Oak Woodland Habitat Revegetation/ Mitigation Program

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Environmental Impact Report Mitigation Measure Nos. Bio-D and Bio-E

California Department of Fish and Wildlife Streambed Alteration Agreement No. 1600-2008-0173-R5

Prepared for

Water Resources Division
County of Los Angeles Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331
Attn: Keith Lilley
T: (626) 458-6104

Prepared by

BonTerra Psomas
225 South Lake Avenue, Suite 1000
Pasadena, California 91101
T: (626) 351-2000 F: (626) 351-2030

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1.0 INTRODUCTION

Note: This document was revised to reflect a recomputation of the Shannon Diversity Index (only) in the Revised 2013 Reference Site Report (Appendix E) and associated performance criteria, as described in Section 7.3. All other information in this document (e.g., species names) remains unchanged.

The Oak Woodland Habitat Revegetation/Mitigation Program (OWHRMP) described herein provides guidelines for the successful creation of 5.5 acres of oak woodland habitat and 2.5 acres of sage scrub habitat as compensation for impacts associated with the Santa Anita Dam Riser Modification and Sediment Removal Project. The creation of this oak woodland and sage scrub habitat is required by Mitigation Measures BIO-D and BIO-E in the *Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Final Environmental Impact Report* (LACDPW 2009) and by the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement (Agreement) No. 1600-2008-0173-R5. The Environmental Impact Report (EIR) and a copy of the Agreement are provided in PDF format in Appendix A. This OWHRMP document provides guidelines for preliminary mitigation tasks; initial mitigation site preparation and installation; long-term maintenance (ten years); biological monitoring (ten years); final program approval; and contingency measure implementation.

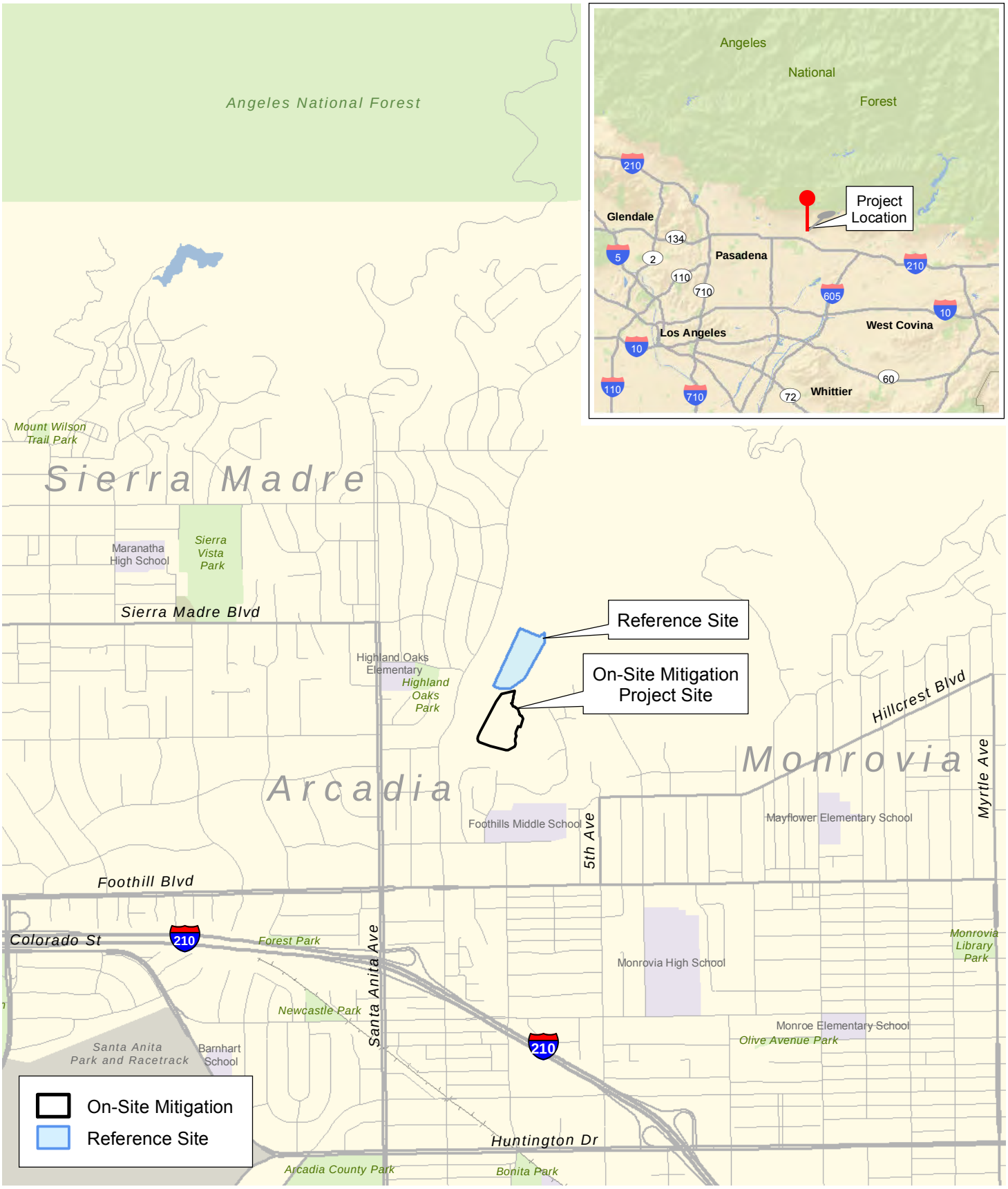
1.1 SEDIMENT REMOVAL PROJECT DESCRIPTION

The Santa Anita Dam Riser Modification and Sediment Removal Project (Sediment Removal Project) involves the removal of approximately 500,000 cubic yards of sediment from the Santa Anita Dam and Reservoir and the construction of a riser on the dam's lowest outlet. The dam and reservoir are located on U.S. Forest Service land (Angeles National Forest) (Exhibit 1). The sediment removal and riser construction is being performed to ensure compliance with the seismic safety requirements of the California Department of Water Resources, Division of Safety of Dams. The removed sediment is being transported via conveyor belt to the Santa Anita Sediment Placement Sites (SPS) located downstream in the City of Arcadia (Exhibit 2). Sediment is being placed on the Middle and Lower SPS locations. Residential development is located west and south of the SPS, and natural open space areas are located north and east of the SPS.

1.2 MITIGATION PROGRAM SUMMARY

1.2.1 Sediment Removal Project Impacts

The Sediment Removal Project required the removal of approximately 11 acres of native vegetation on the Middle SPS in preparation for on-site sediment placement activities. The vegetation impacted on the Middle SPS includes California sycamore/coast live oak riparian forest (CS/CLORF) and coastal sage scrub (CSS) habitat. In addition, approximately 0.5 acre of planted vegetation was removed along the eastern edge of the Lower SPS site. The project impacted a total of 177 coast live oak trees (*Quercus agrifolia*), 1 scrub oak tree (*Quercus berberidifolia*), and 1 Engelmann oak tree (*Quercis engelmannii*). A summary of Project impacts and required mitigation is provided in Table 1.



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Project Vicinity

Exhibit 1

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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Sediment Placement Site Locations

Exhibit 2

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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TABLE 1
SUMMARY OF SEDIMENT REMOVAL PROJECT IMPACTS AND REQUIRED MITIGATION

Vegetation Type	Project Impacts	Required Mitigation[a]
Oak woodland and sage scrub	11 acres (approximate)	On-site creation of oak woodland habitat at the current 8.0-acre site of the Santa Anita Lower SPS (including 5.5 acres of oak woodland restoration and 2.5 acres of sage scrub revegetation).
		Permanent protection of 6.9 acres of high-quality, mature sycamore woodland and alluvial scrub habitat located off site at the Big Tujunga Mitigation Bank site.[b]
		Purchase and permanent preservation of 4.9 acres of mature oak woodland habitat located in an adjacent, off-site tributary to the Sediment Removal Project site.[b]

SPS: Sediment Placement Site

[a] Specified in the CDFW Streambed Alteration Agreement No. 16 2008-0173-R5.
[b] The detailed terms and conditions of the off-site components of the mitigation program are not addressed in this OWHRMP.

1.2.2 Project Mitigation

Sediment Removal Project mitigation includes the establishment of 5.5 acres of oak woodland and 2.5 acres of sage scrub habitat on site as partial mitigation for Sediment Removal Project impacts. On-site mitigation will be installed at the Lower SPS upon the completion of sediment placement in this location. A total of 5.5 acres of oak woodland mitigation will be installed on the "plateau" portion of the Lower SPS, and a total of 2.5 acres of sage scrub vegetation will be installed on the adjacent slopes of the Lower SPS. The primary goal of the on-site mitigation program is to create a developing, diverse, self-sustaining oak woodland and associated scrub habitat that will result in habitats of similar quality and ecological function to the habitat areas impacted by the Sediment Removal Project.

The planting areas on the Lower SPS will entirely consist of placed fill materials. A compaction analysis performed within the Lower SPS subsurface soils indicates that existing soil compaction ranges from 78 percent to 85 percent within the first 35 feet, and from 89 to 90 percent within the 35- to 53-foot range. A copy of the *Santa Anita Dam Riser Modification and Sediment Removal Project Compaction Analysis at Lower Sediment Replacement Site* (LACDPW 2011) is included in Appendix B. Boring activities also indicate that groundwater is located at approximately 50 feet below the existing ground surface. The Sediment Removal Project included placement of approximately 30 feet of sediment over the pre-existing condition. Sediment was placed with construction equipment, but was not compacted beyond the placement efforts. The final soil surfaces will be machine 'ripped' to a minimum depth of 2 feet and left uneven/roughened to improve plant and seed establishment conditions (e.g., 'micro-habitats' for seedling germination/growth). Additionally, the site is being graded to optimize the retention and percolation of on-site precipitation and off-site inflows and will direct drainage towards the plateau where the trees will be planted. A cross-section of the final grades on the mitigation site (oak woodland and sage scrub areas) is included in Appendix B.

Mitigation project implementation tasks are summarized in this document and include preliminary mitigation tasks, site preparation, site installation, and long-term maintenance and monitoring tasks. A map of the mitigation site location is provided on Exhibit 3. Photographs of pre-existing conditions on the Middle SPS (impact site) and the Lower SPS (mitigation site) are provided on Exhibit 4.



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Mitigation Site Location (Lower Sediment Placement Site)

Exhibit 3

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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August 2009. Lower Sediment Placement (Mitigation) Site. Interim fill stockpile conditions in the 'plateau' area to be used for oak mitigation (5.5 acres). Off-site drainage inflow from slopes to the east (left in photo) will enhance on-site hydrology for woodland habitat establishment. A total of 30 feet of additional fill will be placed in this area.



May 2010. Volunteer vegetation growth (including native shrubs) on a slope adjacent to the Middle Sediment Placement (Impact) Site. The slope is composed of transported material from previous sediment removal projects.



August 2009. Lower Sediment Placement (Mitigation) Site. Side slopes will be revegetated with coastal sage scrub species (2.5 acres). Native scrub plant species will not be installed within 100 feet of adjacent residential structures (left in photo) in compliance with the City of Arcadia's defensible space vegetation requirements.

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Site Photographs

Exhibit 4

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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The overall mitigation program also includes (1) the permanent protection of 6.9 acres of high-quality, mature sycamore woodland and alluvial scrub habitat at the Big Tujunga Mitigation Bank site (off site) and (2) the purchase and permanent preservation of 4.9 acres of mature oak woodland habitat located in an adjacent, off-site tributary to the Project site. The detailed terms and conditions of the mitigation program's off-site components are addressed in the CDFW Agreement.

1.2.3 Mitigation Project Schedule

Salvage of coarse woody debris and duff materials is expected to begin in early 2011 during vegetation clearing activities at the Middle SPS. Preliminary weed abatement on the Lower SPS began in spring 2010. Native plant and/or seed installation is expected to occur between November 1 and December 31, 2013. The CDFW is requiring a ten-year maintenance and monitoring period; however, if the ten-year performance criteria are met after seven years, the mitigation project may be eligible for early sign-off. A tentative mitigation implementation schedule is provided in Table 2.

TABLE 2
IMPLEMENTATION SCHEDULE (TENTATIVE)

Task/Milestone	Date
Conduct preliminary weed abatement at the Lower SPS.	Ongoing
Prepare OWHRMP document.	January–February 2011
Initiate site-specific seed collection and salvage of cactus and yucca plants.	Winter 2011 (ongoing)
Clear Middle SPS.	January–February 2011
Salvage and stockpile coarse woody debris and boulders.	January–February 2011
Complete fill placement at the Lower SPS.	Late 2012
Retain Restoration Specialist; initiate mitigation site preparation.	Fall 2013
Install native plants and seeds	Fall/Winter 2013 and 2014
Complete plant materials installation; initiate long-term maintenance period.	Fall 2014
Complete maintenance and monitoring period.	Fall 2023 (or fall 2020 if 10-year criteria are met at the 7-year mark)
SPS: Sediment Placement Site; OWHRMP: Oak Woodland Habitat Revegetation/Mitigation Program	

1.2.4 Responsible Parties

Successful mitigation program implementation will depend upon the cooperative efforts of the Los Angeles County Department of Public Works (LACDPW), the Landscape Architect, the General Contractor (where feasible), the Restoration Specialist, the Seed Collector, and the Biological Monitor. LACDPW and these individuals will also be coordinating with the California Department of Fish and Wildlife and the City of Arcadia to inform them of the status of mitigation activities and the need for any adaptive management actions. LACDPW may, to maintain quality and continuity, engage the same firm to perform, as primary and through sub-contractors, all site design, site-preparation, installation, seed collection and long-term maintenance and monitoring tasks. In the event that multiple contractors/monitors are involved with this mitigation project over time, supplemental kickoff meetings will be held to ensure that all firms/personnel are familiar with project requirements. The following section outlines the various functions of these entities and individuals. A list of responsible parties is provided in Table 3.

TABLE 3
RESPONSIBLE PARTIES

Task/Role	Responsible Parties			
	Entity/Company	**Contact**	**Address/Email**	**Telephone**
Project Manager; Revegetation/Mitigation Program	LACDPW, Water Resources Division	Patricia Wood	900 South Fremont Avenue Alhambra, California 91803 pwood@dpw.lacounty.gov	(626) 458-6131
Advisory	City of Arcadia	Thomas Tait	P. O. Box 60021 Arcadia, California 91066-6021	(626) 305-1386
Mitigation Planning; Restoration Specialist; Biological Monitor	BonTerra Psomas	Joan Patronite Kelly, AICP	225 South Lake Avenue, Suite 1000 Pasadena, California 91101 Joan.Kelly@psomas.com	(626) 351-2000
Section 1600 Permitting	CDFW	Sarah Rains	4949 Viewridge Avenue San Diego, California 92123 srains@dfg.ca.gov	(805) 498-2385
LACDPW: Los Angeles County Department of Public Works; TBD: to be determined; CDFW: California Department of Fish and Wildlife.				

Project Manager

The LACDPW will be responsible for (1) hiring a licensed Landscape Architect to prepare the detailed installation plans; (2) hiring a qualified Restoration Specialist to install and maintain the mitigation site; and (3) retaining qualified Biological Monitor(s) to periodically monitor installation, long-term maintenance, and site performance of the mitigation site. The LACDPW will designate a primary LACDPW staff member (Project Manager) to track the implementation of the mitigation program; review performance documentation; attend site meetings; and perform other necessary duties. The LACDPW will also specify final grading plans for the Lower SPS. The LACDPW will ultimately be responsible for the successful implementation of the program described herein and compliance with required performance standards. LACDPW will engage the following specialists, from in-house resources or through other firms or entities.

Landscape Architect

The LACDPW will retain a qualified Landscape Architect to prepare detailed irrigation plans for the mitigation site. The Landscape Architect will coordinate with the LACDPW, the Restoration Specialist, and the Biological Monitor, on available points of connection; desired temporary irrigation system features (e.g., sprinkler head types and spacing, emergency shut-off features); and site-specific constraints such as potential low source pressure that may require the use of a pump or other methods to obtain proper irrigation coverage for the planting areas.

General Contractor (Sediment Removal)

The LACDPW's General Contractor for the Sediment Removal Project performed vegetation clearing on the Middle SPS in 2011. The General Contractor collected and stockpiled the coarse woody debris, large boulders, and duff materials from the Middle SPS at the time of vegetation clearing, and will move the materials over to the Lower SPS when sediment placement at the site is completed.

Restoration Specialist

The LACDPW will retain a Restoration Specialist with a minimum of five years of experience with (1) the installation and maintenance of native habitat mitigation programs and (2) non-native species control and management in natural habitat areas. The Restoration Specialist must provide documented experience in the installation and long-term maintenance of at least two successful habitat mitigation sites that are at least five acres. The Restoration Specialist will be a licensed Landscaping Contractor and Pesticide (Herbicide) Applicator or be responsible for engaging and supervising licensed Landscaping Contractors and Pesticide (Herbicide) Applicators to perform: (1) all invasive weed species eradication; (2) site-preparation procedures (e.g., irrigation system installation, any needed soil treatment); (3) container plant and acorn installation; (4) seed mix application; and (5) long-term maintenance activities. The Restoration Specialist will also be responsible for performing or engaging the firms qualified to perform the following: collecting and stockpiling boulders of various sizes during mitigation project implementation for later placement on the mitigation site (if additional boulders are required beyond the quantity stockpiled by the General Contractor); and minor grading and machine "ripping" the plateau area soil surface (following final grading) to improve plant establishment conditions. The Restoration Specialist will be responsible for placing the debris/duff/boulder materials on the mitigation site during the restoration installation phase. The Restoration Specialist will provide the LACDPW and the Biological Monitor with a list of the names and contact information (email addresses, cellular telephone numbers, and other information) of its project manager and foremen associated with the mitigation program. To the extent practicable, the Restoration Specialist will assign consistent, long-term maintenance staff to the project site (especially foremen) (1) to reduce the "learning curve" for maintenance issues and other project-specific conditions and (2) to optimize efficiency and site performance. The Restoration Specialist will also be responsible for coordinating with the LACDPW's Project Manager and the Biological Monitor regarding all site preparation, site installation, and long-term maintenance tasks, and will supervise, in coordination with the Biological Monitor, the Seed and Plant Collector in its seed and plant collection activities.

Seed and Plant Collector

The LACDPW will retain a qualified Seed and Plant Collector to collect native seed and plants at the Middle SPS and/or other local sites (if necessary). The Seed and Plant Collector will be responsible for coordinating with the LACDPW, the Restoration Specialist, and the Biological Monitor regarding all seed and plant materials collection and storage activities.

Biological Monitor

The LACDPW will retain a qualified Biological Monitor experienced in monitoring non-native plant species control and Southern California native habitat restoration implementation. The Biological Monitor will be responsible for coordinating with the Restoration Specialist and monitoring: (1) invasive weed species eradication; (2) site-preparation activities; (3) container plant and acorn installation; (4) native seed mix application; and (5) post-installation site conditions and conformance with success criteria. The Biological Monitor will also be responsible for coordinating with the Restoration Specialist and the Seed Collector in any seed collection activities. The Biological Monitor will also be responsible for coordinating with the LACDPW and the Restoration Specialist regarding the status of the mitigation program.

2.0 PRELIMINARY MITIGATION TASKS

2.1 SEED COLLECTION

The LACDPW will retain a qualified Seed and Plant Collector to perform site-specific native seed and plant collection on the Middle SPS and/or other sites in the Santa Anita Wash/Rio Hondo Sub-Watershed. Seed and plant collection started in 2011 and is ongoing. Seed and plant collection will be performed for multiple seasons or until adequate quantities and diversity of native plants/seeds are obtained for mitigation project implementation. The seed and plant collection is being performed by qualified seed and plant collectors (Rancho Santa Ana Botanic Garden, and S&S Seeds, Inc.) and supervised by a qualified biologist with restoration expertise (BonTerra). Native seed and plant materials collection after 2012 will be supervised by the Restoration Specialist, in consultation with the Biological Monitor. Oak acorns will be collected from a minimum of 50 individual trees in the Santa Anita Wash/Rio Hondo Sub -Watershed to provide genetic diversity in the planting stock. The composition of the seed mixes will depend on the species' availability for collection in the Sub-Watershed and the ability to access the source plants. All native plant and seed materials to be installed on the mitigation site will be obtained from within the Santa Anita Wash/Rio Hondo Sub-Watershed. When collection is performed on non-LACDPW properties within the Sub-Watershed (e.g., Arcadia Wilderness Park, Monrovia Hillside Wilderness Preserve), the Seed and Plant Collector and the Restoration Specialist will coordinate in advance with the LACDPW regarding any needed access permits or other documentation to obtain legal entry for collection purposes.

2.2 CACTUS COLLECTION AND PROPAGATION

The LACDPW will retain a qualified Seed and Plant Collector to harvest cuttings (pads) from Mesa prickly pear cactus (*Opuntia x vaseyi*) located in the impact site prior to clearing activities. The quantity of cactus plants to be salvaged will be determined in the field by the Biological Monitor based on plant condition and health. The cactus materials will be delivered to a qualified native plant nursery for propagation in containers for replanting within the mitigation site. The Biological Monitor will also coordinate with the native plant nursery regarding the propagation methods, long-term health, and delivery schedule for the container plants. The Restoration Specialist, in coordination with the Biological Monitor, will also perform periodic inspections of these materials at the nursery facility.

2.3 WOODY DEBRIS, DUFF, AND BOULDER COLLECTION AND STOCKPILING

The General Contractor for the Sediment Removal Project will collect the coarse woody debris, duff materials, and boulders from the cleared Middle SPS area and stockpile this material on the top of the Lower SPS when sediment placement at that site is completed. The collected materials will not be stockpiled in high activity areas; in areas vegetated with native plant species; or in jurisdictional drainage areas. It is important to note that LACDPW retained a separate, non-BonTerra Biological Monitor to monitor this project construction activity, along with sediment removal tasks at the dam site and other tasks associated with the Sediment Removal Project. A list of all biological resource mitigation measures, including biological monitoring requirements, is included in the EIR (Appendix A). Vegetation removal from the Middle SPS was completed in January 2011 (i.e., outside the nesting season) to avoid impacts to nesting birds.

2.3.1 Mulch

The General Contractor will collect mulch material on the Middle SPS and stockpile it for later application to the mitigation site at the Lower SPS. The mulch will be incorporated via machine "ripping" into the upper 2 feet of topsoil to improve soils fertility, including an appropriate amount of applied urea to provide nitrogen balance as the mulch decays.

2.3.2 Boulders

The Restoration Specialist will, in coordination with the Landscape Architect and the Biological Monitor, place boulders of various sizes on the oak woodland mitigation site (i.e., on the plateau, not on side slopes) to provide microhabitat for various wildlife species. If necessary, the Restoration Specialist will collect additional boulders beyond what the General Contractor stockpiled from the already developed areas of the Upper SPS and Middle SPS. All boulders will be stockpiled outside operation areas, in a manner that prevents rolling or other hazards. Breakage and other boulder damage will be minimized during collection and transport.

2.4 INTERIM WEED ABATEMENT

LACDPW will perform or engage a firm to perform periodic weed abatement on the mitigation site in the interim between the completion of the Sediment Removal Project and the engagement of the Restoration Specialist. Interim weed abatement tasks will include the use of glyphosate-based herbicides (Aquamaster®, Roundup Pro® or equivalents), mowing, weed-whipping, or other methods. The primary goal of preliminary weed-abatement tasks is to avoid the re-seeding of weed species on site and reduce the accumulation of weed seeds in the future planting/seeding areas. No pre-emergent herbicides will be applied to the future planting/seeding areas.

2.5 INTERIM EROSION CONTROL

The LACDPW will install erosion-control measures, as needed, to maintain soils stability on the mitigation site prior to planting/seeding activities. Erosion-control materials will include only weed-free materials (e.g., fully bio-degradable rice straw wattles). The Restoration Specialist and/or the LACDPW will keep all drainage features free of sediment (e.g., bench drains) to avoid damage to slope areas on the Lower SPS.

3.0 MITIGATION SITE PREPARATION

The final configuration of the mitigation site (Lower SPS) has been completed. The fill has reached its final elevation as of December 2012. Final grading on the plateau and slopes was performed by the General Contractor for the Sediment Removal Project. Mitigation site preparation is expected to include the following activities, as described in detail below: (1) kickoff meeting; (2) protection of existing resources; (3) staking, fencing, and signage installation; (4) installation of erosion-control measures; (5) initial non-native plant species removal; (6) placement of coarse woody debris, duff, and boulders; (7) installation of a temporary irrigation system and possible performance of grow-and-kill weed abatement; and (8) soils treatments including de-compaction/scarification. Work shall be performed only during favorable weather and site conditions.

3.1 KICKOFF MEETING

Once the Restoration Specialist has been retained, the LACDPW Project Manager will schedule an on-site kickoff meeting that will include the LACDPW, the City of Arcadia, the Restoration Specialist (Project Manager and Foremen), the Biological Monitor, and any other appropriate entities and individuals. The LACDPW will present all rules and regulations for non-LACDPW entities performing on-site mitigation tasks (e.g., approved points of entry and access roads, approved staging areas, utility connections, hours of operation, fire suppression, health and safety, and other standards). LACDPW may, to maintain quality and continuity, engage the same firm to perform, as primary and through sub-contractors, all site preparation, installation, seed collection and long-term maintenance and monitoring tasks. In the event that multiple contractors/monitors are involved with this mitigation project over time, supplemental kickoff meetings will be held to ensure that all firms/personnel are familiar with project requirements.

3.2 PROTECTION OF EXISTING RESOURCES

3.2.1 Biological Resources

Prior to the start of site preparation tasks, the Biological Monitor will install flagging or other materials to indicate any sensitive habitat areas or other resources (e.g., native vegetation along the eastern edge of the plateau, pre-existing native trees/shrubs in the planting area, and other sensitive areas) to be protected during mitigation project implementation. The flagging materials will be replaced, as needed, during the site preparation period to maximize visibility of protected biological resources. If the Restoration Specialist or its sub-contractors cause damage to a preserved habitat area (e.g., vehicle encroachment), the Restoration Specialist must report the damage to the LACDPW Project Manager within 24 hours, and the damage will be inspected and documented by the Biological Monitor within 1 week. The LACDPW will determine appropriate remedial measures for any damage to preserved habitat areas. The timely completion of remedial measures will be the sole responsibility of the Restoration Specialist at no expense to the LACDPW.

3.2.2 Water and Soils

LACDPW personnel and all non-LACDPW personnel shall ensure that no foreign material and/or liquid such as oil, gasoline, or other petroleum products are deposited: on any soil on the mitigation sites or in off-site staging areas; within the dripline (the outside edge of foliage overhang) of any native plant species; or in existing drainages. Should any such contamination of the soil occur, the responsible party shall remove the affected soil, as directed by the LACDPW Project Manager and the Biological Monitor, and replace it as needed with acceptable soil. If the

Restoration Specialist or its sub-contractors are the responsible party, the Restoration Specialist will be responsible for remediation at no expense to the LACDPW. Detailed water quality requirements are specified in the Sediment Removal Project permits (Appendix A).

3.2.3 Fire Prevention

LACDPW's maintenance routines already incorporate fire prevention for all personnel activities on site. All non-LACDPW on-site personnel activities throughout the site preparation, installation, and maintenance periods will include advanced coordination with the LACDPW and, as needed, the City of Arcadia, regarding fire prevention.

3.3 STAKING, FENCING, AND SIGNAGE INSTALLATION

The LACDPW or the Restoration Specialist will stake the mitigation site boundaries in coordination with the Biological Monitor. The staked boundaries will include the overall mitigation site perimeter, the weed abatement buffer Areas 1 and 2 (see Exhibit 3, and Section 3.5) and, as needed, the boundaries between the oak woodland and sage scrub planting areas. The stakes will consist of angle iron or other durable material that will persist for several years of mitigation project maintenance. The LACDPW Project Manager and the Biological Monitor will determine appropriate locations for fencing and/or signage to provide site protection and to maintain worker safety during project implementation. Fencing materials may include snow/construction fencing, post-and-yellow-rope fencing, or other materials. Signage text, size, and materials for fabrication/posting will be specified by the LACDPW Project Manager and will address sensitive biological resources, safety concerns, and project-specific emergency contact information.

3.4 INSTALLATION OF EROSION-CONTROL MEASURES

The Restoration Specialist will install ecologically suitable erosion-control measures on the mitigation site in accordance with County-approved Best Management Practices (BMPs). Erosion-control methods may include temporary toe-of-slope silt fencing (partially buried to enhance stability), mid-slope straw wattles (fully biodegradable), or other measures. Mid-slope straw wattles shall be placed at a suitable vertical spacing to minimize erosion.

3.5 INITIAL NON-NATIVE PLANT SPECIES REMOVAL

It is anticipated that weed coverage in the mitigation site will be sparse at the beginning of the site preparation phase due to preliminary weed abatement tasks performed by LACDPW personnel or its contractors (see Sections 2.4 and 2.5). The Restoration Specialist will perform initial treatment and removal of any non-native plant species that become established prior to mitigation site installation. Weed removal will also be performed in weed abatement buffer Areas 1 and 2 for the duration of the maintenance period. Methods of initial treatment may include mechanical removal, the cut and paint method of herbicide application, and/or foliar application of herbicide as described below. The Biological Monitor may also specify a subsequent "grow-and-kill" program following the installation of the irrigation system, as described below. Appropriate methods of weed control will be determined through consultation among the LACDPW Project Manager, the Restoration Specialist, and the Biological Monitor, based on site conditions. All applied herbicides will include an agriculturally suitable marker dye to facilitate thorough coverage and to alert personnel in the area of the location of recently treated vegetation. Any use of herbicides shall be coordinated with the Biological Monitor. Herbicide use and other maintenance tasks may be suspended by the Biological Monitor based on sensitive biological resource issues in the mitigation project vicinity (e.g., nesting birds).

3.5.1 Mechanical Removal

Weed whips and other mechanical or hand-removal methods will be used, as appropriate, to remove broadleaf weed species and non-native grasses. All green waste resulting from weeding activities will be immediately removed and disposed of at an off-site landfill location (i.e., weeds shall not be stockpiled on site).

3.5.2 Cut and Paint Method of Herbicide Application

A glyphosate-based herbicide (Aquamaster®, Roundup Pro® or equivalent) may be applied to some larger invasive weed species using the cut-and-paint application method. The cut-and-paint method consists of (1) cutting the stem(s) of the shrub to a height of 12 inches or less and removing all aboveground debris from the site; (2) applying glyphosate at a 10 percent rate to the cut stem/stump within 2 minutes of cutting the stem; and (3) performing follow-up foliar applications, as described below, to regrowth every 4 to 6 weeks until all regrowth has been eradicated.

3.5.3 Foliar Application of Herbicide

A glyphosate-based herbicide will be applied to small (i.e., less than three feet tall) broadleaf invasive plant species that are established on the mitigation site. The following removal techniques will be used:

- Aquamaster®, Roundup Pro®, or equivalent herbicides should be applied to each plant at a minimum rate of 1.5 percent to ensure that each plant receives a comprehensive and fully effective treatment and that re-sprouting from root materials is minimal. Application will consist of (1) spot applications to individual plants where broadleaf plant coverage is sparse and (2) broadcast applications to dense patches of weed species. Applications should be on a spray-to-wet basis, and coverage should be uniform and complete. Contact with native shrub and grass species should be avoided as much as possible; in the event of gusty winds or winds in excess of five miles per hour, all work shall be temporarily discontinued to protect applicators and adjacent natural resources. Treatments should also be temporarily discontinued in the event of rainfall since rainfall reduces the effectiveness of the herbicide.
- Sprayed vegetation should be left undisturbed for seven days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted foliage, brown foliage, and disintegrated root material.
- All treated plant materials should be removed by a string trimmer or other appropriate equipment and disposed of off-site in a landfill.

The steps listed above should be repeated two to three times every two to three weeks following the initial treatment to remove seedling exotic species.

3.5.4 Grow-and-Kill Program

If specified by the Biological Monitor, the Restoration Specialist shall implement a preliminary "grow-and-kill" weed abatement program on the mitigation site following the initial eradication methods described above and irrigation system installation described below. The grow-and-kill program will last one to two months or for one year or longer, depending on the mitigation project implementation schedule. The purpose of the grow-and-kill program is to germinate the accumulated weed seeds in the upper soil layer prior to native plant installation, and to

subsequently spray the weed plants with herbicide. The grow-and-kill program will include repeated cycles of overhead irrigation and periodic application of a glyphosate-based herbicide (i.e., Aquamaster® Roundup Pro® or approved equivalent). Herbicide application will be performed only by licensed applicators. During the grow-and-kill period, sufficient moisture (volume and frequency) must be applied on the mitigation site to ensure optimal weed species germination without destabilizing the soil. Overhead irrigation will be suspended for at least three days following herbicide application to maximize weed mortality. The Restoration Specialist shall not allow weed species to set/disperse seed on the mitigation site during the grow-and-kill period. Following initial herbicide treatment, numerous volunteer native plant seedlings may arise in previously weedy areas, requiring greater care in successive applications to avoid damaging the volunteer plants. Native plant species shall be protected throughout the grow-and-kill period, as directed by the Biological Monitor. All herbicide use shall be approved in advance by the LACDPW Project Manager and the Biological Monitor, and all herbicide use shall comply with local codes and regulations. A minimum of two day's advance notice of any herbicide application will be provided to the Biological Monitor. The length of the grow-and-kill program will depend on the interval between site preparation and native plant materials installation. Specific methods of weed control are discussed above and in Section 6.3 below.

3.6 PLACEMENT OF MULCH, BOULDERS, AND WOODY DEBRIS

The final soil surfaces will be machine "ripped" to a minimum depth of 2 feet and left uneven/roughened to improve plant and seed establishment conditions (e.g., 'micro-habitats' for seedling germination/growth).

3.6.1 Mulch Placement

The Restoration Specialist will apply the stored mulch material (described Section 2.3) to the mitigation site (prior to ripping) and incorporate the mulch into the upper 2 feet of topsoil to improve soil fertility, including an appropriate amount of applied urea to provide nitrogen balance as the mulch decays..

3.6.2 Boulder Placement in Oak Woodland Mitigation Area

The Restoration Specialist will transport boulders from the already developed areas of the Upper SPS and Middle SPS, or temporary stockpile location(s) approved by the Biological Monitor to the mitigation site under the supervision of the LACDPW and the Biological Monitor. The purpose of the boulders is to provide microhabitat for plant and animal species. The boulders will be placed/positioned in naturalistic groupings, in shallow pits created with a backhoe as needed to ensure stability (i.e., to avoid rolling). The boulders to be relocated should not be painted or otherwise defaced, and breakage/fragmentation should be minimized.

3.6.3 Woody Debris Placement in Oak Woodland Mitigation Area

The General Contractor for the Sediment Removal Project transported woody debris to the mitigation site and stockpiled it there under the supervision of the LACDPW. The woody debris included (1) pre-cut oak and sycamore trunk sections of various lengths and pre-cut, 15- to 20+ foot oak trunks that are still attached to rootball tissue for planting upright as "snags" and (2) mid- and small-sized oak and sycamore branches. The woody debris placement locations will be pre-flagged in the field by the Restoration Specialist, in coordination with the Biological Monitor, with lath and color-coded flagging tape to indicate the type of material to be placed in these locations. Debris placement will include single-trunk segments to be placed on

their sides; groups of several trunks; the “snags”, which will be planted in excavated holes and secured with compacted backfill; and piles of mid- to small-sized branches.

3.7 INSTALLATION OF A TEMPORARY IRRIGATION SYSTEM AND POSSIBLE PERFORMANCE OF GROW-AND-KILL WEED ABATEMENT

Based on the average annual rainfall in the area, there will be a total of 518,000 cubic feet per year (cf/year) of precipitation falling directly on the leveled area of the Lower SPS site. An additional 570,000 cf/year of water will be available from the tributary that surrounds the slope area (total 7.5 acres). This storm water will be completely captured in the top leveled area of the Lower SPS and will be spread, retained, and percolated into the ground, except for peak rainfall. There will be minor grading on the plateau, associated with decompacting the soil, placing boulders and logs around the site, and modifying the drainage channel to maximize the retention time and improve percolation during small to moderate storms. A temporary irrigation system will be installed to augment natural precipitation. The Landscape Architect shall design and the Restoration Specialist shall install a temporary, aboveground, overhead irrigation system to include all mitigation planting areas. The LACDPW will review and approve the irrigation design prior to installation. The irrigation design shall include heads and risers at a suitable height to maintain proper area coverage as the vegetation increases in size and to minimize wind effects. The system shall include a high-flow detector/shut-off valve and emergency master shut-off valve(s); the LACDPW shall be informed of the location of the valve(s). The system shall be installed prior to the start of the grow-and-kill program (described in Section 3.5.4 above). The Restoration Specialist will coordinate with the LACDPW Project Manager on hours of operation for the irrigation system that are compatible with other site activities and site-wide water needs/line pressures. The mitigation irrigation system shall only be operated when the Restoration Specialist’s foreman is on site to monitor its operation through all valves/cycles to full shut off.

3.8 SOIL TREATMENTS

Oak woodland, sage scrub, and other native plant species require suitable soil microbes and physical elements for long-term success. Fairly loose, aerated soils are required for deep root development and successful plant establishment. Healthy soil structure occurs when soils are loosened and appropriate microbiological elements are present in abundant quantities. Coastal sage scrub habitats especially benefit from soil organisms such as mycorrhizal fungi. When mycorrhizal fungi are present in the soils, a network is formed to link the roots of the native plant species together to provide increased nutrient uptake and to improve soil structure throughout. To allow for the ready movement of water, roots and soil fauna, the fungal hyphae consolidate soil particles into aggregates of different sizes, allowing establishment of beneficial soil bacteria and other soil microbes and improving soil structure. The mycorrhizal network also facilitates the uptake of soluble nutrients such as phosphorous and nitrogen by native plant species, making them unavailable to ruderal weedy species. Weedy species are unable to become established on sites with healthy mycorrhizal networks present within the soil (St. John 1999a, 1999b). Soil organic matter also improves overall soil structure and facilitates water, root, and faunal movement. Soil treatments may include scarification and/or track-walking soils (especially manufactured slopes) to reduce surface compaction. Soil treatments will provide appropriate microhabitats for seed species establishment from the installed seed mixes or natural recruitment. All planting areas will be inoculated with mycorrhizal fungi to facilitate the development of healthy soil conditions, the establishment of native plant species, and the minimization of weed and ruderal species development. This procedure will include the use of a granular form of inoculum material AM-120 (or approved equivalent product) as part of the hydroseed mix and the use of mycorrhizal host container plant species.

4.0 PLANT AND SEED INSTALLATION IN OAK WOODLAND MITIGATION AREAS

Native container plants and seed mixes will be installed at the completion of all site preparation activities. The initial/conceptual container plant and seed mix palettes developed for the oak woodland mitigation area are based on the plant species observed during focused plant surveys conducted on the Sediment Removal Project site in 2009 and 2010 (BonTerra 2010c and 2009). Additional container plants and seeds (locally obtained) of other species typical of oak woodland and sage scrub habitats will be added to the mitigation site on an ongoing basis during the establishment period to improve plant species diversity, in coordination with the CDFW. Copies of the 2009 and 2010 focused plant survey reports are included in Appendix C. Lists of the native plant and seed materials installed to-date (between January and March 2014) are provided in Appendix D.

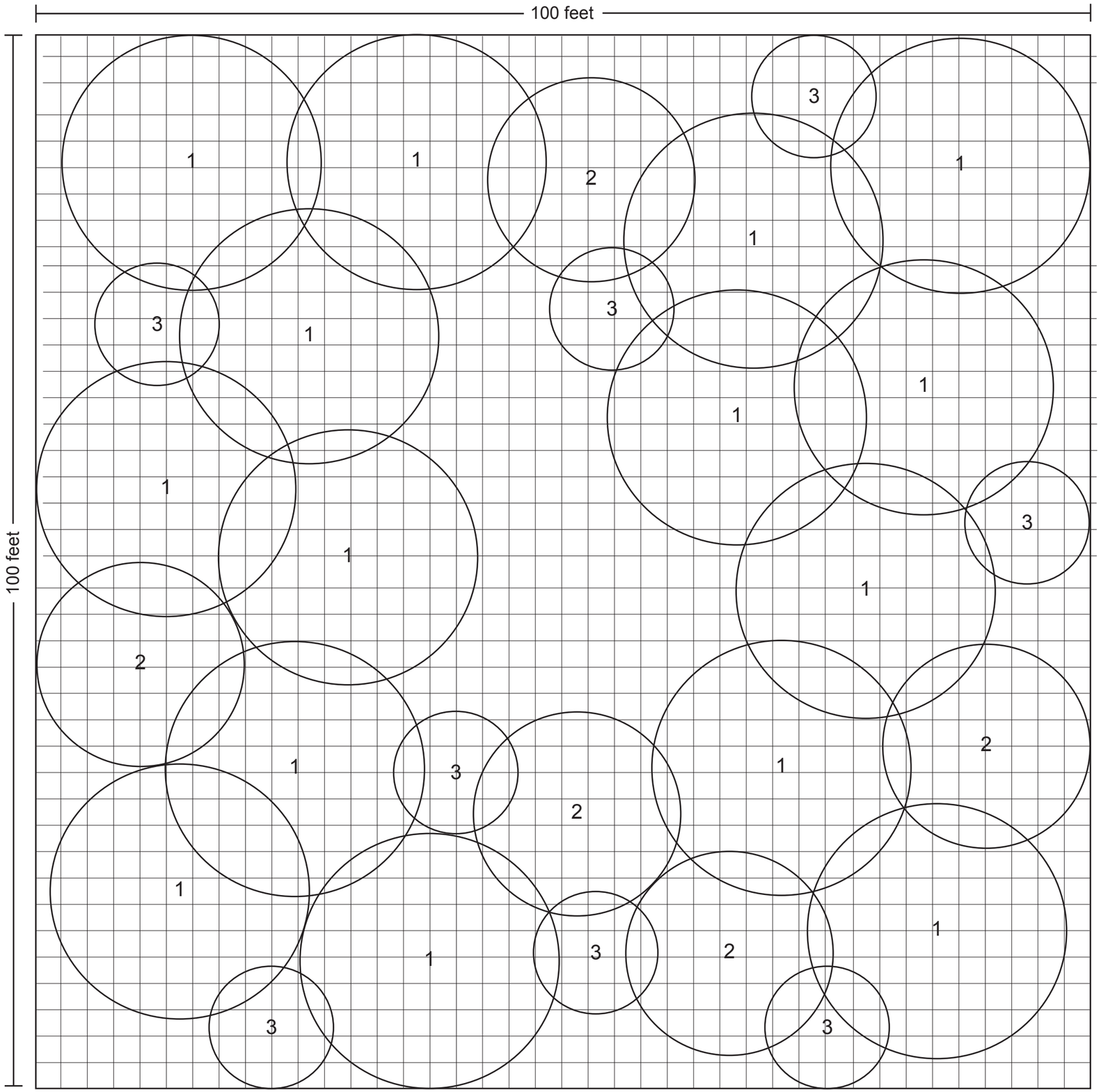
4.1 CONTAINER PLANT MATERIAL

A diversity of native plant species will be installed on the mitigation site at a density of up to 1,115 plants per acre (including a coast live oak planting density of 65 plants per acre). Excluding oak trees, approximately 30 to 40 percent of the total container plants installed will be herbaceous species (e.g., annuals/perennials, grasses, ferns). Using this container planting density will facilitate (1) the rapid establishment of a mix of trees, shrubs, herbs, and grasses at densities and coverages typical of woodland habitats and (2) achievement of the required success criteria for coverage and survival, while allowing for the low level of mortality that typically occurs during native plant establishment programs. This planting density is based on a review of site conditions performed during biological evaluations on the Sediment Removal Project site (BonTerra 2010c and 2009) and on BonTerra's extensive expertise with woodland restoration and establishment throughout Southern California and within the foothill area of the San Gabriel Mountains and adjacent communities (BonTerra 2000, 2005a, 2005b, 2006, 2010a, and 2010b; Michael Brandman Associates 1994).

All container plants will be propagated on a contract basis by a nursery that specializes in native plants. The Restoration Specialist and the Biological Monitor will inspect all plant materials at the nursery and will accept only healthy, vigorous, well-rooted, non-rootbound plant materials upon delivery. Plants determined to have improper genetics (e.g., prostrate cultivars of coyote bush rather than the upright "wild type" form of the shrub) will be rejected. Container plants shall be stored on site in a protected location by the Restoration Specialist, and will not be held on site longer than one week prior to installation. Plants stored on site awaiting installation shall be properly watered by hand with a low-force wand to minimize interim damage/desiccation/decline and shall be kept moist at all times. All appropriate container plant species shall be pre-inoculated with mycorrhizal fungi during nursery propagation.

Container plants shall be installed between November 1 and December 31 and during other periods when weather and soil conditions are suitable and in accordance with locally acceptable practices. The Restoration Specialist shall notify the Biological Monitor and the LACDPW Project Manager one week in advance of scheduled plant deliveries to provide ample opportunity for pre-delivery plant inspections.

A total of 6 to 8 irregular-shaped planting polygons will be delineated on site with permanent staking to include only oak trees and native herbaceous species (1.0 acre total). These sub-areas of oak trees within native grassland/herbland will be managed throughout the maintenance program to avoid invasion by shrub species, thereby facilitating creation of a naturalistic habitat mosaic and structural 'edge' that is beneficial for a range of wildlife species. The Biological Monitor will create at least two demonstration plots in the oak woodland planting areas, delineated by lath-and-flagging, to indicate the container plant distribution (including the shrub-free sub-areas) that will be reproduced throughout the site. The Biological Monitor shall supply the lath, flagging, and color-coded wire flags for the demonstration plot. The Restoration Specialist shall not install any container plants in an unnatural, linear planting pattern. Container plant species that typically grow in denser shade conditions (including fern species) may be planted in later years of the maintenance program as vegetation cover increases, to enhance plant growth and survival. These plant species are also expected to become established on a volunteer basis from adjacent wildland areas. A list of container plant species is provided in Table 4; the actual container plant species and quantities may be modified based on availability of seed to collect from within the Santa Anita Wash/Rio Hondo Sub-Watershed. A list of the native plant materials installed to-date (between January and March 2014) is provided in Appendix D. A typical planting plan for the oak woodland mitigation area is provided on Exhibit 5. Exhibit 5 shows typical plant quantities, spacing, and plant groupings/configurations to be used in a 0.23-acre area (excluding the shrub-free polygons). Any plant species substitution shall be approved in advance by the CDFW.



LEGEND

Species

(1) Coast live oak (*Quercus agrifolia*)	15
(2) Blue elderberry (*Sambucus nigra ssp. caerulea*)	4-5
(3) Large evergreen shrubs Laurel sumac (*Malosma laurina*) Toyon (*Heteromeles arbutifolia*) Sugarbush (*Rhus ovata*)	7-8 (total)
Shrubs succulents (scattered: groups of 10-15) California sagebrush (*Artemisia californica)* California buckwheat (*Eriogonum fasciculatum)* Heartleaf penstemon (*Keckiella cordifolia*) Southern honeysuckle (*Lonicera subspicata)* Bush monkeyflower (*Mimulus aurantiacus*) California coffeeberry (*Rhamnus californica*) Skunkbush (*Rhus trilobata*) Golden currant (*Ribes aureum*) White sage (*Salvia apiana*) Black sage (*Salvia mellifera*) Chaparral yucca (*Yucca whipplei*)	110-120 (total)
Perennials grasses (scattered: groups of 5-10) Narrow-leaved milkweed (*Asclepias fascicularis*) California everlasting (*Gnaphalium californicum*) Giant wild rye (*Leymus condensatus*) Deerweed (*Lotus scoparius*) Small-flowered melic grass (*Melica imperfecta*) Needlegrass (*Nassella spp.*) Showy penstemon (*Penstemon spectabilis*)	70-80 (total)
Ferns (scattered: groups of 3-5) Coffee fern (Pellaea andromedifolia) Bird's foot fern (Pellaea mucronata)	20-25 (total)

Not shown:
- Acorn planting locations
- Salvaged relocated woody debris, boulders, etc.

Area shown is 10,000 square feet (0.23 acre)
Overall plant density is approx. 1,100 plants acre

Proposed Planting Plan: Oak Woodland

Exhibit 5

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra CONSULTING

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TABLE 4
INITIAL/CONCEPTUAL CONTAINER PLANT SPECIES
OAK WOODLAND MITIGATION

Common Name[a,b]	Scientific Name	Size	Density (Plants Per Acre)	Total Plants (Per 5.5 Acres)
California sagebrush	*Artemisia californica*	1 gallon	50	275
narrow-leaved milkweed	*Asclepias fascicularis*	1 gallon	50	275
California buckwheat	*Eriogonum fasciculatum*	1 gallon	50	275
California everlasting	*Gnaphalium californicum*	1 gallon	50	275
toyon	*Heteromeles arbutifolia*	1 gallon	10	55
heart-leaf penstemon	*Keckiella cordifolia*	1 gallon	50	275
giant wild rye	*Leymus condensatus*	1 gallon	50	275
southern honeysuckle	*Lonicera subspicata*	1 gallon	50	275
deerweed	*Lotus scoparius*	1 gallon	50	275
laurel sumac	*Malosma laurina*	1 gallon	10	55
small-flowered melic grass	*Melica imperfecta*	1 gallon	50	275
bush monkeyflower	*Mimulus aurantiacus*	1 gallon	50	275
foothill needlegrass	*Nassella lepida*	1 gallon	50	275
coffee fern	*Pellaea andromedifolia*	1 gallon	50	275
bird's foot fern	*Pellaea mucronata*	1 gallon	50	275
showy penstemon	*Penstemon spectabilis*	1 gallon	50	275
coast live oak	*Quercus agrifolia*	T4[c]	65	358
Engelmann oak	*Quercus engelmannii*	T4[c]	1	5
California coffeeberry	*Rhamnus californica*	1 gallon	50	275
skunkbush	*Rhus trilobata*	1 gallon	50	275
sugar bush	*Rhus ovata*	1 gallon	10	55
golden currant	*Ribes aureum*	1 gallon	50	275
white sage	*Salvia apiana*	1 gallon	50	275
black sage	*Salvia mellifera*	1 gallon	50	275
blue elderberry	*Sambucus nigra* ssp. *caerulea*	1 gallon	20	55
chaparral yucca	*Yucca whipplei*	1 gallon	50	275
		Total	**1,116**	**6,083**

[a] All container plants will be propagated from seed/cuttings obtained from within the Santa Anita Wash/Rio Hondo Sub-Watershed.
[b] Actual container plants to be installed will depend on seed availability for collection in the Santa Anita Wash/Rio Hondo Sub-Watershed.
[c] T4 = deep 1-gallon container

4.1.1 Container Plant Installation

The Restoration Specialist shall follow the specific container plant installation methods described below. Alternate planting methods may be used (e.g., hand digging rather than augering) with the prior approval of the Biological Monitor. No chemical soil amendments or mulch will be used in the container planting holes or basins.

1. Planting holes shall be machine augered to a suitable width and depth prior to container plant installation. The typical planting hole is approximately twice the width and depth of the rootball.
2. Planting holes shall be filled with water immediately prior to plant installation, and the water shall be allowed to percolate fully into the soil prior to planting.

3. Plants shall be removed from the containers in a manner that avoids damage to the rootball. Extended tap root development and minor rootbound conditions will be appropriately treated via pinching and loosening of appropriate portions of the rootball prior to planting.
4. Each plant shall be installed so that the "collar" or soil level is slightly higher than the surrounding finished grade to allow for partial plant settling over time.
5. The excavated soil backfill material shall be placed into the planting hole to the existing grade, and gently compacted around the rootball. A two- to three-inch layer of weed-free mulch (preferably oak leaves) will be used in all oak container planting holes.
6. A temporary watering basin approximately two to three feet in diameter shall be created around each plant to facilitate the initial watering-in of the plants. The exposed upper sides of the rootball shall be covered with backfill material sloping down into the basin.
7. Each plant shall be initially watered-in by hand; the watering basins will be filled using a hose fitted with a low-force wand. The water spray shall be directed to the outer part of the watering basin to avoid damage to the plant roots or crown.

4.2 OAK ACORN PLANTING

In addition to container planting, oak trees will be established through the direct seeding of oak acorns; some acorns will be planted with protective cages, and some will be planted without protective structures (e.g., in association with placed coarse woody debris). Oak seed installation will be performed by the Restoration Specialist under the supervision of the Biological Monitor. The protective structures will be fabricated on site by the Restoration Specialist and will be designed by the Biological Monitor to deter herbivory damage to root and stem tissues. The planting of oaks from acorns will allow for (1) oak establishment during multiple years of variable weather conditions; (2) a portion of the oaks to experience normal taproot formation in the soil; and (3) a small variation in size classes of trees in the mitigation site. Oak acorn planting will be performed each fall in Years One to Five, and will include several experimental methods to assess comparative success. These methods will be documented by the Biological Monitor in each annual report. Potential experimental acorn planting methods will include various protective structure designs, planting depths, acorn pre-treatments (e.g., stratification, pre-germination), "nurse"/companion plants, soil treatments, mulches, and planting schedules, among others. A two- to three-inch layer of weed-free mulch (preferably oak leaves) will typically be used in the oak acorn planting holes. The survival performance criteria will not apply to oak species established via direct sowing (i.e., the criteria only apply to oaks planted from containers); however, surviving oaks of adequate size that are planted from acorns may apply toward the survival criteria for oak trees.

4.3 HYDROSEEDING

The initial/conceptual seed mixes will be installed via hydroseeding and/or hand broadcasting. All native grass species will be installed via hand broadcasting (and/or via container planting); native grasses will not be applied via hydroseeding. Supplemental seed application may occur throughout the maintenance period as directed by the Biological Monitor and may include either hydroseeding or hand-broadcasting.

4.3.1 Hydroseeding Schedule

Seeding will preferably be performed between November 1 and December 31 (and during other periods) when weather and soil conditions are suitable. In this way, seasonal rains can be used to facilitate appropriate germination and coverage. The Biological Monitor will coordinate with the LACDPW Project Manager and provide recommendations on mitigation site conditions prior to

hydroseeding; the Biological Monitor will also review the hydroseeding schedule in advance of seed application, and will regularly monitor hydroseeding application throughout the seeding process to ensure that the Restoration Specialist is using the specified seed materials and methodology and that adequate coverage is achieved.

4.3.2 Seed Material

The initial seed mix for the oak woodland mitigation site is provided in Table 5; the actual seed mix components, potentially including additional shrub and understory species, will be determined by seed availability for collection within the Santa Anita Wash/Rio Hondo Sub-Watershed. A list of the native seed materials installed to-date (between January and March 2014) is provided in Appendix D. All seed used will be clearly labeled showing type of seed; test date; the name of the supplier; and percentage of the pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All commercial processing or packaging material will be delivered to the site in original, unopened containers bearing the manufacturer's guaranteed analysis. All seed mix labels will be retained by the Restoration Contractor and provided to the Biological Monitor. All seed mixes will be stored in a dark, cool place and not be allowed to become damp. Any seed species substitution shall be approved in advance by the CDFW.

TABLE 5
INITIAL/CONCEPTUAL SEED MIX SPECIES FOR OAK WOODLAND MITIGATION

Common Name[a,b]	Scientific Name	Per Acre Rate (lbs)	Total Per 5.5 Acres (lbs)
California sagebrush	*Artemisia californica*	2.00	11.00
primrose	*Camissonia bistorta*	0.25	1.38
California buckwheat	*Eriogonum fasciculatum*	10.00	55.00
California everlasting	*Gnaphalium californicum*	0.25	1.38
heart-leaved penstemon	*Keckiella cordifolia*	0.25	1.38
giant wild rye	*Leymus condensatus*	0.50	2.75
southern honeysuckle	*Lonicera subspicata*	0.50	2.75
deerweed	*Lotus scoparius*	5.00	27.50
truncate lupine	*Lupinus truncatus*	0.25	1.38
small-flowered melic grass	*Melica imperfecta*	2.00	11.00
bush monkeyflower	*Mimulus aurantiacus*	3.00	16.50
foothill needlegrass	*Nassella lepida*	3.00	16.50
showy penstemon	*Penstemon spectabilis*	0.25	1.38
caterpillar phacelia	*Phacelia cicutaria*	1.00	5.50
California coffeeberry	*Rhamnus californica*	0.50	2.75
skunkbush	*Rhus trilobata*	0.50	2.75
golden currant	*Ribes aureum*	0.50	2.75
chia	*Salvia columbariae*	0.25	1.38
	Total Lbs	**30.00**	**165.03**

lbs: pounds

[a] All seed will be obtained from within the Santa Anita Wash/Rio Hondo Sub-Watershed.
[b] Actual seed mix to be installed will depend on availability for collection in the Santa Anita Wash/Rio Hondo Sub-Watershed.

4.3.3 Water

Forty-eight hours prior to hydroseeding, all areas to be hydroseeded shall be presoaked via overhead irrigation to a depth of at least three inches. The Restoration Specialist shall coordinate with the LACDPW Project Manager on suitable filling locations for the hydroseeding truck tank. If a metered hydrant is utilized, filling shall occur only during acceptable working hours, and care shall be taken to avoid disturbing residents with noise; use of improper parking locations; spillage of component materials; or other actions.

4.3.4 Additional Materials

A granular form of mycorrhizal inoculum (AM-120 or approved equal) shall be added to the hydroseed mixes at a rate of 60 pounds per acre (lbs/acre). An agriculturally suitable marking dye will also be included in the hydroseed mix.

4.3.5 Quality of Work

Hydroseeding shall be performed by a competently trained and licensed individual or hydroseeding company in accordance with the best standards and practices related to the trade.

4.3.6 Equipment

Hydroseed mixing shall be performed in a tank with a built-in continuous agitation and recirculation system of sufficient operating capacity to produce a homogenous slurry of materials in the designed unit proportions. It shall be applied using a discharge system that applies the slurry to the areas to be treated at a continuous and uniform rate.

4.3.7 Preparation

The slurry preparation shall take place at the work site and shall begin by adding water to the tank when the engine is at half throttle. When the water level has reached the heights of the agitator shaft, good circulation shall be established, and at this time the required materials shall be added depending on the application stage. Spraying shall commence immediately when the tank is full.

4.3.8 Time Limit

The hydromulching slurry components are not to be left in the hydromulch machine for more than four hours. Any slurry components left for more than four hours in the machine shall be rejected and disposed of offsite by the Restoration Contractor at his/her expense.

4.3.9 Application

The hydroseed operator shall spray the area with a uniform visible coat using the color of the marking dye as a visual guide. The slurry shall be applied in a downward drilling motion via a fan stream nozzle (or other device, as appropriate for specific site conditions) to achieve proper coverage and binding. When hydraulically sprayed onto the soil, the mulch shall not form a blotter-like material. The spray operation shall be directed so that the slurry spray penetrates the soil surface by mixing the slurry components into the soil, thus ensuring maximum impregnation and coverage. Overhead irrigation shall be suspended for 48 hours following the application of hydroseed to allow sufficient time for the fiber/binder material to form a cohesive layer.

4.3.10 Native Plant Protection

Native container plants and other native plant species on and adjacent to the mitigation sites shall be protected during hydroseed application (i.e., hydroseed material will not be shot directly onto existing plants), and the hose will not be dragged over existing plants. The Restoration Specialist shall provide a sufficient number of crewmen to carry the hose in addition to the operator of the hose nozzle.

4.4 INSTALLATION COMPLETION MEETING

Immediately following the completion of plant materials installation, the LACDPW Project Manager will meet on site with the City of Arcadia, the Restoration Specialist, and the Biological Monitor, to assess mitigation site conditions to ensure they are in compliance with the terms of the OWHMP. The Biological Monitor and the LACDPW will develop a list of any remaining action items and related deadlines. The list will be included in a memorandum to be provided to the LACDPW Project Manager and the Restoration Specialist within three days after the installation completion meeting. A follow-up meeting will be scheduled, if necessary, to assess any completed action items. The seven to ten-year maintenance and monitoring period will commence upon the satisfactory completion of all installation procedures.

5.0 PLANT AND SEED INSTALLATION IN SAGE SCRUB MITIGATION AREAS

Native container plants and seed mixes will be installed at the completion of all site-preparation activities. The initial/conceptual container plant and seed mix palettes developed for the sage scrub mitigation area are based on the plant species observed during focused plant surveys conducted on the Sediment Removal Project site in 2009 and 2010 (BonTerra 2010c and 2009). Copies of the 2010 and 2009 focused plant survey reports are included in Appendix C. Native seeds of local origin for many native plant species were unavailable for collection in 2011 and 2012 due to drought conditions in the approved collection area. Therefore, plant and seed installation will be started in Fall/Winter 2013 and completed in Fall/Winter 2014 to allow additional time for seed collection and plant propagation in 2013 and 2014. Lists of the native plant and seed materials installed to-date (between January and March 2014) are provided in Appendix D.

5.1 CONTAINER PLANT MATERIAL

A diversity of native plant species will be installed on the mitigation site at a density of up to 1,020 plants per acre. Approximately 20 to 25 percent of the total container plants installed will be herbaceous species (e.g., annuals/perennials, grasses). Using this container planting density will facilitate (1) the rapid establishment of a mix of shrubs, herbs, and grasses at densities and coverages typical of scrub habitats and (2) the achievement of the required success criteria for coverage and survival, while allowing for the low level of mortality that typically occurs during native plant establishment programs. This planting density is based on a review of site conditions performed during biological evaluations on the Sediment Removal Project site (BonTerra 2010c and 2009) and BonTerra's extensive expertise with sage scrub restoration and establishment throughout Southern California and within foothill areas of the San Gabriel Mountains (BonTerra 2000, 2001, 2005b, 2006, and 2010b). Cactus plants will be installed in groups of at least 20 to 25 plants, approximately 5 feet on-center, to result in several contiguous patches of cactus cover that will be managed to exclude non-succulent shrub species.

All container plants will be propagated on a contract basis by a nursery that specializes in native plants. The Restoration Specialist and the Biological Monitor will inspect all plant materials at the nursery and will accept only healthy, vigorous, well-rooted, non-rootbound plant materials upon delivery. Plants determined to have improper genetics (e.g., prostrate cultivars of coyote bush rather than the upright "wild type" form of the shrub) will be rejected. Container plants shall be stored on site in a protected location by the Restoration Specialist and will not be held on site longer than one week prior to installation. Plants stored on site awaiting installation shall be properly watered by hand with a low-force wand to minimize interim damage/desiccation/decline and shall be kept moist at all times. All appropriate container plant species shall be pre-inoculated with mycorrhizal fungi during nursery propagation.

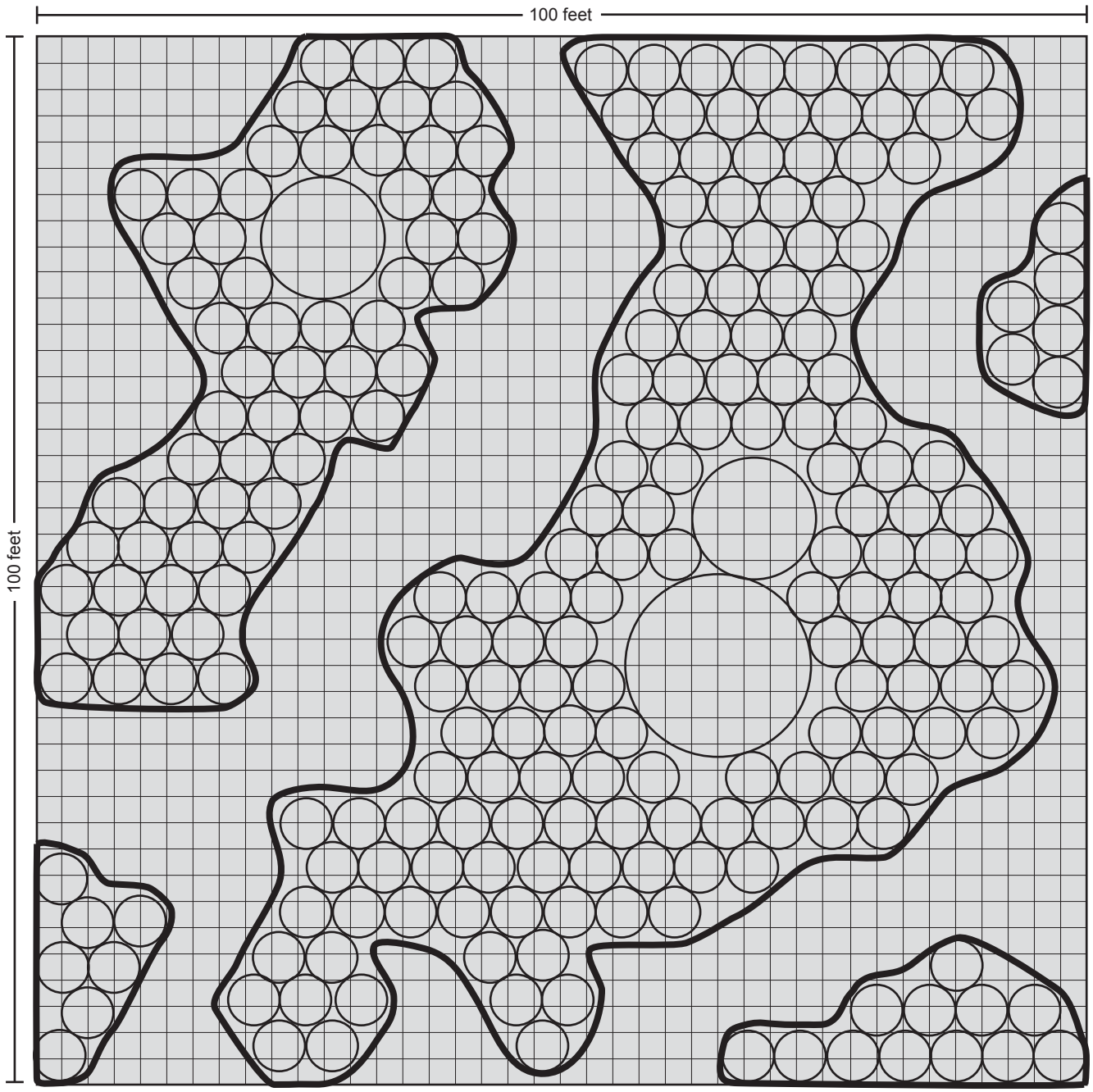
Container plants shall be installed between November 1 and December 31 and during other periods when weather and soil conditions are suitable and in accordance with locally acceptable practices. The Restoration Specialist shall notify the Biological Monitor and the LACDPW Project Manager one week in advance of scheduled plant deliveries to provide ample opportunity for pre-delivery plant inspections.

The Biological Monitor will create at least two 100-foot by 100-foot demonstration plots in the sage scrub planting areas, delineated by lath-and-flagging, to indicate the container plant distribution that will be reproduced throughout the site. The Biological Monitor shall supply the lath, flagging, and color-coded wire flags for the demonstration plot. The Restoration Specialist shall not install container plants in an unnatural, linear planting pattern. The planting pattern will include gaps for herbaceous species only, to create an "edge effect" in the shrub canopy that is considered beneficial for many wildlife species. A list of container plant species is provided in Table 6; the actual container plant species and quantities may be modified based on seed availability for collection in the Santa Anita Wash/Rio Hondo Sub-Watershed. A list of the native plant materials installed to-date (between January and March 2014) is provided in Appendix D. A typical planting plan for the sage scrub mitigation area is provided on Exhibit 6. Exhibit 6 shows typical plant quantities, spacing, and plant groupings/configurations to be used in a 0.23-acre area; this typical 0.23-acre planting scheme would be repeated throughout the entire sage scrub mitigation area. Any plant species substitution shall be approved in advance by the CDFW.

5.1.1 Container Plant Installation

The Restoration Specialist shall follow the specific container plant installation methods described below. Alternate planting methods may be used (e.g., hand digging rather than augering) with the prior approval of the Biological Monitor. No chemical soil amendments or mulch will be used in the container planting holes or basins.

1. Planting holes shall be machine augered to a suitable width and depth prior to container plant installation. The typical planting hole is approximately twice the width and depth of the rootball.
2. Planting holes shall be filled with water immediately prior to plant installation, and the water shall be allowed to percolate fully into the soil prior to planting.
3. Plants shall be removed from the containers in a manner that avoids damage to the rootball. Extended tap root development and minor rootbound conditions will be appropriately treated via pinching and loosening of appropriate portions of the rootball prior to planting.
4. Each plant shall be installed so that the "collar" or soil level is slightly higher than the surrounding finished grade to allow for partial plant settling over time.
5. The excavated soil backfill material shall be placed into the planting hole to the existing grade and gently compacted around the rootball.
6. A temporary watering basin approximately two to three feet in diameter shall be created around each plant to facilitate the initial watering-in of the plants. The exposed upper sides of the rootball shall be covered with backfill material sloping down into the basin.
7. Each plant shall be initially watered-in by hand; the watering basins will be filled using a hose fitted with a low-force wand. The water spray shall be directed to the outer part of the watering basin to avoid damage to the plant roots or crown.



Area shown is 10,000 square feet (0.23 acre)
Overall container plant density is approximately 1,000 plants/acre
Actual planting pattern would be random/non-linear

Container planting area
Small symbols represent dominant shrub species, including California sagebrush.
Large symbols represent large shrubs such as laurel sumac (larger plant spacing).

Hydroseeding area

Projects:CoLADPW:J110:Graphics:Ex:CSS:layout:v002.ai

Proposed Planting Plan: Sage Scrub

Exhibit 6

Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra CONSULTING

(Rev: 10-09-2013 MMD) PAS R:\Projects\CoLADPW\J212\Graphics\OWHMP\Ex6-062810.pdf

TABLE 6
INITIAL/CONCEPTUAL CONTAINER PLANT SPECIES FOR SAGE SCRUB MITIGATION

Common Name[a,b]	Scientific Name	Size	Density (Plants Per Acre)	Total Plants (Per 2.5 Acres)
California sagebrush	*Artemisia californica*	1 gallon	350	875
narrow-leaved milkweed	*Asclepias fascicularis*	1 gallon	50	125
California buckwheat	*Eriogonum fasciculatum*	1 gallon	200	500
California everlasting	*Gnaphalium californicum*	1 gallon	50	125
deerweed	*Lotus scoparius*	1 gallon	50	125
laurel sumac	*Malosma laurina*	1 gallon	10	25
foothill needlegrass	*Nassella lepida*	1 gallon	50	125
Vasey's prickly pear	*Opuntia x vaseyi*	1 gallon	50	125
showy penstemon	*Penstemon spectabilis*	1 gallon	50	125
sugar bush	*Rhus ovata*	1 gallon	10	25
white sage	*Salvia apiana*	1 gallon	50	125
black sage	*Salvia mellifera*	1 gallon	50	125
chaparral yucca	*Yucca whipplei*	1 gallon	50	125
		Total	**1,020**	**2,550**

[a] All container plants will be propagated from seed/cuttings obtained from within the Santa Anita Wash/Rio Hondo Sub-Watershed.
[b] Actual container plants to be installed will depend on availability for collection in the Santa Anita Wash/Rio Hondo Sub-Watershed.

5.2 HYDROSEEDING

The initial/conceptual seed mixes will be installed via hydroseeding and/or hand broadcasting. All native grass species will be installed via hand broadcasting (and/or via container planting); native grasses will not be applied via hydroseeding. Supplemental seed application may occur throughout the maintenance period, as directed by the Biological Monitor, and may include either hydroseeding or hand-broadcasting.

5.2.1 Hydroseeding Schedule

Seeding will preferably be performed between November 1 and December 31 and during other periods when weather and soil conditions are suitable. In this way, seasonal rains can be used to facilitate appropriate germination and coverage. The Biological Monitor will coordinate with the LACDPW Project Manager and provide recommendations on mitigation site conditions prior to hydroseeding. The Biological Monitor will also review the hydroseeding schedule in advance of seed application and will regularly monitor hydroseeding application throughout the seeding process to ensure that the Restoration Specialist is using the specified seed materials and methodology and that adequate coverage is achieved.

5.2.2 Seed Material

The initial/conceptual seed mix for the sage scrub mitigation site is provided in Table 7; the actual seed mix components, potentially including additional shrub and understory species, will be determined by seed availability for collection from within the Santa Anita Wash/Rio Hondo Sub-Watershed. A list of the native seed materials installed to-date (between January and March 2014) is provided in Appendix D. All seed used will be clearly labeled showing type of seed; test date; the name of the supplier; and percentage of the pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All commercial processing or packaging material will be delivered to the site in original unopened containers bearing the manufacturer's guaranteed analysis. All seed mix labels will be retained by the Restoration Specialist and provided to the Biological Monitor. All seed mixes will be stored in a dark, cool place and not be allowed to become damp.

TABLE 7
INITIAL/CONCEPTUAL SEED MIX SPECIES FOR SAGE SCRUB MITIGATION

Common Name[a,b]	Scientific Name	Per Acre Rate (lbs)	Total Per 2.5 Acres (lbs)
California sagebrush	*Artemisia californica*	4.00	10.00
primrose	*Camissonia bistorta*	0.25	0.63
California buckwheat	*Eriogonum fasciculatum*	10.00	25.00
California everlasting	*Gnaphalium californicum*	0.25	0.63
heart-leaved penstemon	*Keckiella cordifolia*	0.25	0.63
deerweed	*Lotus scoparius*	5.00	12.50
truncate lupine	*Lupinus truncatus*	0.25	0.63
foothill needlegrass	*Nassella lepida*	3.00	7.50
showy penstemon	*Penstemon spectabilis*	0.25	0.63
caterpillar phacelia	*Phacelia cicutaria*	1.00	2.50
white sage	*Salvia apiana*	1.00	2.50
chia	*Salvia columbariae*	0.25	0.63
black sage	*Salvia mellifera*	2.00	5.00
chaparral yucca	*Yucca whipplei*	2.50	6.25
	Total Lbs	**30.00**	**75.03**

lbs: pounds

[a] All seed will be obtained from within the Santa Anita Wash/Rio Hondo Sub-Watershed.
[b] Actual seed mix to be installed will depend on availability for collection in the Santa Anita Wash/Rio Hondo Sub-Watershed.

5.2.3 Water

Forty-eight hours prior to hydroseeding, all areas to be hydroseeded shall be presoaked via overhead irrigation to a depth of at least three inches. The Restoration Specialist shall coordinate with the LACDPW Project Manager on suitable filling locations for the hydroseeding truck tank. If a metered hydrant is utilized, filling shall occur only during acceptable working hours, and care shall be taken to avoid disturbing residents with noise; use of improper parking locations; spillage of component materials; or other actions.

5.2.4 Slope Stabilization Material

Slope stabilization will be provided by Flexterra™ Flexible Growth Medium (or another material approved by the LACDPW Project Manager and the Biological Monitor) and be applied at a rate of 3,500 lbs/acre. An alternative will be to use mulch material consisting of fiber produced from virgin wood mulch (applied at the rate of 2,000 lbs/acre); the soil stabilizer shall consist of Aztec M binder (or another approved equal) at a rate of 150 lbs/acre. A granular form of mycorrhizal inoculum (AM-120 or approved equal) shall be added to the hydroseed mix at a rate of 60 lbs/acre or at the manufacturer's specified rate. An agriculturally suitable marking dye will also be included in the hydroseed mix.

5.2.5 Quality of Work

Hydroseeding shall be performed by a competently trained and licensed individual or hydroseeding company in accordance with the best standards and practices related to the trade.

5.2.6 Equipment

Hydroseed mixing shall be performed in a tank with a built-in continuous agitation and recirculation system of sufficient operating capacity to produce a homogenous slurry of materials in the designed unit proportions. It shall be applied using a discharge system that applies the slurry to the areas to be treated at a continuous and uniform rate.

5.2.7 Preparation

The slurry preparation shall take place at the work site and shall begin by adding water to the tank when the engine is at half throttle. When the water level has reached the heights of the agitator shaft, good circulation shall be established; at this time, the required materials shall be added depending on the application stage. Spraying shall commence immediately when the tank is full.

5.2.8 Time Limit

The hydromulching slurry components are not to be left in the hydromulch machine for more than four hours. Any slurry components left for more than four hours in the machine shall be rejected and disposed of offsite by the Restoration Specialist at his/her expense.

5.2.9 Application

The hydroseed operator shall spray the area with a uniform visible coat using the color of the marking dye as a visual guide. The slurry shall be applied in a downward drilling motion via a fan stream nozzle or other device, as appropriate for specific site conditions, to achieve proper coverage and binding. When hydraulically sprayed onto the soil, the mulch shall not form a blotter-like material. The spray operation shall be directed so that the slurry spray penetrates the soil surface through mixing the slurry components into the soil, thus ensuring maximum impregnation and coverage. Overhead irrigation shall be suspended for 48 hours following the application of hydroseed to allow sufficient time for the fiber/binder material to form a cohesive layer.

5.2.10 Protection of Native Plants

Native container plants and other native plant species on and adjacent to the mitigation sites shall be protected during hydroseed application (i.e., hydroseed material will not be shot directly onto

existing plants), and the hose will not be dragged over existing plants. The Restoration Specialist shall provide a sufficient number of crewmen to carry the hose in addition to the operator of the hose nozzle.

5.3 INSTALLATION COMPLETION MEETING

Immediately following the completion of plant materials installation, the LACDPW Project Manager will meet with the City of Arcadia, the Restoration Specialist, and the Biological Monitor on site to assess mitigation site conditions and in compliance with the terms of the OWHRMP. The Biological Monitor and the LACDPW will develop a list of any remaining action items and related deadlines. The list will be included in a memorandum to be provided to the LACDPW Project Manager and the Restoration Specialist within three days after the installation completion meeting. A follow-up meeting will be scheduled, if necessary, to assess any completed action items. The ten-year maintenance and monitoring period will commence upon the satisfactory completion of all installation procedures.

6.0 LONG-TERM MAINTENANCE

The maintenance tasks described below will be performed by the Restoration Specialist in coordination with the LACDPW Project Manager and the Biological Monitor. The intent of the maintenance program is to facilitate the successful establishment of self-sustainable oak woodland and sage scrub habitat. It is anticipated that weed removal and other maintenance tasks will be required on a minimum monthly basis for the first two years of the maintenance period. During the first year of the maintenance period, no more than two weeks shall elapse without an on-site inspection performed by the Restoration Specialist's project manager. The LACDPW Project Manager and the Biological Monitor will approve any needed revisions to the specified schedule and methodologies. Maintenance activities will include the tasks listed in Table 8.

TABLE 8
LONG-TERM MAINTENANCE SCHEDULE

Work Tasks[a, b]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weed Control												
Irrigation System Inspections												
Pest Control												
Plant Protection												
Erosion-control Inspections												
Plant Mortality Identification							X	X	X			
Plant Replacement												
Trash Removal												

	= Ongoing Task
X	= Task performed one or more times per month.

[a] Maintenance task schedule and frequency will be adjusted as appropriate depending on site conditions and in coordination with the LACDPW and the Biological Monitor.

[b] The Restoration Specialist's project manager shall perform inspections every other week (at a minimum) for the first six months following installation, and on a minimum monthly basis thereafter during Year One of the maintenance period.

6.1 PROTECTION

The Restoration Specialist shall be responsible for providing, as feasible, adequate protection of all seeded and planted areas against herbivores, traffic, vandalism, or other intrusions by erecting fencing, caging, or other acceptable structures, as needed, with the prior approval of the LACDPW Project Manager. Damaged areas shall be repaired within one week or as specified by the LACDPW and the Biological Monitor.

6.2 EROSION CONTROL

The Restoration Specialist shall be responsible for maintaining long-term erosion and sediment control, as appropriate, to prevent damage to the mitigation site and adjacent areas. All materials shall be approved in advance by the LACDPW Project Manager and the Biological Monitor.

6.3 WEED CONTROL

Aggressive weed control will be required throughout the maintenance period. The site will be kept free of weed species to the greatest extent feasible. Weed species will not be allowed to mature; set seed; or otherwise inhibit the germination, growth, and establishment of planted, seeded, and volunteer native plant species at any time during the ten-year maintenance program. Maintenance field crews must be able to distinguish native plant species of all age classes (including seedlings) from non-native plants. If necessary, the LACDPW Project Manager may request the Biological Monitor to conduct an orientation on plant identification for the Restoration Specialist's crew. The orientation will occur before the maintenance period begins. The orientation(s) may also include a discussion of suitable weed-removal methods, herbicide treatment, and other related topics. Long-term maintenance will include weed removal within weed abatement Areas 1 and 2, as shown in Exhibit 3. Weed control will include the methods described below by weed type. The oak woodland and sage scrub mitigation sites must achieve and maintain the required success criteria, including the weed coverage success criteria (a maximum of five percent coverage) for one year without any weed control prior to final approval of the mitigation program.

6.3.1 Broadleaf Plants

Broadleaf plants include castor bean (*Ricinus communis*), black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulgare*), tree tobacco (*Nicotiana glauca*), and other weed species identified by the Restoration Specialist and the Biological Monitor. The following procedures shall be followed to remove these species:

1. Aquamaster® or Roundup Pro®, (or equivalent products) shall be used at a minimum rate of 2 percent (2.5 ounces/gallon [oz/gal]) to ensure a comprehensive and fully effective treatment and minimal re-sprouting from root tissues. No broadcast herbicide spraying of large areas shall be performed following native plant installation. Methods of application to broadleaf weeds shall be limited to "wicking" application to freshly cut stems for the initial treatments (e.g., castor bean, fennel). Spot spraying of herbicide via "backpack" sprayers may be performed following native plant installation as long as they are consistent with County weed-abatement procedures. Herbicide contact with native shrub and grass species shall be avoided as much as possible. Herbicide application will be performed only in appropriate weather conditions (e.g., winds no greater than five miles per hour). In the event of gusty winds or winds in excess of five miles per hour, all work shall be temporarily discontinued as a means of protecting applicators and adjacent natural resources. Treatments shall also be temporarily discontinued in the event of current or anticipated rainfall (rainfall and irrigation will reduce the effectiveness of the herbicide).
2. Sprayed vegetation shall be left undisturbed for seven days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted and brown foliage and disintegrated root material.
3. All treated plant materials shall be removed via weed-whips or hand tools approximately one week after treatment and disposed of off-site at an appropriate landfill. No weeds shall be stockpiled on the mitigation project site on a long-term basis. Disturbance of the soil surface will be avoided to the greatest extent practicable to avoid bringing non-germinated weed seeds to the surface.
4. Steps 1 and 3 shall be repeated, as needed, throughout the maintenance program to prevent the production/dispersal of weed seeds and the inhibition of native plant growth on site.

5. All herbicide use shall be performed in accordance with the manufacturer's specifications and relevant codes/ordinances. Care shall be taken to avoid spillage of herbicides at mixing sites or other locations. Any herbicide-contaminated soils shall be removed by the Restoration Specialist and disposed of at a suitable off-site location. Herbicide application will be performed only by Certified Pesticide (Herbicide) Applicators (CPA). Applicators shall wear gloves, masks, and long sleeves at all times as protection from chemical injuries.

6.3.2 Non-Native Grasses

Non-native grasses will be prevented from reseeding on the mitigation site by frequently performing at least one of the following methods: hand-pulling; weed-whipping; spot spraying with herbicide (such as Aquamaster®, Roundup® Pro, or equivalent product) via "backpack" sprayers; or other methods of grass, plant, or seed head removal. Herbicide contact with native shrub and grass species shall be avoided as much as possible. Herbicide spraying shall be performed only in appropriate weather conditions (e.g., winds no greater than five miles per hour). In the event of gusty winds or winds in excess of five miles per hour, all work shall be temporarily discontinued as a means of protecting applicators and adjacent natural resources. Treatments shall also be temporarily discontinued in the event of current or anticipated rainfall (rainfall and irrigation will reduce the effectiveness of the herbicide). Non-native grasses will not be allowed to form dense patches of "thatch" that would suppress the establishment of native seedlings.

6.3.3 Alternative Eradication Methods

Alternative weed eradication methods will be approved in advance by the LACDPW and may include (1) use of approved alternate herbicides and (2) adjustments to treatment frequencies and schedules.

6.4 IRRIGATION

Container plant and seed mix species will be temporarily irrigated to facilitate germination and plant establishment. Plant species will initially be irrigated at a rate of three to five acre-feet per acre per year. The irrigation system will be operated in a manner that encourages deep root growth rather than surface root development (i.e., infrequent deep watering rather than frequent light watering). The frequency of irrigation operation will be decreased over time to adapt the native vegetation to an arid moisture regime and to minimize potential die-back of native plant species due to excessive soil moisture. Regular maintenance will be required to inspect and repair any problems that may develop in the irrigation system; specifically, the Restoration Specialist's project manager shall perform inspections of the irrigation system at least once every two weeks for the first six months following plant and seed installation and as-needed thereafter. Irrigation system checks will consist of the separate operation of each valve and verification that each irrigation head is functional. Remedial measures to correct irrigation system malfunctions shall be performed by the Restoration Specialist immediately upon determination. The irrigation system will remain in place until final mitigation project approval, and the Restoration Specialist will remove all irrigation components from the mitigation site with minimal impacts to surrounding native vegetation. Irrigation system removal shall occur outside the general breeding bird season which, according to EIR Mitigation Measure No. BIO-B, occurs between February 1 and August 31. The mitigation site must be self-sustainable without supplemental water for two years prior to final approval of the mitigation program. LACDPW shall consult with the CDFW prior to the termination of irrigation.

6.5 PEST CONTROL

Insects, plant disease, herbivores, and other pests shall be closely monitored during the maintenance period. Diseased or infected plants shall be immediately disposed of off-site at an approved landfill to prevent infection of on-site resources. If rodents or deer become a problem, the Biological Monitor will recommend caging container plants and oak trees to protect them from herbivory.

The oak woodland and sage scrub mitigation sites must achieve and maintain the required success criteria for one year without any pest control prior to final approval of the mitigation program. If some limited rodent re-location or other control method is necessary for proper habitat establishment, LACDPW will submit a brief, project-specific Rodent Management Plan for CDFW review and approval prior to the use of live traps or other non-lethal measures. Biological controls shall be used instead of pesticides or other similar chemicals for rodent control.

6.6 REPLACEMENT

The Restoration Specialist will replant or reseed using species and quantities specified by the LACDPW Project Manager and the Biological Monitor in order to compensate for widespread plant mortality; non-compliance with coverage standards; mechanical damage to plant species; and/or poor plant health. The Biological Monitor will recommend replanting and reseeding actions to the LACDPW during the course of the monitoring period. Replacement container plants and seed mixes shall be of local geographic origin (i.e., the Santa Anita Wash/Rio Hondo Sub-Watershed) and shall include plant species and application quantities that result in the establishment of oak woodland and sage scrub habitat similar to the preserved habitat areas on site. Fern species will be installed at least 2 years after the initial planting period, when tree and shrub species have grown enough to begin to provide shade for fern species. The Restoration Specialist will coordinate with the Biological Monitor and a qualified native plant nursery on the propagation of any needed replacement container plants. All replanting or reseeding shall occur between November 1 and December 31 or during other periods when weather conditions are appropriate.

6.7 FUEL MODIFICATION ZONES

In compliance with the City of Arcadia's defensible space vegetation requirements, no green waste or other flammable materials will be stored within 100 feet of residential structures located to the south of the Lower SPS.

6.8 TRASH REMOVAL

The Restoration Contractor shall remove all trash and man-made debris from the mitigation site on an ongoing basis.

7.0 LONG-TERM MONITORING

Long-term mitigation performance monitoring will be performed by the Biological Monitor. A schedule of biological monitoring tasks is provided in Tables 9 through 11.

TABLE 9
LONG-TERM MONITORING SCHEDULE
YEARS 0 TO 1.5

Work Tasks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Monitoring												
Qualitative Surveys	X			X			X			X		
Quantitative Surveys[a]					X							
Photo-documentation	X			X	X		X			X		
On-site Meetings[b]	X			X	X		X			X		
Site Status Documentation												
Installation Completion[c]												X
Progress Reports	X			X			X			X		
Annual Status Reports					X							

[a] Regardless of the installation completion date, the annual quantitative survey will be performed in May to best assess native plant species coverage, including seasonal growth of native herbs and grasses.
[b] On-site meetings will include, as needed, the LACDPW, the Restoration Contractor, the Biological Monitor, and any other appropriate parties, and will occur, as needed, during regularly scheduled site-monitoring visits.
[c] Actual date depends on timing of installation completion.

TABLE 10
LONG-TERM MONITORING SCHEDULE
YEARS 1.5 TO 5

Work Tasks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Monitoring												
Qualitative Surveys					X						X	
Quantitative Surveys[a]					X							
Photo-documentation					X						X	
On-site Meetings[b]					X						X	
General Wildlife Survey					X							
Site Status Documentation												
Progress Reports					X						X	
Annual Status Reports					X							

[a] Regardless of the installation completion date, the annual quantitative survey will be performed in May to best assess native plant species coverage, including seasonal growth of native herbs and grasses.
[b] On-site meetings will include, as needed, the LACDPW, the Restoration Contractor, the Biological Monitor, and any other appropriate parties, and will occur, as needed, during regularly scheduled site monitoring visits.

TABLE 11
LONG-TERM MONITORING SCHEDULE
YEARS 6 TO 10

Work Tasks	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site Monitoring												
Qualitative Surveys					X							
Quantitative Surveys[a]					X							
Photo-documentation					X							
On-site Meetings[b]					X							
General Wildlife Survey					X							
Site Status Documentation												
Progress Reports					X							
Annual Status Reports					X							

[a] Regardless of the installation completion date, the annual quantitative survey will be performed in May to best assess native plant species coverage, including seasonal growth of native herbs and grasses.
[b] On-site meetings will include, as needed, the LACDPW, the Restoration Contractor, the Biological Monitor, and any other appropriate parties, and will occur, as needed, during regularly scheduled site monitoring visits.

The Biological Monitor will perform regularly scheduled qualitative and quantitative surveys as described below to review site maintenance activities; to evaluate site conditions; and to determine compliance/non-compliance with the performance standards described in Section 7.

7.1 GOALS AND RATIONALE OF THE MONITORING PROGRAM

As stated above, the primary goal of the on-site mitigation program is to create a developing, diverse, self-sustaining oak woodland and associated sage scrub that will result in habitats of similar or better quality and ecological function to the habitat areas impacted by the sediment removal project. The following objectives have guided the development of the monitoring program described below:

- To facilitate the establishment of healthy coast live oak trees within the mitigation site
- To establish native plant species that will form an understory (oak woodland) and scrub habitat (slopes) whose structure and diversity is consistent with the impacted habitat.

7.1.1 Oak Tree Assessment

Each of the coast live oak trees installed on the mitigation site will be assessed by a qualified Arborist. Criteria for assessing tree health will include visual evidence of vigor, such as the amount of foliage; leaf color and size; presence and length of new shoot growth; presence of branch or twig dieback; severity of insect infestation; the presence of disease, heart rot, fire damage, or mechanical damage; the amount of new growth; the appearance of bark; and the presence of and rate of callous development over wounds. Structural integrity will also be evaluated with respect to branch attachment; branch placement; presence of decay; presence of exposed roots due to soil erosion; and stability. The health of each tree will be recorded on a scale of 1 to 5 based on the criteria presented in Table 12.

TABLE 12
TREE HEALTH RATING CRITERIA

Rating	Criteria
5	Tree in excellent health with abundant foliage, new leaf growth and shoot elongation; no signs of herbivory, insect infestation, disease, fungus growth, or limb/trunk damage.
4	Tree in very good health with ample green foliage and new leaf growth; minor signs of drought stress, herbivory, insect infestation, decreased shoot growth, or loss of vigor.
3	Tree in moderate health with limited or uneven new leaf growth; moderate signs of drought stress; noticeable insect activity; decay on branches; noticeable herbivory damage.
2	Tree in poor health with existing leaves yellowing; limited/stunted new leaf growth; decreased shoot growth from previous year; dark-colored cracks or abnormalities on trunk; presence of fungus; observable decay on trunk or major limbs; sap bleeding from trunk; significant insect infestation; extensive herbivory; thinning canopy.
1	Tree in obvious decline with existing leaves yellowing and no new leaf growth; extensive limb or trunk damage; large cracks or other decay on trunk; bleeding sap; dieback of more than 30% of the canopy; a general lack of vigor.

7.1.2 Oak Woodland Sampling

Coast live oak is a very slow-growing species and the planted trees will not constitute a woodland resource (i.e., produce flowers [catkins]/seeds [acorns], provide arboreal canopy, shading, diverse nesting opportunities, extensive litterfall with associated biota/functions, well-developed 'liana' [vining shrubs], etc.) within the seven to ten year maintenance period or indeed for several decades. Even with optimal growth performance, the oaks will remain small and shrubby for many years; oak coverage is not expected to exceed 2 to 3 percent of the 5.5-acre mitigation site during the maintenance period (see Table 13, below). Therefore, the sampling program is not designed to assess mature woodland functions as described above (e.g., oak seedling recruitment) but is rather designed (1) to assess individual oak tree survival and condition and (2) to determine the quality of the upland scrub/herbaceous habitat mosaic in which the oaks are becoming established and where they will eventually develop into mature trees. Moreover, the sampling program is intended to assess whether the mitigation site is poised to achieve extended, long-term success after the completion of the seven to ten year maintenance and monitoring period.

TABLE 13
POTENTIAL OAK TREE GROWTH PERFORMANCE

Oak Tree Mean Canopy Diameter (sf)[a]	Oak Tree Mean Canopy Area (sf)	Total Quantity of Planted Oak Trees	80% of Planted Oak Trees	Total Oak Canopy Area	
				290 Surviving Trees (sf)	290 Trees As Percentage of 5.5-Acre Site (239,580 sf)(%)
3	7.07	363	290	2,053	0.86
4	12.57	363	290	3,649	1.52
5	19.63	363	290	5,702	2.38
6	28.27	363	290	8,211	3.43
7	38.48	363	290	11,176	4.66

sf: square feet

[a] Examples for immature tree sizes up to 7-ft diameter only; mature coast live oak trees substantially exceed this size.

7.1.3 Reference Site Surveys

Reference site surveys were conducted in California sycamore/coast live oak riparian forest and sage scrub habitats in fall 2013 in woodland portions of the non-impacted part of the Middle SPS, located immediately south of the impacted habitat area (Exhibit 2). The reference site was surveyed using the same sampling methodology and intensity (e.g., number of transects, quadrats) to be used in the oak woodland and sage scrub mitigation sites, as described in Section 7.3 below. The Middle SPS contains numerous mature coast live oak trees with patches of native and non-native understory vegetation, as well as sage scrub habitat and patches of ruderal vegetation. Because the non-impacted Middle SPS habitats exhibit similar vegetation composition and structure to the adjacent, impacted habitat areas, it is considered a suitable reference site for this mitigation program. By contrast, the planted oak trees will not provide arboreal canopy within the mitigation site during the maintenance period; therefore, the reference site tree canopy data will not be a useful measure of relative site performance. Hence, the reference site data (vegetation percent coverage, plant species density/diversity) will be used to evaluate non-oak tree vegetation performance (i.e., under- and midstory) in the mitigation site. The reference site will be quantitatively sampled (quadrats and transects) at the end of Years 3, 5, 7, and 10 for comparison to mitigation site performance. The reference site survey methodology and results (report) are provided in Appendix E, and a summary of mitigation performance standards derived from these results is provided in Tables 14 and 16.

7.2 MONTHLY/QUARTERLY QUALITATIVE SURVEYS

Quarterly qualitative surveys shall be performed for the first 1.5 years, qualitative surveys will be performed twice per year from Year 1.5 to Year 5, and annual qualitative surveys will be performed for the remainder of the 10-year period following implementation. The qualitative surveys will include an assessment of native plant species' percent coverage and diversity; native species recruitment and reproduction; plant mortality and germination failure; plant health; pest problems; irrigation system performance; invasive weed species establishment; and wildlife species use. Qualitative surveys will include an evaluation of wildlife species use, including active searches for amphibians and reptiles by lifting, overturning, and carefully replacing rocks and debris. Birds will be identified by the use of standard visual and auditory recognition. The presence of nests or other evidence of breeding activity will also be noted. Searches for mammals will include searching for and identifying diagnostic sign, including scat, footprints, scratch-outs, dusting bowls, burrows, and trails of various mammal species. The Biological Monitor shall estimate container plant mortality in late summer of every year, and will recommend appropriate fall plant replacement to maintain required native container plant survival levels.

7.3 ANNUAL QUANTITATIVE SURVEYS

Annual quantitative surveys (annual surveys) shall be performed on the mitigation sites, and in the designated reference site (the non-impacted portion of the Middle SPS) in the first two weeks of May of each year. Geographic Information System (GIS)-generated and Global Positioning System (GPS)-located random point-intercept transects and vegetation quadrats shall be used during the quantitative survey to more precisely measure native vegetation performance (coverage and diversity). The oak woodland mitigation site will be divided into a total of 6 approximate 0.9-acre sub-areas (using GIS) and the sage scrub mitigation site will be divided into 6 approximate 0.4-acre sub-areas for long-term monitoring purposes. A detailed discussion of the required sampling methodology is provided in the Reference Site Survey Report (Appendix E). A total of six 100-foot point-intercept transects (1.0-foot intercepts) will be performed in the oak woodland mitigation site (one transect per sub-area) and a total of six 50-foot point-intercept transects (1.0-foot intercepts) will be performed in the sage scrub mitigation site (one transect per

sub-area). A linear sample of 100 feet within each 0.9-acre area is considered adequate to determine the woodland/scrub vegetation coverage and diversity, in combination with areal (quadrat) sampling as described below. Species coverage will be listed by native and non-native species, and ground cover will be recorded at each intercept as coarse woody debris, fine woody debris, leaf litter, rock/cobble/gravel, and bare ground, among others. The measured native species coverage will be sub-classified by trees, large shrubs, medium shrubs, sub-shrubs, succulents, and herbaceous species, as shown in Tables 14 and 16.

At 6 locations in the oak woodland mitigation site (one per sub-area), and 3 locations in the sage scrub mitigation site (one per 2 sub-areas), GIS-generated and GPS-located 20x40-foot quadrats (0.02 acre) will be performed to assess plant species density and diversity. Quadrats will be created using constructible, pre-measured polyvinylchloride (PVC) pipe and fittings, or using wire flags, flagging tape, or other suitable material depending on field conditions. Sample data sheets for quantitative sampling and a discussion of data compilation and interpretation are provided in Appendix F. The transects and quadrats will be performed by a team of two biologists including (1) a qualified Botanist for accurate plant identification and (2) a Biologist qualified to detect nesting bird species. Individual transects or quadrats will be moved to alternate random locations as needed to avoid impacts to nesting birds.

The transect and quadrat data will facilitate the yearly determination of compliance/non-compliance with the percent plant coverage and diversity performance standards listed in Tables 14 and 16. Additionally, a qualitative evaluation using the form included in Appendix G will be performed by a Certified Arborist for all planted oaks (via containers) to assess tree survival and health, and to assign a performance score. This score will help to assess the site's progress towards meeting its performance standards and will provide data to support recommendations related to potential issues related to tree health. The oak tree evaluations will include a visual estimate of tree height and canopy width.

The Shannon Diversity Index ('H') will be computed for the mitigation sites (and for the reference sites in Years 3, 5, 7, and 10) based on the collected survey data. As described in Appendix E, the reference site values of 'H' based on the 2013 quadrats were H = 0.01 (CS/CLORF habitat) and H = 0.03 (CSS habitat). As described in Appendix E, ripgut brome (*Bromus diandrus*) constituted a substantial percentage of the herbaceous understory on the reference site (percent cover and number of individual plants), and ripgut brome was sampled in disproportionate quantities relative to other plant species in the quadrats. If ripgut brome is removed from the 2013 Shannon Diversity Index computations for the reference site, the values would be H = 2.47 for the CS/CLORF habitat and H = 0.77 for the CSS habitat. These computations suggest that this invasive grass species is suppressing the statistical vegetative diversity of the reference site. Because the mitigation sites cannot exceed five percent cover of ripgut brome or other invasive grasses, it is anticipated that the mitigation sites will readily exceed the computed diversity indices of the reference sites.

The annual survey will also include qualitative evaluations of site conditions, as described above. All wildlife and plant species observed on the mitigation sites will be recorded throughout the year, and a compendium of all species will be appended to the Annual Monitoring Report. Permanent photo-documentation stations shall be established with GPS coordinates; panorama photographs will be obtained at each photo-documentation station prior to native plant installation and during each annual quantitative survey. Recommended remedial measures shall be based on site observations and survey results, and shall follow the guidelines provided in Tables 15 and 17.

TABLE 14
OAK WOODLAND MITIGATION PERFORMANCE STANDARDS

Year	Vegetation Percent Coverage								Native Vegetation Diversity (Richness): No. of Plant Species[f]	Oak Tree Survival (Percent)
	Native (Minimum)									
	Trees[a]	Shrubs[a]			Succulents[a]	Herbs/ Grasses[a]	Total[e]	Non- Native[e]		
		Large[b]	Medium[c]	Sub-shrubs[d]						
1							25	< 5		80
2							40	< 5		80
3	0.5	3.0	14.0	3.0	0.5	25.0	55	< 5	15	80
4							65	< 5		80
5	1.0	4.0	16.0	4.0	1.0	30.0	75	< 5	18	80
6							75	< 5		80
7	1.5	5.0	18.0	5.0	2.0	30.0	75	< 5	20	80
8							75	< 5		80
9							75	< 5		80
10	**2.0**	**5.0**	**18.0**	**5.0**	**2.0**	**30.0**	**75**	**< 5**	**24**	**80**

[a] Absolute Coverage
[b] Large evergreen shrubs such as toyon and sugarbush.
[c] Includes medium shrubs (evergreen or deciduous) such as California buckwheat and golden currant.
[d] Includes sub-shrubs and vining shrubs (evergreen or deciduous) such as California blackberry.
[e] Class Coverage
[f] The mitigation site shall meet or exceed a Shannon Diversity Index value ('H') of 0.01 at project completion.

TABLE 15
OAK WOODLAND MITIGATION REMEDIAL PROCEDURES

Performance Standard	Non-Compliance	Potential Remedial Measures
25%, 40%, 55%, 65%, and 75% coverage of native species at Years 1, 2, 3, 4, and 5, respectively, and 75% for Years 6 to 10, and native plant coverage goals for growth forms as listed in Table 14.	>5% deviation below specified coverage throughout 10% or more of the entire site (i.e., if 10% or more of the site is 5% below the coverage standard, the entire site will be considered non-compliant).	Reseeding and replanting with appropriate plant species and quantities, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate <5% deviation below specified coverage throughout 10% or more of the entire site, and 5% maximum weed coverage.
5% maximum coverage of non-native plant species.		
80% survival of oak trees	Less than 80% survival.	Replanting, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate 80% survival of oak trees.
Minimum native plant species diversity of 15, 18, 20, and 24 species at Years, 3, 5, 7, and 10, respectively.	Plant diversity below the established minimum number of species for Years 3, 5, 7, and 10.	Planting and/or seeding with additional native plant species of local origin.

TABLE 16
SAGE SCRUB MITIGATION PERFORMANCE STANDARDS

Year	Vegetation Percent Coverage							Native Vegetation Diversity (Richness): No. of Plant Species[f]
	Native (Minimum)							
	Shrubs[a]							
	Large[c]	Medium[d]	Sub-shrubs[e]	Succulents[a]	Herbs/ Grasses[a]	Total[b]	Non-Native[b]	
1						25	< 5	
2						40	< 5	
3	2.0	24.0	2.0	0.5	8.0	55	< 5	10
4						65	< 5	
5	3.0	28.0	3.0	1.0	10.0	75	< 5	12
6						75	< 5	
7	4.0	35.0	4.0	2.0	15.0	75	< 5	15
8						75	< 5	
9						75	< 5	
10	5.0	50.0	5.0	2.0	**15.0**	**75**	**< 5**	**18**

[a] Absolute Coverage
[b] Class Coverage
[c] Large evergreen shrubs such as laurel sumac and sugarbush.
[d] Includes medium shrubs (evergreen or deciduous) such as California sagebrush and California buckwheat
[e] Includes sub-shrubs and vining shrubs (evergreen or deciduous) such as chaparral clematis (*Clematis lasiantha*).
[f] The mitigation site shall meet or exceed a Shannon Diversity Index value ('H') of 0.03 at project completion.

TABLE 17
SAGE SCRUB MITIGATION REMEDIAL PROCEDURES

Performance Standard	Non-Compliance	Potential Remedial Measures
25%, 40%, 55%, 65%, and 75% coverage of native species at Years 1, 2, 3, 4, and 5, respectively, and 75% for Years 6 to 10, and native plant coverage goals for growth forms as listed in Table 16.	>5% deviation below specified coverage throughout 10% or more of the entire site (i.e., if 10% or more of the site is 5% below the coverage standard, the entire site will be considered non-compliant).	Reseeding and replanting with appropriate plant species and quantities, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate <5% deviation below specified coverage throughout 10% or more of the entire site, and 5% maximum weed coverage.
5% maximum coverage of non-native plant species.		
Minimum native plant species diversity of 10, 12, 15, and 18 species at Years, 3, 5, 7, and 10, respectively.	Plant diversity below the established minimum number of species for Years 3, 5, 7, and 10.	Planting and/or seeding with additional native plant species of local origin.

7.4 PROTECTION

In the event of herbivore damage, pedestrian damage, vandalism, or other types of damage to the planting areas, the Biological Monitor shall recommend supplemental protection measures to minimize future damage to the site (e.g., additional fencing, caging, live traps, signage, or other measures) with the prior LACDPW Project Manager approval. The Restoration Specialist shall be responsible for implementing these protection measures.

7.5 EROSION CONTROL

The LACDPW Project manager and the Biological Monitor shall approve, in advance, any erosion-control measures and materials to be used on site. The Restoration Specialist shall be solely responsible for the adequacy of existing or proposed measures to comply with County Best Management Practices and storm water pollution standards. Some erosion-control measures (e.g., fully bio-degradable straw wattles) may remain in place following mitigation project completion, whereas some (e.g., silt fencing) may require removal for ecological or aesthetic reasons. The Restoration Specialist will remove erosion-control measures from the mitigation site upon project completion, on an as-needed basis, under LACDPW direction. The removal of erosion-control measures shall be conducted outside the bird breeding season, as discussed in EIR Mitigation Measure No. BIO-B.

7.6 WEED CONTROL

The Biological Monitor shall educate Restoration Specialist crews regarding the differences between invasive weed species and native plant species on an as-needed basis (frequency will be based on field personnel changes and field conditions). The Biological Monitor shall coordinate with the LACDPW Project Manager and the Restoration Specialist on an ongoing basis regarding weed-control measures to facilitate the successful control of weed species and the establishment of native habitat.

7.7 IRRIGATION

The Biological Monitor shall coordinate with the Restoration Specialist regarding the irrigation schedule to ensure that successful plant establishment is achieved and that irrigation is discontinued as soon as possible without adverse impacts to native plant growth and survival.

7.8 PEST CONTROL

Insects, plant disease, herbivores, and other pests shall be closely monitored during the maintenance period. Diseased or infected plants shall be immediately disposed of off-site at an approved landfill to prevent infection of on-site resources. If rodents or deer become a problem, the Biological Monitor will recommend caging container plants and oak trees to protect them from herbivory.

The oak woodland and sage scrub mitigation sites must achieve and maintain the required success criteria for one year without any pest control prior to final approval of the mitigation program. If some limited rodent re-location is necessary for proper habitat establishment, LACDPW will submit a brief, project-specific Rodent Management Plan for CDFW review and approval prior to the use of live traps or other non-lethal measures. Biological controls shall be used instead of pesticides or other similar chemicals for rodent control.

7.9 REPLACEMENT PLANTING

The LACDPW shall coordinate with the Biological Monitor and the Restoration Specialist regarding appropriate replacement planting measures in the event of widespread plant failure and non-compliance with performance standards. Replacement container plants and seed mixes shall be of local geographic origin (i.e., the Santa Anita Wash/Rio Hondo Sub-Watershed), and shall include plant species and application quantities that result in the establishment of oak woodland and sage scrub habitat similar to the preserved habitat areas on site. The Biological Monitor will coordinate with the Restoration Specialist and a qualified native plant nursery on the propagation of any needed replacement container plants.

7.10 FUEL MODIFICATION ZONES

The LACDPW will coordinate with the Restoration Specialist regarding compliance with the City of Arcadia's defensible space vegetation requirements.

7.11 TRASH REMOVAL

The Biological Monitor will note the presence of any trash and man-made debris within the mitigation site on an ongoing basis. The Restoration Contractor will be responsible for removing trash and man-made debris from the mitigation project site.

7.12 SITE PERFORMANCE DOCUMENTATION

The Biological Monitor will prepare the documentation described below following mitigation site inspections.

7.12.1 Progress Reports

The Biological Monitor will prepare quarterly reports from Years 0 to 1.5, twice per year progress reports from Years 1.5 to 5, and annual progress reports from Years 6 to 10 to summarize site conditions as observed during the ongoing maintenance and monitoring period. The progress reports will be submitted to the LACDPW and the Restoration Specialist. Each progress report shall list native plant species health and estimated percent coverage; the establishment of volunteer native plant species; problem weed species; wildlife species' use of the site; significant drought stress; and any recommended remedial measures necessary for compliance with performance standards. The progress reports will include maps and photo-documentation, as needed, to illustrate site conditions. The progress reports will reference the various sub-areas (e.g., a weed problem in 'Area 3') as described above in Section 7.3.

7.12.2 Annual Monitoring Reports

The Biological Monitor shall prepare annual monitoring reports (annual report) that summarize year-end site performance. The Biological Monitor shall send the annual reports to the LACDPW Project Manager and the Restoration Specialist within six weeks of the completion of the annual quantitative survey. The annual reports will include the native and non-native plant species percent coverage and diversity measured during the annual quantitative surveys; compliance/ non-compliance with required performance standards; native plant species health; the establishment of volunteer native species; and wildlife species' use of the site. The detection of any special status plant or animal species on the mitigation site will be described in detail. In the event of substantial non-compliance with the required performance standards, the reports will include recommended remedial measures to facilitate future compliance. The annual reports will include (1) photo-documentation of site progress (i.e., before-and-after photographs) recorded at designated photo-documentation stations and (2) exhibit(s) that include the mitigation site boundaries displayed on an aerial photograph, the photo-documentation stations, and the transect locations. The annual reports will include a table of annually updated contact information for all responsible parties. The Biological Monitor shall provide the annual reports in both hard copy and digital (.pdf) formats, and LACDPW will send copies of the annual reports to CDFW and the City of Arcadia.

8.0 MITIGATION PERFORMANCE STANDARDS

The Biological Monitor shall use the performance standards listed in this section to evaluate the successful establishment of oak woodland (developing) and sage scrub habitat.

8.1 OAK WOODLAND MITIGATION

The oak woodland mitigation shall be considered successful when planted and seeded native species achieve the coverage and survival goals listed in Table 14 at the end of the ten-year maintenance program. Additional success criteria include the following:

- In order for the oak woodland mitigation program to be considered successful, the following site conditions will be documented within the mitigation areas: evidence of wildlife species use and evidence of native species recruitment (with the exception of oak trees). Note that the planted oak trees will not be mature enough at the end of ten years to produce viable acorns; however, planted oak trees should display a level of health and vigor at the end of the ten-year program (or at the time that monitoring and maintenance is discontinued) that would indicate that successful reproduction is likely to occur once trees have sufficiently matured.
- The oak woodland mitigation site must achieve and maintain the required success criteria, including the weed coverage success criteria (a maximum of five percent coverage), for one year without any weed control prior to final approval of the mitigation program.
- The oak woodland mitigation site must achieve and maintain the required success criteria for one year without any pest control prior to final approval of the mitigation program.
- The mitigation site must be self-sufficient for a period of two years without supplemental irrigation in order to be eligible for sign-off (CDFW Streambed Alteration Agreement No. 1600-2008-0173-R5). LACDPW shall consult with the CDFW prior to the termination of irrigation.

If, after seven years of monitoring, the oak woodland mitigation site meets the success criteria described above (including a minimum of two years without supplemental irrigation) and listed in Table 14, and upon receiving written approval of mitigation program success from the CDFW, the LACDPW may consider the sites to have been successful and may cease monitoring thereafter.

Table 15 provides definitions of non-compliance with the performance standards listed in Table 14 and potential remedial measures. The Biological Monitor shall evaluate compliance and non-compliance with specified performance standards using the methods described below. The use of the mitigation sites by wildlife species detected during regular monitoring visits will aid in the overall determination of mitigation success and appropriate remedial measures.

8.2 SAGE SCRUB MITIGATION

The site shall be considered successful when planted and seeded native species achieve the coverage listed in Table 16 at the end of the ten-year maintenance program. Additional success criteria include the following:

- In order for the sage scrub mitigation program to be considered successful, the following site conditions will be documented in the mitigation areas: evidence of wildlife species use and evidence of native species recruitment.
- The sage scrub mitigation site must achieve and maintain the required success criteria, including the weed coverage success criteria (a maximum of five percent coverage), for one year without any weed control prior to final approval of the mitigation program.
- The sage scrub mitigation site must achieve and maintain the required success criteria for one year without any pest control prior to final approval of the mitigation program.
- The mitigation site must be self-sufficient for a period of two years without supplemental irrigation in order to be eligible for sign-off. LACDPW shall consult with the CDFW prior to the termination of irrigation.

If, after seven years of monitoring, the sage scrub mitigation site meets the success criteria described above (including a minimum of two years without supplemental irrigation) and listed in Table 16, and upon receiving written approval of mitigation program success from the CDFW, the LACDPW may consider the sites to have been successful and may cease monitoring thereafter.

Table 17 provides definitions of non-compliance with the performance standards listed in Table 16 and potential remedial measures. The Biological Monitor shall evaluate compliance and non-compliance with specified performance standards using the methods described below. The use of the mitigation sites by wildlife species detected during regular monitoring visits will aid in the overall determination of mitigation success and appropriate remedial measures.

9.0 FINAL PROGRAM APPROVAL

The Biological Monitor will notify the LACDPW Project Manager when the ten-year performance criteria have been achieved. If at least seven years of maintenance have been completed, the LACDPW will meet on site with the CDFW, the Restoration Specialist, the City of Arcadia, and the Biological Monitor to verify the successful establishment of oak woodland (developing) and sage scrub habitats. Upon its approval of the mitigation program, CDFW will prepare a memorandum to confirm the completion of the program and the cessation of required maintenance and monitoring tasks.

10.0 ALTERNATE MITIGATION

If the mitigation project does not meet performance criteria in a timely manner and there are no feasible remedial measures to achieve project compliance, an alternate mitigation program shall be identified by the LACDPW in coordination with the CDFW and the City of Arcadia. Alternate mitigation measures may include habitat creation/restoration at an alternate site(s); participation in an approved mitigation bank; or any other appropriate measure approved by the LACDPW. The selection of an alternate mitigation site will include the evaluation of geographic location (e.g., the Santa Anita Canyon vicinity); land ownership; elevation; slope steepness; aspect; soils, proximity to existing preserved native habitat; weed conditions; and other ecological and logistical factors. The planning and implementation of the alternate mitigation program will be the responsibility of the LACDPW.

11.0 REFERENCES

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APPENDIX A

BACKGROUND ENVIRONMENTAL DOCUMENTATION

FINAL ENVIRONMENTAL IMPACT REPORT AND TECHNICAL APPENDICES: SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT (COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, 2009)

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG) STREAMBED ALTERATION AGREEMENT (AGREEMENT) NO. 1600-2008-0173-R5

CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICAION (CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, NOVEMBER 22, 2009)

DEPARTMENT OF THE ARMY PERMIT (PERMIT) NO. SPL-2008-00370-VEN (LOS ANGELES DISTRICT U.S. ARMY CORPS OF ENGINEERS)

MAY 2009

FINAL

SCH No. 2007061093

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

ENVIRONMENTAL IMPACT REPORT









prepared for:
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT

Final
Environmental Impact Report

State Clearinghouse No. 2007061093

Prepared For:
County of Los Angeles
Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803

Prepared By:
EDAW, Inc.
515 South Flower Street, 9th Floor
Los Angeles, California 90071

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FINAL ENVIRONMENTAL IMPACT REPORT
SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL

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ES EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Environmental Impact Report (EIR) has been prepared by the Los Angeles County Department of Public Works (LACDPW) to evaluate potential environmental effects that may result from the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project (proposed project). This EIR has been prepared in accordance with the California Environmental Quality Act of 1970 (CEQA), as amended (Cal. Pub. Res. Code, § 21000 *et seq*.), and implementing State CEQA Guidelines (Cal. Code Regs., Title 14, § 15000 *et seq*.).

The proposed project is subject to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for sediment removal and placement activities under the jurisdiction of the U.S. Army Corps of Engineers. As the federal lead agency, the U.S. Army Corps of Engineers is preparing an Environmental Assessment (EA) for this project under the National Environmental Policy Act (NEPA). The NEPA and CEQA processes are being undertaken concurrently for this project in separate environmental documents.

ES.2 PROJECT BACKGROUND

Construction of the Santa Anita Reservoir and Santa Anita Dam was completed in 1927. LACDPW owns and manages the dam, the reservoir, and the associated land south of the dam. The last complete drawdown of the reservoir occurred during the 1992-1993 storm season, when LACDPW performed a FAST (Flow-Assisted Sediment Transport) operation to minimize sediment accumulation behind the dam. The sediment deposited in the reservoir is from erosion that occurs from the mountainous areas above the reservoir. The purpose of the proposed project is to remove the sediment that has accumulated behind the dam since the last clean out and to construct a new riser on the low-level outlet of the dam.

The California Department of Water Resources, Division of Safety of Dams (DSOD), currently restricts long-term water storage in the reservoir behind Santa Anita Dam to ensure the facility's compliance with the agency's seismic stability requirements. Currently, the restriction limits the maximum reservoir pool to an elevation of 1,258 feet. A recent seismic analysis of Santa Anita Dam showed the safe long-term maximum reservoir level is at an elevation of 1,230 feet (El. 1,230 feet), or 28 feet below the current restricted reservoir level. Due to concerns regarding the dam's compliance with DSOD's seismic stability standards, DSOD has mandated a lower long-term maximum reservoir level of El. 1,230 feet, effective May 2009. In May 2009, DSOD will require that the dam's outlet works freely drain the reservoir to this elevation.

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,212 feet, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately

500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves and to ensure DSOD's requirements are met. LACDPW proposes to start the removal of the sediment in the summer of 2009.

Concurrent with the sediment removal activities, LACDPW also proposes modifying the riser on the dam's lowest outlet gate to allow water above El. 1,230 feet to freely pass through the dam, thus ensuring that DSOD's seismic requirements are met. To make use of the impounded water below El. 1,230 feet, when conditions allow, LACDPW may install additional slide gates on the existing risers for the valves.

An Initial Study was prepared for this project in June 2007. The Initial Study concluded that there was substantial evidence that the project may have a significant impact on the environment in the areas of aesthetics, air quality, biological resources, cultural resources, geology/soils, hydrology/water quality, noise, recreation, and transportation/traffic (see Appendix A). Based on the Initial Study, LACDPW determined that an Environmental Impact Report ("EIR") would be required for the project.

ES.3 PROPOSED PROJECT LOCATION AND SETTING

The proposed project is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles. The project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Santa Anita debris basin, and the Santa Anita Sediment Placement Site (SPS). The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia.

The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area, but does not have sufficient capacity for the anticipated sediment to be removed from the reservoir. The Middle SPS area has always been planned for sediment storage use; apart from existing access roads it is relatively undisturbed and characterized by native vegetation because it has not been used for previous sediment storage activities. The Lower SPS area, located in the southerly end of the SPS areas, is a previously disturbed area that contains sediment from prior cleanouts of the reservoir, debris basin and other local

flood protection facilities; it also does not have sufficient capacity to accommodate the expected volume of sediment from the reservoir.

ES.4 PROPOSED PROJECT SUMMARY

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir via conveyor belt system, and placing it in the Santa Anita SPS. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south. At the completion of the proposed project, no standard maintenance changes would occur at any of the areas that are used during the construction activities of the project, except at the Lower SPS, which would be closed out to future sediment placement activities after the project.

DAM OUTLET MODIFICATION

The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal project. The bottom elevation at the entrance to the low-level outlet is 1,179.5 feet. There is no existing riser on this outlet. Soundings revealed that the sediment elevation at the face of the dam is at approximately 1,212 feet.

The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valve Nos. 2, 3, and 4, to allow for water releases below the new restricted reservoir level. Installation of the new riser would allow water above El. 1,230 feet to freely pass through the dam, thus meeting DSOD's seismic safety requirements.

DRY EXCAVATION

The proposed project would remove approximately 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the El. 1,300 feet.

SEDIMENT CONVEYANCE

The proposed project would transport sediment from the reservoir to the proposed SPS areas using an electric conveyor belt system. The conveyor belt system would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot, south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS. The conveyor belt system would be raised over portions of the parking lot and access roads and would not obstruct traffic and emergency vehicles.

The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The conveyor belt system would be connected to the main electricity grid. The existing access road north of the Headworks is about 12 to 15 feet wide, which would allow for maintenance and emergency vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and LACDPW access road to the SPS areas. Within the City of Arcadia, the conveyor belt would operate from 7:00 a.m. to 7:00 p.m.

Inflows to the dam would hinder construction activities at the dam, so modification of the riser would require the dam's outlet to be completely dry. As such, reservoir inflows will be bypassed through the construction areas to the downstream area.

SEDIMENT PLACEMENT

Approximately 250,000 cubic yards of sediment would be placed in the approximately 5-acre already disturbed Lower SPS first. The Lower SPS would then be closed out to future sediment placement; the remainder of the excavated sediment, approximately 250,000 cubic yards, would be placed at the 13-acre area in the Middle SPS, located east of the Santa Anita Wash, south of the existing Upper SPS.

The base of the 13-acre Middle SPS area can be tiered in order to accommodate up to 710,000 cubic yards of material. The proposed ultimate height of the Middle SPS would be 60 feet from the lowest elevation at the southern end of the SPS. The proposed project would place approximately 250,000 cubic yards of sediment at the Middle SPS, increasing the height from the existing ground up to approximately 30 feet. The western edge of the SPS would be landscaped in a following project to create a visual buffer for the residences to the west.

The proposed project would require the removal of approximately 0.5 acres of vegetation in the Lower SPS. The current elevation of the Lower SPS ranges from approximately 630 feet to 650 feet. The proposed sediment height at the Lower SPS would increase approximately 30 feet from existing elevations.

The proposed project would require the removal of approximately 11 acres of native vegetation in the undeveloped Middle SPS. The remaining two acres of the sediment placement footprint is comprised of existing access roads. Approximately 250,000 cubic yards of sediment would be conveyed to the already disturbed Lower SPS and approximately 250,000 cubic yards of sediment would be conveyed to the Middle SPS. The remaining sediment capacity in the 13-acre footprint, approximately 500,000 cubic yards, would be used for future routine and emergency sediment removal activities of facilities, including Santa Anita Dam, served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, would be closed out for future sediment placement. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.

ES.5 AREAS OF CONTROVERSY

A public scoping meeting was held on July 11, 2007 for the proposed project. The scoping meeting introduced the proposed project and alternatives, outlined the environmental review process, and invited public comment on the scope and content of the environmental review. Approximately 10 citizens attended the meeting, most of whom expressed their concerns regarding the potential environmental effects of the proposed project. Issues and concerns raised by the public at the scoping meeting included dam safety, reservoir capacity, haul routes, noise impacts, air quality impacts, the appearance of the SPS after the project, and other details of the project description. Several commenters requested additional justification regarding the need for the proposed project. The key issues and areas of controversy are detailed in Chapter 1.

In addition to the comments provided at the scoping meeting, several comments were received in response to the Notice of Preparation/Initial Study for this EIR. Copies of the comment letters are provided in Appendix A. The primary areas of controversy identified by the public and agencies include impacts to the Wilderness Park, dust control, noise impacts, oak tree removal, and other biological impacts.

ES.6 SUMMARY OF ENVIRONMENTAL IMPACTS

Table ES-1 provides a summary of the significant environmental impacts that would result during construction and operation of the proposed project, mitigation measures that would lessen the significant environmental impacts, and the level of significance of the environmental impacts that would remain after implementation of the proposed mitigation. Detailed analysis of environmental impacts is presented in Chapter 3 of this EIR.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

This section is prepared in accordance with Section 15126.2(b) of the *CEQA Guidelines*, which requires the discussion of any significant environmental effects that cannot be avoided if a project is implemented.

These include impacts that can be mitigated but cannot be reduced to a less than significant level. An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR. Nine issue areas were analyzed in detail in Chapter 3. Two issues have been found to result in significant unavoidable adverse impacts – construction-related noise and global climate change. Short-term noise impacts would exceed the acceptable noise threshold for sensitive noise receptors in the City of Arcadia. The residences located closest to the project site, approximately 300 feet west of the Middle SPS and approximately 200 feet south of the Lower SPS would be subject to intermittent construction equipment noise that cannot be mitigated below the level of significance.

EFFECTS FOUND NOT TO BE SIGNIFICANT

Sections 15128 and 15143 of the *CEQA Guidelines* require the identification of impacts of a project that were determined not to be significant and that were not discussed in detail in the impact section of the EIR. For this project, it was determined that significant impacts would not occur in the following resource categories: Agricultural Resources, Hazards and Hazardous Materials, Land Use, Mineral Resources, Population and Housing, Public Services, and Utilities and Service Systems. An Initial Study (Appendix A) was prepared which outlines the reasons why these effects were found to be not significant.

CUMULATIVE IMPACTS

According to Section 15130 (b)(1)(A) of the *CEQA Guidelines*, a list of past, present, and probable future projects producing related or cumulative impacts may be used as the basis of the cumulative impacts analysis. The "list" approach was used for the cumulative impacts discussion in this EIR. The related projects within one mile of the project area used for the cumulative project list are based on information provided by the cities of Arcadia, Sierra Madre, and Monrovia. A radius of one mile was selected, since the cumulative impacts would primarily be limited to construction effects and the surrounding uses are mainly residential in the vicinity of the project site, aside from the adjacent open space and Angeles National Forest. As discussed in this EIR, the project would not result in operational impacts after the dam riser modification and sediment excavation and conveyance activities are complete. However, cumulative air quality impacts related to Greenhouse Gas (GHG) emissions from construction of the project and other cumulative projects in the area would be significant and unavoidable. The related projects, when combined with the proposed project, would not contribute to any other cumulative impacts.

ES.7 ALTERNATIVES TO THE PROPOSED PROJECT

Section 15126.6 of the *CEQA Guidelines* requires consideration and discussion of alternatives to the proposed project which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. Four alternatives, including alternative sediment conveyance methods and an alternate truck route, were considered but rejected from

consideration in this EIR as infeasible. Four alternatives, including the No Project Alternative, are reviewed in Chapter 5 of this document and briefly summarized here.

ALTERNATIVE 1 – NO PROJECT

According to the *CEQA Guidelines* (Section 15126.6(e)(3)(b)), the No Project Alternative is defined as the "circumstance under which the project does not proceed." The impacts of the No Project Alternative shall be analyzed "by projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." The purpose of describing and analyzing the No Project Alternative is "to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." Under the No Project Alternative, the proposed dam riser modification would not be constructed and sediment would not be removed from the Santa Anita Reservoir. The environmental characteristics would generally be the same as those described in the environmental setting sections of Chapter 3.0.

The No Project Alternative assumes that the Santa Anita Dam and the Santa Anita Reservoir would remain non-compliant with DSOD dam safety requirements for emergency drawdowns. The sediment level in the reservoir would continue to increase and exceed that deemed by DSOD as adequate for dam stability. The LACDPW facility may become inoperable/structurally unstable in the future due to no construction, and the outlet would eventually silt up, making the dam inoperable. Additional consequences of Alternative 1 would be the potential loss of water supply, continued decrease in water storage capacity, and further reduction in flood control capabilities to protect downstream residents.

ALTERNATIVE 2 – CONVEY TO WILDERNESS PARK, TRUCK TO SPS

Alternative 2, like the proposed project, would remove up to 500,000 cubic yards of sediment from Santa Anita Reservoir. Alternative 2 would convey the sediment directly to the Wilderness Park area via conveyor belt system, then the sediment would be transported by truck to the Lower and Middle SPS areas. The conveyance system would be approximately 5 feet wide and up to 15 feet high. Public access to the park would be maintained during sediment conveyance activities. All other project characteristics of Alternative 2 would be the same as the proposed project. Impacts associated with Alternative 2 would be similar to the proposed project for aesthetics, biological resources, cultural resources, geology and soils, hydrology and water quality, recreation, and transportation and circulation. However, some impacts would be greater than the proposed project including air quality and noise would result in a significant unavoidable impact (see Table ES-2). These additional impacts are associated with the use of trucks for hauling sediment from the Wilderness Park to the SPS areas.

ALTERNATIVE 3 – CONVEY TO THE CLEARING OF THE NORTH SPS, TRUCK OFF SITE

Alternative 3, like the proposed project, would remove up to 500,000 cubic yards of sediment from Santa Anita Reservoir. Alternative 3 would convey the sediment to a staging area above the Upper SPS area, where it would be loaded onto trucks and hauled to an off site disposal location in Irwindale (Manning Pit SPS). Trucks would exit the Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS, in the City of Irwindale. All other characteristics of Alternative 3 would be the same as the proposed project. It is estimated that approximately 20 trucks would be used at one time to transport sediment and that approximately 160 truck trips would occur per eight-hour day. Impacts associated with Alternative 3 would be similar to the proposed project for cultural resources, geology and soils, hydrology and water quality, and recreation. However, some impacts would be greater than the proposed project including air quality, noise, and transportation and circulation (see Table ES-2). These additional impacts are associated with the use of trucks for hauling sediment off site to the Manning Pit SPS. Alternative 3 would result in reduced impacts to aesthetics and biological resources compared to the proposed project.

ALTERNATIVE 4 – CONVEY TO WILDERNESS PARK, TRUCK OFF SITE

Alternative 4, like the proposed project, would remove up to 500,000 cubic yards of sediment from Santa Anita Reservoir. Alternative 4 would convey the sediment to the Wilderness Park staging area by a conveyor belt system, located above and within part of the park's western parking lot, truck the sediment along the existing maintenance road, truck the sediment to Irwindale, and place the sediment in the Manning Pit SPS. All other characteristics of Alternative 4 would remain the same as the proposed project. Trucks would exit Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS in the City of Irwindale. Alternative 4 would require clearing, grubbing, and grading at various locations along the existing maintenance road below Santa Anita Dam. It is estimated that about 20 trucks would be used at one time to transport sediment and that approximately 160 truck trips would occur per eight-hour day. Impacts associated with Alternative 4 would be similar to the proposed project for cultural resources, geology and soils, hydrology and water quality, and recreation. However, some impacts would be greater than the proposed project including air quality, noise, and transportation and circulation (see Table ES-2). These additional impacts are associated with the use of trucks for hauling sediment off site to the Manning Pit SPS. Alternative 4 would result in reduced impacts to aesthetics and biological resources compared to the proposed project.

TABLE ES-1 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
AIR QUALITY			
AIR-1 Short-term construction emissions of the proposed project would exceed the SCAQMD emissions threshold for NOx and would potentially contribute substantially to an existing or projected air quality violation.	Significant	**AIR-A** The construction contractor shall provide a NOx reduction plan, for LACDPW approval, demonstrating that construction equipment shall not exceed the 100 lbs/day NOx threshold for the duration of the project. The plan shall provide a detailed equipment list for the overlap and non-overlap construction periods using the construction equipment emissions from URBEMIS 2007, which will be provided by LACDPW, or an equivalent verifiable source approved by CARB or SCAQMD. Measures to reduce emissions may include the use of oxygenated catalysts or Tier 2 or Tier 3 engines.	Less than Significant
BIOLOGICAL RESOURCES			
BIO-1 Tree removal in the Lower and Middle SPS areas during construction of the proposed project would disturb nesting birds, including raptors. The project site and areas immediately adjacent to the project site contain potential habitat for coast (San Diego) horned lizard and two-striped garter snake. Both the coast (San Diego) horned lizard and the two-striped garter snake are CDFG Species of Special Concern. To ensure no injury or damage to sensitive reptile species, mitigation measure BIO-B will be required.	Significant	**BIO-A** Prior to commencement of project construction, a rare plant survey shall be completed within the Santa Anita Reservoir, the Middle SPS and anywhere else project ground-disturbing activities would affect vegetated areas to determine the presence or absence of sensitive plant species with potential to occur within this project site. Surveys within the Middle SPS will focus on Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass where suitable habitat for these species	Less than Significant

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		occurs. However, all sensitive plant species that have potential to occur in the project area based on the presence of suitable habitat or the known presence of the species in neighboring areas will be searched for during their blooming periods to confirm presence or absence. In addition, all other biological requirements of the U.S. Forest Service shall be implemented to minimize impacts to federal species. Surveys shall be conducted in accordance with the following CNPS guidelines: • A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas. • If a state, U.S. Forest Service, or federally listed plant species is detected (e.g., slender-horned spineflower or San Diego ambrosia), then consultation with USFWS and/or, U.S. Forest Service, and/or CDFG must occur to document the finding and determine appropriate mitigation requirements to ensure that impacts to the listed plant species would be less than significant. • Rare plants listed as CNPS List 1B, protected by the California Endangered Species Act, shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		activities to allow for salvage of the plants. **BIO-B** Should tree and vegetation removal in the Santa Anita Reservoir or Middle SPS or commencement of other construction activities in the project site occur during the breeding season for migratory non-game native bird species (February 1 - August 31), weekly bird surveys shall be performed to detect any protected native birds in the trees to be removed and other suitable nesting habitat within 300 feet of the construction work area (500 feet for raptors). The surveys shall be conducted 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys shall continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, LACDPW shall halt all clearance/construction disturbance activities in suitable nesting habitat or within 300 feet of nesting habitat (within 500 feet for raptor nesting habitat) until August 31 or continue the surveys in order to locate any nests. If an active nest is located during the survey, clearing and construction with 300 feet of the nest (within 500 feet for raptor nests) shall be postponed until the nest is naturally vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		sensitivity of the area. The results of this measure shall be recorded to document compliance with applicable State and Federal laws pertaining to the protection of native birds. A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to removal of trees or structures on the site. If no active roosts are found, then no further action will be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following measures shall be implemented: • If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in consultation with CDFG shall be observed during the maternity roost season (March 1 - July 31). • If a non-breeding bat hibernacula is found in a structure or tree scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial disturbance for airflow. This action shall allow bats to leave during	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Structures or trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours. • If special-status bats are found roosting within trees or structures onsite that require removal, appropriate replacement roosts shall be created at a suitable location onsite or offsite in coordination with a qualified biologist, the CDFG, and the LACDPW. **BIO-C** In order to reduce impacts to sensitive reptiles potentially occurring in the Santa Anita Reservoir, the Middle SPS, and along the access road adjacent to the debris basin LACDPW shall implement the following measures: • Grading and other habitat disturbing activities shall be limited to the footprint of the SPS areas. • To prevent injury or damage to coast (San Diego) horned lizard, two-striped garter snake, and other reptiles, an animal exclusion fence shall be placed along the boundary of the Middle SPS area and along the portion of the access road adjacent to the debris basin. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded "T" steel posts. Fence material should also be	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		buried a minimum of 12 inches below the ground surface. • Prior to construction, a qualified biologist shall conduct a pre-construction survey for the coast (San Diego) horned lizard and two-striped garter snake and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion fenced area, the biologist shall safely relocate these species to a suitable area outside of the fenced area. • Drift nets or other exclusionary fencing shall be placed around excavations to reduce the potential for individuals entering excavated areas. If excavations with the potential for entrapment are to remain open for more than 12 hours they must include some means for small mammals, reptiles, and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavation. Before an excavation is backfilled, it must be checked to ensure that there are no live individuals inside. Backfilling shall not occur until the excavation is clear of all live individuals. • Personnel involved in project implementation shall receive a briefing from a qualified biologist to identify and describe sensitive resources that may be encountered in the project area. Wildlife of any kind that is encountered during the course of project implementation shall either be moved or provided the opportunity to vacate the site.	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		• Personnel shall be reminded that harassment, handling, or removal of wildlife from the project site shall not be permitted.	
BIO-2 Construction of the proposed project would impact approximately 6.7 acres of coast live oak woodland in the Middle SPS. Coast live oak woodland has high habitat value. The proposed project would impact approximately 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub in the Middle SPS. Riversidean alluvial fan sage scrub is considered to be of high priority for inventory by the CNDDB because of its significance and rarity. The proposed project would impact 0.15 acre waters under jurisdiction of CDFG in the Middle SPS.	Significant	**BIO-D** LACDPW shall mitigate for impacts to 6.7 acres of coast live oak woodlands through a combination of on-site creation of coast live oak woodland and/or by permanently protecting comparable habitat in the watershed or by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of onsite creation and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 6.7 acres. Oak woodland restoration shall occur within the Lower SPS, which includes approximately 8 acres available for such restoration activities. Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW. The final size of a conservation easement and the number of trees planted for mitigation shall be determined through consultation with CDFG. City of Arcadia will be consulted regarding restoration activities on the Lower SPS. Mitigation for impacts to coast live oak individuals shall be negotiated in	Less than Significant

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		conjunction with mitigation for impacts to coast live oak woodland. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation shall be described in both a conceptual restoration plan and a mitigation and monitoring plan for oak woodland, which shall be submitted and approved by CDFG prior to implementation of the project. **BIO-E** Mitigation for impacts to 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub will be accomplished through a combination of restoration of a suitable area on-site and/or by permanently protecting at least 3.88 acres of comparable habitat by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of onsite restoration and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 3.88 acres. The Lower SPS includes approximately 8 acres available for restoration. Mitigation for impacts to Riversidean alluvial fan sage scrub shall be negotiated with CDFG. A conceptual restoration plan shall be provided once mitigation ratios are	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation shall be described in a mitigation and monitoring plan approved by CDFG. Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW. **BIO-F** Clean Water Act Section 404 (b)(1) guidelines shall be followed as a framework for compensatory mitigation. Through 404(b)(1) negotiations with the USACE and negotiations with CDFG under Fish and Game Code Sections 1600-1616, a determination of the functions and values of impacted jurisdictional waters shall result in the coordination of appropriate mitigation measures for sediment removal and the impacted ephemeral wash and riparian habitat in the excavation area of the reservoir and Middle SPS. Compensatory mitigation of permanently protecting a minimum of 0.15 acres of comparable habitat shall occur at the Big Tujunga Mitigation Bank or through restoration and permanent protection on Mountains Recreation Conservation Authority (MRCA) land.	
CULTURAL RESOURCES			

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
CUL-1 Because the project involves grubbing and ground disturbing activities, it is possible that surface artifacts obscured by surface vegetation or subsurface artifacts may be encountered by these construction activities.	Significant	**CUL-A** If archaeological materials are encountered during ground disturbing activities, work in the vicinity shall be immediately halted. The resource shall be assessed by a qualified archaeologist and the appropriate treatment determined in accordance with state law and standard archaeological practices consistent with those outlined by the California Office of Historic Preservation prior to the resumption of construction.	Less than Significant
CUL-3 Grading activities would potentially disturb human remains.	Significant	**CUL-B** If human remains are encountered on the property during ground disturbing activities, the Los Angeles County Coroner's Office shall be contacted and all activities in the vicinity of the discovery shall cease until appropriate disposition of the remains is determined by the Coroner's Office, who will follow their standard protocols.	Less than Significant
NOISE			
NOISE-1 Construction of the proposed project would create a substantial temporary or periodic increase in ambient noise level near sensitive receptors in the vicinity of the Lower and Middle SPS areas. The construction equipment used for sediment placement and transport activities would increase periodic noise level during the 8-month construction period and would exceed City noise standards.	Significant	**NOISE-A** At all areas except the reservoir-dam area, construction equipment shall be fitted with noise shielding and muffling devices to reduce noise levels to the maximum extent feasible. Where available, these devices shall be better than manufacturer's standard equipment. **NOISE-B** Stationary sources, such as message boards for traffic control, that will be located within 500 feet of residences shall be solar or battery powered, or connected to the local power grid, i.e., not powered by an	Significant and Unavoidable

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		internal combustion engine. **NOISE-C** At the SPS areas, equipment maintenance and staging areas shall be located within the project area. **NOISE-D** At the Lower SPS, construction of a noise barrier on the west and southwest sides will be feasible. Therefore, at the commencement of sediment placement in the Lower SPS, LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west and southwest. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, the most efficient and economical barrier may be built by depositing the initial sediment along the affected boundaries of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors. **NOISE-E** At the commencement of sediment placement in the Middle SPS, the LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west. The necessary height of the barrier	

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, a barrier may be built by depositing the initial sediment along the western boundary of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors. **NOISE-F** The LACDPW shall establish a noise complaint and response procedure that includes a 24-hour toll free or local telephone number for complaints, and a procedure where a field engineer/construction manager will respond to within 48 hours as practicable, investigate the complaints, and take corrective action if necessary. Complaints after normal working hours may be received by voice mail.	
NOISE-3 Noise levels associated with sediment transfer and placement in the SPSs would exceed the standards of the City of Arcadia Noise Element of the General Plan and noise ordinance of the Municipal Code.	Significant	See **NOISE-A** through **NOISE-F**	Significant and Unavoidable
TRANSPORTATION			
TRANS-2 It is not anticipated that the proposed project would create any significant parking impacts within the Wilderness Park parking lot or surrounding neighborhood. However, to ensure construction workers do not park in the Wilderness Park or other public areas, including local streets, implementation of mitigation measure TRANS-A will be required.	Significant	**TRANS-A** Prior to construction, a parking plan shall be prepared by the contractor for review and approval by LACDPW. The parking plan shall illustrate the parking locations for workers on the project site in areas that are not accessible by the public and clearly indicate that construction worker or equipment parking for non-maintenance and construction activities is prohibited in the Wilderness Park and on public roads. A	Less than Significant

Environmental Impacts	Significance Determination	Mitigation Measures	Level of Significance after Mitigation
		parking map shall be provided to all construction workers prior to construction activities each year. LACDPW shall monitor parking compliance on a monthly basis throughout the construction period.	

TABLE ES-2 COMPARISON OF IMPACTS FOR THE PROPOSED PROJECT AND THE ALTERNATIVES

Impact Area	Proposed Project	Alternative 1: No Project	Alternative 2: Convey to Wilderness Park, Truck to SPS	Alternative 3: Convey to Clearing of the North SPS, Truck Off Site	Alternative 4: Convey to Wilderness Park, Truck Off Site
Aesthetics	III	IV (Less)	III (Similar)	IV (Less)	IV (Less)
Air Quality	II	IV (Less)	I (Greater)	I (Greater)	I (Greater)
Biological Resources	II	IV (Less)	II (Similar)	IV (Less)	IV (Less)
Cultural Resources	II	IV (Less)	II (Similar)	II (Similar)	II (Similar)
Geology and Soils	III	IV (Less)	III (Similar)	III (Similar)	III (Similar)
Hydrology and Water Quality	III	IV (Less)	III (Similar)	III (Similar)	III (Similar)
Noise	I	IV (Less)	I (Greater)	I (Greater)	I (Greater)
Recreation	II	IV (Less)	II (Similar)	II (Similar)	II (Similar)
Transportation and Circulation	II	IV (Less)	II (Similar)	II (Greater)	II (Greater)

Notes:

I: Significant Unavoidable Impact
II: Significant Impact Unless Mitigated
III: Less Than Significant Impact
IV: No Impact

Less: Impact is lower in magnitude than impacts of the proposed project
Similar: Impact is similar in magnitude to impacts of the proposed project
Greater: Impact is greater in magnitude than impacts of the proposed project

1 INTRODUCTION

This Final Environmental Impact Report (EIR) has been prepared by the Los Angeles County Department of Public Works (LACDPW) to evaluate potential environmental effects that may result from the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project (proposed project). This EIR has been prepared in conformance with the California Environmental Quality Act of 1970 (CEQA) statutes (Cal. Pub. Res. Code, § 21000 et. seq., as amended) and implementing guidelines (Cal. Code Regs., Title 14, § 15000 et. seq., 1998). In addition to the analysis sections of the EIR, this Final EIR includes: Clarifications and Modifications, which describes the changes made to the Draft EIR; Response to Comments, which includes the County's responses to all written comments received by agencies, private organizations, and the public during the 45-day public comment period; and the Mitigation Monitoring and Reporting Program, which lists all the mitigation measures required for implementation of the project, the phase in which the measures would be implemented, and the enforcement agency responsible for compliance.

1.1 SUMMARY OF THE PROPOSED PROJECT

The purpose of the proposed project is to remove the sediment that has accumulated behind the dam since the last clean out, which occurred during 1992-1993 storm season, and to construct a new riser on the low-level outlet of the dam. The proposed project involves draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt), and placing it at LACDPW sediment placement site (SPS). The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, and SPS. These facilities are owned and operated by the LACDPW. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the two SPS areas on the south end of the project area.

The California Department of Water Resources, Division of Safety of Dams (DSOD), currently restricts long-term water storage in the reservoir behind Santa Anita Dam to ensure the facility's compliance with the agency's seismic stability requirements. Due to concerns regarding the dam's compliance with DSOD's seismic stability standards, DSOD has mandated a lower long-term maximum reservoir level at El. 1,230 feet, effective May 2009.

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,220, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately

500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves to ensure DSOD's requirements are met.

1.2 NOTICING AND AVAILABILITY OF THE DRAFT EIR

The Draft EIR was circulated for public review and comment on May 5, 2008, initiating a 45-day public review period pursuant to CEQA and its implementing guidelines. The document and Notice of Completion (NOC) was distributed to the California Office of Planning and Research, State Clearinghouse. Relevant agencies also received copies of the document. A Notice of Availability (NOA) was distributed to over 1,100 interested parties and adjacent property owners and residents, which informed them of where they could view the document and how to comment. The purpose of the 45-day review period is to provide interested public agencies, groups and individuals the opportunity to comment on the contents and accuracy of the document. The document was available to the public at the LACDPW and the City of Arcadia and Sierra Madre Libraries. A copy of the document was also posted online.

This document makes up the Final EIR as defined in the *CEQA Guidelines*, Section 15132. The Final EIR will subsequently be reviewed by the County for certification. Certification is not the same as approval, but marks the end of the environmental review phase. Certification is a judgment that the EIR is a legally adequate information document in compliance with CEQA. Only when the EIR document adequately identifies all significant environmental impacts associated with the project can it be used in the project approval phase, along with consideration of other relevant factors. To approve a project, CEQA requires that either the significant impacts of the project (as identified in the EIR) be reduced to a less than significant level through the implementation of mitigation measures, or the approving body must adopt a statement of overriding considerations, stating that mitigation measures do not exist or are infeasible thereby resulting in unavoidable significant impact(s). The statement of overriding considerations states, in effect, that the benefits of the project outweigh the environmental impacts that would result upon implementation of the project.

1.3 ORGANIZATION OF THE EIR

The content and format of this EIR meet the current requirements of CEQA and the *CEQA Guidelines*. The EIR is organized into the following chapters so the reader can easily obtain information about the project and its specific issues.

The **Executive Summary** of this EIR provides an overview of the information provided in detail in subsequent chapters. It consists of an introduction; a description of the proposed project and alternatives considered; a discussion of areas of controversy and issues to be resolved; and a table that summarizes the potential environmental impacts in each category, the significance determination for those impacts, mitigation measures, and significance after mitigation.

Chapter 1 of this EIR provides a brief description and purpose of the proposed project. It includes an overview of the CEQA environmental review process and a section describing the organization of the EIR.

Chapter 2 of this EIR provides a detailed description of the proposed project. Project objectives are identified, and information on the project characteristics, conceptual project design, and construction scenario is provided. This section also includes a description of the intended uses of the EIR and public agency actions.

Chapter 3 of this EIR describes the potential environmental effects of implementing the proposed project. The discussion in Chapter 3 is organized by nine environmental issue areas, as follows:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hydrology and Water Quality
- Noise
- Recreation
- Transportation/Circulation

For each environmental issue in Chapter 3, the analysis and discussion is organized into five subsections as described below:

- *Environmental Setting* – This subsection describes, from a local and regional perspective, the physical environmental conditions in the vicinity of the proposed project at the time of publication of the NOP. The environmental setting establishes the baseline conditions by which the LACDPW will determine whether specific project-related impacts are significant.

- *Regulatory Setting* – This subsection provides a summary of the federal, state, and local regulatory parameters pertinent to each topic area as established at the time of publication of the NOP.

- *Environmental Impact Analysis*

    - Thresholds of Significance – This subsection identifies a set of criteria for determining whether an impact would be considered significant.

    - Impacts Analysis – This subsection provides detailed information on the environmental effects of the proposed project during construction and operations

phases, and whether the impacts of the proposed project would meet or exceed the established significance criteria.

- *Mitigation Measures* – This subsection identifies potentially feasible mitigation measures that would avoid or substantially reduce significant adverse project-related impacts.

- *Significance After Mitigation* – This subsection provides a significance conclusion and identifies any residual significant and unavoidable adverse effects of the proposed project that would result even after the mitigation measures have been implemented.

Chapter 4 of this EIR presents the other mandatory CEQA sections, including the following:

- *Unavoidable Significant Adverse Impacts (CEQA Section 15126.2)* – This subsection identifies and summarizes the unavoidable significant impacts described in detail in Chapter 3.

- *Effects Not Found to Be Significant (CEQA Section 15128)* – This subsection identifies and summarizes the environmental impacts that were determined to have no adverse environmental effect or less than significant environmental effect, given the established significance criteria.

- *Cumulative Impacts(CEQA Section 15130)* – This subsection addresses the potentially significant cumulative impacts that may result from the proposed project when taking into account related or cumulative impacts resulting from other past, present, and reasonably foreseeable future projects.

- *Significant Irreversible Environmental Changes (CEQA Section 15126.2)* – This subsection addresses the extent to which the proposed project would result in the commitment of nonrenewable resources.

- *Growth-Inducing Impacts (CEQA Section 15126.2)* – This subsection describes the potential of the proposed project to induce economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

Chapter 5 of this EIR describes and evaluates the comparative merits of the three alternatives to the proposed project that would feasibly attain most of the basic objectives of the proposed project and avoid or substantially lessen potentially significant project-related impacts. The chapter also describes the preliminary site constraints analysis and rationale for selecting the range of alternatives discussed in the EIR and identifies the alternatives considered by the LACDPW that have been rejected from further evaluation. Chapter 5 also includes a discussion of the environmental effects of the No Project Alternative and identifies the environmentally superior alternative.

Chapter 6 provides a detailed description of all clarifications and revisions which were made to the text or graphics of the Draft EIR. Clarifications and revisions reflect changes made to the project, analysis, or mitigation as a result of a comment made by an agency or individual during the public review period.

Chapter 7 provides a copy of all comment letters received during the public review period, as well as the County's responses to those comments.

Chapter 8 includes the Mitigation Monitoring and Reporting Program, which details the mitigation that has been made a condition of project approval in order to mitigate or avoid significant effects on the environment. It also includes the phase during which the mitigation and the monitoring will be implemented and the agency responsible for enforcing the measure.

Chapter 9 provides a bibliography of reference materials used in preparation of this EIR.

Chapter 10 includes a list of agencies, organizations, and persons consulted during preparation of this EIR.

Chapter 11 provides a list of acronyms and abbreviations used in this EIR.

Chapter 12 identifies those persons responsible for preparation of this EIR.

1.4 AREAS OF CONTROVERSY

A public scoping meeting was held on July 11, 2007 for the proposed project. The scoping meeting introduced the proposed project and alternatives, outlined the environmental review process, and invited public comment on the scope and content of the environmental review. Approximately 10 citizens attended the meeting, most of whom expressed their concerns regarding the potential environmental effects of the proposed project. Through this process, several key issues and areas of controversy were identified, including:

- How much sediment would be removed from the reservoir?
- Is the sediment contaminated?
- How often does sediment removal occur?
- What are the worst case, most likely scenario, and probabilities of a:
    - 100 Year Flood?
    - 50 Year Flood?
    - 20 Year Flood?
- What is the lowest elevation of the sediment and existing riser?
- How many truck trips per day?

- What is the capacity per truck?
- Will trash be buried in SPS?
- What is reservoir capacity now and after project?
- What will happen to SPS after project?
    - Re-vegetation?
    - Future Uses?
- What will be days and hours of construction? Will construction occur on the weekends?
- How will dust be controlled?
- How will drainage on east side of proposed SPS be affected?
- What is worst case scenario if nothing is done?
- What will most likely occur if the project does not occur?
- Any impacts on air/water from exposed SPS?
- How safe is reservoir now; and after the project?
    1. Seismic
    2. Factor of safety (static)
- What is the timetable for EIR process?
- Does Arcadia have any sanction power over project?
- What is the guarantee of maintenance of the SPS after the project is complete?
- Why is there no landscape maintenance on existing SPS?
- Preserve the beauty of middle SPS. It is one of the last areas of natural beauty in the flood control area.
- Expand the purpose and need of project.
- The CEQA process is inadequate for this project.

- One more public hearing is needed.

In addition to the comments provided at the scoping meeting, several comments were received in response to the NOP/Initial Study for this EIR. Copies of the comment letters are provided in Appendix A. The primary areas of controversy identified by the public and agencies included the following potential issues:

- Impacts to the City of Arcadia Wilderness Park, associated with closure or limited access and safety concerns to visitors;
- Dust control throughout the project area and the adjacent neighborhoods;
- Noise impacts at the Wilderness Park and the adjacent neighborhoods;
- Oak tree removal at the middle Sediment Placement Site (SPS);
- Water conservation impact for the East Raymond Groundwater Basin;
- Erosion control;
- Biological resources impacts; and
- Recreational impacts.

In response to the public comments and concerns, the LACDPW refined the alternative concepts into a preferred alternative. This proposed project, which is described in detail in Chapter 2.0 of this EIR, addresses many of the key issues described above. A number of issues are addressed through mitigation measures and regulatory requirements.

1.5 INTENDED USES OF THE EIR

An EIR is a public document used by a public agency to analyze the significant environmental effects of a proposed project, to identify alternatives, and to disclose possible ways to reduce or avoid environmental damage (Cal. Code Regs., Title 14, §15121). As an informational document, an EIR does not recommend for or against approving a project. The main purpose of an EIR is to inform governmental decision makers and the public about potential environmental impacts of the project.

This EIR will be used by the County of Los Angeles, as the lead agency under CEQA, in making decisions with regard to the adoption of the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. The information in this EIR will also be used by responsible agencies and other agencies with jurisdiction, as listed below, in deciding whether to grant permits or approvals to construct or operate the proposed project. Because this project is also subject to the National

Environmental Policy Act (NEPA) due to the Section 404 of the Clean Water Act, information in this document will also be used by the U.S. Army Corps of Engineers in preparing the necessary documentation for federal approvals.

2 PROJECT DESCRIPTION

This chapter provides a description of the proposed project evaluated in Chapter 3.0 of this EIR. The project location, background, and objectives are described, followed by a description of the proposed project, alternatives, and a summary of project approvals that would be required.

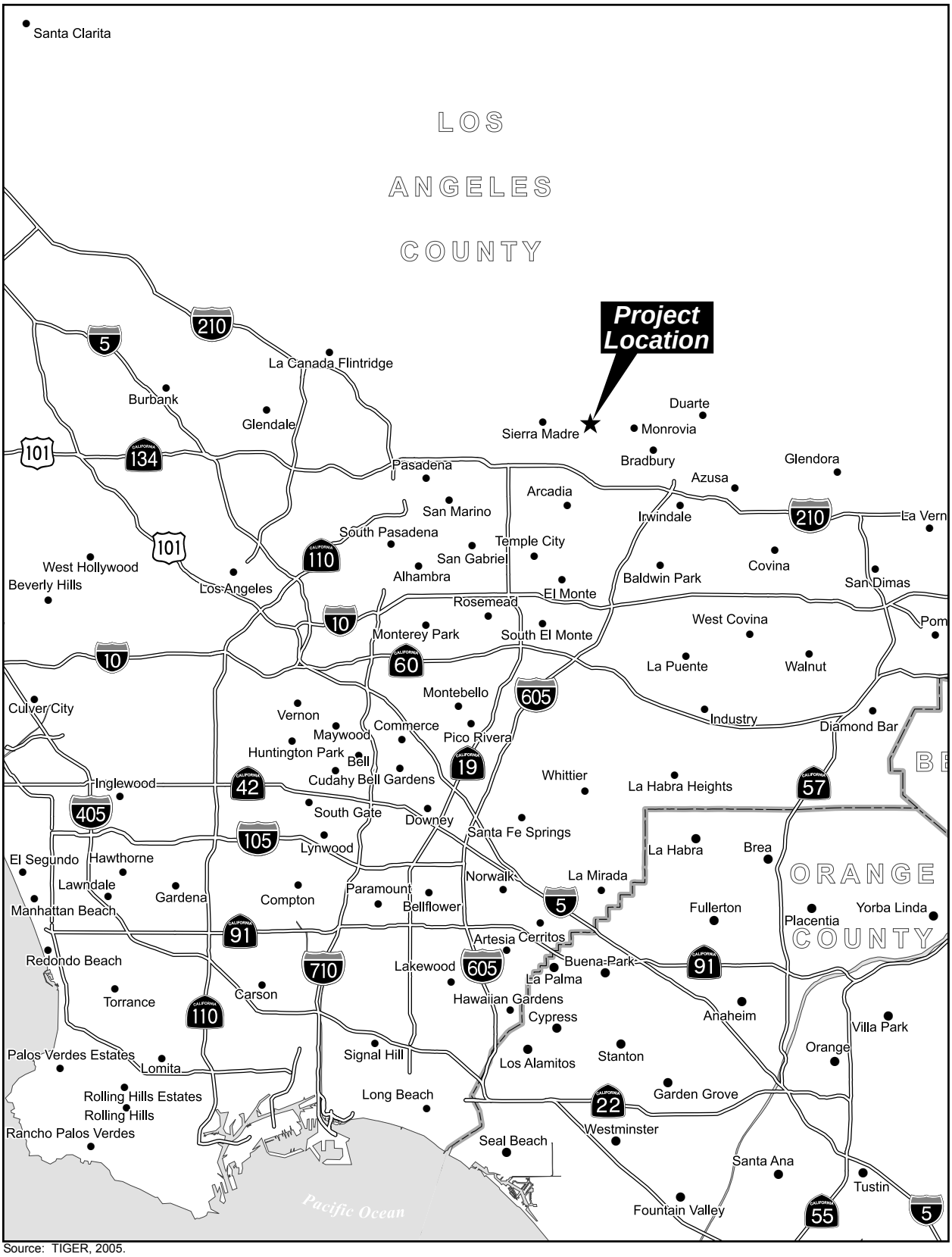
2.1 PROJECT LOCATION AND SETTING

The Santa Anita Reservoir Dam Riser Modification and Sediment Removal Project (proposed project) is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles (see Figure 2-1).

As shown on Figure 2-2, the project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, Santa Anita Headworks, Santa Anita debris basin, and the Santa Anita Sediment Placement Site (SPS). These facilities are owned and operated by the Los Angeles County Department of Public Works (LACDPW) under easements from the U.S. Forest Service and the City of Arcadia. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia.

The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area, but does not have sufficient capacity for the anticipated sediment to be removed from the reservoir. The Middle SPS area has always been planned for sediment storage use; apart from existing access roads it is relatively undisturbed and characterized by native vegetation because it has not been used for previous sediment storage activities. The Lower SPS area, located in the southerly end of the SPS areas, is a previously disturbed area that contains sediment from prior cleanouts of the reservoir, debris basin and other local flood protection facilities; it also does not have sufficient capacity to accommodate the expected volume of sediment from the reservoir, over 300,000 cubic yards. The proposed project would place approximately 250,000 cubic yards of excavated sediment in the Lower SPS and the remainder of sediment, approximately 250,000 cubic yards, would be placed in the Middle SPS. The location of the SPS and its Upper, Middle, and Lower SPS areas is shown in Figure 2-3.

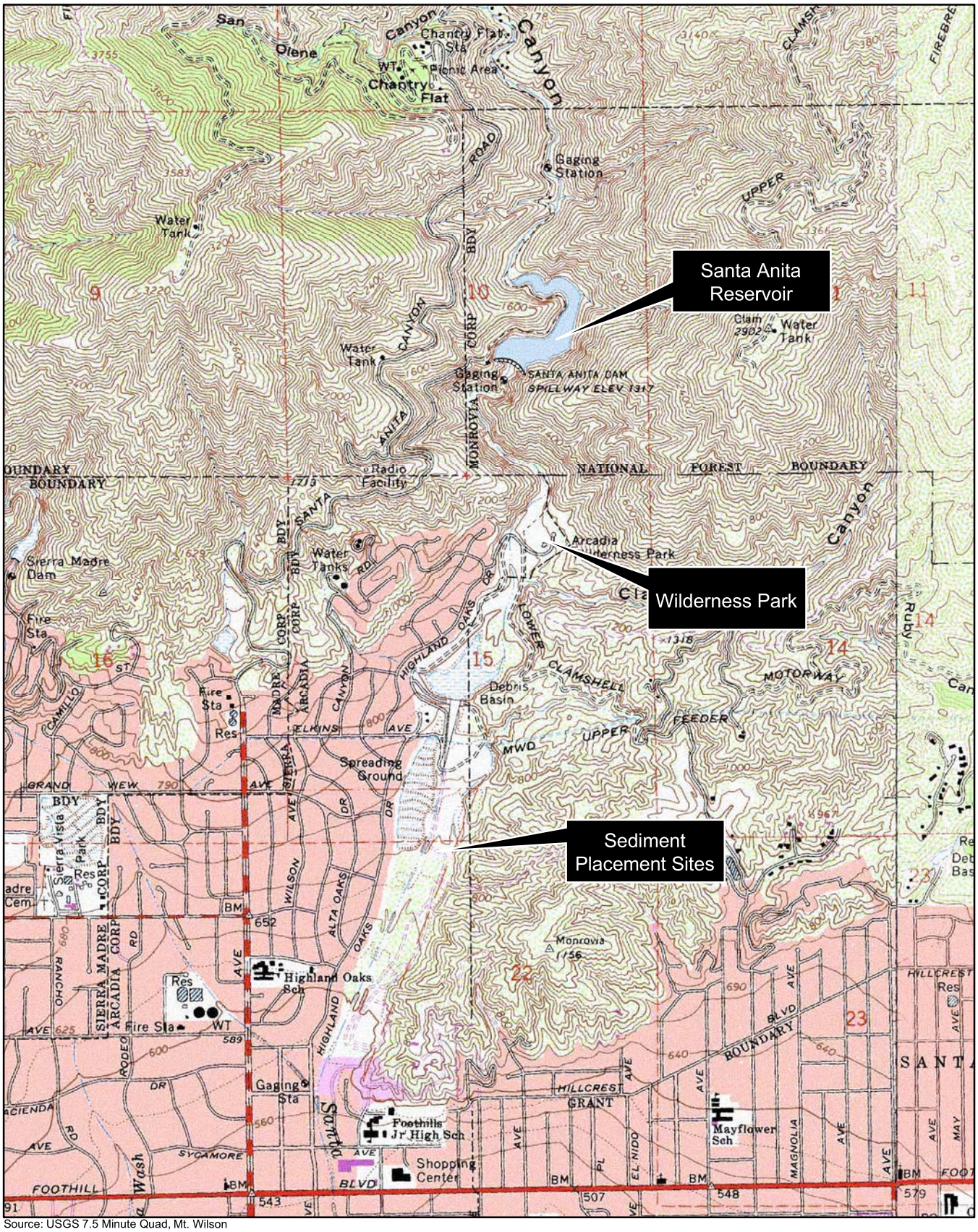


Source: TIGER, 2005.

NORTH

0 2 4 8 12 Miles

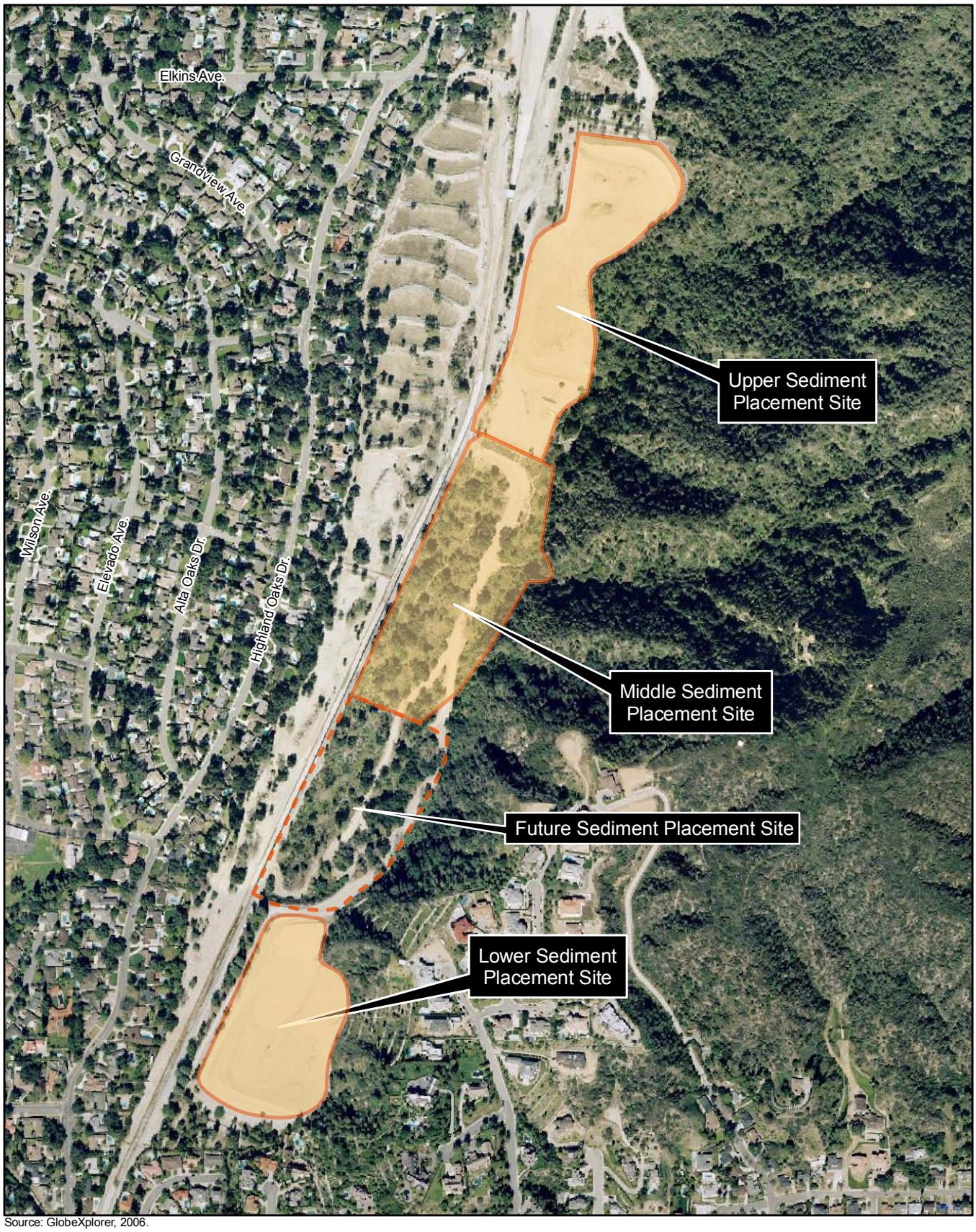
Figure 2-1
Regional Location Map



Source: USGS 7.5 Minute Quad, Mt. Wilson

NORTH 0 0.25 0.5 1 Mile

Figure 2-2
Vicinity Map



Source: GlobeXplorer, 2006.

NORTH

0 300 600 1,200 Feet

Figure 2-3
Sediment Placement Sites

The topography to the north of the project site is characterized by the foothills and steep slopes of the San Gabriel Mountains, the area to the west and south of the project area is generally flat with scattered rolling hills, and the area to the east contains mostly rolling hills.

There are two schools located within one-quarter mile of the project site: the Highland Oaks Elementary School (10 Virginia Drive), located to the west, and the Foothill Middle School (171 East Sycamore Avenue), located to the south.

2.2 PURPOSE OF AND NEED FOR THE PROPOSED PROJECT

Construction of the Santa Anita Reservoir and Santa Anita Dam was completed in 1927. LACDPW owns and manages the dam, the reservoir, and the associated land south of the dam. The last complete drawdown of the reservoir occurred during the 1992-1993 storm season, when LACDPW performed a FAST (Flow-Assisted Sediment Transport) operation to minimize sediment accumulation behind the dam. The sediment deposited in the reservoir is from erosion that occurs from the mountainous areas above the reservoir. The purpose of the proposed project is to remove the sediment that has accumulated behind the dam since the last cleanout and to construct a new riser on the low-level outlet of the dam.

The need to cleanout the reservoir depends on the sediment deposition behind the dam in terms of total amount deposited and elevation of accumulation relative to the operational function of the valves. If sediment deposition reaches 158 acre-feet (255,000 cubic yards) of the reservoir capacity, and/or sediment level behind the dam impacts the valves (the riser for valve No. 2 is at elevation 1,210 feet), sediment removal is needed to ensure the flood and debris control capability of the reservoir and dam. The rate of sediment deposition depends on the quantity of storm runoff which, in turn, carries sediment and debris from the upper watershed. The most recent cleanout was conducted in 1993. Prior to 1993, sediment removal activities has occurred in this reservoir about every ten years.

The California Department of Water Resources, Division of Safety of Dams (DSOD), currently restricts long-term water storage in the reservoir behind Santa Anita Dam to ensure the facility's compliance with the agency's seismic stability requirements. The restricted reservoir level at Santa Anita Dam was previously held at an elevation of 1,280 feet (El. 1,280 feet). Currently, the restriction limits the reservoir pool to an elevation of 1,258 feet. A recent seismic analysis of Santa Anita Dam showed the safe long-term maximum reservoir level is at El. 1,230 feet, or 28 feet below the current restricted level. Due to concerns regarding the dam's compliance with DSOD's seismic stability standards, DSOD has mandated a lower long-term restricted reservoir level of El. 1,230 feet, effective May 2009.[1] In May 2009, DSOD will require that the dam's outlet works always be capable of draining the reservoir to this elevation.

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,212 feet, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for

[1] The DSOD Certificate of Approval for Big Santa Anita Dam (signed December 18, 2006) allows water to be temporarily impounded to an elevation of 1,258 feet behind the dam until May 2008. During storm events, a temporary impound elevation of 1,316 feet is allowed. DSOD issued a letter on May 7, 2008 to LACDPW for an extension of the temporary reservoir elevation variance of 1,258 feet behind the dam until May 2009.

drawing down the reservoir to the restricted level after storms and during an emergency. Approximately 500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves and to ensure DSOD's requirements are met. LACDPW proposes removing the sediment in the summer and fall.

Concurrent with the sediment removal activities, LACDPW also proposes constructing a new riser on the dam's lowest outlet gate to allow water above El. 1,230 feet to freely pass through the dam, thus ensuring that DSOD's seismic requirements are met. To make use of the impounded water below El. 1,230 feet, when conditions allow, LACDPW may install additional slide gates on the existing risers for the valves.

The County design standard for a facility on a natural watercourse is the Capital Flood event. This is the runoff produced by a 50-year frequency design storm falling on a saturated watershed, while also adding the effects of fires and erosion under certain conditions. For Santa Anita Dam, the Capital Flood flow rate is 9,700 cfs. The current spillways do not have sufficient capacity to pass this flow. During a Capital Flood event, water would overtop the dam and could potentially erode the abutments, possibly compromising the stability of the dam. While Santa Anita Wash downstream of Santa Anita Debris Dam could contain the maximum flow rate from the Capital Flood, it is not designed to contain the expected flows should the dam fail.

The DSOD requires using the Probable Maximum Precipitation (PMP) as the design flow rate for the spillway capacity. The PMP is the greatest amount of precipitation for a given duration that is theoretically possible for a particular area. For Santa Anita Dam, the PMP flow rate is 26,100 cfs. As with the Capital Flood, the spillways do not have sufficient capacity to pass this flow. During a PMP event, water would overtop the dam and would likely erode the abutments, which could potentially lead to dam failure and the sudden release of the entire reservoir down Santa Anita Wash. The wash and downstream channel are not designed to contain the expected flows from the PMP event or dam failure and would be overtopped. Flooding of the areas around the wash and other adjacent low-lying areas would be expected. A future LACDPW project is planned to enlarge the spillway at Santa Anita Dam to handle the entire PMP flow rate.

A structural analysis of Santa Anita Dam was conducted by LACDPW. Modeled stresses on the dam were compared to the assumed maximum allowable stresses of the existing concrete of the dam to determine if there would be potential for damage. The seismic structural analysis of the dam was modeled for the existing condition and post construction of the proposed project. In its current condition, the modeled dam stresses during a Maximum Credible Earthquake (MCE) event exceed the concrete strength, resulting in significant cracking of the dam. This could compromise the dam's stability during a MCE. DSOD concurred with the findings of the structural analysis and as a result, lowered the long term maximum allowable water elevation behind the dam to 1,230 feet.

If this project is not completed, LACDPW would still be required by the DSOD to maintain the reservoir water level no higher than El. 1,230 feet. At this level, LACDPW would eventually lose the ability to control water releases and maintain the low water level because all outlet valves on the dam would be buried in sediment and would be non-operational. The reservoir would be above the long-term maximum

water level for long periods of time and spillway flows would occur more often. In addition the following conditions would likely occur:

- the higher sediment levels would add additional loading on the dam, which could increase the amount of damage likely to occur to the dam during an earthquake; and
- following an earthquake, LACDPW would not have the ability to lower the reservoir level due to plugging of the valves with sediment.

With a total dam failure in any case, approximately 4,800 acres below the dam would flood with the sudden release of the reservoir water. This flooded area would extend south of the Foothill Freeway, including a large residential area, multiple schools and churches, and recreational facilities. Property damage would be extensive and there is a potential for the loss of life.

2.3 PROJECT OBJECTIVES

As discussed above, DSOD is lowering the maximum allowable water elevation behind the dam. The goal of the proposed project is to comply with DSOD's seismic safety requirements and ensure the ability to draw down the reservoir water levels to the elevation of 1,230 feet. The primary project objectives identified to support this goal include:

- Remove the sediment accumulated in the reservoir in a timely manner to avoid plugging and damage to the dam's outlet works.
- Modify the riser on the dam's lowest gate to ensure that DSOD's water level restrictions and seismic safety requirements are met.
- Provide additional sediment storage capacity for future routine and emergency cleanout activities served by the Santa Anita SPS.

2.4 PROJECT CHARACTERISTICS

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir via conveyor belt system, and placing it in the Santa Anita SPS, as shown on Figure 2-4. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south. At the completion of the proposed project, no operational changes would occur at any of the areas that are used during the construction activities of the project, except the Lower SPS would be closed out to future sediment placement activities after the project.

2.4.1 DAM OUTLET MODIFICATION

The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment

removal project. The bottom elevation at the entrance to the low-level outlet is 1,179.5 feet. There is no existing riser on this outlet. The sediment elevation at the face of the dam is at approximately 1,212 feet.

The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet (see Figure 2-5). The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valve Nos. 2, 3, and 4, to allow for operations below the new restricted reservoir level. Installation of the new riser would allow water above El. 1,230 feet to freely pass through the dam, thus meeting DSOD's seismic safety requirements.

2.4.2 DRY EXCAVATION

The proposed project would remove over 300,000 cubic yards of sediment from Santa Anita Reservoir. Because the sediment is submerged in the reservoir, it is difficult to predict the exact amount of sediment to be removed. Additionally, it is unknown how much sediment will enter the reservoir during storm events during the project. Approximately 500,000 cubic yards of sediment can be expected. Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required. Sediment would be removed from the 3.2-acre excavation area in the reservoir and transported on the conveyor belt system described below. The excavation area is mostly open water, with a combination of bare ground and some native and invasive vegetation. This area behind the Santa Anita Dam is inundated seasonally and much of the native and exotic vegetation is naturally washed out by storm flows. All sediment removal activities would occur below the El. 1,310 feet within the footprint shown on Figure 2-6.

2.4.3 SEDIMENT CONVEYANCE

The proposed project would transport sediment from the reservoir to the proposed SPS areas using an electric conveyor belt system. The conveyor belt system would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot (not obstructing traffic or emergency vehicles), south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS. LACDPW would require the construction contractor to use netting, shielding, or other conveyor belt system designs over the Wilderness Park parking lot to ensure no sediment would fall over vehicle and pedestrian access areas. The sediment conveyance routes are shown on Figure 2-4.

The conveyor belt would transport sediment approximately 1.5 miles. The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. South of the Headworks, the conveyor belt system would follow the existing dirt maintenance road and LACDPW access road to the SPS areas.



Source: GlobeXplorer, 2005.

Figure 2-4
Proposed Project - Convey to Sediment Placement Site

Back of Figure 2-4

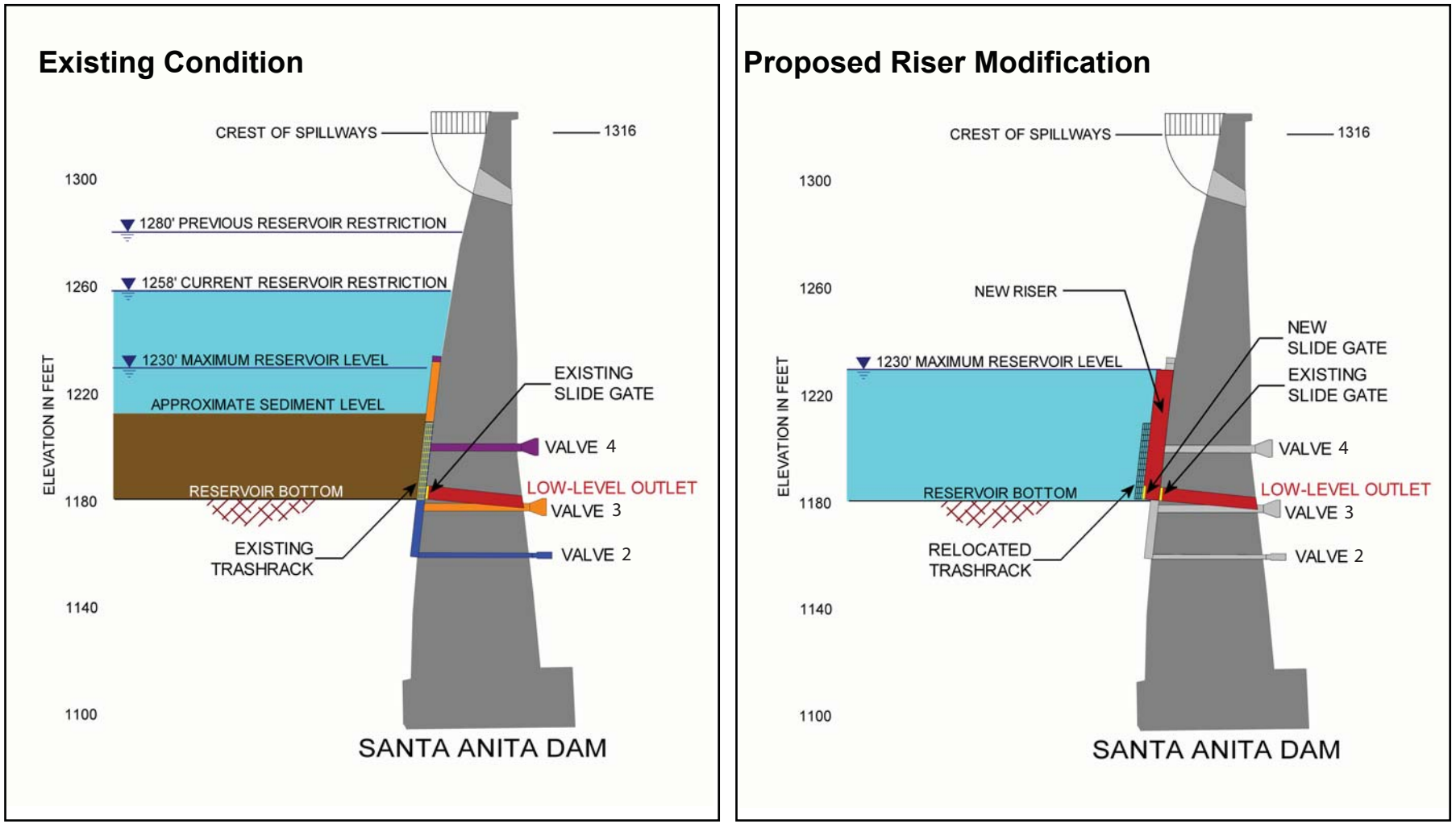
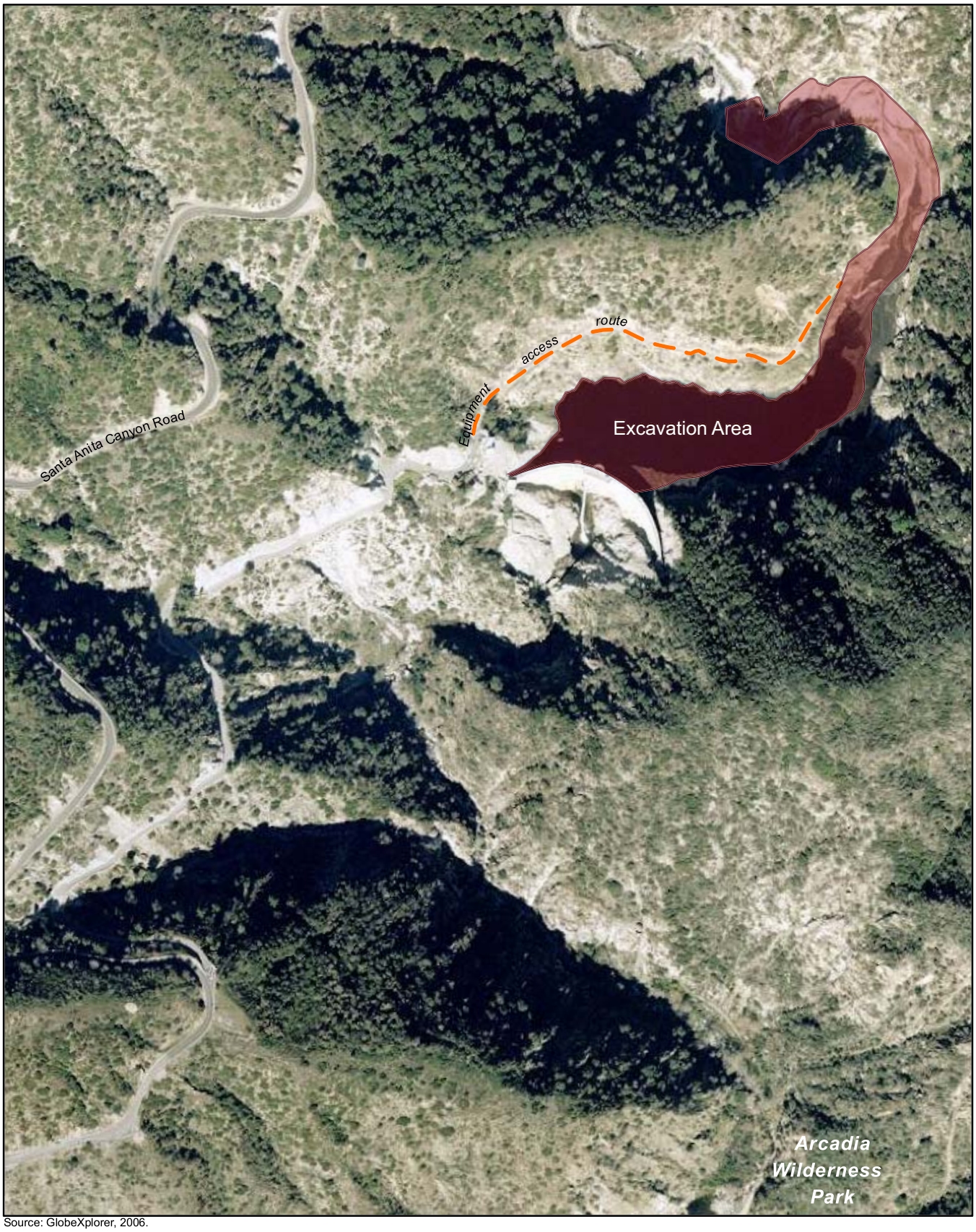


Figure 2-5

Not to Scale

Existing Conditions and Proposed Riser Modification



Source: GlobeXplorer, 2006.

NORTH 0 200 400 800 Feet

Figure 2-6
Excavation Area

Because modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

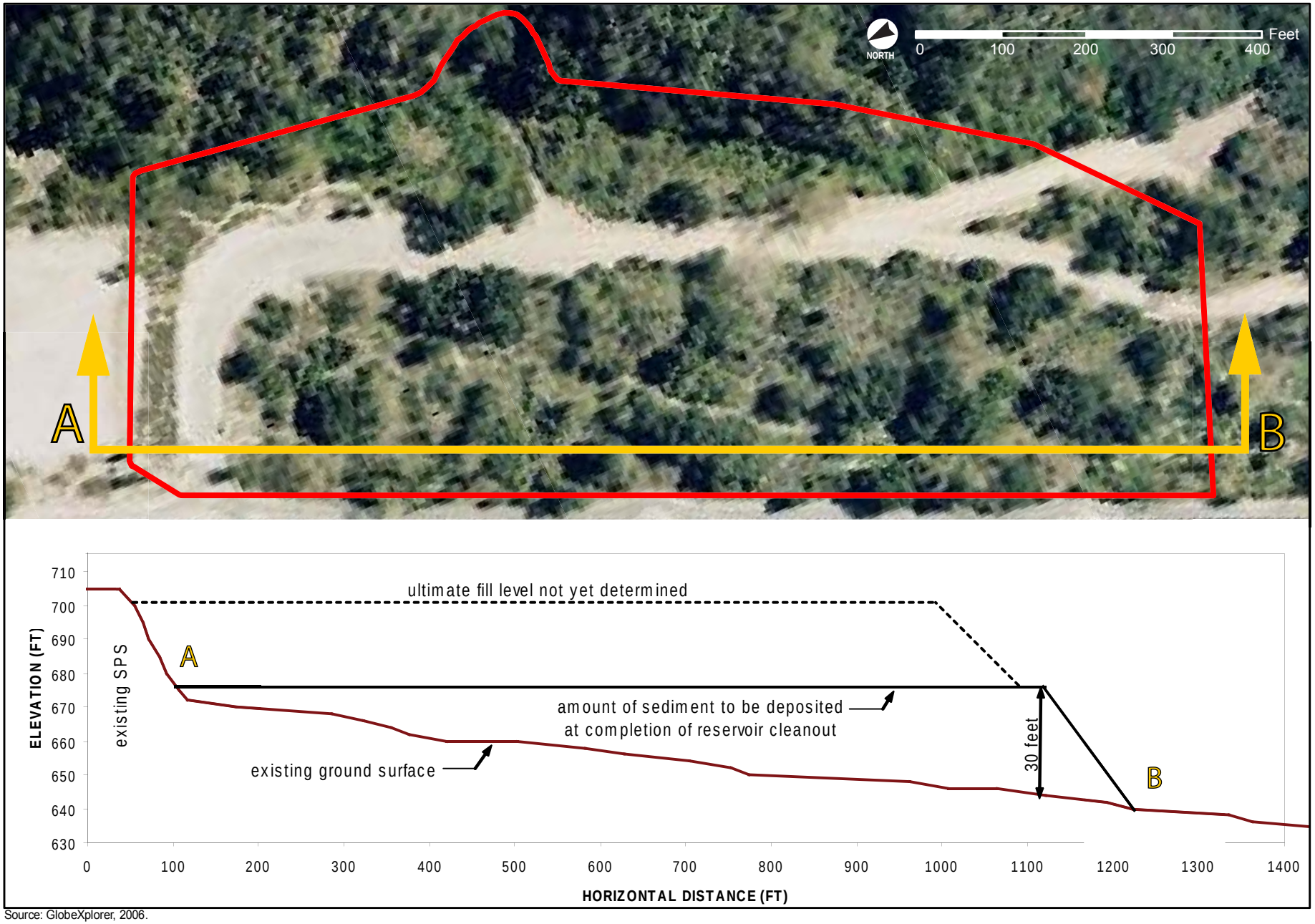
2.4.4 SEDIMENT PLACEMENT

Approximately 250,000 cubic yards of sediment would be placed in the approximately 5-acre already disturbed Lower SPS first (see Figure 2-4). The Lower SPS would then be closed out to future sediment placement; the remainder of the excavated sediment, approximately 250,000 cubic yards, would be placed at the 13-acre area in the Middle SPS, located east of the Santa Anita Wash, south of the existing Upper SPS.

The base of the 13-acre Middle SPS area can be tiered in order to accommodate up to 710,000 cubic yards of material. The proposed ultimate height of the Middle SPS would be 60 feet from the lowest elevation at the southern end of the SPS, as shown on Figure 2-7. This project would place approximately 250,000 cubic yards of sediment at the Middle SPS and increase the current height by approximately 30 feet. The western edge of the SPS would be landscaped to create a visual buffer for the residences to the west.

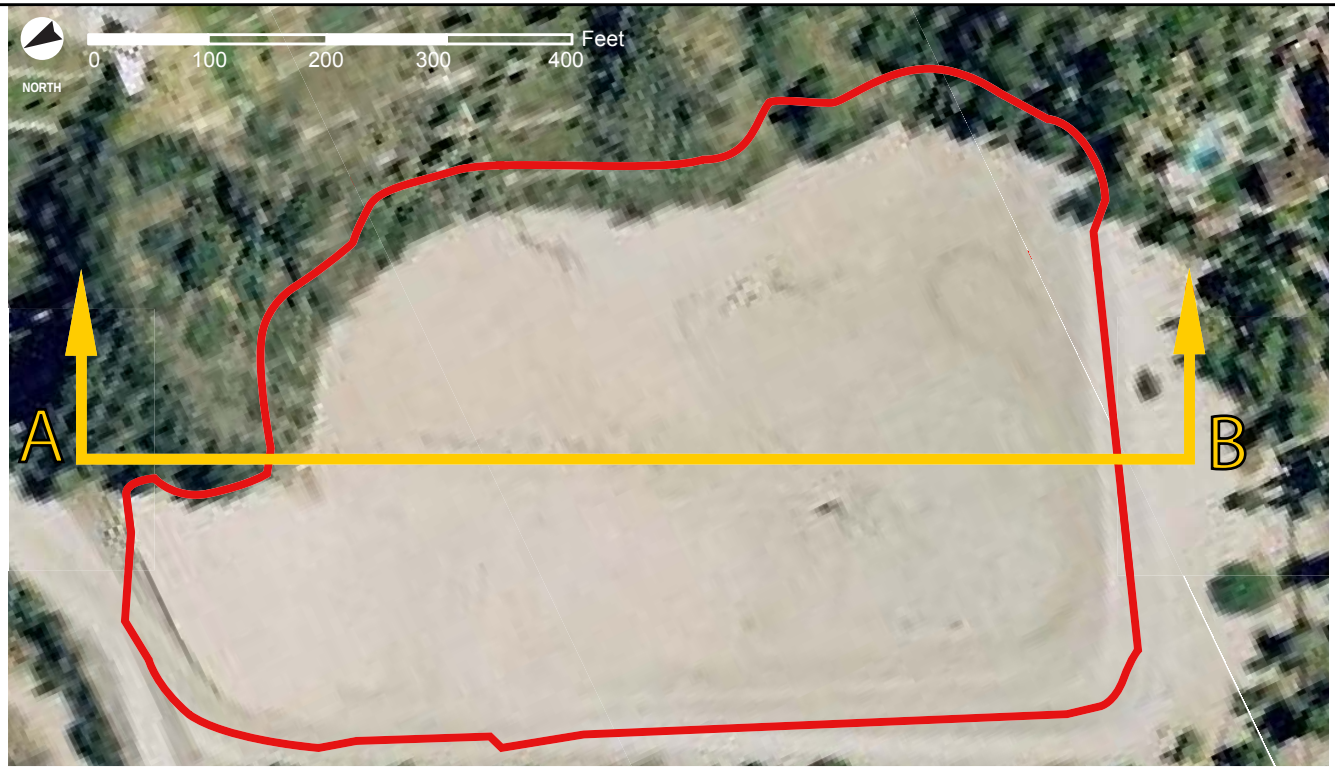
The proposed project would require the removal of approximately 0.5 acres of vegetation in the Lower SPS. The current elevation of the Lower SPS ranges from approximately 630 feet to 650 feet. The proposed sediment height at the Lower SPS would increase up to 30 feet, as shown on Figure 2-8.

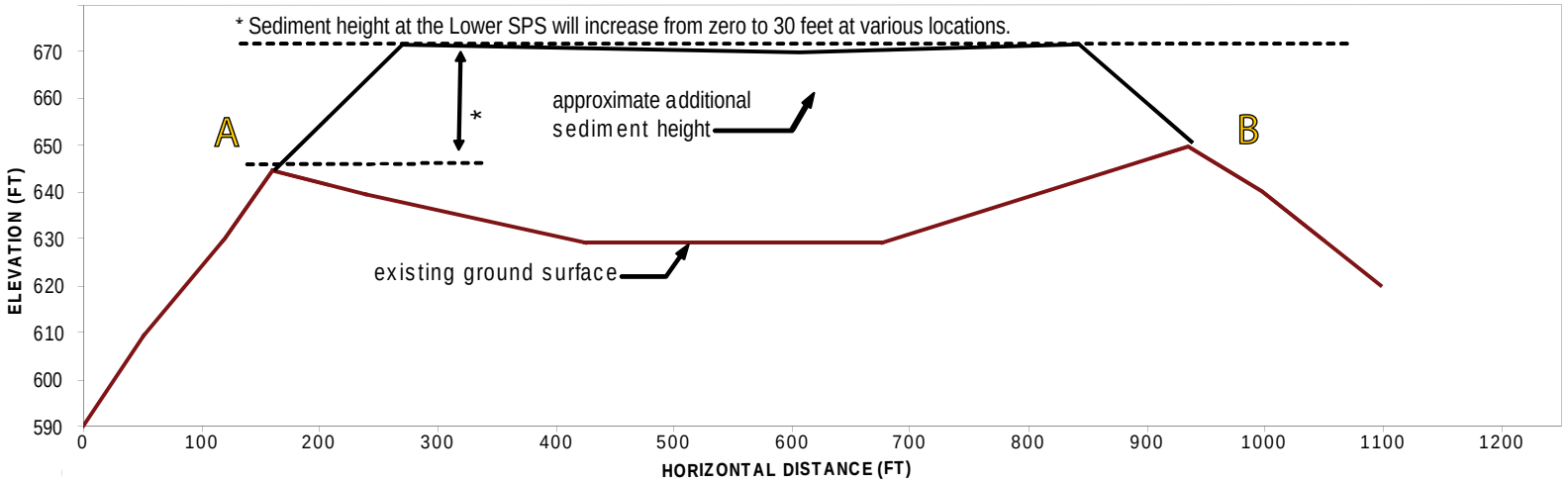
The proposed project would require the removal of approximately 11 acres of native vegetation in the undeveloped Middle SPS. The remaining two acres of the sediment placement footprint is comprised of existing access roads. In the proposed project, approximately 250,000 cubic yards of sediment would be conveyed to the already disturbed Lower SPS and approximately 250,000 cubic yards of sediment would be conveyed to the Middle SPS. The remaining sediment capacity in the 13-acre footprint, approximately 500,000 cubic yards, would be used for future routine and emergency sediment removal activities of facilities, including Santa Anita Dam, served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, would be closed out for future sediment placement. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.



Source: GlobeXplorer, 2006.

Figure 2-7
Middle SPS Cross Section





Source: GlobeXplorer, 2006

Figure 2-8
Lower SPS Cross Section

2.5 CONSTRUCTION SCENARIO

LACDPW would attempt to complete the sediment removal within the summer and fall of 2009, but sediment removal activities may last over the two 6 to 8 -month periods of April through October (possibly to December, weather permitting). The removal of vegetation in a portion of the Middle SPS area is anticipated to occur after May 2009. The riser construction would likely occur from May 2009 to December 2009, although the contractor may choose an alternate construction sequence. Dewatering of the reservoir would occur for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in summer 2009 and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below. Construction equipment required for the proposed project is summarized in Table 2-1.

2.5.1 DAM OUTLET MODIFICATION

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. LACDPW anticipates the outlet work to commence in late 2009. The dry excavation activities, described in Section 2.5.2 below, would clear sediment away from the work area.

TABLE 2-1 CONSTRUCTION EQUIPMENT FOR THE PROPOSED PROJECT

Area of Site	Anticipated Equipment
Reservoir (Dry Excavation)	1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt System Assembly/SPS and Conveyor Route Preparation	1 Bulldozers 1 Backhoe/Loaders 4 Trucks
Middle and Lower SPS (Sediment Placement)	3 Bulldozers 1 Grader 2 Sheepfoot Rollers
Entire Project Site	1 Water Truck

Note: The estimated construction equipment mix may be different than the ultimate equipment mix chosen by the contractor.

2.5.2 DRY EXCAVATION

Construction workers would access the reservoir via an existing access road on the east side of Santa Anita Canyon Road (see Figure 2-6). Based on cleanout operations at LACDPW's other reservoirs, construction equipment at the reservoir during the dry excavation would likely consist of one crusher, three bulldozers, two excavators, and three loaders. The actual configuration may vary depending on the contractor chosen for the project. Sediment and debris from the reservoir would be loaded on to the conveyor belt system using the bulldozers and loaders. Equipment staging would occur within the reservoir area and along the existing access road. Best Management Practices (BMPs) would be implemented within the reservoir area to reduce downstream water quality impacts, as described in Section 2.7 below.

2.5.3 SEDIMENT CONVEYANCE

As discussed above, sediment would be transported to the SPS using an electric powered conveyor belt system, likely 5 feet wide. The conveyor belt system route may require some clearing, grubbing, and grading of various locations along existing access and maintenance roads. No tunnel improvements would be required to accommodate the conveyor belt system and PVC bypass pipe.

2.5.4 SEDIMENT PLACEMENT

Prior to the use of the proposed Lower SPS area, approximately 0.5 acres of native and non-native vegetation would be cleared. Prior to the use of the proposed Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur prior to May, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Construction equipment at the proposed Middle SPS area is expected to include of three bulldozers, one grader, and two sheepfoot rollers. Up to three bulldozers, one grader, and two sheepfoot rollers may also be used at the Lower SPS. This construction scenario assumes the Lower SPS sediment placement would occur prior to the use of the Middle SPS. The actual configuration may vary depending on the construction contractor chosen for the project. The equipment would be used for the clearing, grubbing, and any grading that is necessary to prepare the proposed SPS areas. The equipment would also be used during sediment placement activities to spread and compact sediment throughout the tiered placement area.

Disturbed sediments are more susceptible to erosion; however, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites to address soil stability issues.

The policy requires that the SPS site be cleared of vegetation and unsuitable topsoil to ensure proper interface between the sediment and the existing hillside. Clearing would also be completed with as little time between clearing and placement as possible to prevent erosion of exposed sediment.

The sediment would be placed in horizontal layers not exceeding 5 feet in thickness behind a 15-foot-wide layer of sediment compacted to at least 88 percent relative compaction. Sediment would be continuously graded during placement and no organic material or rocks greater than six inches would be placed within the sediment. Following placement of sediment, surface drainage structures would be installed, including gutters, inlet structures, and surface drains, which would direct stormwater runoff around the fill area to the storm drain system.

2.6 ENVIRONMENTAL COMMITMENTS/BEST MANAGEMENT PRACTICES

To reduce potential impacts to air quality, noise, and water quality the construction and operation of the proposed project would be conducted in accordance with applicable standards and BMPs. The following environmental safeguards would be implemented as part of the proposed project:

- Project will implement applicable construction procedures approved by the South Coast Air Management District, including Rule 403.

To reduce potential impacts to water quality, construction of the proposed project would implement the following project provisions:

- Project will comply with the provisions of the State's General Construction Activities Permit (General Permit). The project would also conform to the requirements in the latest edition of the LACDPW "Construction Site Best Management Practices Manual" (BMP Manual). Erosion control and grading plans would include:

  - Temporary soil stabilization through scheduling work outside of the wet season as much as possible (work in the SPS may have to occur through February), preservation of existing vegetation, mulching, hydroseeding, soil binders (if permitted), erosion control blankets, earth dikes, drainage swales, and/or slope drains.
  - Temporary sediment control through silt fencing, desilting basins, sediment traps, check dams, fiber rolls, barriers or berms, street sweeping, and/or storm drain protection.
  - Wind erosion control.
  - Tracking control through stabilization of construction entrances/exits and roadways, and/or tire washes.
  - Non-storm water management through water conservation practices and during vehicle equipment cleaning, fueling, and maintenance, dewatering operations, or stream crossings.
  - Waste management and material pollution control including management of stockpiles, solid waste, hazardous waste, contaminated soil, concrete waste, sanitary waste, and liquid waste, spill prevention/control, and proper material delivery, use, storage, and disposal.

2.7 PROJECT ACTIONS AND APPROVALS

As described above, this EIR will be used by LACDPW as a decision making tool for approval of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. Prior to implementation of the proposed project, the Los Angeles County Board of Supervisors must consider the EIR, must certify the EIR, adopt the Findings of Fact, Mitigation Monitoring Program and Statement of Overriding Considerations, and approve the various County permits required for the dam riser and sediment removal and placement construction project. In addition, a series of approvals, permits, and notifications must be obtained from several federal and state, and local area regulatory agencies. The required permits and approvals for the proposed project are presented in Table 2-2.

Because this project is also subject to the National Environmental Policy Act (NEPA) due to the Section 404 of the Clean Water Act, information in this document will also be used by the NEPA lead agency, U.S. Army Corps of Engineers, in preparing the necessary documentation for federal approvals.

TABLE 2-2 PROJECT ENTITLEMENTS AND REGULATORY PERMITS

Agency	Permit/Action
Federal	
U.S. Forest Service	Special Use Permit
U.S. Army Corps of Engineers	Section 404 Individual Permit for the discharge of dredged or fill material into Santa Anita Wash.
U.S. Fish and Wildlife Service	Section 7 consultation
State	
California Department of Fish and Game	Section 1600 Streambed Alteration Agreement
California Regional Water Quality Control Board, Los Angeles Region	Construction General Permit for ground disturbing activities; Section 401 Permit for discharge of storm water into Santa Anita Wash
Local	
City of Arcadia	Various ministerial approvals (e.g., grading, drainage, and traffic control)
Southern California Edison	Utility relocation

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3 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

The following sections include an analysis, by issue area, of the proposed project's potential effects on the environment. Each environmental issue area includes the following subsections:

- Environmental Setting;
- Regulatory Setting;
- Environmental Analysis;
- Mitigation Measures; and
- Significance After Mitigation.

The environmental issue areas analyzed in this section are as follows:

3.1 Aesthetics,
3.2 Air Quality;
3.3 Biological Resources;
3.4 Cultural Resources;
3.5 Geology/Soils;
3.6 Hydrology/Water Quality;
3.7 Noise;
3.8 Recreation; and
3.9 Transportation/Circulation;

As identified in the Initial Study prepared in June 2007 (see Appendix A), the following are the environmental issue areas that were not found to be significantly impacted or potentially impacted by the proposed project:

- Agricultural Resources;
- Hazards and Hazardous Materials;
- Land Use and Planning;
- Mineral Resources;
- Population/Housing;
- Public Services; and
- Utilities and Service Systems.

Therefore, no further evaluation of these environmental issue areas is necessary in this chapter. Chapter 4.0 includes a brief discussion of impacts that were not found to be significant.

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3.1 AESTHETICS

This section evaluates the potential impacts to the visual character of the project site and its surroundings resulting from construction of the proposed project. The analysis describes the potential aesthetic effects of the proposed project on the existing landscape, focusing on the compatibility of the proposed project with existing conditions and its effects on visual resources. Visual simulations were prepared and Figure 3.1-1 illustrates the location of photographs shown in this section.

3.1.1 ENVIRONMENTAL SETTING

LOCAL SETTING

The project area is shown on Figure 3.1-1, and includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Wilderness Park staging area, and the SPS areas. These facilities are owned and operated by LACDPW under easements with the U.S. Forest Service and the City of Arcadia. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest north of the City of Arcadia. The Arcadia Wilderness Park and SPS areas are located in the City of Arcadia. Other land uses adjacent to the project area include single-family residential uses to the west and south, and the City of Monrovia open space to the east of the project site.

The proposed dam outlet modification and dry excavation activities would occur at the Santa Anita Reservoir in the northern portion of the project site. The Santa Anita Reservoir and Dam can be viewed from portions of the Santa Anita Canyon Road and from some hiking trails of the Angeles National Forest, from areas that are located above the reservoir and dam. The reservoir and the concrete dam are characteristic of the other LACDPW dams and reservoirs in the San Gabriel Mountains, in terms of aesthetics of the dam and the surrounding hillsides and vegetation. The area adjacent to the reservoir is a mix of scrub and riparian species, and along the access road to the west of the reservoir is a mix of non-native plants. The vegetation above the reservoir contains chaparral and scrub that is characteristic of the foothills to the mountains in the project vicinity. The area south of the dam is a rocky streambed with riparian habitat with scrubs and willow species. An existing tunnel from the reservoir leads to the downstream access road along the streambed that leads south of the Headworks to the proposed Wilderness Park staging area, which is an open dirt area, located north of the northwest parking lot area of the park. The tunnel was constructed through approximately 1,500 feet of a hillside to the east of the dam. It was installed in 1968 to accommodate on a conveyor belt system to remove about 825,000 cubic yards of debris from the drained reservoir.

The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state. The park includes a Nature Center, multi-purpose field, nature trails, a stream, picnic and barbeque areas, fire circle, and restrooms. The

foothills of the San Gabriel Mountains surround the park and this area provides a natural transition between the residential neighborhoods to the west of the park.

As the proposed project area continues south of the Wilderness Park, the area has restricted access by a fence and gate to LACDPW Santa Anita Dam flood control facilities that terminates at the southern end of the project site at the Lower SPS, as shown on Figure 3.1-1. An existing dirt access road parallels the Santa Anita Wash to the east that leads to the SPS areas. The Santa Anita Debris Basin is located to the west of the access road and as the conveyor belt system continues south the Upper SPS area, located in the northerly end of the SPS areas. The Upper SPS is a previously disturbed area that is filled to capacity with sediment from earlier cleanouts of the reservoir, debris basin, and other local flood protection facilities. West of the Upper SPS is the northern end of the Santa Anita Spreading Grounds, which is immediately east of the houses on Highland Oaks Drive. South of the Upper SPS is the proposed Middle SPS that is relatively undisturbed and characterized by native vegetation, including mature oak and sycamore trees and shrubs. An access road also passes through the Middle SPS and branches into two access roads that lead to the Lower SPS at the southern end of the project site. The Lower SPS area, located in the southerly end of the SPS areas, is an already disturbed area that contains sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities. Residences are located to south and east of the Lower SPS.

3.1.2 REGULATORY SETTING

THE CITY OF ARCADIA GENERAL PLAN

While the Arcadia General Plan serves as the principal instrument regulating land use across the City, it does not contain specific goals or policies with regard to aesthetics of LACDPW facilities that are associated with the proposed project. The General Plan recognizes LACDPW facilities in Arcadia south of the Wilderness Park as a 197-acre area for flood control and debris disposal that provides an important function in the region for water conservation.

Chapter 6, Implementation and Monitoring of the Arcadia General Plan provides the following Urban Design Performance Standards that are the most applicable to the proposed project.

Respect Existing Views and Vistas

New developments are to respect the identified views and view corridors of existing developments to the greatest extent possible.

- View corridors oriented toward existing or proposed community amenities, such as parks, open space, or natural features, are to be enhanced.

- Subtle variations in architectural and landscape components that provide visual interest, but do not create abrupt changes or cause discord in the overall character of the neighborhood, are encouraged.



Source: GlobeXplorer, 2005.

NORTH 0 500 1,000 2,000 Feet

Figure 3.1-1
Key Observation Points

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- Appropriate transitions between different projects shall be provided, including the provision of buffer areas, landscaping, and other similar treatments (e.g., hedges, walls, fences, berms, or landscaped open space).

3.1.3 ENVIRONMENTAL ANALYSIS

This environmental analysis uses a qualitative description approach to evaluate the impact of the proposed project on visual resources. Locations from which the various project areas would be seen and where construction would occur were identified as key views. In general, key views are those viewsheds of quality, which contain elements that are considered visually important or which are visible to sensitive viewers. Sensitive viewers are groups of people who would see the project site during construction and after the sediment placement activities are complete. Residents, motorists, and recreationalists would be sensitive viewers of the proposed project. The proposed project is evaluated below considering the short- and long-term visual impact on sensitive viewers.

Key views are those viewsheds that provide views of scenic vistas or visually important areas. Key views have a high quality of topographic relief, a variety of landscaping, rich colors, impressive scenery, and unique built features. Key Observation Points (KOPs), views of the project site from a representative range of sensitive viewer locations, were selected for each project site location and an evaluation made as to the degree of visual change from each location as a result of the project.

Two KOPs were selected and analyzed to determine the impacts of the proposed project on surrounding views. Figure 3.1-1, Key Observation Points, illustrates the location from which photos were taken. Figures 3.1-2 through 3.1-5 illustrate existing views and visual simulations of the proposed project from the two KOPs. Simulations of the proposed project from these locations were prepared to provide a comparison of the conditions prior to project construction activities and to allow for visual comparison as well as provide a qualitative description of the aesthetic changes that would result from the proposed project. Two simulations represent the proposed project as it would appear after construction, including a view of the Middle SPS from residents to the west and an overview of the project area from the Santa Anita Canyon Road. Because the Middle SPS would be visible for some adjacent residences, KOP 1 was selected for a visual simulation. The second KOP provides an overview of the project site from public views from the north and above the project. Other KOPs are not necessary for this analysis, since the Lower SPS is currently visible by surrounding residents and public views would be from views similar to KOP 2.

The KOPs, shown in Figure 3.1-1, are as follows:

- Location 1: View west from the edge of the southern end of the Santa Anita Spreading Grounds from the rear of residences towards the proposed Middle SPS (Figures 3.1-2 and 3.1-3).

- Location 2: View southeast from Santa Anita Canyon Road (Figures 3.1-4 and 3.1-5).



Figure 3.1-2
Existing View From Key Observation Point 1



Figure 3.1-3
Simulation of the Proposed Project From Key Observation Point 1 After Construction



Figure 3.1-4
Existing View From Key Observation Point 2



Figure 3.1-5
Simulation of the Proposed Project From Key Observation Point 2 After Construction

THRESHOLDS OF SIGNIFICANCE

The project would have a significant effect on aesthetics if it would substantially degrade the existing visual character or quality of the site and its surroundings.

EFFECTS DISMISSED IN THE INITIAL STUDY

The Initial Study (see Appendix A) issued for the proposed project in June 2007 determined that several issues were less than significant and did not need to be further analyzed in the EIR. Specifically, the Initial Study determined that the project would not:

- substantially damage significant visual resources such as trees, rock outcroppings, and historic buildings within a state scenic highway;
- have a substantial adverse effect on a scenic vista or obstruct designated scenic views; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area; or
- create a new source of substantial shade or shadow that would adversely affect daytime views in the area.

As discussed in the Initial Study, there are no designated state scenic highways near the project site; the nearest designated state scenic highway is the Angeles Crest Highway (State Route 2), located approximately six miles north of the project site in the San Gabriel Mountains. The City of Arcadia General Plan does not identify the project site or its surroundings as a scenic resource. The proposed project would not include any uses that would require lighting or produce glare during or after construction.

IMPACT ANALYSIS

VIS-1: *The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings.*

The potential aesthetic impacts of the proposed project would occur in the short-term during the construction activities and over the long-term after the sediment placement in the two SPS areas. The following analysis provides impact discussion for the project areas that would be visible from sensitive viewers.

Reservoir and Dam. During the dry excavation and construction of the new riser for the dam, the proposed construction would occur over an 8-month period throughout two consecutive years and construction activities would be visible to sensitive viewers from limited locations along Santa Anita Canyon Road and hiking trails of the Angeles National Forest. Many of the sensitive viewers would have

temporary or partial views of the reservoir and dam construction activities due to the fact that motorists would be driving and views from hiking trails at elevations above the project construction area could be obstructed and incomplete. These impacts would be temporary and the views of the reservoir and dam would be restored to their existing visual character upon completion of the project construction. Thus, construction activities in the reservoir and the dam would not affect the long-term visual character of the site or its surroundings. The aesthetic impact in this area of the project site would be less than significant.

Wilderness Park. The view of the conveyor belt system would be seen from the parking lot of the Wilderness Park. The aesthetic impact of viewers would be temporary, occurring during the 8-month construction period. As these views would be temporary, only during construction, and most sensitive viewers would only notice the construction activities while passing by, this impact would be less than significant. Upon completion of the project, views from this area would be restored to their existing condition.

Middle and Lower SPS. Prior to the use of the approximately 13-acre Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. The remaining two acres of the sediment placement footprint is comprised of existing access roads. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area. The visual impact of clearing the Middle SPS would be a temporary impact because sediment placement activities are anticipated to occur in June 2009. Figure 3.1-2 shows the existing view of the area where the Middle SPS would join the Upper SPS. The proposed height of the Middle SPS would rise to 30 feet from the current elevation of the southern end of the Middle SPS, as shown on Figure 2-7. The western edge of the Middle SPS would be landscaped to serve as a visual buffer for the residences to the west, which are adjacent to the Santa Anita Spreading Grounds. As depicted in the simulation, shown on Figure 3.1-3, the existing trees and other vegetation would provide a visual buffer to areas of the Middle SPS and other areas where vegetation does not exist would be landscaped as a project mitigation measure. Refer to Section 3.3 mitigation measures BIO-D and BIO-E. Additionally, some backyards of the residences along Santa Anita Spreading Grounds have fences that already provide a visual barrier to the Middle SPS or the viewers already have obstructed views due to trees in the Spreading Grounds. Sediment would be visible through or next to vegetated areas of the western slope of the Middle SPS (Figure 3.1-3). After completion of the proposed project and the landscaping of the western edge of the Middle SPS, this SPS area would visually transition to a natural vegetated area along the western edge of this SPS. While the trees would not be mature oak and sycamores, the visual impact on the residences to the west of this area would be less than significant.

As described in Section 2.5.4, the proposed construction scenario assumes the Lower SPS sediment placement would occur prior to the Middle SPS sediment placement activities. Preliminary estimates anticipate approximately 250,000 cubic yards of sediment would be placed at the already disturbed Lower SPS, which would then be landscaped as a project mitigation measure, and then closed out for future sediment placement. This addition of the approximately 250,000 cubic yards of sediment would increase

the height of the existing Lower SPS up to thirty feet above its current elevation (see Figure 2-8). Currently residences south of the Lower SPS along Oakglen Avenue are below the grade of the Lower SPS and have views of the southern slope of the SPS. Other residences, also located south of the Lower SPS that are located on cul-de-sac of Oakhaven Road are higher in elevation than the Oakglen Avenue residences, but are still below the grade of the Lower SPS. Residences to the west of the Santa Anita Wash and east of the Lower SPS on Whispering Pines Drive also have views of the SPS. All of the views of the Lower SPS would improve after the construction of the project because the new sediment would be eventually landscaped as part of biological resources mitigation, and closed for future sediment placement. The visual character of the Lower SPS at the completion of the project would be similar to the existing condition with a higher elevation of the sediment and more vegetation that would be characteristic of the LACDPW flood control area that makes up the project site. Accordingly, the impact would be less than significant.

Overall Impact. At the completion of the proposed project, the visual character of the Middle and Lower SPS would not be substantially degraded. The overall visual character of the project site would remain similar to the existing condition. Because this area has been historically used by LACDPW for flood control purposes, including debris removal and sediment placement, the project site has been visually modified from its natural state, such as the adjacent open space to the east and the Angeles National Forest to the north of the reservoir. Figure 3.1-4 shows the existing view of the project site from Santa Anita Canyon Road. The bare open area of the top of the Upper SPS is toward the left of the figure, the trees in the Middle SPS are in the center of the figure, and the bare open area of the Lower SPS is in the distance toward the right. The simulation of the proposed project after completion is shown on Figure 3.1-5. While the Middle SPS would show an open bare area on the top elevation due to the removal of the existing trees, the Lower SPS would be landscaped and the existing bare area would be replaced with vegetation, similar to the surrounding neighborhood tree canopy and the hillside east of the Lower SPS. The overall project impact on the visual character of the site and surroundings would be less than significant.

3.1.4 MITIGATION MEASURES

No significant impacts to aesthetics would occur as a result of the project; therefore, no mitigation measures are required.

3.1.5 SIGNIFICANCE AFTER MITIGATION

No significant unavoidable adverse impacts to aesthetics would occur as a result of the proposed project.

3.2 AIR QUALITY

This section of the EIR addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations. This section analyzes the type and quantity of emissions that would be generated by the construction of the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project; there are no new operations created by this project, thus no operational emissions to consider.

3.2.1 ENVIRONMENTAL SETTING

REGIONAL CLIMATE

Air quality is affected by both the rate and location of pollutant emissions, and by meteorological conditions which influence movement and dispersal of pollutants. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality.

The proposed project is located within the South Coast Air Basin (Basin), which consists of Orange County and the non-desert portions of Los Angeles, San Bernardino and Riverside counties. The distinctive climate of the Basin is determined by its terrain and geographic location. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by the daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling toward the sea. Local canyons can also alter wind direction, with wind tending to flow parallel to the canyons.

An inversion layer, which is a layer of warm air that lies over cooler, ocean-modified air, often acts as a pressure ceiling, preventing air pollutants from escaping upward. In the summer, inversion layers are stronger (more pressure) than in the winter, preventing ozone and other pollutants from escaping upward and dispersing. In the winter, a ground-level or surface inversion commonly forms during the night and traps carbon monoxide emitted by vehicles during the peak morning traffic hours.

EXISTING AIR QUALITY

Air pollutants of concern include ozone (O_3), carbon monoxide (CO), volatile organic compounds (VOC), oxides of nitrogen (NOx), including nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), sulfur

dioxide (SO_2), lead (Pb), and toxic air contaminants (TAC). The pollutants that are most important for this air quality impact analysis are those that can be traced principally to motor vehicles. Of these pollutants, CO, VOC, NO_X, PM_{10}, and $PM_{2.5}$ are evaluated on a regional basis. CO is often analyzed on a localized basis in cases of congested traffic conditions. Although PM_{10} and $PM_{2.5}$ may have localized effects, there is no USEPA-approved methodology to evaluate localized impacts of PM_{10} or $PM_{2.5}$.

Ambient air pollutant concentrations in Los Angeles County are measured at 18 air quality monitoring stations operated by SCAQMD. The air quality monitoring station nearest to the project site is the Azusa Station, located approximately 10 miles east of the project site in the City of Azusa. However, the Azusa Station does not monitor for SO_2 and NO_2; the nearest station which monitors SO_2 and NO_2 is the Fontana Monitoring Station, located approximately 40 miles east of the project site in the City of Fontana. Table 3.2-1 presents a summary of the highest pollutant values recorded at these stations and compliance with the federal and state standards from 2002 to 2006. A description of each pollutant is provided below.

Ozone (O_3)

The most pervasive air quality problem in the Basin is high, ground-level O_3 concentrations. O_3 is the principal component of smog and is formed in the atmosphere through a complex series of photochemical reactions with VOC and NO_X, which are commonly referred to as precursors of O_3. NO_X includes various combinations of nitrogen and oxygen, including NO, NO_2, NO_3, etc. Significant O_3 production generally requires about 3 hours in a stable atmosphere with strong sunlight. O_3 is a regional air pollutant because it is transported and diffused by wind concurrent with the photochemical reaction process. Motor vehicles are the major source of O_3 precursors in the Basin. During late spring, summer, and early fall, light winds, low mixing heights, and abundant sunshine combine to produce conditions favorable for maximum production of O_3. O_3 causes eye and respiratory irritation, reduces resistance to lung infection, and may aggravate pulmonary conditions in persons with lung disease. O_3 is also damaging to vegetation and untreated rubber. Control strategies for O_3 have focused on reducing emissions from vehicles, industrial processes using solvents and coatings, and consumer products.

Carbon Monoxide (CO)

CO is a colorless and odorless gas which, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300 to 600 feet) of heavily traveled roadways. Overall CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. Concentrations of CO are typically higher in winter. As a result, California has required the use of oxygenated gasoline in the winter months to reduce CO emissions. CO interferes with the transfer of oxygen to the blood; it may cause dizziness and fatigue, and can impair central nervous system functions.

TABLE 3.2-1 AZUSA AND FONTANA MONITORING STATIONS– AMBIENT AIR QUALITY

Pollutant	Averaging Time	Federal Primary Standards	California Air Quality Standards	Maximum Concentrations[1](ppm)					Number of Days Exceeding Federal Standard[2]					Number of Days Exceeding State Standard[2]				
				2002	2003	2004	2005	2006	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Ozone (Azusa)	1 hour	0.12 ppm[3]	0.09 ppm	0.136	0.150	0.134	0.145	0.17	5	11	2	4	7	26	40	28	20	23
	8 hour	0.08 ppm	0.07 ppm	0.102	0.124	0.104	0.122	0.120	12	21	10	6	10	-	-	26	14	19
Carbon Monoxide (Azusa)	1 hour	35 ppm	20 ppm	4	5	3	3	2	0	0	0	0	0	0	0	0	0	0
	8 hour	9 ppm	9.0 ppm	2.4	2.6	2.0	1.7	1.7	0	0	0	0	0	0	0	0	0	0
Sulfur Dioxide (Fontana)	24 hours	0.14 ppm	0.04 ppm	0.005	0.004	0.003	0.004	0.003	0	0	0	0	0	0	0	0	0	0
	Annual	0.03 ppm	None	0.001	0.001	0.001	0.002	0.002	0	0	0	0	0	–	–	–	–	–
Nitrogen Dioxide (Azusa)	1 hour	none	0.18 ppm	0.12	0.12	0.10	0.09	0.11	0	0	0	0	0	0	0	0	0	0
	Annual	0.053 ppm	0.030 ppm	0.0336	0.0296	0.0204	0.0251	0.0258	0	0	0	0	0	1	0	0	0	0
PM_{10}[4][5] (Azusa)	24 hours	150 µg/m^3	50 µg/m^3	91.0	119.0	83.0	76.0	81.0	0	0	0	0	0	22	20	7	10	7
	Annual	Revoked	20 µg/m^3	45.8	44.4	31.9	35.1	32.6	–	–	–	–	–	*	1	*	*	1
$PM_{2.5}$[5] (Azusa)	24 hours	35 µg/m^3	None	72.4	121.2	75.6	132.6	52.7	1	3	1	1	0	–	–	–	–	–
	Annual	15 µg/m^3	12 µg/m^3	20.7	19.3	18.3	17.0	15.4	*	*	*	*	*	*	*	*	*	*

"–" = data not available or applicable.
"*" = there were insufficient data to determine the value.
(1) Concentration units for ozone, carbon monoxide, and nitrogen dioxide are in parts per million (ppm). Concentration units for PM_{10} and $PM_{2.5}$ are in micrograms per cubic meter (µg/m^3).
(2) For annual standards, a value of 1 indicates that the standard has been exceeded.
(3) The federal 1-hour ozone standard was revoked in June 2005.
(4) PM_{10} data are recorded separately for federal and state purposes because the USEPA and California methods are slightly different. Federal values are shown. PM_{10} is measured every 6 days; the number of days exceeding standards is projected to a 365-day base from the measurements.
(5) Very high values of PM_{10} and $PM_{2.5}$ in 2003 were due to wildfires that occurred in October 2003.
Source: CARB 2007a.

Nitrogen Dioxide (NO_2)

There are two oxides of nitrogen that are important in air pollution: nitric oxide (NO) and NO_2. NO, along with some NO_2, is emitted from motor vehicle engines, power plants, refineries, industrial boilers, ships, aircraft, and railroads. NO_2 is primarily formed when NO reacts with atmospheric oxygen in the presence of VOC and sunlight; the other product of this reaction is O_3, as discussed above. NO_2 is the "whiskey brown"-colored gas, more commonly known as a component of smog, readily observed during periods of heavy air pollution. NO_2 increases damage from respiratory disease and irritation and may reduce resistance to certain infections.

Particulate Matter (PM)

Inhalable Particulate Matter (PM_{10})

Inhalable particulates, which are particulate matter equal to or less than 10 micrometers or microns in diameter (PM_{10}) consist of extremely small suspended particles or droplets that can lodge in the lungs, contributing to respiratory problems. PM_{10} arises from such sources as road dust from paved and unpaved roads, diesel soot, combustion products, tire and brake abrasion, construction operations, and fires. It is also formed in the atmosphere from NO and SO_2 reactions with ammonia. PM_{10} scatters light and significantly reduces visibility. Control of PM_{10} is primarily achieved through the control of dust at construction and industrial sites, the cleaning of paved roads, and the wetting or paving of frequently used unpaved roads.

Inhalable particulates pose a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled will be deposited in the lungs and can cause permanent lung damage. Inhalable particulates can also have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance. Health studies have shown a significant association between exposure to PM and premature death. Other important effects include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heartbeat. Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children.

Fine Particulate Matter ($PM_{2.5}$)

Fine particles, such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller ($PM_{2.5}$). Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. $PM_{2.5}$ is the major cause of reduced visibility (haze) in California. Control of $PM_{2.5}$ is primarily achieved through emission source regulations, such as the USEPA's Clean Air Interstate Rule and Clean Air Visibility Rule for stationary sources; the 2004 Clean

Air Non-road Diesel Rule, the Tier 2 Vehicle Emission Standards, and Gasoline Sulfur Program; or the California Air Resources Board (CARB) Goods Movement reduction plan.

Sulfur Dioxide (SO_2)

SO_2 is a corrosive gas which is a combustion product from power plants and heavy industry that use coal or oil as fuel. SO_2 is also a product of diesel engine combustion. The health effects of SO_2 include lung disease and breathing problems for asthmatics. SO_2 in the atmosphere contributes to the formation of acid rain. In the Basin, there is relatively little use of coal and oil, and SO_2 is of lesser concern than in many other parts of the country.

Lead (Pb)

Pb is a stable compound that persists and accumulates both in the environment and in animals. Pb used in gasoline anti-knock additives represents a major source of Pb emissions to the atmosphere. However, Pb emissions have significantly decreased due to the near elimination of the use of leaded gasoline.

Toxic Air Contaminants (TACs)

In addition to the criteria air pollutants, the USEPA also regulates toxic air contaminants (TACs) also known as hazardous air pollutants. Concentrations of TACs are also used as indicators of ambient-air-quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Most TACs originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

According to the 2006 California Almanac of Emissions and Air Quality (CARB 2006a), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, the CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions

inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California.

Greenhouse Gases

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back to space, but the properties of the radiation have changed from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This radiation that would have otherwise escaped back to space is now "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Without the Greenhouse Effect, Earth would not be able to support life as we now know it.

Prominent GHGs contributing to the Greenhouse Effect include carbon dioxide (CO_2), methane (CH4), O3, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for an enhancement of the Greenhouse Effect, which has led to a trend of unnatural warming of the Earth's climate, known as global warming or global climate change. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gasing associated with agricultural practices and landfills. Processes that absorb CO_2, often referred to as sinks, include uptake by vegetation and dissolution into the ocean.

Carbon dioxide-equivalent (CO_2e) is a value used to account for different GHGs having different potential to retain infrared radiation in the atmosphere and contribute to the Greenhouse Effect. This is known as the Global Warming Potential of a GHG, and is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the Greenhouse Effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in carbon-dioxide equivalents takes the Greenhouse Effect contribution of all GHG emissions and converts them to a single unit equivalent to the effect if all emissions were CO_2.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, respectively. The strong majority of the scientific community concurs that global warming will lead to adverse climate change effects around the globe and that the phenomenon is anthropogenic, i.e., caused by humans.

In 2004, California produced 492 million gross metric tons of CO_2e gases. Fossil fuel consumption in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state. This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent).

Various local and statewide initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way and there is a real potential for severe adverse environmental, social, and economic effects over the long term. Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help slow or stop human-caused increase in average global temperatures and associated changes in climatic conditions. As such, global climate change and the proposed project's contribution of GHGs are discussed in Section 4.3.2, Cumulative Impacts of this EIR.

AIR POLLUTION SOURCES

Air quality in proximity to the project site is primarily affected by regional emissions; and local vehicle emissions from vehicle traffic on Highland Oaks Drive adjacent to the SPS areas, and on Foothill Boulevard and the I-210 freeway south of the SPS. There are no commercial, institutional, or industrial sources of substantial pollutant emissions located within a one-mile radius of the project site.

SENSITIVE RECEPTORS

Some people are especially sensitive to air pollution emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, the elderly, persons with preexisting respiratory or cardiovascular illnesses, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as sensitive receptors (SCAQMD 2005).

Residential areas are considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution; exposure periods are relatively short and intermittent as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Sensitive receptors to air pollution in proximity (within one mile) to the project site are the primarily residences west, south, and east of the project site and the following schools: Foothills Middle School,

located approximately 0.20 miles south of the Lower SPS of the project site, Highland Oaks Elementary School, approximately 0.33 miles west of the Lower SPS; and Arcadia Home Nursing & Health, approximately 0.44 miles southeast of the Lower SPS. Recreational areas include the Arcadia Wilderness Park, immediately surrounding the staging area, and Highland Oaks Park, located approximately 0.20 miles west of the Middle SPS.

3.2.2 REGULATORY SETTING

FEDERAL AND CALIFORNIA LEGISLATION AND STANDARDS

The federal Clean Air Act (42 U.S.C. §§ 7401-7671q) (CAA), first enacted in 1955, has been amended numerous times, most recently in 1990. The CAA established federal air quality standards, known as the National Ambient Air Quality Standards (NAAQS), for SO_2, CO, NO_2, O_3, PM_{10}, $PM_{2.5}$, and Pb, and specified future dates for achieving compliance with these standards. Federal standards are shown in Table 3.2-2. The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for local areas not meeting the NAAQS. A SIP must include pollution control measures that demonstrate how the NAAQS will be met.

Under the federal CAA, regional areas are classified as either "attainment" or "non-attainment" areas for each criteria pollutant based on whether or not the NAAQS are being met. If an area is redesignated from non-attainment to attainment, the federal CAA requires a revision to the SIP; a maintenance plan which demonstrates how the air quality standard will be maintained for at least 10 years.

The 1990 Amendment to CAA Section 176 requires the U.S. Environmental Protection Agency (USEPA) to promulgate rules to ensure that federal actions conform to the appropriate SIP. These rules, known as the General Conformity Rule (40 CFR Parts 51.850-51.860 and 93.150-93.160), require any federal agency responsible for an action in a nonattainment/maintenance area to determine whether that action conforms to the applicable SIP or whether the action is exempt from the General Conformity Rule requirements. This means that federally supported or funded activities would not (1) cause or contribute to any new air quality standard violation, (2) increase the frequency or severity of any existing standard violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestones. Actions would conform to a SIP and be exempt from a conformity determination if an applicability analysis shows that the total direct and indirect emissions from the project construction and operational activities would be less than specified emission rate thresholds, known as *de minimis* levels, and that the emissions would be less than 10 percent of the area emission budget.

The State of California, signed the California Clean Air Act into law in 1988, which requires all areas of California to achieve and maintain California Ambient Air Quality Standards (CAAQS) set by the State of California. The CAAQS are set for NAAQS criteria pollutants, which are more restrictive than the NAAQS for some pollutants. CAAQS are also set for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The CAAQS, in addition to the NAAQS, are shown in Table 3.2-2.

Attainment to the NAAQS and CAAQS is determined by the USEPA and California Air Resources Board (CARB), respectively. Federal and California attainment classifications for the Basin are shown in Table 3.2-3.

TABLE 3.2-2 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]
Ozone (O_3)[6]	1-Hour	-	Same as Primary Standard	0.09 ppm (180 µg/m^3)
	8-Hour	0.08 ppm (157 µg/m^3)		0.070 ppm (137 µg/m^3) [9]
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1-Hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary Standard	0.030 ppm (56 µg/m^3)[10]
	1-Hour	-		0.18 ppm (338 µg/m^3)[10]
Sulfur Dioxide (SO_2)	Annual Average	0.03 ppm (80 µg/m^3)	-	-
	24-Hour	0.14 ppm (365 µg/m^3)	-	0.04 ppm (105 µg/m^3)
	3-Hour	-	0.5 ppm (1300 µg/m^3)	-
	1-Hour	-	-	0.25 ppm (655 µg/m^3)
Suspended Particulate Matter (PM_{10})[7]	24-Hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual Arithmetic Mean	Revoked		20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	35 µg/m^3	Same as Primary Standard	-
	Annual Arithmetic Mean	15 µg/m^3		12 µg/m^3
Lead (Pb)	30-Day Average	-	-	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	Same as Primary Standard	-
Hydrogen Sulfide (H_2S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 am to 6 pm, Pacific Standard Time)			In sufficient amount to produce an extinction coefficient of 0.23 per km due to particles when the relative humidity is less than 70 percent.
Vinyl chloride[9]	24 Hour			0.01 ppm (26 µg/m^3)

[1] NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the USEPA for further clarification and current federal policies.

[2] California Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

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

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

[5] Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

[6] On June 15, 2005 the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at http://www.epa.gov/oar/oaqps/greenbk/index.html.

[7] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the USEPA revoked the annual PM_{10} standard on December 17, 2006.

[8] Effective, December 17, 2006, the USEPA lowered the $PM_{2.5}$ 24-hour standard from 65 µg/m^3 to 35 µg/m^3.

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

[10] The Nitrogen Dioxide ambient air quality standard was amended on February 22, 2007, to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter
Source: USEPA . 2007a. CARB 2006.

TABLE 3.2-3 ATTAINMENT STATUS FOR THE SOUTH COAST AIR BASIN

Pollutant	Attainment Status	
	Federal	**State**
O_3 (1-hour)	--[a]	**Non-attainment Extreme**
O_3 (8-hour)	**Non-attainment Severe 17**	
PM_{10}	**Non-attainment Serious**	**Non-attainment**
$PM_{2.5}$	**Non-attainment**	**Non-attainment**
CO	Attainment/Maintenance[b]	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Attainment	Attainment

Note: Refer to Table 3.2-2 footnotes on federal and state attainment.
Sources:USEPA 2007b. CARB 2007b.
a- Repealed by law in June 2005.
b- Redesignation to attainment was effective in June 2007.
Bold – nonattainment

REGIONAL AUTHORITY

Within the Basin, the South Coast Air Quality Management District (SCAQMD) is the agency responsible for the administration of federal and state air quality laws, regulations, and policies. SCAQMD regulations require that any equipment that emits or controls air contaminants, such as NO_X and VOC, be permitted prior to construction, installation, or operation (i.e., Permit to Construct and Permit to Operate). The SCAQMD is responsible for review of applications and for the approval and issuance of these permits.

Included in the SCAQMD's tasks are monitoring of air pollution, preparation of the SIP for the District, and the promulgation of its Rules and Regulations. The SIP includes strategies and tactics to be used to attain the federal O_3 standard. The SIP elements are taken from the SCAQMD's Air Quality Management Plan (AQMP), which is the plan for attaining the state O_3 standard. Every three years, SCAQMD prepares the AQMP; each iteration of the plan is an update of the previous plan and has a 20-year horizon.

The SCAQMD's 2003 and 2007 AQMPs are in different stages of approval. The 2003 AQMP was adopted by SCAQMD in August 2003 and approved, with modifications, by the CARB in October 2003 (SCAQMD 2003a). The 2003 AQMP is an update to the 1997 AQMP. The 2007 AQMP was adopted by the AQMD Governing Board on June 1, 2007. On June 22, 2007, CARB held a public hearing and more aggressive actions were recommended to reduce emissions from mobile sources, which contribute over 80 percent of the particulate matter pollution in the region, and are responsible for impacting public health. Based on public input received at the hearing, CARB has delayed the adoption of its State Strategy, and directed its staff to work closely with the SCAQMD to strengthen the AQMP to further reduce mobile source emissions. The 2007 AQMP will be submitted to USEPA as a revision to the South Coast SIP once it is approved by the District's Governing Board and the California Air Resources Board (CARB) (SCAQMD 2007); the CARB submitted the South Coast SIP to the USEPA on January 9, 2004. The

SCAQMD's Rules and Regulations include procedures and requirements to control the emission of pollutants and to prevent adverse impacts.

3.2.3 ENVIRONMENTAL ANALYSIS

Construction activities can affect air quality as a result of (1) exhaust emissions from the operation of construction equipment and vehicles; (2) fugitive dust from earthmoving activities; and/or (3) emissions from vehicles driven to/from the sites by construction workers.

Air quality impacts associated with the proposed project are related to the type and quantity of emissions from relatively short-term construction operations; there would be no operational emissions because the project would not result in an operational phase.

Subsequent environmental analysis would be carried out under future projects as required under CEQA.

The type and quantity of project-related emissions were estimated using the URBEMIS 2007 software package, version 9.2.2 (Rimpo Associates 2007). URBEMIS is a calculation tool designed to estimate air emissions from land use development projects based on development type and size. The construction module of URBEMIS 2007 has the capabilities of calculating emissions from the proposed project. URBEMIS 2007 uses EMFAC 2007 for on-road vehicles and OFFROAD 2007 for construction equipment. The model contains data that are specific for many California air basins and for counties within the basins. Los Angeles County data were used for the proposed project. Emissions were calculated for maximum daily and annual emissions to meet the requirements of local and federal jurisdictions, respectively.

URBEMIS considers emissions from construction phases which may overlap for some projects. The proposed project would include draining of the reservoir; improvements to the dam riser; drying of reservoir sediment (by evaporation); and the excavation, transport, and placement of approximately 300,000 to 500,000 cubic yards of dried sediment from the reservoir to the SPS area. Negligible emissions are anticipated from the draining of the reservoir and the drying of reservoir sediment.

The URBEMIS analysis for the proposed project is based on the worst-case conditions for air emissions from the following construction schedules and conditions:

- The maximum volume of sediment (500,000 cubic yards) is assumed to be removed for the project over the 2 annual dry seasons; therefore, approximately 250,000 cubic yards of sediment is assumed to be moved each year;
- The removal of vegetation in the Lower and Middle SPS area would occur prior to May;
- Draining of the reservoir would last for approximately two weeks;

- At the end of the draining period, the reservoir sediment would be allowed to dry (based on the weather and recession flows) for three or more weeks to facilitate sediment transport and placement;

- The dam riser construction would last for approximately three months when the reservoir is drained, and would most likely occur during the sediment moving period;

- Sediment excavation, conveyance, and placement would occur from June – December;

- All excavated sediment would be conveyed to the Lower and Middle SPSs by an electrical conveyor belt system; approximately 250,000 cubic yards of the sediment would be placed at the Lower SPS first, and then approximately 250,000 cubic yards of the sediment would be placed at the Middle SPS;

- The construction equipment to be used for all earthmoving activities is listed in Section 2.5 of this EIR;

- No sediment would be exported off-site; and

- There would be no operational (post-construction) emissions.

In addition to the known construction schedules and conditions, other data inputs to the URBEMIS model are assumed based on industry standards. All model inputs, calculations, and results for this project are included in the URBEMIS output data sheets in Appendix B of this EIR.

THRESHOLDS OF SIGNIFICANCE

The proposed project would have a significant effect on air quality under CEQA if it would result in one or more of the following:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation. Air quality significance thresholds established by SCAQMD are listed in Table 3.2-4.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); or

- Expose sensitive receptors to substantial pollutant concentrations.

In the CEQA Initial Study for the project, it was determined that the proposed project would not conflict with or obstruct implementation of an applicable air quality management plan, and impacts related to

objectionable odors would be less than significant. Therefore, these issues are not addressed in this section of this EIR.

TABLE 3.2-4 SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds [a]		
Pollutant	**Construction [b]**	**Operation [c]**
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [d]		
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (federal)	
PM_{10} 24-hour average annual geometric average annual arithmetic mean	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation) 1.0 µg/m^3 20 µg/m^3	
$PM_{2.5}$ 24-hour average	10.4 µg/m^3 (construction)[e] & 2.5 µg/m^3 (operation)	
Sulfate 24-hour average	1 µg/m^3	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

[a] Source: SCAQMD 1993.
[b] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[c] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[d] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[e] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million µg/m^3 = micrograms per cubic meter ≥ greater than or equal to

(Rev. July 2008)

IMPACT ANALYSIS

AIR-1: *Short-term construction emissions of the proposed project would exceed the SCAQMD emissions threshold for NOx and would potentially contribute substantially to an existing or projected air quality violation.*

The principal sources of pollutant emissions during construction would be fugitive dust and construction equipment engine exhaust. Fugitive dust would potentially be created during the excavation, conveyance,

and placement of sediment; construction vehicle travel on paved and unpaved roads; and material blown from unprotected graded areas, stockpiles, and conveyor belts. Fugitive dust includes PM_{10} and $PM_{2.5}$, which are potential health hazards that often contribute to visibility and nuisance impacts when dust from construction activities is deposited on homes, vehicles, and vegetation. It is assumed that the proposed project would comply with applicable SCAQMD Rules and Regulations, in particular, Rule 403, Fugitive Dust, which specifies dust control requirements. In construction equipment exhaust, the principal pollutants of concern are NO_X and VOC; these are the primary constituents in the formation of O_3, which is a regional nonattainment pollutant.

Project construction emissions were estimated with URBEMIS based on the project construction schedules and conditions described in Section 3.2.3 (e.g., 500,000 cubic yards would be removed over a 2-year period at 250,000 cubic yards per year). The estimated daily construction emissions, without the addition of Rule 403 requirements or any mitigation measures (unmitigated), are shown in Table 3.2-5.

TABLE 3.2-5 ESTIMATED DAILY CONSTRUCTION EMISSIONS (UNMITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
SPS preparation	2	21	11	<1	35	8
Dam Riser construction	4	38	15	<1	2	1
Sediment excavation, transfer and placement	15	**122**	71	<1	**455**	**100**
Maximum Overlap (concurrent construction activities)						
Dam Riser construction	4	38	15	<1	2	1
Sediment excavation and conveyance	9	70	41	<1	**228**	50
Sediment placement	6	52	30	<1	**227**	49
Total for maximum overlap	19	**160**	86	<1	**457**	**100**
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix B.
Bold – emissions exceeds threshold

Without mitigation, the maximum daily project emissions for NO_X, $PM_{10,}$ and $PM_{2.5}$ would exceed their maximum daily emission thresholds for sediment movement, and the worst-case condition, when riser construction and sediment cleanout occur simultaneously and there would be a maximum overlap of activities and emissions.

The greatest contributors to exceeding the PM thresholds are the emissions from sediment excavation and placement. The URBEMIS model assumes dry sediment, which would not be the case for this project, since the excavated sediment would assume to be relatively damp from recent draining, particularly with depth during excavation. Therefore, PM construction measures, equivalent to the requirements of Rule 403, were added to the project URBEMIS model to reduce PM emissions.

The principal source of NO_X emissions would be from operating diesel-engine powered construction equipment (i.e. off-road equipment) during earth-moving activities. The most effective means of

reducing NO_X emissions is by utilizing add-on equipment emission controls, cleaner fuels, or newer, lower emission emitting equipment. However, application of these methods to all off- and on-road diesel engine powered equipment on a large project such as this one may not be feasible due to the cost and availability of these materials. The URBEMIS model includes NO_X-reduction measures including the use of low-NO_X fuel, and retrofitting equipment with oxygenated catalysts. However, low-NO_X fuel is not available in the project area as it was previously (SCAQMD 2007a), and therefore, is not a feasible measure for the project. Retrofitting construction equipment with oxygenated catalysts is feasible to the extent it is cost-effective; therefore, this NO_X reduction measure was added to the project URBEMIS model. To reduce maximum overlap period of 160 lbs/day of NO_X to the 100 lbs/day NO_X threshold, a NO_X reduction 37.5 percent is required; therefore, the 40 percent NO_X reduction value was selected in the URBEMIS model to verify. [After the maximum overlap period (without riser construction), to reduce the 122 lbs/day of NO_X , an 18 percent NO_X reduction is required; therefore, the 20 percent NO_X reduction value was selected in the URBEMIS model to verify].

The predicted URBEMIS project emissions with the identified PM emissions and 40 percent NO_X reduction mitigation measures are shown in Table 3.2-6.

TABLE 3.2-6 ESTIMATED DAILY CONSTRUCTION EMISSIONS (MITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
SPS preparation	2	19	11	<1	19	5
Dam Riser construction	4	23	15	<1	2	1
Sediment excavation, transfer and placement	15	74	71	<1	65	18
Maximum Overlap (concurrent construction activities)						
Dam Riser construction	4	23	15	<1	2	1
Sediment excavation and conveyance	9	42	41	<1	33	10
Sediment placement	6	31	30	<1	32	9
Total for maximum overlap	19	97	85	<1	67	20
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix B.
Bold – emissions exceeds threshold

As a result, the estimated project emissions for all construction activities, with the identified mitigation measures, would be reduced below their threshold levels during and after the maximum construction overlap. Therefore, with the identified mitigation measures, the proposed project would not result in a significant impact.

AIR-2 *The proposed project would result in a cumulatively considerable net increase of criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.*

As discussed above, the Basin is designated nonattainment for state PM_{10}, $PM_{2.5}$, and O_3 standards, and federal PM_{10}, $PM_{2.5}$, and O_3 standards. Table 3.2-6 shows that short-term construction emissions with the

mitigation proposed would not exceed the NO_X threshold and therefore would be not be considered a significant cumulative impact. Emissions of VOC, PM_{10}, and $PM_{2.5}$ with the mitigation proposed would be less than half of the SCAQMD thresholds. Because of their reduced magnitude and short-term duration, the cumulative effect of these emissions would not be considerable and would be less than significant.

AIR-3 *The proposed project would not expose sensitive receptors to substantial pollutant concentrations.*

Local Impacts – Criteria Pollutants

The SCAQMD has promulgated standards and methodology for the calculation of impacts based on Localized Significance Thresholds (LST) (SCAQMD 2003b). Calculation of LST is a voluntary procedure, but has more importance when sensitive receptors are close to sources of emissions. As existing residences are close to the project site, the LST calculations are included in this air quality analysis.

An LST analysis is a localized air dispersion modeling analysis. Air dispersion modeling is a function of multi-variables, including local-specific meteorological conditions, site-specific air pollutant emission levels, and sensitive receptor distances to the modeling site. LST analyses utilize air dispersion modeling methodologies to predict maximum concentration levels of air pollutant emissions generated from a project site that could reach nearby sensitive receptors based on mathematic simulation of meteorological dispersion processes. The pollutants of concern are NO_2, CO, PM_{10}, and $PM_{2.5}$. The SCAQMD thresholds of significance are described in Table 3.2-4.

In order to minimize efforts for detailed dispersion modeling, SCAQMD developed screening (lookup) tables to assist lead agencies with a simple tool for evaluating impacts from small typical projects. The use of LST lookup tables is limited to projects that are 5 acres or smaller in size, with operations during the day, limited to 8 hours of operations, and with emissions distributed evenly across the proposed site.

The SPS area for sediment placement is approximately 13 acres, of which approximately ¼ (i.e., 3.25 acres) will be disturbed for sediment placement on a daily basis. Since this area is less than 5 acres, the look-up tables were used for this analysis. The screening tables require the following information:

- The area of the project site. The lookup tables provide data for 1, 2, and 5-acre sites. The thresholds for 3.25 acre were determined by linear interpolation between the 2-acre and 5-acre values.

- Maximum daily emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$, in pounds per day. These data were calculated with the URBEMIS 2007, version 9.2.2 model, as described above. In the LST analysis, only on-site emissions are considered; thus, off-site emissions, such as on-road hauling

and worker commuting are not included. The URBEMIS data sheets are included in Appendix B to this EIR.

- Distance from the boundary of the project to the nearest off-site receptor. The look-up tables analyze distances of 25, 50, 100, 200, and 500 meters (82, 164, 328, 656, and 1,640 feet) from the boundary of the project to the nearest off-site receptor. The closest receptors to the project site are the residences on the western boundary of the spreading grounds at a distance of approximately 100 meters (328 feet) from the Middle SPS.

- Geographic location of the construction site in terms of district source/receptor area (SRA). These data are required because emissions thresholds are based on local pollutant measurements and meteorology. The proposed project is located in SRA 9 – East San Gabriel Valley.

The local project emissions are shown in Table 3.2-7.

TABLE 3.2-7 LOCAL PROJECT EMISSIONS

Pollutant	Maximum Daily Emissions[1] lbs/day	LST Threshold[2] lbs/day	Exceed threshold?
NO_X	31	498/100[3]	No
CO	30	2819/550[3]	No
PM_{10}	32	128	No
$PM_{2.5}$	9	14	No

[1] See URBEMIS data sheets, Appendix B
[2] LST thresholds from SCAQMD 2003b.
[3] LST thresholds for NO_X and CO are higher than SCAQMD mass emissions thresholds; therefore the lower numbers, which are the mass emissions thresholds, apply.

According to the SCAQMD methodology, "if the calculated emissions for the proposed construction or operational activities are below the LST emission found on the LST lookup tables, then the proposed construction or operation activity is not significant" (SCAQMD 2003b). As seen from Table 3.2-6, the localized project emissions (from sediment placement at the SPS) with mitigation would be below the LST thresholds. Accordingly, these impacts to sensitive receptors would be less than significant.

Exposure to Toxic Pollutants During Construction

Construction of the proposed project and associated dam and SPS infrastructure would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Construction of the proposed project would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site clearing and grading; soil excavation, and conveyance; and other construction activities; and from on-road diesel equipment used to bring materials to and from the project site. While the SCAQMD has established guidance for estimating potential diesel PM impacts from truck idling and movement (such as,

but not limited to, truck stops, warehouse/distribution centers or transit centers), ship hotelling at ports, and train idling, this guidance has not been extended to short-term construction projects.

The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2004).

Construction of the proposed project would occur over approximately 2 years; however, the soil excavation, conveyance, and placement would occur in two 7-month periods from June to December. Thus, since the duration of proposed construction activities near any sensitive receptor is less than two years, the exposure would be less than the 70-year total exposure period used for health risk calculation. Therefore, diesel PM generated by project construction is not expected to create conditions where the probability is greater than 10 in 1 million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of noncarcinogenic TACs that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. This impact would be less than significant. No mitigation is required.

3.2.4 MITIGATION MEASURES

To reduce impacts from pollutants emitted from the proposed project, mitigation measure AIR-A would be incorporated into the project. AIR-A would reduce project NO_X emissions during the maximum emissions overlap period (during dam riser construction and sediment movement) by 40 percent and 20 percent during the non-overlap period, as shown in Table 3.2-6, which reduces project NO_X emissions to below its NO_X threshold limit for the worst-case daily project NO_X emissions.

AIR-A The construction contractor shall provide a NO_X reduction plan, for LACDPW approval, demonstrating that construction equipment shall not exceed the 100 lbs/day NO_X threshold for the duration of the project. The plan shall provide a detailed equipment list for the overlap and non-overlap construction periods using the construction equipment emissions from URBEMIS 2007, which will be provided by LACDPW, or an equivalent verifiable source approved by CARB or SCAQMD. Measures to reduce emissions may include the use of oxygenated catalysts or Tier 2 or Tier 3 engines.

3.2.5 SIGNIFICANCE AFTER MITIGATION

Mitigation measure AIR-A would reduce project NO_X emissions below the SCAQMD/CEQA significance threshold for NO_X. Accordingly, project NO_X emissions would not be significant. Because the proposed project would implement applicable construction procedures approved by SCAQMD, including Rule 403, Fugitive Dust, which specifies dust control requirements, PM emissions during construction would be less than significant.

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3.3 BIOLOGICAL RESOURCES

This section evaluates existing biological resources at the site and potential impacts associated with the proposed project. Information in this section was gathered through literature review, examination of available databases, and through field reconnaissance. General surveys and field surveys for vegetation communities, oak trees, sensitive plants and wildlife and jurisdictional waters were conducted from 2006 through 2007. This information reflects the existing conditions that were present at the time the notice of preparation was published for this project (June 2007). Additional detail about the biological resources within and surrounding the project site is provided in the Biological Technical Report prepared for the proposed project that is included as Appendix C.

3.3.1 ENVIRONMENTAL SETTING

Vegetation and Other Land Cover

As shown of Figure 2-4, project related activities would occur in several areas between Santa Anita Reservoir and the Lower SPS. General descriptions of the vegetation and other land cover types associated with the primary project features within the site, i.e., the reservoir excavation area, access roads to be used during sediment transport, and the sediment placement site are provided below. Of these, only the Middle SPS contains appreciable cover of vegetation; therefore, this area is described in greatest detail below.

Reservoir

The reservoir area consists of open water, bare ground, and a very small amount of riparian vegetation. A mix of native scrub and riparian species occur immediately adjacent to the reservoir. Due to the fluctuation of the height of the water in the reservoir no vegetation is expected to be present within the excavation area.

Access Roads

The existing access roads are maintained as dirt roads that are cleared of all vegetation. Some ruderal (weedy) species generally associated with disturbance may establish between maintenance events. Along the western edge of the access road south of the dam road between the tunnel and the staging area is a rocky streambed that supports Southern Sycamore Alder Riparian Woodland; this vegetation community also occurs west of the staging area.

Middle Sediment Placement Site

Vegetation communities within the Middle SPS include coastal sage scrub, coast live oak woodland, Riversidean alluvial fan sage scrub, and disturbed Riversidean alluvial fan sage scrub. The Middle SPS also contains a graded, bare access road.

Acreages of vegetation communities in Middle SPS are presented in Table 3.3-1. Vegetation community descriptions and corresponding element codes are from Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). A vegetation map showing communities in the Middle SPS is shown in Figure 3.3-1. Vegetation communities in the project site are described below and a complete discussion is included in Appendix C.

TABLE 3.3-1 VEGETATION COMMUNITIES AND OTHER LAND COVER TYPES WITHIN THE MIDDLE SPS

Vegetation Communities and Cover Types	Holland Code	Acre(s)
Vegetation		
Coastal Sage Scrub	32300	0.3
Riversidean Alluvial Fan Sage Scrub*	32700	3.8
Disturbed Riversidean Alluvial Fan Sage Scrub*	32700	0.08
Coast Live Oak Woodland	71160	6.7
Other Cover Types		
Bare		1.9
Total Acres of the Middle SPS		**12.78**

***Denotes a vegetation community either known or believed to be of high priority for inventory in the CNDDB.

Coastal Sage Scrub

This community most closely corresponds to Holland's description of Venturan Coastal Sage Scrub (32300), which contains mostly low, soft-woody shrubs, 1.6 to 6.5 feet in height, with crowns usually touching, but less dense than Central (Lucian) Coastal Scrub (32200) or Chaparral (37000), and typically with bare ground underneath and between shrubs. Growth occurs in late winter and spring, following the onset of winter rains. Most flowering occurs in spring, but some species continue into summer. It is dormant and more or less deciduous in summer and fall.

Venturan Coastal Sage Scrub occurs on dry, more or less rocky slopes, often at lower elevations and on drier but less rocky sites than associated Upper Sonoran (37100) and Chamise chaparrals (37200). This community can be found from the South Coast Ranges in southern California to northern Baja California, usually below 3,000 feet. It is most abundant in the coastal region south of Point Conception, but extends inland to the vicinity of Cajon and San Gorgonio passes in San Bernardino and Riverside counties.



Source: Aerial - GlobeXplorer, 2005; Vegetation mapping - EDAW, 2007.

NORTH 0 50 100 200 300 400 Feet

Figure 3.3-1
Middle SPS Vegetation Map

Within the project site, approximately 0.3 acre of coastal sage scrub occurs along a south-facing slope in the northern area of the Middle SPS. This community in the project site consists solely of sparse cover (crowns do not touch) of California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*). Vegetation in his area does not appear to be naturally occurring, and may have been established through hydroseed for stabilization of the slope. Venturan coastal sage scrub naturally occurs around the reservoir and along much of the east side of the access road from the tunnel to the Upper SPS.

Riversidean Alluvial Fan Sage Scrub

Riversidean Alluvial Fan Sage Scrub (32700) is described by Holland as the most xeric expression of coastal sage scrub south of Point Conception. Typical stands are fairly open and dominated by California sagebrush, California buckwheat, and red brome (*Bromus rubens*), each attaining at least 20% cover.

Riversidean Alluvial Fan Sage Scrub is typically found on xeric sites such as steep slopes, severely drained soils, or clays that release stored soil moisture only slowly. At slightly higher elevations, it mixes with several southern Californian chaparrals (37000). This community occurs along the coastal base of the Transverse and Peninsular range from central Los Angeles County to the Mexican border.

Within the project site, approximately 3.8 acres of Riversidean Alluvial Fan Sage Scrub occurs in the Middle SPS, intergrading with Coast Live Oak Woodland. This community in the project site is dominated by laurel sumac (*Malosma laurina*), chaparral yucca (*Yucca whipplei*), black sage (*Salvia mellifera*) and several herbaceous understory species. Additionally, the Middle SPS contains 0.08 acre of Riversidean Alluvial Fan Sage Scrub that is in a disturbed phase. Disturbed Riversidean Alluvial Fan Sage Scrub contains the species listed above but has been considerably encroached upon by non-native invasive species such as tree tobacco (*Nicotiana glauca*) and Oriental hedge mustard (*Sisymbrium orientale*).

Coast Live Oak Woodland

Holland typically describes Coast Live Oak Woodland (71160) as very similar to Oregon Oak Woodland (71110) with only one dominant tree, coast live oak (*Quercus agrifolia*). The shrub layer is poorly developed, but may include toyon (*Hetermomeles arbutifolia*), gooseberries and currants (*Ribes* spp.), laurel sumac (*Malosma laurina*), or elderberry (*Sambucus mexicana*). The herb component is continuous and dominated by brome (*Bromus diandrus*) and several other introduced taxa.

This community is typically on north-facing slopes and shaded ravines in the south and more exposed sites in the north. Coast Live Oak Woodland intergrades with Coastal Scrub (32000) and Upper Sonoran Mixed Chaparral (37100) on drier sites and with Coast Live Oak Forest (81310) or Mixed Evergreen Forest (81100) on moister sites.

Coast Live Oak woodland can be found on outer South Coast Ranges, and coastal slopes of Transverse and Peninsular ranges, usually below 4,000 feet. The oaks extend beyond southern California into coastal Baja California, where they reach their southern limit. They occur at elevations from just above sea level near the immediate coast to about 5,000 feet in the interior regions, especially in southern California.

Within the project site, approximately 6.7 acres of coast live oak woodland occurs in the Middle SPS. This community in the project site is dominated by coast live oak, western sycamore (*Platanus racemosa*), and poison oak (*Toxicodendron diversilobum*) and is bifurcated by an ephemeral wash which drains out towards the south. Unlike typical coast live oak woodland conditions, the herb component is patchy as many of the oaks present themselves as 'wolf trees' which are sparsely vegetated beneath their crowns.[1] Throughout this oak woodland, the woodland floor under the established tree canopies and open areas presents an approximate 0.5-foot heterogeneous layer of duff and random piles of mixed tree litter further suppressing understory herbaceous growth and establishment. This oak woodland also intergrades with Riversidean Alluvial Fan Sage Scrub.

Bare

A portion of the Middle SPS contains bare areas. Bare areas are graded access roads that traverse the Middle SPS. There are few or no plant species on these roads. Approximately 1.9 acres of this cover type occurs within the Middle SPS. The remainder of the project area outside of the Middle SPS occupies bare ground including the Lower SPS, access roads, and Wilderness Park staging area.

Lower Sediment Placement Site

Vegetation communities and cover types within the Lower SPS include coastal sage scrub, Ornamental Landscaping, and bare ground. The majority of the Lower SPS contains little or no vegetation. A vegetation map showing communities in the Lower SPS is shown in Figure 3.3-2.

Coastal Sage Scrub

For a description of Venturan Coastal Sage Scrub, see the discussion of the Middle SPS above. Within the Lower SPS, coastal sage scrub is characterized by California sagebrush (*Artemisia californica*), California buckwheat, laurel sumac, and black sage. Coastal sage scrub within the Lower SPS is in a disturbed phase and has been severely encroached upon by non-native invasive species such as castor bean (*Ricinus communis*) and tree tobacco. The Lower SPS contains 0.4 acre of disturbed coastal sage scrub.

[1] A wolf tree is an excessively branched tree with spreading crowns that dominate the area of ground lying within their shade and occupy more space in the forest than surrounding trees. A prime example of a wolf tree is a tree with overgrown foliage or canopy which grows 'from the crown to the ground' (i.e. the tree skirt [lowest point of the tree canopy] touches the ground). A wolf tree is usually the result of a tree growing within a habitat that is a relatively open and undisturbed area, in which they established themselves and persist. This type of tree form monopolizes the available light, water and nutrients for their own use at the detriment of understory vegetation and other smaller trees to a lesser extent. Although wolf trees have high aesthetic and wildlife value, they also present themselves as an increased fuel load and fuel ladder.



Source: Aerial - GlobeXplorer, 2005; Vegetation mapping - EDAW, 2007.

Figure 3.3-2
Lower SPS Vegetation Map

Ornamental Landscaping

Ornamental Landscaping (11000) is nonnative vegetation consisting of planted ornamental trees, shrubs, and ground cover. Ornamental Landscaping within the project site consists primarily of wattle (*Acacia cyclops*). This area also contains invasive vegetation such as castor bean and tree tobacco. Within the project site, Lower SPS contains 0.1 acre of Ornamental Landscaping.

Bare

Most of the Lower SPS is bare. It consists of previously placed, compacted sediment, and access roads. There are few or no plant species in this area. Approximately 8 acres of this cover type occurs within the Lower SPS.

Oak Trees

A formal oak tree survey of the Middle SPS was conducted during the week of October 15, 2007 by EDAW ecologist and certified arborist Joshua Zinn and biologists Jeanette Duffels and Donna Germann. The project site was methodically surveyed and all native oak trees inspected and recorded with the following methods: 1) a site survey was conducted for inspecting, recording tree conditions, and obtaining tree locations; 2) a diameter tape was used to obtain trunk diameter measurement at 54 inches above natural grade (diameter breast height [DBH]); a clinometer was used to measure tree height (±5 feet accuracy) and topographic slope; 3) a 100-foot tape measure was used to obtain canopy radius for ascertaining tree driplines; 4) discretely numbered 1.5-inch-diameter aluminum tree tags and orange flagging tape were applied to each respective tree, placed on the north side of each oak tree trunk at 54 inches above natural grade, for identification and mapping purposes; 5) a digital camera was used to record and document the location of the tree, relevant tree condition, or areas of interest at the time of inspection; 6) binoculars were used to inspect the upper trunk and crown (including scaffolding limbs, branches, and foliage) for structure, defects, and disease; and a Trimble XT submeter global positioning system (GPS) handheld unit was utilized to record location coordinates for the purposes of assembling a tree survey map.

The Middle SPS contains 179 oak trees (the trunks of two of these trees are not within the project site, however, significant portions of their crowns are and so they have therefore been included in the total number) of these trees, 177 are coast live oak, one is a scrub oak (*Quercus dumosa*), and one is an Engelmann oak. The aggregate cover of all oak tree canopies within the 6.7 acres of coast live oak woodland habitat described above within the Middle SPS is approximately 3.02 acres (as calculated using ESRI Geographic Information software). Tree locations identified within the project site are shown on Figure 3.3-3.



Source: GlobeXplorer 2006

NORTH

0 175 350 525 Feet

Figure 3.3-3
Oak Tree Survey

Wildlife

Birds

Thirty-seven species of birds were observed during general surveys of the project site. A complete list of birds observed in the project site during all surveys is included in Appendix C. Presence-absence surveys were also conducted for least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) following current USFWS protocols. Presence-absence surveys are further described in the Sensitive Wildlife Species section below and are completely discussed in Appendix C.

Mammals

Four mammal species were observed or detected in the project site during general surveys, coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), gray squirrel (*Sciurus carolinensis*), and California ground squirrel (*Spermophilus beecheyi*). Additionally, black bear (*Ursus americanus*) was detected in the Santa Anita Debris Basin, adjacent to the project site.

Reptiles and Amphibians

Three reptile species, coastal western whiptail (*Cnemidophorus tigris stejnegeri*), western fence lizard (*Sceloporus occidentalis*), and common side-blotched lizard (*Uta stansburiana*) were observed during general surveys of the project site. One amphibian species, pacific tree frog (*Pseudacris regilla*), was detected. Focused surveys for coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) and the silvery legless lizard (*Anniella pulchra pulchra*) within potential habitat in the project site were conducted by UltraSystems Environmental, Inc. between May and July 2007. Coast (San Diego) horned lizard and silvery legless lizard were not detected during any of the surveys. Focused surveys for coast (San Diego) horned lizard and silvery legless lizard are further described in the Sensitive Wildlife Species section below and are completely discussed in Appendix C.

Invertebrates

Four insects were noted during general surveys: blue damselfly (*Enallagama cyathigerum*), red dragonfly (*Nelumbo nucifera*), tiger swallow-tail (*Papilio glaucas*) and cabbage butterfly (*Pieris rapae linnaeus*).

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources include plant and animal species present in the project site that are considered sensitive by federal, state, or local conservation agencies and organizations, or unique habitat areas that are of relatively limited distribution. Determination of sensitive wildlife is made by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). A California Natural Diversity Database (CNDDB) search of the Mount Wilson, Azusa, and El Monte 7.5-minute

quadrangles resulted in a total of 15 plant species and 6 sensitive animal species known to occur in the vicinity of the project site (CDFG 2007).

Sensitive Plant Species

Fifteen sensitive plant species are known to occur in the vicinity of the project site: San Diego ragweed (*Ambrosia pumila*), Greata's aster (*Aster greatae*), Braunton's milk-vetch (*Astragalus brauntonii*), Plummer's mariposa lily (*Calochortus plummerae*), southern tarplant (*Centromadia pungens* ssp. *australis*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), slender-horned spineflower (*Dodecahema leptoceras*), San Gabriel bedstraw (*Galium grande*), mesa horkelia (*Horkelia cuneata* ssp. *puberula*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), and Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), San Gabriel linanthus (*Linanthus concinnus*), Orcutt's linanthus (*Linanthus orcuttii*), Parish's gooseberry (*Ribes divaricatum* var. *parishii*), and sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*). Descriptions, status, habitat requirements, and other information regarding these sensitive plants are included in Appendix C.

The project site, specifically the Middle SPS, contains suitable habitat for four sensitive plants: Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass. Slender-horned spineflower is a State and Federal Endangered species. Plummer's mariposa lily, mesa horkelia, and Robinson's pepper-grass are on List 1B of the California Native Plant Society.

Three areas were surveyed for the presence of sensitive plant species during the months of March, June, and July of 2007: the northern boundary of the reservoir just outside of the project site, the access road, and the Middle SPS. Due to unfavorably dry weather conditions, however, it was determined that many plants may not have been detectable during the 2007 surveys. Additional surveys for sensitive plant species were therefore conducted in April and May of 2008. Methods used for the rare plant surveys comply with the CDFG's *Guidelines for Assessing the Affects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities* (CDFG 2000). A floristic survey was conducted, so that all species observed were identified to the point where their status could be determined. The assessment included a 100% pedestrian survey of the project site. The search pattern used was a random meander within the project site. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological resources including habitats that may support special status plant species. Complete discussions of the sensitive plant surveys conducted in 2007 and 2008 are included in Appendix C.

One federally listed plant species, San Diego ragweed (*Ambrosia pumila*), was observed in the Santa Anita Debris Basin, more than 250 feet west of the access road (personal communication K. Kurtz, UltraSystems, 2007). This species has a low potential for occurrence within the project disturbance area due to the lack of suitable habitat. No other sensitive plant species were detected during 2007 or 2008 surveys.

Sensitive Wildlife Species

Birds

Three sensitive bird species are known to occur in the vicinity of the project site: black swift (*Cypseloides niger*), southwestern willow flycatcher, and least Bell's vireo. Descriptions, status, habitat requirements, and other information regarding these sensitive birds are included in Appendix C.

The project site does not contain suitable habitat for sensitive birds. Riparian areas immediately adjacent to the access road, however, contain suitable habitat for two sensitive bird species: least Bell's vireo and southwestern willow flycatcher. Least Bell's vireo and southwestern willow flycatcher are both State and Federal listed endangered species.

Presence-absence surveys for least Bell's vireo and southwestern willow flycatcher were conducted at the reservoir, along the access road, and the Santa Anita Debris Basin which is adjacent to the project site. As required by *Least Bells Vireo Survey Guidelines* (U.S. Fish and Wildlife Service 2001) eight individual surveys for least Bell's vireo were conducted at least ten days apart between sunrise and 11:00 a.m. from April to July in 2007. All surveys were conducted during ideal weather conditions. Least Bell's vireo was not detected during any of the surveys. A complete discussion of the least Bell's vireo presence-absence surveys is included in Appendix C.

Surveys for southwestern willow flycatcher were conducted from May to July 2007 following requirements of the *Southwestern Willow Flycatcher Survey Protocol* (U.S. Fish and Wildlife Service 2000). At least one survey is required during Survey Period 1 (May 15-May 31) and one during Survey Period 2 (June 1-June 21). Three surveys are required during Survey Period 3 (June 22-July 17). Surveys conducted in different survey periods and multiple surveys within the third survey period must be at least five days apart and be conducted between one hour before sunrise and 10:00 a.m. All surveys were conducted during ideal weather conditions. Southwestern willow flycatcher was not detected during any of the surveys. A complete discussion of the southwestern willow flycatcher presence-absence surveys is included in Appendix C. No sensitive bird species were observed within the project vicinity during surveys conducted for this project.

Mammals

No sensitive mammals were detected during general surveys. Three sensitive mammal species are known to occur in the vicinity of the project site: Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*). Descriptions, status, habitat requirements, and other information regarding these sensitive bats are included in Appendix C.

The project site and adjacent areas contain suitable habitat for bats south of the reservoir along the streambed and in the Middle SPS. Pallid bat, Townsend's big-eared bat, and western red bat are all U.S.

Forest Service sensitive species. While Pallid bat is also CDFG Species of Special Concern and the Townsend's big-eared bat is a Federal Species of Special Concern.

Reptiles and Amphibians

Three sensitive reptiles, silvery legless lizard, coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) and two-striped garter snake (*Thamnophis hammondii*), and one sensitive amphibian, mountain yellow-legged frog (*Rana muscosa*), are known to occur in the vicinity of the project.

The project site and areas immediately adjacent to the project site contain potential habitat for silvery legless lizard and coast (San Diego) horned lizard. The Middle SPS contains suitable habitat for the silvery legless lizard, and the Middle SPS and the Debris Basin immediately adjacent to the access road contain suitable habitat for coast (San Diego) horned lizard. Both the silvery legless lizard and coast (San Diego) horned lizard are CDFG Species of Special Concern.

Focused surveys for each species were conducted during their active season, March to July. The assessment included a 100% pedestrian survey. The search pattern used was a random meander within the survey areas. A complete discussion of the focused surveys for coast (San Diego) horned lizard and silvery legless lizard is included in Appendix C.

No sensitive reptile species were observed within the project vicinity. The absence of these species during focused surveys, however, does not confirm their absence from the project site or surrounding area. Small population size, movement within or through an area, and cryptic, fossorial behavior are factors that increase the probability that a species may not be detected during surveys even though it is present.

Sensitive Invertebrates

No sensitive invertebrates are known from the project vicinity and none were detected during general surveys.

Sensitive Habitats

Sensitive habitats are those considered rare within the region, support sensitive flora and/or fauna, or function as linkages for wildlife movement. The project site, specifically the Middle SPS, contains two vegetation communities that are considered sensitive: Coast Live Oak Woodland and Riversidean Alluvial Fan Sage Scrub. Other sensitive habitats adjacent to, but not within the project site, include: Venturan Coastal Sage Scrub along the reservoir and along much of the east side of the access road, and Southern Sycamore Alder Riparian Woodland along the western edge of the access road between the tunnel and the staging area, and an area west of the staging area.

Habitat Connectivity (Wildlife Corridors and Habitat Linkages)

Wildlife corridors are relatively narrow landscape features that provide connections between larger blocks of native habitat. Habitat linkages are broader native habitat patches that join larger patches of habitat and can reduce the adverse effects of habitat fragmentation. Wildlife migration corridors are essential in geographically diverse settings, and especially in urban settings, for the sustenance of healthy and genetically diverse animal communities.

Open spaces with native habitat adjacent to the project area include the City of Arcadia Wilderness Park and the Angeles National Forest to the north, and the City of Monrovia open space to the east.

Although development exists southwest of the Wilderness Park and south of the Middle SPS, the area is otherwise open for wildlife movement and habitat connectivity outside of the neighboring developed areas is largely intact.

Jurisdictional Waters

A formal jurisdictional delineation within the project site, specifically the Middle SPS, was performed on October 15, 2007, by EDAW ecologist Joshua Zinn to identify boundaries and acreages of U.S. Army Corps of Engineers (USACE) and CDFG jurisdictional waters. These two jurisdictions may overlap but remain distinct for permitting requirements. The methodology described below has been prepared at a level of detail suitable for inclusion in the following: 1) permitting under Section 404 of the Clean Water Act (CWA) (as regulated by the USACE); 2) Permitting under Section 401 of the Clean Water Act (as regulated by Regional Water Quality Control Board [RWQB]); and 3) permitting under California Fish and Game Code (CFGC) Section 1600 et seq.

Federal Jurisdiction- Waters of the U.S.

Jurisdictional waters of the U.S. were delineated pursuant to the criteria outlined in and in accordance to the USACE 1987 Wetland Delineation Manual (Manual) (Environmental Laboratory 1987) and the December 2006 Interim Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region (Environmental Laboratory 2006). The jurisdictional delineation was conducted in accordance with Section IV D, Subsection 2 of the Manual 'Routine Determinations for Areas Greater Than Five Acres in Size' (Manual).

The Middle SPS has potential to contain at least two types of federally regulated waters warranting field assessments composed of: (1) formal wetland delineations based upon the 3-criteria method outlined in the Manual and Arid West Region (the simultaneous presence of wetland hydrology, hydric soil, and hydric vegetation) to define the jurisdictional limit of non-tidal wetlands[2]; and (2) formal surveys for field

[2] 33 CFR 328.4(c).

indicators to define the jurisdictional extent of unvegetated waters in the form of Ordinary High Water Mark (OHWM)[3].

The Manual recommends that transects be used to evaluate areas of this size and that the maximum distance between transects does not exceed 0.5 mile. This threshold was determined to be appropriate for this project due to the relative biological homogeneity of the survey site. Obvious upland areas were not mapped as part of this analysis as they did not represent 'riparian' communities (riparian being in the form of ephemeral wash and in immediate proximity to flood control infrastructure which flows seasonally) that warranted a formal jurisdictional delineation. Upland areas were surveyed and mapped for drainage features if it was determined that the drainage features presented field evidence for OHWM.

No jurisdictional waters in the form of wetlands were determined within the SPS project footprint. Since no jurisdictional wetlands were determined, separate reaches for ascertaining other jurisdictional waters in the form of OHWM were applied as a baseline. This baseline placement ensured that the outer observation point for each transect was also located in uplands allowing for accurate demarcation of the limits of jurisdictional areas. A total of four transects, composing eight data points were employed to determine the jurisdictional extent of the ephemeral wash occurring on-site. The Middle SPS contains 0.12 acre of ephemeral wash (OHWM) that may be considered jurisdictional by USACE. Additionally, the Santa Anita Reservoir contains over 500,000 cubic yards of sediment that is below the maintained high water line of 1,258 feet. This high water line would be considered the OHWM, which may also be considered jurisdictional by USACE.

Potential USACE jurisdictional areas are shown in Figure 3.3-4.

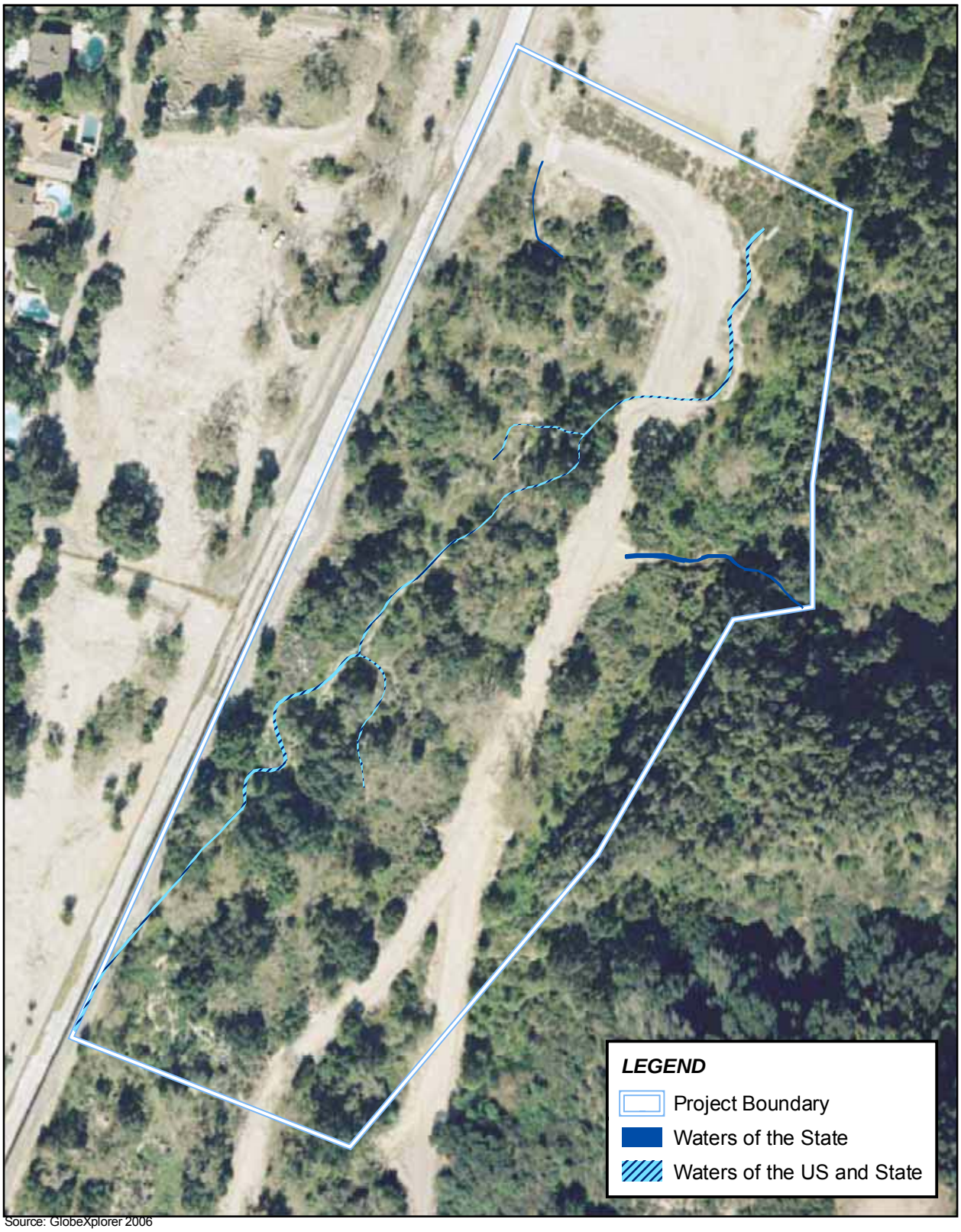
All project waters described above may or may not be considered under USACE jurisdiction, based on the outcome of the significant nexus determination that will be undertaken as part of the 404 permit process. The EIR analysis assumes that these areas fall within USACE jurisdiction.

State Jurisdiction- Waters of the State

Jurisdictional waters of the State include those waters listed in CFGC 1600 et.seq. Section 1601(a) is based on Title 14 CCR 720, which designates waters of the State, as regulated by CDFG, to be "all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose."

In practice, the CDFG usually extends its jurisdictional limit to the top of a stream, the bank of a lake, or outer edge of the riparian vegetation, whichever is wider. Riparian habitats do not always have identifiable hydric soils, or clear evidence of wetland hydrology as defined by the USACE. Therefore, CDFG wetland boundaries often extend beyond USACE wetland boundaries, which sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Jurisdictional boundaries under

[3] 33 CFR 328.3(e).



Source: GlobeXplorer 2006

NORTH

0 175 350 525 Feet

Figure 3.3-4
Jurisdictional Waters

CFGC Sections 1600-1616 (CDFG's Lake and Streambed Alteration Program) may encompass an area that is greater than that under the jurisdiction of the USACE.

The Middle SPS contains 0.15 acre of waters considered jurisdictional by CDFG. These areas include all of the waters under jurisdiction of the USACE. CDFG and USACE jurisdictional areas within the Middle SPS site are shown in Figure 3.3-3.

Additionally, the Santa Anita Reservoir, including any existing riparian vegetation associated with this water body, is considered under the jurisdiction of CDFG and USACE.

Regional Resource Planning Context

No regional habitat conservation plans (HCP) or Natural Community Conservation Plans (NCCP) have been adopted that would affect the project site.

3.3.2 REGULATORY SETTING

The following provides a general description of the regulations applicable to biological resources. Permits or other authorizations expected to be required for the project under these regulations are also noted where applicable.

Section 404 and 401 of the Clean Water Act

The CWA governs pollution control and water quality of waterways throughout the U.S. Its intent, in part, is to restore and maintain the biological integrity of the nation's waters. The goals and standards of the CWA are enforced through permit provisions. Sections 401 and 404 of the CWA pertain directly to the proposed project. Section 401 requires certification from the Regional Water Quality Control Board (RWQCB) that the proposed project is in compliance with established water quality standards. Section 404 of the CWA requires an individual or general permit from the USACE for discharge into "waters of the U.S." The project will require permitting under Section 404 of the CWA; it is anticipated that an individual permit will be required.

Endangered Species Act[4]

Enacted in 1973, the Endangered Species Act (ESA) provides for the conservation of threatened and endangered species and their ecosystems. The Act prohibits the "take" of threatened and endangered species except under certain circumstances and only with authorization from the USFWS through a permit under Section 4(d), 7 or 10(a) of the Act. Under the ESA, "take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Formal consultation under Section 7 of the ESA would be required if the proposed project has the

[4] U.S.C Title 16, Chapter 35, Sections 1531-1544.

potential to affect federally listed. Because the project will require permitting under Section 404 of the CWA, the USACE will consult with USFWS on the need for formal consultation for the project. It is anticipated that consultation will not be required since no sensitive species have been identified; however, interactions between the federal agencies will determine what type, or whether, consultation is necessary.

Migratory Bird Treaty Act[5]

Congress passed the Migratory Bird Treaty Act (MBTA) in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia. Although no permit is issued under the MBTA, if vegetation removal within the project area occurs during the breeding season for raptors and migratory birds (February 1 through September 15), the USFWS requires that surveys be conducted to locate active nests within the construction area. If active raptor or migratory bird nests are detected, project activities may be temporarily curtailed or halted. The project must comply with the MBTA.

California Fish and Game Code

The California Fish and Game Code regulates the taking or possession of birds, mammals, fish, amphibian, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA; Sections 2050-2115) and Streambed Alternation Agreement regulations (Sections 1600-1616), as well as provisions for legal hunting and fishing, and tribal agreements for activities involving take of native wildlife. Any proposed impact to state-listed species or state jurisdictional waters within or adjacent to the proposed project site would require a permit under CESA and a Streambed Alternation Agreement from the CDFG, respectively.

Under Sections 1600-1617 of the California Department of Fish and Game Code, CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG jurisdiction are defined in the code as the "bed, channel or bank of any river, stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." The California Code of Regulations (14 CCR 1.72) defines a stream as:

> "[A] stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

In practice, CDFG usually extends its jurisdictional limit to the top of a stream or lake bank, or outer edge of the riparian vegetation, whichever is wider. Riparian habitats do not always have identifiable hydric soils, or clear evidence of wetland hydrology as defined by the USACE. Therefore, CDFG wetland

[5] U.S.C Title 16, Chapter 7, Subchapter II, Sections 703-712.

boundaries often extend beyond USACE wetland boundaries, which sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Jurisdictional boundaries under Sections 1600-1607 may encompass an area that is greater than that under the jurisdiction of Section 404 (Cylinder et al. 1995). The project will require authorization under Sections 1600-1616 of the Fish and Game Code via a Streambed Alteration Agreement.

California Endangered Species Act[6]

CESA, under Sections 2050-2115 of the Fish and Game Code, generally parallels the main provisions of the federal ESA and is administered by the CDFG. CESA prohibits take of any species that the California Fish and Game Commission determines to be a threatened or endangered species. CESA allows for take incidental to otherwise lawful development projects upon approval from the CDFG. Under the California Fish and Game Code, "take" is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. Any proposed impact to state-listed species within or adjacent to the proposed project site would require a permit under CESA. Consultation under Sections 2050-2115 of the Fish and Game Code would be required if the proposed project has the potential to affect state listed species. If these species are also federally listed, CDFG can adopt any measures required through consultations between the federal agencies. It is anticipated that consultation will not be required; however, interactions between the resource agencies will determine whether consultation is necessary

City of Arcadia Oak Tree Protection

Article IX, Chapter 7 of the Arcadia Municipal Code provides that Engelmann oaks and coast live oaks (with a trunk diameter larger than 4 inches measured at a point 4 ½ feet above the crown root, or 2 or more trunks measuring 3 inches each or greater in diameter, measured at a point 4 ½ feet above the crown root) and any other living oak (with a trunk diameter larger than 12 inches measured at a point 4 ½ feet above the crown root, or 2 or more trunks measuring 10 inches each or greater in diameter measured at a point 4 ½ feet above the crown root) shall not be removed, relocated, damaged, or half their protected zones encroached upon unless an Oak Tree permit is granted. The City of Arcadia sent a letter to LACDPW on August 7, 2008 regarding the application of the City's Oak Tree Preservation Ordinance to the proposed project. The City stated that an Oak Tree Removal permit was unnecessary for projects requiring oak tree removal for public purposes under Section 9701 of the Arcadia Municipal Code; therefore, the proposed project would not be subject to the City of Arcadia's Oak Tree Preservation Ordinance.

[6] California Fish and Game Code, Division 3, Chapter 1.5, Sections 2050-2115.

3.3.3 ENVIRONMENTAL IMPACTS

Thresholds of Significance

The project would have a significant effect on biological resources if it would result in one or more of the following:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS;
- have a substantial adverse effect on any federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Effects Dismissed in the Initial Study

The Initial Study (see Appendix A) issued for the proposed project in July 2007 determined that implementation of the proposed project would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP as the project area is not located within an adopted HCP, NCCP, or other approved local, regional, or state HCP. As such, these impacts are not considered further in this analysis.

Impact Analysis

BIO-1 *The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFG or USFWS.*

No sensitive plant species were detected in the project site during focused botanical surveys during the appropriate survey periods. Due to unfavorably dry weather conditions, it was determined that many plants may not have been detectable during the 2007 surveys. Per mitigation measure BIO-A of the Draft

EIR, additional surveys for sensitive plant species were conducted in April and May of 2008 (see Appendix C). Because no sensitive plant species were detected during focused surveys in 2007 or 2008, no sensitive plant species are expected to occur within the project area and impacts to sensitive plant species are not anticipated. To ensure that no sensitive plant species are impacted by the proposed project, mitigation measure BIO-A has been provided to require that focused surveys for sensitive plants are repeated prior to removal of vegetation in the Santa Anita Reservoir, Lower and Middle SPS areas or wherever ground-disturbing activities would affect vegetated areas. With implementation of this mitigation measure, if listed plant species are detected, consultation with USFWS and/or CDFG would be required to document the finding and determine appropriate mitigation requirements to ensure that impacts to listed plant species would be less than significant.

Tree and vegetation removal would occur in the Middle SPS and construction activities with potentially adverse noise levels would occur in the vicinity of other trees (e.g., the Southern Sycamore Alder Riparian Woodland adjacent to the access road), which would significantly affect nesting birds and roosting bats, if present. Disturbance of active nests would violate the MBTA and result in a significant impact requiring mitigation. To ensure compliance with the MBTA and reduce adverse impacts to bats, mitigation measure BIO-B has been provided to require nesting bird and roosting bat surveys prior to the start of project construction. With implementation of this mitigation measure, impacts to nesting birds and roosting bats would be less than significant.

The project site and areas immediately adjacent to the project site contain potential habitat for coast (San Diego) horned lizard and two-striped garter snake. Both the coast (San Diego) horned lizard and the two-striped garter snake are CDFG Species of Special Concern. No sensitive reptile species were observed within the project vicinity during focused surveys; however, this does not confirm their absence from the project site or surrounding area. To ensure no injury or damage to sensitive reptile species, mitigation measure BIO-C has been provided. With implementation of this mitigation measure, impacts to reptiles that are CDFG Species of Special Concern would be less than significant.

BIO-2 *The proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS.*

The proposed project would impact approximately 6.7 acres of coast live oak woodland in the Middle SPS. Coast live oak woodland has high habitat value. The State of California Legislature has declared that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion, sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the state. Impacts to coast live oak woodland would result in a significant impact requiring mitigation. To minimize impacts due to loss of coast live oak woodland, mitigation measure BIO-D has been

provided. With implementation of this mitigation measure, impacts to coast live oak woodland would be reduced to a level below significance.

The proposed project would impact approximately 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub in the Middle SPS. Riversidean alluvial fan sage scrub is considered to be of high priority for inventory by the CNDDB because of its significance and rarity. Impacts to Riversidean alluvial fan sage scrub would result in a significant impact requiring mitigation. To minimize impacts due to loss of Riversidean alluvial fan sage scrub, mitigation measure BIO-E has been provided. With implementation of this mitigation measure, impacts to Riversidean alluvial fan sage scrub would be reduced to a level below significance.

The proposed project would impact approximately 0.3 acre of coastal sage scrub in the Middle SPS and 0.4 acre in the Lower SPS. Due to the extremely degraded condition, poor habitat value, and small size of these areas impacts to this community within the project are considered less than significant.

The proposed project would impact 0.15 acre waters under jurisdiction of CDFG in the Middle SPS. The proposed project would remove sediment from the Santa Anita Reservoir; however, no loss of habitat would occur and no permanent impacts to federal jurisdictional waters would occur. Impacts to state waters would result in a significant impact requiring mitigation. To minimize impacts due to loss of state waters, mitigation measure BIO-F has been provided. With implementation of this mitigation measure, impacts to state protected waters would be reduced to a level below significance.

BIO-3 *The proposed project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

No jurisdictional waters in the form of wetlands were determined within the SPS project footprint. The proposed project would impact 0.12 acre of ephemeral wash (OHWM) under the jurisdiction of the USACE in the Middle SPS. No permanent impacts to jurisdictional waters within the Santa Anita Reservoir would occur because the proposed project would not result in the loss of habitat in the reservoir and the reservoir would continue to operate within the normal range of water level fluctuation upon completion of the project. Impacts to ephemeral wash would result in a significant impact requiring mitigation. To minimize impacts due to loss of ephemeral wash, mitigation measure BIO-F has been provided. With implementation of this mitigation measure, impacts to federally protected wetlands would be reduced to a level below significance.

BIO-4 *The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

The project area is predominantly open for wildlife movement and habitat connectivity. Developed areas to the south are largely intact. The project would not interfere substantially with the movement of any native wildlife or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Aside from the Middle and Lower SPS sites, the project area would remain in its current condition upon completion of the project.

BIO-5 *The proposed project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

The proposed project would remove 177 coast live oak and 1 Engelmann oak (the trunks of two of these trees are not within the project site, however, significant portions of their crowns are and so they have therefore been included in the total number) from the Middle SPS. Removal of oak trees would not require an Oak Tree Permit from the City of Arcadia, as stated in a letter dated August 7, 2008 from the City of Arcadia to LACDPW. Implementation of measure BIO-D would reduce impacts to city protected oak trees to a level below significance.

3.3.4 MITIGATION MEASURES

BIO-A Prior to commencement of project construction, a rare plant survey shall be completed within the Santa Anita Reservoir, the Middle SPS and anywhere else project ground-disturbing activities would affect vegetated areas to determine the presence or absence of sensitive plant species with potential to occur within this project site. Surveys within the Middle SPS will focus on Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass where suitable habitat for these species occurs. However, all sensitive plant species that have potential to occur in the project area based on the presence of suitable habitat or the known presence of the species in neighboring areas will be searched for during their blooming periods to confirm presence or absence. In addition, all other biological requirements of the U.S. Forest Service shall be implemented to minimize impacts to federal species. Surveys shall be conducted in accordance with the following CNPS guidelines:

• A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas.

• If a state, U.S. Forest Service, or federally listed plant species is detected (e.g., slender-horned spineflower or San Diego ambrosia), then consultation with USFWS and/or, U.S. Forest Service, and/or CDFG must occur to document the finding and determine appropriate mitigation requirements to ensure that impacts to the listed plant species would be less than significant.

• Rare plants listed as CNPS List 1B, protected by the California Endangered Species Act, shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project activities to allow for salvage of the plants.

BIO-B Should tree and vegetation removal in the Santa Anita Reservoir or Middle SPS or commencement of other construction activities in the project site occur during the breeding season for migratory non-game native bird species (February 1 - August 31), weekly bird surveys shall be performed to detect any protected native birds in the trees to be removed and other suitable nesting habitat within 300 feet of the construction work area (500 feet for raptors). The surveys shall be conducted 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys shall continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, LACDPW shall halt all clearance/construction disturbance activities in suitable nesting habitat or within 300 feet of nesting habitat (within 500 feet for raptor nesting habitat) until August 31 or continue the surveys in order to locate any nests. If an active nest is located during the survey, clearing and construction with 300 feet of the nest (within 500 feet for raptor nests) shall be postponed until the nest is naturally vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The results of this measure shall be recorded to document compliance with applicable State and Federal laws pertaining to the protection of native birds.

A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to removal of trees or structures on the site. If no active roosts are found, then no further action will be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following measures shall be implemented:

• If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July

31). Disturbance-free buffer zones as determined by a qualified biologist in consultation with CDFG shall be observed during the maternity roost season (March 1 - July 31).

• If a non-breeding bat hibernacula is found in a structure or tree scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial disturbance for airflow. This action shall allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Structures or trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

• If special-status bats are found roosting within trees or structures onsite that require removal, appropriate replacement roosts shall be created at a suitable location onsite or offsite in coordination with a qualified biologist, the CDFG, and the LACDPW.

BIO-C In order to reduce impacts to sensitive reptiles potentially occurring in the Santa Anita Reservoir, the Middle SPS, and along the access road adjacent to the debris basin LACDPW shall implement the following measures:

• Grading and other habitat disturbing activities shall be limited to the footprint of the SPS areas.

• To prevent injury or damage to coast (San Diego) horned lizard, two-striped garter snake, and other reptiles, an animal exclusion fence shall be placed along the boundary of the Middle SPS area and along the portion of the access road adjacent to the debris basin. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded “T” steel posts. Fence material should also be buried a minimum of 12 inches below the ground surface.

• Prior to construction, a qualified biologist shall conduct a pre-construction survey for the coast (San Diego) horned lizard and two-striped garter snake and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion fenced area, the biologist shall safely relocate these species to a suitable area outside of the fenced area.

• Drift nets or other exclusionary fencing shall be placed around excavations to reduce the potential for individuals entering excavated areas. If excavations with the potential for entrapment are to remain open for more than 12 hours they must include some means for small mammals, reptiles, and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of

the excavation. Before an excavation is backfilled, it must be checked to ensure that there are no live individuals inside. Backfilling shall not occur until the excavation is clear of all live individuals.

• Personnel involved in project implementation shall receive a briefing from a qualified biologist to identify and describe sensitive resources that may be encountered in the project area. Wildlife of any kind that is encountered during the course of project implementation shall either be moved or provided the opportunity to vacate the site.

• Personnel shall be reminded that harassment, handling, or removal of wildlife from the project site shall not be permitted.

BIO-D LACDPW shall mitigate for impacts to 6.7 acres of coast live oak woodlands through a combination of on-site creation of coast live oak woodland and/or by permanently protecting comparable habitat in the watershed or by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of onsite creation and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 6.7 acres.

Oak woodland restoration shall occur within the Lower SPS, which includes approximately 8 acres available for such restoration activities.

Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW.

The final size of a conservation easement and the number of trees planted for mitigation shall be determined through consultation with CDFG. City of Arcadia will be consulted regarding restoration activities on the Lower SPS.

Mitigation for impacts to coast live oak individuals shall be negotiated in conjunction with mitigation for impacts to coast live oak woodland. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels.

Details of planting for mitigation shall be described in both a conceptual restoration plan and a mitigation and monitoring plan for oak woodland, which shall be submitted and approved by CDFG prior to implementation of the project.

BIO-E Mitigation for impacts to 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub will be accomplished through a combination of restoration of a suitable area on-site and/or by permanently protecting comparable habitat by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of onsite restoration and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 3.88 acres.

The Lower SPS includes approximately 8 acres available for restoration. Mitigation for impacts to Riversidean alluvial fan sage scrub shall be negotiated with CDFG. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation shall be described in a mitigation and monitoring plan approved by CDFG.

Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW.

BIO-F Clean Water Act Section 404 (b)(1) guidelines shall be followed as a framework for compensatory mitigation. Through 404(b)(1) negotiations with the USACE and negotiations with CDFG under Fish and Game Code Sections 1600-1616, a determination of the functions and values of impacted jurisdictional waters shall result in the coordination of appropriate mitigation measures for sediment removal and the impacted ephemeral wash and riparian habitat in the excavation area of the reservoir and Middle SPS. Compensatory mitigation of permanently protecting a minimum of 0.15 acres of comparable habitat shall occur at the Big Tujunga Mitigation Bank or through restoration and permanent protection on Mountains Recreation Conservation Authority (MRCA) land.

3.3.5 SIGNIFICANCE AFTER MITIGATION

Implementation of mitigation measures BIO-A through BIO-F would reduce impacts to biological resources to a less than significant level and would promote restoration of native habitat. No significant unavoidable adverse impacts to biological resources would occur as a result of the proposed project.

3.4 CULTURAL RESOURCES

A Cultural Resources Assessment including background research, archival record search and field survey was conducted for the proposed project is included as Appendix D. The results of the assessment are summarized in this section.

3.4.1 CULTURAL SETTING

PREHISTORIC AND HISTORIC OVERVIEW

While people are known to have inhabited southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al. 2004), the first evidence of human occupation in the Los Angeles area dates to at least 9,000 years B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Departing from the subsistence strategies of their nomadic big-game hunting predecessors, Millingstone populations established more permanent settlements. Settlements were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P., a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This was accomplished in part through use of the circular shell fishhook on the coast and more abundant and diverse hunting equipment. Evidence for shifts in settlement patterns has been noted at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of numerous rivers, marshes, and swamps served as ideal locations for prehistoric settlement during this period. These well-watered areas contained a rich collection of resources and are likely to have been among the more heavily trafficked travel routes.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of the contemporary Native American group whom the Spanish referred to as the *Gabrielino* (Wallace 1955). Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange counties, the *Gabrielino* are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The *Gabrielino* are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925) and maps produced by early explorers indicate that at least 26 *Gabrielino* villages

were within close proximity to known Los Angeles river courses, while an additional eighteen villages were within reasonably close proximity to the river (Gumprecht 1999). Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game were hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939[1852]). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid 1939 [1852]).

Spanish explorers made brief visits to *Gabrielino* territory in both 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Passing through the Los Angeles area, they reached the San Gabriel Valley on August 2, and traveled west through a pass between two hills where they encountered the Los Angeles River and camped on its east bank near the present-day N. Broadway Bridge. Father Juan Crespi's diaries indicate that on that day they "entered a spacious valley, well grown with cottonwoods and alders, among which ran a beautiful river. This plain where the river runs is very extensive and…is the most suitable site for a large settlement" (The River Project 2001). He goes on to describe this "green, lush valley", its "very full flowing, wide river", the "riot of color" in the hills, and the abundance of native grapevines, wild roses, grizzly, antelope, quail and steelhead trout. Crespi observed that the soil was rich and "capable of supporting every kind of grain and fruit which may be planted." The river was named El Rio y Valle de Nuestra Senora la Reina de Los Angeles de la Porciuncula.

Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers. Nine important villages were located within the San Gabriel Valley, including *´Ashuukshanga, Weniinga, ´Ahwiinga* and *Pemookanga* in the prairie-foothill transition zone. Reid reported that the Gabrielino community of *´Aluupkenga* was located on the grounds of the Rancho Santa Anita, which he owned. The grant includes the cities of Arcadia and Sierra Madre. A *Gabrielino* informant, Jose Zalvidea reported that *´Aluupkenga* was located at Santa Anita (McCawley 1996).

A string of 21 Missions were established in the years that followed the Portola expedition, the fourth being Mission San Gabriel *Archangel* founded in 1771, near the present-day city of Montebello, eight miles southwest of the proposed project area. This original location enjoyed fertile soils, but was repeatedly damaged by the periodic flooding of the San Gabriel River. In 1775, the mission was moved to higher ground five miles to the northwest, to its present day location in the city of San Gabriel (Lindsey and Schiesl 1976; McCawley 1996). By the early 1800s, the majority of the surviving *Gabrielino* population had entered the mission system, under the jurisdiction of Mission San Gabriel or Mission San Fernando several miles to the northwest. Mission life offered the Indians security in a time when their traditional trade and political alliances were failing and epidemics and subsistence instabilities were

increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for *Gabrielino* health and cultural integrity, however.

On September 4, 1781, 12 years after Crespi's initial visit, the El Pueblo de la Reina de Los Angeles was established not far from the site where Portola and his men camped. Watered by the river's ample flow and the area's rich soils, the original pueblo occupied 28 square miles and consisted of a central square, surrounded by twelve houses, and a series of 36 agricultural fields occupying 250 acres, plotted to the east between the town and the river. By 1786, the flourishing pueblo attained self-sufficiency and funding by the Spanish government ceased. Fed by a steady supply of water and an expanding irrigation system, agriculture and ranching grew, and by the early 1800s the pueblo produced 47 cultigens (Gumprecht 1999).

Alta California became a state when Mexico won its independence from Spain in 1821, and Los Angeles selected its first city council the following year. The authority of the California missions gradually declined, culminating with their secularization in 1834. Native Americans who had become dependent upon the missions were disenfranchised, and most *Gabrielino* neophytes either fled to the north or sought work as laborers for nearby private land owners. Former mission lands were quickly divided and granted to private citizens for use as agricultural and pastoral land (Reid 1977 [1851]).

As the possibility of a takeover of California by the United States loomed large in the 1840s, the Mexican government increased the number of land grants in an effort to keep the land in Mexican hands. More than 600 rancho grants were made between 1833 and 1846. The proposed project area falls within the 13,319.06 acre Santa Anita Rancho, Hugo Reid obtained a provisional title to the Rancho in April 16, 1841 and was granted full title four years later. He later sold the Rancho to Henry Dalton, the grant finalized on August 9, 1866 (California State Archives 2006).

The United States took control of California after the Mexican-American War of 1846, seizing Monterey, San Francisco, San Diego and Los Angeles with little resistance. Los Angeles soon slipped from American control, and was retaken in 1847. Approximately 600 U.S. sailors, marines, Army dragoons, and mountain men converged under the leadership of Colonel Stephen W. Kearney and Commodore Robert F. Stockton in early January of that year to challenge the California resistance, which was led by General Jose Maria Flores. The American party crossed the San Gabriel River and scored a decisive victory over the Californians, effectively ending the war and opening the door for increased American immigration (Takahashi 1980).

While small deposits of gold had been mined previously in southern California (Guinn 1977 [1915]), the discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. Retired American miner Elias Jackson "Lucky" Baldwin purchased over 30,000 acres of land in California between 1875 and 1880, and he eventually acquired the last intact portion of Ranch Santa Anita (Kielbasa 1997).

The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876. Newcomers continued to pour into Los Angeles and the population nearly doubled between 1870 and 1880. The completion of the second transcontinental line, the Santa Fe, took place in 1886 causing a fare war which drove fares to an unprecedented low. More settlers continued to head west and the demand for real estate skyrocketed. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45). During the first three decades of the 20th century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area (Gumprecht 1999).

The rivers of the Los Angeles basin, like the San Gabriel River, flooded frequently in historic times, depositing rich soil that attracted early settlers. These unpredictable overflows became increasingly problematic as the landscape filled with ever more people in the late 19th and early 20th centuries, however. Until January of 1868, the San Gabriel River emptied into San Pedro Bay. Massive flooding that year caused the river to cut a new, more southerly course after leaving Whittier Narrows, destroying the young town of Galatin and ultimately discharging at Alamitos Bay. The new channel gradually took on the name of San Gabriel, while the original course of the San Gabriel River came to be known as Rio Hondo upstream and the Los Angeles River downstream (Gumprecht 1999).

The San Gabriel River experienced significant floods in 1884, 1889, 1911, 1914, and again in 1934 and 1938, each seemingly more destructive and costly than the last. A comprehensive flood control plan was drafted as a response, including the construction of 14 dams to impound San Gabriel Mountain storm waters. The Los Angeles County Flood Control District was also created at that time, and is now administered by the LACDPW. A federal flood control act, passed in 1936, placed flood control in the Los Angeles Basin under the ultimate control of the Corps (Lindsey and Schiesl 1976; Gumprecht 1999).

HISTORY OF THE PROJECT AREA

Sanborn Fire Insurance Maps were consulted for the identification of historic structures within the proposed project area. Although Sanborn Map coverage does include a portion of the City of Arcadia, the area encompassing the proposed project area is not covered.

The review of historic USGS topographic maps was completed to gauge the amount and type of development which occurred historically in the proposed project area. The Sierra Madre 1928 15' Topographic Quadrangle predates the development of the Dam and flood control system and shows the natural configuration of Santa Anita Canyon with no development. Only one structure is indicated along Santa Anita Avenue, north of Foothill Boulevard on the east side. There is no other development indicated within the proposed project area.

The 1941 USGS 15' Sierra Madre Topographic Quadrangle revealed very little development on any portions of the proposed project area prior to 1941. The dam and reservoir themselves are indicated on the map, but no other structures are present with the exception of a few, presumably residential structures, along Santa Anita Avenue, three at the southern base of Santa Anita Canyon Road, and eleven between Sierra Madre Boulevard and Foothill Boulevard on Santa Anita Avenue. None of the residences on Santa

Anita Avenue are listed on the California or National Registers. Most of the residences are single-story ranch style homes which appear to be 1950's and 1960's era homes with the exception of a few residences and one school which may date to the 1940's.

In 1941, the Sierra Madre 15' Quadrangle indicates Elkins Avenue is a dirt road with no development. None of the residences on Elkins Avenue are listed on the California or National Registers. The stretch of Elkins Avenue which is within the project vicinity is developed currently with single family homes on what appear to be quarter acre lots. The road is tree lined and most of the residences are set back from the street. Most of the residences are single-story ranch style homes; a few of which are split.

The city of Arcadia covers eleven square miles in the western end of the San Gabriel Valley, and is situated at the base of the San Gabriel Mountains (LSA Associates 1996:1-1). One of Arcadia's first European settlers was Hugo Reid. Reid was granted the Rancho Santa Anita and was therefore the first individual land owner in the area. He developed the land for use in agriculture and ranching and built the first structure in Arcadia on his Rancho. The Rancho had a long succession of owners. Eventually Elias J. "Lucky" Baldwin bought the last intact portion of the rancho in 1875, including what is known as Arcadia for $200,000 ($25 an acre) (City of Arcadia 2007). Downtown Arcadia was first developed in the 1880's as the Los Angeles and San Gabriel Valley Railroads entered the City. In 1887 Lucky Baldwin financed the construction of the Arcadia Depot at First Avenue and Santa Clara (LSA Associates 1996). He eventually established the original Santa Anita Park horse racetrack in Santa Anita (Hale 1997). In 1903 Arcadia officially became incorporated as a City (LSA Associates 1996).

The Angeles National Forest (ANF) was originally known as the San Gabriel Timberland Reserve, it consisted of 555,520 acres in the San Gabriel Mountains. Under the Forest Reserve Act passed by Congress in 1891, President Benjamin Harrison created the ANF on December 20, 1892. It was the eighth reserve created in the United States and the first in California. The first ranger station was built in the park in 1900; the West Fork Ranger Station was built on the West Fork of the San Gabriel River. (Triem 1993: II-1 and II-3)

Fires and floods were of ongoing concern in the San Gabriel Mountains in the 1930's, floods in 1933 and 1938 were extremely destructive to the Civilian Conservation Corps camps in the area, Forest Service improvement and equipment and the surrounding San Gabriel foothill communities. Improvement funding was redirected toward flood control and by 1956 twelve flood control dams had been built (Triem 1993: 11-9).

In the early 1940's, Federal Flood Control funding became available to the Angeles National Forest. Federal funds in the War and post-War period underwrote the construction of flood control projects and administrative site buildings, including residences, barracks and garages. In 1946 the architect Keplar B. Johnson was hired by the Forest Service as the new regional architect (Treim 1993). "His use of concrete block and flat rooflines are particularly notable and were an omnipresent theme of the post-War era (Treim 1993: II-31)."

HISTORY OF THE SANTA ANITA DAM AND RESERVOIR

As one of many dams built between 1920 and 1940, the history of the Santa Anita Dam is often difficult to separate from the other dams. Much of the historical information is general in nature and not specific to this dam. Files kept by LACDPW provide one of the best sources for the history of work associated with the construction and maintenance of the dam since the 1920s. Supplemental information was obtained with Los Angeles Times newspaper articles on file at the Los Angeles Public Library. The following history represents the bulk of the information contained in these sources.

The Santa Anita Dam (also known as the Big Santa Anita Dam) was constructed between 1925 and 1927 in response to continual flooding in the Los Angeles basin. Within the 90-year period from 1825 to 1914, Los Angeles experienced eleven catastrophic floods. The flood of 1914 resulted in damages in excess of $10 million and brought a public outcry for action to address the city's recurrent flood problems. As a consequence, the Los Angeles County Flood Control District (LACFCD) was formed (Los Angeles Times April 20, 1924). The LACFCD oversaw the construction of dams and reservoirs for nearly sixty years.

Engineer James W. Reagan was appointed as the first engineer of the LACFCD in 1915 (Los Angeles Times August 31, 1915). He was tasked with investigating and preparing a plan for conserving flood waters and protecting flood prone areas and the harbor. One of his first projects included putting together a $4,000,000 bond issue (Los Angeles Times March 29. 1927). Taxpayers approved the bond in 1917. This bond allowed the LACFCD to begin to implement some preliminary flood control efforts, including some channelization and the construction of reservoirs. It also included the Devil's Gate Dam, which was built at the headwaters of the Arroyo Seco above Pasadena in 1920 and was the first of a number of LACFCD dams.

In 1924, a second bond issue was approved in the amount of $35,300,000 (Los Angeles Times August 24, 1924). The bond was intended to support the construction of 12 dams which could both prevent flooding and provide a stable water supply (Los Angeles Times May 4, 1924). The largest of the dams included the San Gabriel Dam (described as the largest in the United States at the time), the Pacoima Dam, the Big Tujunga Dam and the Puddingstone Dam (Los Angeles Times September 21, 1921; April 27, 1924). The Big Tujunga and the San Gabriel Dams were intended to have the greatest drainage area. All together, the four dams were expected to cost more than $30,000,000. The Santa Anita Dam was expected to cost $586,000 (Los Angeles Times May 4, 1924).

After the bond was approved, the Board of Supervisors for the LACFCD arranged for General George W. Goethals to act as consulting engineer for all of their bond-related projects (Los Angeles Times September 26, 1924). George Goethals was the engineer who oversaw the construction of the Panama Canal. In a newspaper article announcing the hiring of Goethals, Chairman McClellan of the Board of Supervisors was quoted as saying "So vast is the program of work that lies ahead of the board in connection with the flood-control work that we have felt justified in retaining the services of the man we believe to be the greatest practical engineer in the country" (Los Angeles Times September 26, 1924).

The Santa Anita and the Pacoima were the first dams slated for construction (Los Angeles Times September 27, 1924). Initial plans for the Santa Anita Dam were reviewed by Goethals. An undated copy of a letter from Goethals to the Los Angeles County Board of Supervisors showed his approval regarding the plans for the Santa Anita Dam and the Pacoima Dam (Goethals N.D.). In addition to endorsing the plans for the Santa Anita Dam, Goethals also endorsed the use of engineer Lars Jorgensen on the project (Goethals N.D).

The Ross Construction Company won the bid to build the Santa Anita Dam (Los Angeles Times October 3, 1924). The dam was to be 225 feet high, 550 feet long at the top, 50 feet thick at the base, and seven feet thick at the top (Los Angeles Times September 6, 1925). The dam was expected to hold back approximately 1500 acre feet of water (Los Angeles Times September 27, 1924). In October, 1924, work began on the 3 ½ mile road that would be used to bring supplies to the Santa Anita Dam (Los Angeles Times October 13, 1924).

The Pacoima and the Santa Anita Dam were constructed in tandem, with the main work camp located at the Pacoima Dam (Los Angeles Times September 6, 1925). This was also where a field testing laboratory was established to check the strength of each batch of cement. The dams were built in vertical sections; one section was built from the bottom to the top and then the forms were moved over to start the next section. The sections were initially built out of order. The crew first built every second section and then returned to fill in the missing sections. This was done to allow the largest surface area to be exposed so the cement could cure before an adjoining section was installed (Los Angeles Times September 6, 1925).

A letter from Lars Jorgensen to the Flood Control District's Board of Supervisors dated September 10, 1925 discusses Jorgensen's visit to the dam construction site. Jorgensen comments on the progression of the construction at the Santa Anita Dam, saying that it was working like a factory (Jorgensen 1925). Jorgensen designed the Salmon Creek Dam in Alaska (1914) and founded the Constant Angle Arch Dam Company. The Salmon Creek Dam was the first constant angle arch dam ever constructed (Jackson 1993:569). Jorgensen's patented design was used by Reagan to design both the Santa Anita Dam and the Pacoima Dam (Los Angeles Times October 3, 1924).

Also known as a "variable radius arch concrete dam," an arch dam is one that has an alignment so that the convex curvature of the arch is directed upstream in order to direct water to the abutments at either side. Arch dams become narrower in length and thicker in width at the bottom. The Santa Anita Dam is one of about 40 such types constructed in California between 1912 and 1970 (Table 3.4-1).

TABLE 3.4-1 VARIABLE RADIUS ARCH CONCRETE DAMS CONSTRUCTED IN CALIFORNIA

Dam Name	County	Year Built
Big Bear Dam	San Bernardino	1912
Lake Spaulding	Nevada	1913
Spaulding	Nevada	1913
Kerckhoff Diversion	Madera	1920

Dam Name	County	Year Built
San Clemente	Monterey	1921
Lost Creek	Butte	1924
Concow	Butte	1925
Balch Diversion	Fresno	1927
Santa Anita	**Los Angeles**	**1927**
Buck Diversion	Plumas	1928
Camino	El Dorado	1928
Cedar Lake	San Bernardino	1928
Combie	Nevada	1928
Deer Creek Diversion	Nevada	1928
Grizzly Forebay	Plumas	1928
Railroad Canyon	Riverside	1928
Henry Jr.	San Diego	1929
Pacoima	Los Angeles	1929
Juncal	Santa Barbara	1930
Lyons	Tuolumne	1930
Big Tujunga #1	Los Angeles	1931
Tiger Creek Afterbay	Amador	1931
Gene Wash	San Bernardino	1937
Copper Basin	San Bernardino	1938
Parker	San Bernardino	1938
Englebright	Yuba	1941
Lake Loveland	San Diego	1945
San Marcos	San Diego	1946
Matilija	Ventura	1949
Vail	Riverside	1949
Monticello	Napa	1957
Donnells	Tuolumne	1958
Slate Creek Diversion	Plumas	1961
South Fork Diversion	Plumas	1961
Forbestown Diversion	Butte	1962
Junction	El Dorado	1962
Slab Creek	El Dorado	1967
Hour House	Sierra	1968
Log Cabin	Yuba	1968
New Drum Afterbay	Nevada	1968
Brush Creek	El Dorado	1970
New Bullards Bar	Yuba	1970

During the year of 1925, the LACFCD spent $2,309,947 on flood control work (Los Angeles Times September 25, 1925). This work included initial construction of the Pacoima, Santa Anita, and Puddingstone dams as well as nearly 8 ½ miles of work in the drainage channels. It also included levee building and laying of rip-rap.

By January of 1926, work was under way on six dams (Pacoima, Santa Anita, Puddingstone, Big Dalton Canyon, Thompson Creek and San Gabriel) (Los Angeles Times January 3, 1926). Four months later, the first forms were being filled at Santa Anita Dam (Los Angeles Times April 1, 1926). In August, the dam was halfway completed and stood 115 feet high (Los Angeles Times August 10, 1926). The Santa Anita Dam was completed in 1927 and final approval for its construction was granted on August 15, 1927 (Bailey 1927; Easton 1927). A letter from Paul Bailey, State Engineer, to Eaton stated that the final inspection had been completed and approved. The final cost for the dam was $1,200,000 (Los Angeles Times September 16, 1969).

Subsequent documentation regarding the Santa Anita Dam mostly relates to the maintenance of the dam. Letters between the Flood Control District and various other parties tell of leaks at the spillways and blowouts at the contraction joints. Lars Jorgensen and the Constant Angle Arch Dam Company were associated with these repairs. Jorgensen wrote to E.C. Eaton on December 6, 1927 to inform him of the findings of a visit to the Santa Anita Dam and the methods for repairing leaking joints at the dam (Jorgensen 1927). These correspondences led to the grouting of joints at various points along the dam. An application for repairing the dam was filed by E.C. Eaton with State Department on Public Works Water Resources Division in 1931 (Eaton 1931). A copy of this application is included in the Chronology of Santa Anita Dam.

A report was filed by the County Flood Control District on August 4, 1931 responding to a letter from the Fish and Game Division (Hedger 1931). The State Fish and Game Commission had requested that screens be placed over the outlets of the dam to prevent fish from getting through. The report stated that the necessary screens would inhibit the normal flow of water at the outlet source and pose a potential danger to the integrity of the dam.

On November 3, 1932, E.C. Eaton sent a letter to John Spencer of the Division of Fish and Game informing him that the screens he had requested had been installed (Eaton 1932). The screens apparently remained in place until 1938 (Howell 1938). A letter dated December 30, 1937 from C.H. Howell, Chief Engineer to the Division of Fish and Game requested permission to remove the screens because they present a threat to the dam's operations and potentially a danger to the public (Howell 1937). It is not clear whether the screens were removed at this time.

On March 2, 1938, a storm caused flooding at the Santa Anita Dam. As a result, the LACFCD undertook studies to determine how to prevent a spillage from occurring again (Manotta 1940; Fuller and Burke 1941; Hedger 1941). The proposed plan resulted in a spillway pool designed to keep water from flowing over the top of the dam and preventing the release of discharge valves.

The records associated with the dam become less consistent after the 1940s. The remaining documentation relates to repairs and additions to the dam in the 1960s and 1970s. An application for repair or alteration of the dam was filed on May 8, 1963 to reinforce an existing 18-inch valve at one of the outlets (Salsbury 1963a). On May 31, 1963, another application was filed in order to replace the trash

racks at the dam with semi-circular reinforced concrete risers and structural steel trashracks (Salsbury 1963b).

The next major construction that was associated with the Santa Anita Dam was construction of a tunnel in 1968. The tunnel was constructed through approximately 1,500 feet of a hillside to the east of the dam. It was installed so that workers could place on a conveyor belt system to remove about 825,000 cubic yards of debris that they cleaned from the drained reservoir (Los Angeles Times September 8, 1968). In 1969, workers replaced a sluice gate and hydraulic power unit on the Santa Anita Dam (Los Angeles Times September 16, 1969).

Records associated with the Santa Anita Dam from the 1970s and 1980s are not included with the documentation about the dam. In 1985, the District was merged with other engineering departments in Los Angeles County to form the LACDPW. Today the LACDPW oversees the maintenance of dams, reservoirs, storm drains, and sediment management, in addition to flood control measures.

3.4.2 RESEARCH METHODS

ARCHIVAL AND LIBRARY RESEARCH

The cultural resources investigation for this proposed project included archival and other background research. The following section describes the research methods used in the investigation.

Archival research of the proposed project area was conducted by Linda Kry, B.A. on January 29, 2007 at the South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. The research focused on the identification of previously recorded cultural resources within a 0.5-mile radius of the proposed project area. The archival research involved review of archaeological site records, reports of previous cultural resources investigations, historic maps and historic site and building inventories.

The records search revealed that a total of seven cultural resource investigations were previously conducted within a 0.5-mile radius of the study area (Table 3.4-2). Three of these projects encompass a portion of the proposed project area (see Table 3.4-2). Less than five percent of the proposed project area has been previously surveyed.

TABLE 3.4-2 PREVIOUS SURVEYS CONDUCTED WITHIN 0.5-MILE OF THE PROPOSED PROJECT AREA

Author	Report # (LA-)	Description	Date
ARM	2568	A Cultural Resource Assessment Conducted for a Ten Acre Parcel in Sierra Madre, Los Angeles County, California	1992

Author	Report # (LA-)	Description	Date
Bartoy, K.	7217	Los Angeles County Flood Control Water Line (Special Use Permit LAR101403) Angeles National Forest, Los Angeles County, California	2003
Bissell, Ronald M.	3308**	Cultural Resources Reconnaissance of the Madison/Cloverleaf Specific Plan Area, Monrovia, Los Angeles County, California	1993
Gilliland, Donald B.	1499	K.M.A.X. Radio Tower (Arcadia Electronic Site) A.R.R.	1985
Kerr, David	4734**	Clamshell Fuelbreak	1996
Unknown	6859**	Arcadia General Plan	1996
Woodward, Jim	247	Archaeological Survey of Lux Arboretum City of Monrovia, California	1988

** Indicates study overlapping with project area

The records search revealed that eight cultural resources were previously recorded within 0.5-mile radius of the proposed project; none of these were located within the boundaries of the project site (Table 3.4-3).

All eight of the previously recorded cultural resources within the 0.5-mile study area are historic in nature. No prehistoric resources have been previously recorded within the 0.5-mile study area.

TABLE 3.4-3 PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN 0.5 MILE OF THE PROPOSED PROJECT AREA

Permanent Trinomial (CA-LAN-)	P-Number (P-19-)	Other Number	Description	Date Recorded
2102H			Single historic wood frame structure	2/15/1993
2103H			Two historic period chimneys	2/15/1993
2106H			Site of former 1933 Monrovia survey monuments	2/03/1993
2109H			Historic concrete and wood plank channel	2/15/1993
	150019		Lux Arboretum property with associated structures (Built 1910-1927)	2/19/1993
	150025		Sierra Madre Ranger Station (Built 1936)	4/23/1992
	187817	2N31	Upper Clamshell Road	7/26/2006
	187819	2N41	Chantry Road	6/08/2006

ARCHAEOLOGICAL SURVEY

Archaeological field surveys were conducted by Sara Dietler, B.A., and Linda Kry, B.A. on February 20, 2007, February 23, 2007 and October 11, 2007. The proposed project area for archaeological resources

consists of sediment transportation and equipment routes, sediment placement sites, and staging areas included in the proposed project area.

The archaeological resources survey was conducted on foot with surveyors walking transects of no more than 10 to 20 feet apart, depending on survey conditions and ground visibility. Particular attention was paid to areas of good ground surface visibility. Rodent burrows and road cuts were inspected where possible for the presence of buried archaeological materials.

For the purposes of this discussion, the archaeological resources survey and results will be described in five geographically-defined survey areas, which as a whole cover the entirety of the proposed project area. These areas include Santa Anita Canyon Road between the terminus of Santa Anita Avenue and the Santa Anita Dam access road, Sediment Placement Sites, Santa Anita Wilderness Park Staging Area and Parking Lot and Sediment Transportation and Equipment Routes North to Reservoir, LACDPW Maintenance Road, Santa Anita Dam and Complex Area

Santa Anita Canyon Road between the terminus of Santa Anita Avenue and the Santa Anita Dam access road

Santa Anita Canyon Road is an entirely paved mountain road extending the terminus of Santa Anita Avenue on the north end and the Santa Anita Dam Access Road. Carved into the granite hillside, Santa Anita Canyon Road extends roughly in a north/south direction, although it is characterized by a number of curves and switchbacks. The west/northwest edge of the road is bounded by a steep upslope, while the south/southeast edge of the road is bounded by a precipitous downward slope. Metal barriers, guard rails and cobble and cement block walls have been constructed along the south/southeast edge. A marker inscribed “DC14/LACO/1973”, possibly referring to a construction date, was observed in the wall near the entrance to the Santa Anita Dam Access Road. Intermittent drainages and culverts, as well as modern cliff stabilization were noted along the road at the creek crossing located in the U-bend near the south end of Santa Anita Canyon Road.

Because the Santa Anita Canyon Road is paved, archaeological surveyors focused on an inspection of the unpaved roadway shoulders. No archaeological resources were encountered in the portion of the proposed project area associated with the Santa Anita Canyon Road.

Sediment Placement Sites

The project proposes to place sediment in the Middle SPS and in the Lower SPS. The Middle SPS consists of relatively undisturbed vegetation including mature oak and pine trees, poison oak, vines, and prickly pear cactus. The vegetation ranges from extremely dense and impenetrable to accessible, although overall the ground surface visibility was less than 5%. Leaf litter covers the majority of the ground surface and some modern debris including large pieces of rusted metal, homeless camp debris, and shoes, was observed by surveyors. Soil observed in the Middle SPS is sandy with gravel, cobbles and boulders. Although the center portion of the Middle SPS appears relatively undisturbed, the mounded

piles of dirt and boulders at the edges of the SPS suggest some degree of disturbance. Piles of cobbles were also noted intermittently throughout the Middle SPS, suggesting the area may have been used to deposit natural debris washed down the canyon. All accessible boulder outcroppings were inspected for possible prehistoric milling activities. No archaeological resources were encountered in the Middle SPS portion of the proposed project area.

Because the Lower SPS contains previously-placed sediment, none of the original ground surface in this portion of the proposed project area is exposed. Accordingly, this portion of the proposed project area was not surveyed for archaeological resources.

Santa Anita Wilderness Park Staging Area and Parking Lot and Sediment Transportation and Equipment Routes North to Reservoir

The Santa Anita Wilderness Park staging area is an open dirt area situated to the north of the Wilderness Park parking lot. The parking lot is a paved asphalt parking area surrounded by cement and cobble walls on the east side, and chain link fencing on the south and west sides, with picnic areas that are located in clearings on the eastern side of the lot. The dirt staging area appears to be recently grubbed.

A dirt access road (sediment transportation and equipment route) located between the Wilderness Park Staging Area in the south and the reservoir in the north, extends approximately 1,000 feet before entering a tunnel. The tunnel opening is set in the hillside, just to the north of the Headworks. The door to the tunnel faces south. The façade around the two steel doors is cement and the structure itself is surrounded by solid rock. The tunnel was constructed in 1968. No cultural resources were encountered in this portion of the project site.

Archaeological surveyors focused on areas in this portion of the proposed project area where ground surface was visible including the open dirt area proposed as a staging area, edges of the parking lot, picnic area, as well as the dirt road extending northward to the tunnel. No archaeological resources were encountered in this portion of the proposed project area.

LACDPW Access Road

The LACDPW access road extends between the northern edge of the Upper SPS staging area and the Santa Anita Wilderness Park. The road is dirt and has been graded. The soil is decomposing granite and consistent with soils observed elsewhere in most other roadway locations within the proposed project area. A steep slope abuts the east side of the road, where it has been cut into the cliff. A stream channel runs along the western edge of the road. There are locked gates on either end of the maintenance road.

Archaeological surveyors inspected the road and the roadway shoulders for the presence of archaeological resources, but none were encountered.

Santa Anita Dam and Complex Area

The area surrounding the Santa Anita Dam and Complex consist of the Santa Anita Dam and a number of maintenance support structures. Access roads extend from Santa Anita Canyon Road into and around these facilities.

Archaeological surveyors inspected the roadway in areas where it was not paved as well as the adjacent shoulders in areas where it was paved. Soils along the unpaved portions of the roadways consist of decomposing granite with gravel and cobbles. Access from the roadway down to the reservoir water line is limited due to an extremely steep slope. Survey of these slopes was not conducted. No archaeological resources were encountered in this portion of the proposed project area.

HISTORIC ARCHITECTURAL RESOURCES SURVEY

A historic architectural resources survey was conducted by Christy Dolan, M.A., R.P.A and Sara Dietler, B.A. on September 13, 2007. The historic architectural resources survey addressed historic buildings and structures located within the proposed project area. For the purposes of this assessment, these resources have been designated the Santa Anita Dam and Complex and include the dam itself and five historic-era residential/maintenance support buildings. Although ancillary structures related to the dam are located adjacent transportation routes near the proposed project area, none of these occur within the proposed project area and accordingly are not evaluated as part of this assessment.

The Santa Anita Dam and Complex consists of the Santa Anita Dam, shelter house, hoist house, relief quarters, storage shed, sluice gate control house, dam keeper's house and garage, and paint shed. The dam was built in 1927. The dam keeper's house and garage, the sluice gate control house and the paint shed all appear to have been built in 1937. The shelter house was built in 1946. The hoist house, storage shed, and relief quarters appear to have been constructed in the 1960s or later. These last three structures will not be described as they are not more than 50 years old. Buildings at the Santa Anita Dam were marked with serial numbers that begin with "FC" for Flood Control.

Santa Anita Dam (1927)

The Santa Anita Dam is 230 feet high with a crest thickness of 7 feet, a base thickness of 61.5 feet and a crest length of 612 feet. The dam has two spillways. Spillway #1 is a side channel and Spillway #2 is at the center of the crest. Spillway #1 is a flat weir at the west end of the dam which discharges into a covered flume. It is approximately 20 feet long and 12 feet wide. This spillway sits under the shelter house (described below) and is approximately 10 feet below the crest of the dam. Spillway #2 is formed by a notch in the 3 feet high concrete parapet wall that is on the upstream side of the dam. It discharges water when it reaches the crest of the dam. The original spillway is approximately 90 feet long and 3 feet wide. An addition was made to the spillway which extends it another 14 feet downstream. A hoist mechanism sits on the spillway addition.

A chain link fence sits on top of the parapet wall, extending its height another three feet. The downstream side of the dam, where no parapet exists, has a chain link fence approximately six feet high. The dam is accessed by a series of concrete steps with a metal pole handrail. This allows access from the top of the dam to the bottom of the stream bed.

There are four outlets; an 18-inch gate valve near the bottom of the dam, a 20-inch gate valve about 50 feet higher, and two 30-inch needle valves that are 20 feet apart in elevation. A trash rack protects these outlets and the outlet tower is visible on the upstream side of the dam. The trash rack appears to have been constructed using old railroad rails. A sluice gate control house (described below) sits just west of the outlet tower on a projecting slab of concrete.

Alterations are listed in the Chronology of the Santa Anita Dam provided by the LACDPW. Most alterations have been relatively minor. There are several instances of grouting to reduce leaks (1929, 1931, 1945, 1960 etc.) In 1931, there were general repairs made as well as installation of additional bars on trash racks to prevent fish from entering the outlets. In 1934, the 30-inch outlet needles were replaced. In 1938, risers and trash racks were constructed for the 30-inch outlet pipes.

A major alteration was made in 1945 when a projecting slab supported by brackets was constructed along the downstream side of Spillway #2. It was 14 feet wide and 90 feet long. It was intended to carry water away from the downstream face of the dam to protect workers who would operate flood discharge valves down below during a flood.

In 1963, the existing trashrack and 16-inch cast iron pipe riser was replaced with a 3.5-foot radius, semi-circular reinforced concrete riser and structural steel trashrack. In 1967, the 20-inch valve was replaced.

Dam Keeper's House and Garage (1937)

The Dam Keeper's Residence is a single story, stuccoed building with a covered porch on the main façade. The cross-gabled roof is clad in asphalt shingles. Louvered vents are at each apex of the roof. Windows are mostly metal sash windows, although some are fixed. The west façade has a plastered chimney that currently being repaired. The south façade contains a covered porch with a decorative metal railing. It is the main entrance to the house. The gable on this end is clipped, with a crescent shaped louvered vent in it. The rear (or north) elevation contains a single wooden door that leads to an entryway. A covered patio sits adjacent to this entrance. The original drawings for the house indicate it was built in 1937, the Office Engineer was W.B. Ream and the Chief Design Engineer was W. E. Chastison.

A review of the original drawings for this house showed that several alterations have been made to the house since it was constructed. The house originally had wooden siding (which has been stuccoed) and an assortment of double hung windows, many with shutters. All of the windows have been changed out for metal sash windows without shutters and a few have been removed entirely. The porch originally had a wooden railing, not a metal one, and there was not originally an entryway or covered patio off the north façade.

The Dam Keeper's Garage is a single story, wood sided building with a moderately pitched roof covered in rolled asphalt. A metal roll up door is on the west façade. The building has a wooden porch extending from its south façade. This allows one to walk around the building as it sits over the slope. An open shed roof is attached to the north façade of the building.

Paint and Explosives Shed (1936)

The Paint and Explosives Shed is a wooden shed that was used for storing paint and explosives until it was replaced by a newer structure. It is a single story building with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A single, wooden door is on the north façade and the east and west façades each have a single pivot window.

Sluice Gate Control House (1936)

The control house is very similar to the paint shed in construction. It is a single story structure with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A large window opening is boarded up on the west façade. A single, wooden door is offset on the east façade.

Shelter House (1946)

The Shelter House is a concrete, single story structure. The roof is flat, with a parapet and an 8-inch vent. The north façade has a single wooden door with a glass light and a single, vented metal door. There are two small, single pane pivot windows in metal sashes. There are three top pivot windows with four lights on top and two fixed on the bottom. The building is approximately 18 by 18 feet. The original drawings for this structure indicate that it housed a generator, storage and shelter/radio room. They list the "Division Engineer In Charge of Design" as N. B. Ream and the plans were approved by H.E. Hedger.

SURVEY RESULTS

As a result of the cultural resources surveys conducted in connection with this assessment, no archeological resources and six historic-era buildings and structures were identified within the proposed project area.

CULTURAL RESOURCE ASSESSMENT

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing on the California Register. The California Register was designed to be used by state and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for the California Register (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852). A resource is considered significant if it:

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

2. is associated with the lives of persons important in our past; or

3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. has yielded, or may be likely to yield, information important in prehistory or history.

Applying the criteria set forth above, the resources identified (Santa Anita Dam and Complex) were evaluated for listing on the California Register. The assessment and application of eligibility criteria for each resource is provided below.

Significance Evaluation of the Santa Anita Dam and Complex

From 1914 to the 1950s, the Los Angeles County Flood Control District built numerous dams and structures in an attempt to control destructive flooding throughout the county. The Santa Anita Dam and associated buildings were part of that effort. Although these structures were constructed during a significant flood control effort, they played a small role relative to the larger dams such as San Gabriel or Big Tujunga. Therefore, they are not considered eligible under Criterion 1 for their association with significant events.

The Santa Anita Dam is associated with George Goethals, who oversaw the construction of the Panama Canal. Goethals oversaw all of the dams that were built under the same bond issue and he appears to have no special association with the Santa Anita Dam. Therefore, Criterion 2 does not apply.

Neither the Santa Anita Dam, nor its associated structures, embody a distinctive type, period or method of construction. Nor do they represent the same style or period of construction, having been constructed in stages between 1927 and 1946. Therefore, they are not eligible under Criterion 3.

Criterion 4 is usually reserved for archaeological sites. Since the Santa Anita Dam has been fully researched, there is no further information potential for the Santa Anita Dam. Therefore, the dam complex is not considered eligible under Criterion 4.

3.4.3 ENVIRONMENTAL ANALYSIS

The following archaeological resources analysis is based on the archival and library research and archaeological survey that was conducted for this project, as described above. This discussion is only limited to potential impacts to archaeological resources during construction as the proposed project would not involve operational activities that would disturb or destroy underlying archaeological remains.

THRESHOLDS OF SIGNIFICANCE

The *CEQA Guidelines* establish that a project would have a significant effect on cultural resources if it would result in one or more of the following:

- cause a substantial adverse change in the significance of a historical or archaeological resource (Cal. Code Regs., Title 14, § 15064.5);
- disturb any human remains, including those interred outside of formal cemeteries.

EFFECTS DISMISSED IN THE INITIAL STUDY

The project was determined to have a less than significant impact with respect to the following threshold of significance, which dismissed from the analysis in the Initial Study: directly or indirectly destroy a unique paleontological resource. The project does not involve any excavation, aside from the sediment behind the dam, which is all recently eroded material. For this reason, paleontological impacts do not need to be evaluated in detail in the EIR.

IMPACTS ANALYSIS

CUL-1 *Construction of the proposed project would potentially cause a substantial adverse change in the significance of an archaeological resource.*

Although, no archaeological resources were encountered during the course of the archaeological survey, native Americans are known to have inhabited the San Gabriel Valley in prehistory. Because the project involves grubbing and ground disturbing activities, it is possible that surface artifacts obscured by surface vegetation or subsurface artifacts may be encountered by these construction activities. Grubbing and ground disturbance in the areas that are currently obscured may uncover evidence of such sites. Provided that mitigation measure CUL-A is implemented, no significant impacts to archaeological resources is anticipated.

CUL-2 *Construction of the proposed project would not cause a substantial adverse change in the significance of a historical resource.*

Six historic-era buildings and structures within the Santa Anita Dam Complex were identified during the historic architectural survey. The six identified buildings and structures were recorded as part of the Santa Anita Dam Complex, on Department of Parks and Recreation (DPR) forms, and will be assigned Primary numbers by the State Office of Historic Preservation. The only alterations or modifications to any of the buildings and structures that were evaluated involve the proposed riser modifications. The new riser and relocated trash rack would be located underwater on the upstream face of the dam.

As discussed above, the resources that were evaluated, including the Santa Anita Dam, are not considered eligible for California Register of Historical Resources listing. Because the buildings and structures associated with the Santa Anita Dam and Complex are not eligible, no significant impacts to historical resources is anticipated.

CUL-3 *Construction of the proposed project would not disturb any human remains, including those interred outside of a formal cemetery.*

The proposed project area does not contain any formal cemeteries. Archival research and the archaeological survey in connection with the present project did not indicate the presence of any known human remains in the project area. Provided mitigation measure CUL-B is implemented, no significant impacts to human remains is anticipated.

3.4.4 MITIGATION MEASURES

CUL-A If archaeological materials are encountered during ground disturbing activities, work in the vicinity shall be immediately halted. The resource shall be assessed by a qualified archaeologist and the appropriate treatment determined in accordance with state law and standard archaeological practices consistent with those outlined by the California Office of Historic Preservation prior to the resumption of construction.

CUL-B If human remains are encountered on the property during ground disturbing activities, the Los Angeles County Coroner's Office shall be contacted and all activities in the vicinity of the discovery shall cease until appropriate disposition of the remains is determined by the Coroner's Office, who will follow their standard protocols.

3.4.5 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

There would be no significant unavoidable adverse impacts to cultural resources after implementation of the mitigation measures specified above.

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3.5 GEOLOGY AND SOILS

3.5.1 ENVIRONMENTAL SETTING

This section describes the regional and local geologic and soil characteristics of the proposed project area. A *Seismic Hazard Evaluation of the Mt. Wilson 7.5-minute Quadrangle*, prepared by the California Geological Survey (CGS; CGS 1998), was reviewed for purposes of the analysis contained in this section. The geologic information contained in the evaluation adequately reflects the existing conditions that were present at the time the notice of preparation was published for the proposed project (June 2007).

REGIONAL SETTING

The project area is located in the San Gabriel Valley in east-central Los Angeles County. The San Gabriel Valley is an alluvial basin lying to the east of the city of Los Angeles, to the north of the Puente Hills, to the south of the San Gabriel Mountains, and to the west of the Inland Empire. The valley is a broad plain that slopes at an average of 65 feet per mile from the foot of the San Gabriel Mountains toward Whittier Narrows (CGS 1998). The San Gabriel Valley is bounded by a series of low-level sedimentary hills to the east, southeast, southwest, and west and to the north by the San Gabriel Mountains. The proposed project site is located south of Santa Anita Reservoir within the foothills of the San Gabriel Mountains. Bounded on the north by the San Andreas fault, the San Gabriel Mountains are actively rising due to seismicity along a series of east-west-trending left-lateral faults, which bound the mountains to the south (CGS 1998).

The site is located within the U.S. Geological Survey (USGS) Mt. Wilson Quadrangle, which consists predominantly of Pleistocene and Holocene alluvial deposits composed primarily of sand, silt, and gravel. Elevations range up to 6,000 feet above sea level in the San Gabriel Mountains in the northwest portion of the quadrangle (CGS 1998). The elevation within the immediate project area ranges from 1,318 feet above sea level at Santa Anita Reservoir to 590 feet above sea level at the existing sediment placement site.

FAULTING AND SEISMICITY

During an earthquake, the acceleration of an object attached to the earth is highly irregular. The movement can be described by its changing acceleration as a function of time. Peak ground acceleration (PGA) can be measured in g (the acceleration due to gravity) and represents the maximum acceleration experienced by the particle during the course of earthquake motion. Building codes prescribe how much horizontal force related to ground acceleration a building should be able to withstand during an earthquake. Determination of PGA is based on a 10 percent change for PGA to occur in a given time. For example, if a site has a PGA of 50 years 0.04g, than there is a ten percent chance that the site will experience a PGA of 4/10 the acceleration of gravity within 50 years.

The proposed alignment is not located within an Alquist-Priolo Earthquake Fault Zone (CGS 1986). The project site is located within Seismic Zone 4 of the Uniform Building Code (UBC) (UBC 1997). UBC Seismic Zones are based on the probability of expected intensity of ground shaking due to an earthquake and range from 0 to 4. Seismic Zone 4 corresponds to regions where expected peak acceleration (as a fraction of gravity, g) is greater than 0.3g and that have a 10 percent chance of experiencing strong seismic ground shaking within a 50 year period. The probabilistic approach to forecasting future ground motion at the site determines the expected peak ground acceleration level that has a 10 percent probability of exceedance over the approximate lifetime of the project (typically 50 years). This approach takes into account historical seismicity, the geological slip rate of faults within 100 kilometers (62 miles) of the property, and the site-specific response characteristics.

The CGS (formerly the California Division of Mines and Geology) conducted a probabilistic seismic hazard analysis for general soil and rock conditions which correspond to site categories defined by the UBC which are commonly found in California. The proposed alignment is located in Quaternary alluvium of varying densities. The results of the analysis performed by the CGS for alluvium conditions at sample locations approximately 2.0 miles from the alignment suggest a 10 percent probability of exceedance in 50 years ground acceleration of 0.74g. Analysis results for other sample locations nearest to the proposed alignment ranged from 0.70 to 0.73g (CGS 1998).

The fault classification system adopted by CGS for delineating Earthquake Fault Zones along active or potentially active faults is used for structures. CGS defines an active fault (or fault zone) as a fault that has moved within Holocene time (about the last 11,000 years). Faults with no known displacement within Holocene time that showed evidence of movement during Quaternary time (the last 1.6 million years) have been defined as potentially active.

Ground surface rupture along faults, ground shaking, and liquefaction are three of the most important seismic considerations for properties in Southern California. Based on the current understanding of the geologic framework of the site area, the seismic hazard which is expected to have the highest probability of affecting the site is ground shaking resulting from an earthquake occurring along several major active and potentially active faults in Southern California. Active and potentially active faults bound and bisect the San Gabriel Mountains on all sides, including the San Andreas, Punchbowl, Nadeau, San Jacinto, Fenner, San Francisquito, San Gabriel, Sierra Madre, South Frontal, San Antonio, Verdugo, Cucamonga, and Garlock faults. Known regional faults that could produce significant ground shaking at the site include the San Andreas fault, the Raymond fault, the Sierra Madre fault, and the San Gabriel fault.

San Andreas Fault Zone

The San Andreas Fault Zone extends from Northern California to near the Mexican border, a distance of about 1,000 miles. Based on its geometry, historical seismicity, and data on how it has broken in past earthquakes, the fault zone has been divided into several segments. In Southern California, the San Andreas Fault consists of three segments: the Mojave, San Bernardino Mountains, and Coachella Valley

segments. The project site is located approximately 24 miles south of the San Bernardino Mountains segment. This segment is the most complex of the three, consisting of a series of braided fault branches that veer off from the predominantly southeast-northwest trend characteristic of the San Andreas, and bend to a more east-west direction.

The San Andreas Fault Zone is a right-lateral strike-slip fault, approximately 745 miles long, slipping about 20 to 35 millimeters per year (mm/yr). The interval between major ruptures averages about 140 years on the Mojave segment with a recurrence interval varying from under 20 years (in the City of Parkfield only, which is located directly over the most active region of the fault) to over 300 years. The last major rupture occurred on January 9, 1857 along the Mojave segment. The magnitude is estimated to have been 8.0 (SCEDC 2007). As the last large earthquake on the southern San Andreas occurred in 1857, that section of the fault is considered a likely location for a large earthquake within the next few decades (USGS 1997). Such an earthquake would produce strong ground motion throughout the Los Angeles area.

Sierra Madre Fault Zone

The Sierra Madre Fault Zone is a northwest-southeast trending fault running approximately 33 miles from Sunland in the northwest to Glendora in the southeast. The fault zone is divided into five main segments with the length of all segments totaling approximately 45 miles. The project site is located approximately two miles north of the middle segment, Segment C. The most recent surface ruptures have occurred during Holocene time on the surrounding segments, Segments B and D (SCEDC 2007).

The Sierra Madre fault is a reverse thrust fault with a slip rate between 0.36 and 4 mm/yr. The fault dips to the north and has a probable magnitude of 6.0 to 7.0. Ruptures along the Sierra Madre Fault Zone are potentially limited to one segment at a time; however, it has been recently suggested that a large seismic event along the San Andreas could cause simultaneous rupture on reverse faults south of the San Gabriel Mountains, including the Sierra Madre Fault Zone (SCEDC 2007)

The Raymond Fault Zone

The Raymond fault is a northeast-southwest trending left-lateral fault with areas of minor reverse slip. The fault zone extends approximately 15.5 miles from South Pasadena in the southwest to Arcadia in the northeast. The fault zone crosses I-210 approximately two miles southwest of the project site and intersects the Sierra Madre Fault Zone between Segments C and D. The fault dips approximately 75 degrees to the north and has a slip rate between 0.10 and 0.22 mm/yr. The probable magnitude for seismic events occurring along the Raymond fault is between 6.0 and 7.0 and there is evidence of at least eight surface-rupturing events during the last 36,000 years (SCEDC 2007).

The San Gabriel Fault Zone

The San Gabriel fault is a northwest-southeast trending primarily right-lateral strike-slip fault extending

approximately 84 miles from west of Castaic in the northwest to north of Rancho Cucamonga in the southeast. The fault dips steeply to the north and the slip rate varies from one to five mm/yr. Located approximately six miles north of the project site, recent Holocene seismic activity has only occurred on the portion of the fault zone between Castaic and Saugus (SCEDC 2007).

SOILS AND STABILITY

The majority of the project site is generally underlain by a sequence of alluvial deposits. The upper project area is within the older Pre-Quaternary bedrock of the San Gabriel Mountains, while the middle and lower portions of the project area lie within the younger alluvial deposits of the Holocene (CGS 1998). Descriptions of the geologic units are discussed in Table 3.5-1 below.

TABLE 3.5-1 PROJECT SITE GEOLOGIC UNITS AND GEOTECHNICAL CHARACTERISTICS

Geologic Unit	Age	Lithologic Description	Occurrence	Susceptible to Liquefaction?
Active Alluvium	Holocene	Very loose to loose sand, gravel, and cobbles of active stream channels	Within the lower project area, including the proposed sediment placement sites and existing sediment placement site.	Yes
Young Alluvium	Holocene	Loose to moderately dense sand, silt, and clay of younger alluvial fan deposits	Within the middle project area, including upper portion of truck route and staging area.	Yes
Very Old Bedrock	Pre-Quaternary	Massive to weakly foliated crystalline igneous and metamorphic rock	Within the upper project area, including Santa Anita Reservoir and conveyor belt system.	No

Source: CGS 1998

Liquefaction typically occurs when near surface (usually upper 50 feet) saturated, clean, fine-grained loose sands are subject to intense ground shaking. One of the major types of liquefaction induced ground failures is lateral spreading of mildly sloping ground. Lateral spreading involves primarily lateral movement of earth materials due to ground shaking and is evidenced by near-vertical cracks with predominantly horizontal movement of the soil mass involved. As shown in Table 3.5-1 the loose, young and active alluvial sediments of the middle and lower portions of the project site are susceptible to liquefaction when saturated (CGS 1998). These areas, shown on Figure 3.5-1, are included in the liquefaction hazard zone (CGS 1999). The upper portion of the project area is located on igneous and metamorphic bedrock, which is not considered susceptible to liquefaction (CGS 1998). Historic high groundwater levels in the project area range from less than 40 feet below ground surface in the lower portion of the project area to greater than 100 feet below ground surface in the upper portion of the project area (CGS 1998).



Source: California Department of Conservation, 2002

Figure 3.5-1
Seismic Hazard Zones

Back of Figure 3.5-1

Landslides and other slope failures are common occurrences during or soon after earthquakes. The project area is undeveloped and elevations range dramatically. Existing landslides are located to the east, west, and north of the upper and middle portions of the project area (CGS 1998). Additionally, as shown on Figure 3.5-1, the middle portion of the project area falls within an Earthquake-Induced Landslide Hazard Zones (CGS 1999). Expansive soils generally result from specific clay minerals that expand when saturated and shrink in volume when dry. Expansive soils can occur in any climate; however, arid and semi-arid regions are subject to more extreme cycles of expansion and contraction than more consistently moist areas. Sediments associated with the proposed alignment are not anticipated to have a high expansion potential.

Subsidence is the lowering of surface elevation due to changes occurring underground. In the arid southwest, subsidence can be associated with earth fissures, cracks in the ground surface that form from horizontal movement of sediment and can be more than 100 feet deep. Collapsible soils consist of loose dry materials that collapse and compact under the addition of water or excessive loading. Collapsible soils are prevalent throughout the southwestern United States, specifically in areas of young alluvial fans, debris flow sediments, and loess (wind-blown sediment) deposits. Soil collapse occurs when the land surface is saturated at depths greater than those reached by typical rain events. Because of the very loose to loose alluvial sediment is the middle and lower portions of the project site, these areas are potentially susceptible to subsidence and collapse.

3.5.2 Environmental Analysis

The following geology and soils analysis is based on review of the available technical reports and knowledge of the proposed type, intensity, and duration of project construction activities on the proposed project sites, including A *Seismic Hazard Evaluation of the Mt. Wilson 7.5-Minute Quadrangle, Los Angeles County, California*, prepared by CGS (1998).

Thresholds of Significance

The project would have a significant effect on geology and soils if it would result in one or more of the following:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:
  - strong seismic ground shaking; or
  - seismic-related ground failure, including liquefaction.
- result in substantial soil erosion or the loss of topsoil; or

- be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

EFFECTS DISMISSED IN THE INITIAL STUDY

The project was determined to have no impact or a less than significant impact with respect to the following thresholds of significance, which were dismissed from the analysis in the Initial Study:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:

  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42;

- be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

- have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

IMPACT ANALYSIS

GEO-1 *The proposed project site would potentially experience strong seismic ground shaking during seismic events on regional faults within the vicinity.*

The proposed project is located within a seismically active region and has the potential to be subjected to ground shaking hazards associated with earthquake events on active faults throughout the region, including the San Andreas, Sierra Madre, Raymond, and San Gabriel fault zones. However, seismic ground shaking from major faults in the region is not anticipated to be greater than at any other sites in southern California and is not considered to pose an unusual risk to the project site.

The project would not affect any habitable structures and no new buildings are proposed. Above-ground structures would be limited to the concrete riser and slide gates, which would be constructed to bring the dam into compliance with DSOD's seismic stability standards. The riser modifications and sediment removal would improve the safety of the dam operations. After the construction of the project, the stresses on the dam below the reservoir level would be reduced below the maximum allowable stress of the concrete. While there may be some cracking on the upper portion of the dam during the MCE, the cracks are not expected to penetrate the entire thickness of the dam and would not cause an uncontrolled sudden release of the reservoir (Harza Engineering Company 2000, MWH 2005). The new sediment

placement sites would not include any habitable structures and no operational changes would occur as a result of the proposed project. Accordingly, the proposed project would not result in a significant adverse impact by exposing people or structures to major seismic hazards beyond what is considered normal for the southern California region. Impacts related to seismic ground shaking would be less than significant for the proposed project.

GEO-2 *Loose sediment exposed during excavation and grading activities would potentially result in erosion from exposure to wind and rain.*

The proposed project would excavate up to 500,000 cubic yards of sediment from Santa Anita Reservoir and deposit it first at the Lower SPS and the later at the proposed 13-acre Middle SPS, which would be graded as part of the project. Disturbed sediments are more susceptible to erosion; however, as discussed in Section 2.0, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites (see Figure 3.5-2). Additionally, the contractor would be required to prepare a Local Stormwater Pollution Prevention Plan (SWPPP) and a Wet Weather Erosion Control Plan (WWECP) in accordance with the National Pollution Discharge Elimination System (NPDES) Permit for construction activities disturbing more than one acre of land. With the implementation of these requirements, construction-related erosion impacts would be less than significant for the proposed project.

To prevent future erosion impacts following construction of the proposed project, the placement of sediment within the SPS sites would be undertaken in accordance with LACDPW regulations for SPS sites. As discussed in Section 2.0, the sediment would be properly placed, graded, compacted, and hydroseeded and surface drainage structures would be installed to direct stormwater runoff around the fill area. As such, operation-related impacts to erosion would be less than significant for the proposed project.

GEO-3 *The lower and middle portions of the project site, which are located within a liquefaction hazard zone, contain loose alluvial deposits which are susceptible to liquefaction/lateral spreading and subsidence/collapse. Additionally, the middle portion of the project site is located within a landslide hazard zone.*

As shown in Figure 3.5-1, the middle and lower portions of the project site are located in a liquefaction hazard zone. Liquefaction and related lateral spreading impacts would occur if loose, unconsolidated sediment in the SPS site was subjected to seismic shaking. However, as discussed above, sediment would be properly placed and compacted in accordance with applicable LACDPW regulations and procedures.

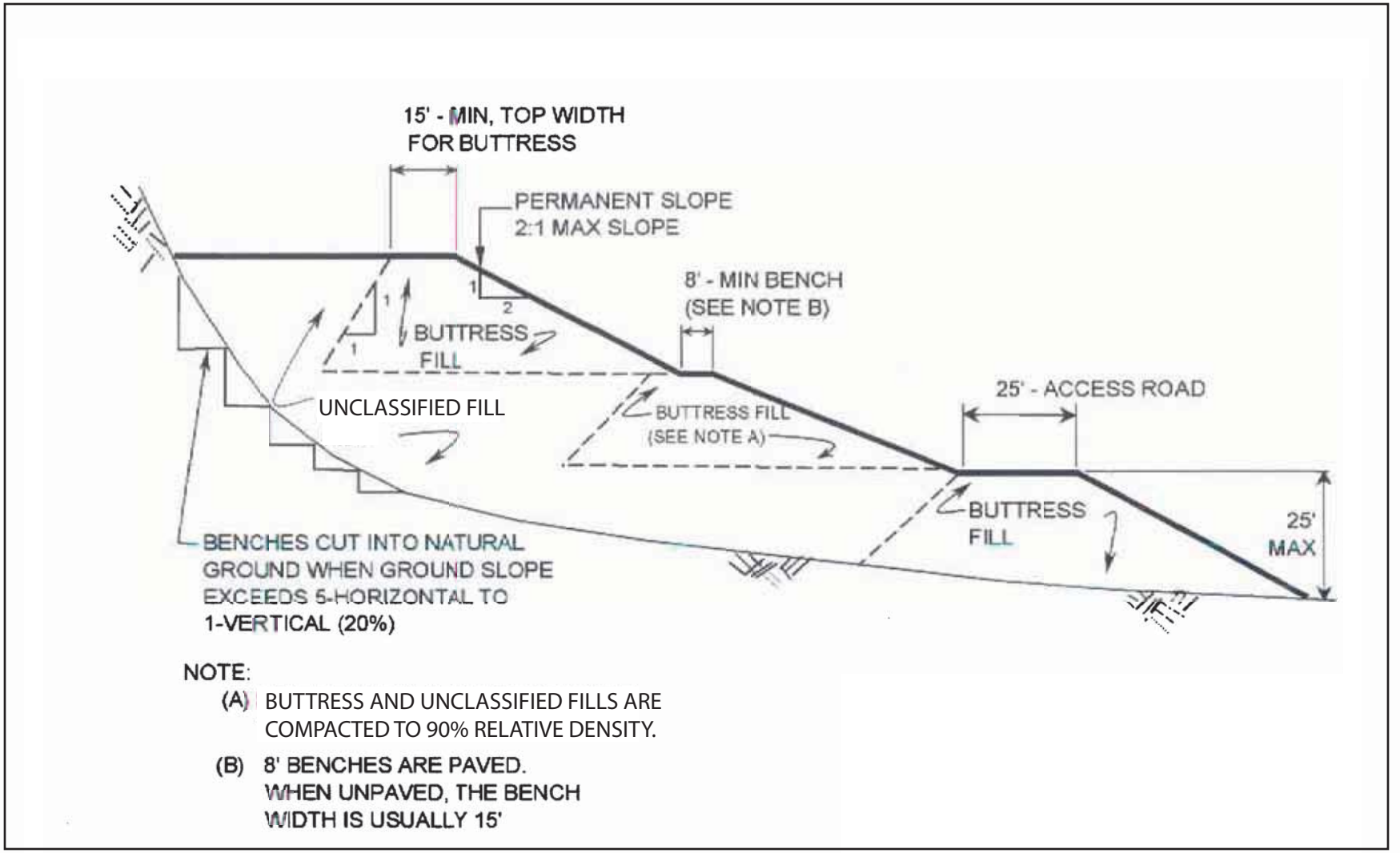


Figure 3.5-2
Sediment Placement Slope Details

Additionally, if subsidence were to occur in the underlying soil, no habitable structures would be constructed and the project would not be expected to expose people to risk associated with liquefaction or lateral spreading.

As discussed above, the project would install a drainage system, preventing the addition of excessive water to the SPS sites. Additionally, no structures are proposed which would place excessive loading on the sediment. Because the sediment would not experience excessive loading or intrusion of water, and the sediment would be properly placed and compacted within the SPS sites, the proposed project would not be expected to result in subsidence or collapse. Additionally, per LACDPW standards, the sediment would be placed in horizontal layers and would ultimately result in a slope no steeper than 2:1 horizontal to vertical ratio, the proposed project would not be expected to result in on- or off-site landslides.

Impacts related to soil and ground stability would be less than significant for the proposed project and no mitigation would be required.

3.5.3 MITIGATION MEASURES

No significant impacts to geology and soils would occur as a result of the project; therefore, no mitigation measures are required.

3.5.4 SIGNIFICANCE AFTER MITIGATION

No significant unavoidable adverse impacts would occur as a result of the proposed project. Compliance with the NPDES construction permit and applicable LACDPW regulations for sediment placement would reduce potential geology and soils impacts to a less than significant level.

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3.6 HYDROLOGY AND WATER QUALITY

3.6.1 ENVIRONMENTAL SETTING

This section describes the surface water and groundwater hydrology and water quality characteristics within the proposed project area. California's Groundwater Bulletin 118 for the Raymond Groundwater Basin, prepared by the California Department of Water Resources (DWR 2004), was reviewed for purposes of the analysis contained in this section. The hydrologic information contained in the evaluation reflects the existing conditions that were present at the time the notice of preparation was published for the proposed project (June 2007).

REGIONAL SETTING

The project site is located in the Los Angeles River Watershed, one of the largest in the South Coast Region. The watershed covers a land area of over 2,135 square kilometers (834 square miles) from the eastern portions of the Santa Monica Mountains and Simi Hills, and the Santa Susana Mountains to the San Gabriel Mountains in the west. The watershed is highly modified, with an upper 360-square-mile portion covered by forest or open space, and the remaining 474 square miles developed with highly urbanized land uses. The watershed encompasses and is shaped by the path of the Los Angeles River.

The Los Angeles River flows from its headwaters at the confluence of Bell Creek and Calabasas Creek in the San Fernando Valley eastward to the northern corner of Griffith Park, where the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. The Los Angeles River once flowed freely over the coastal plain but was channelized for flood control purposes by the U.S. Army Corps of Engineers (USACE) from the 1930s to the 1960s. Today, 47.9 miles of the total 51-mile length of the river is lined with concrete. The current flow in the river is effluent dominated with approximately 80 percent of its flow originating at discharges and the remaining flow coming from storm drain runoff and groundwater recharge reaching the surface.

The Los Angeles River Watershed has 22 lakes and a number of spreading grounds within its boundaries. Major tributaries of the Los Angeles Rover include the Pacoima Wash, Tujunga Wash, Burbank Western Channel, and Verdugo Wash in the San Fernando Valley and the Arroyo Seco, the Rio Hondo, and Compton Creek south of the Glendale Narrows.

SURFACE DRAINAGE CHARACTERISTICS OF THE PROJECT SITE

Surface runoff from the site drains along natural courses towards Santa Anita Wash, which north-south beginning at Santa Anita Dam. Santa Anita Wash feeds the Santa Anita Spreading Grounds and further downstream is tributary to the Rio Hondo, which hydraulically connects the Los Angeles and San Gabriel River Watersheds through the Whittier Narrows Reservoir. Water in the Rio Hondo eventually flows to the Los Angeles River near Downey.

With the exception of the Santa Anita Dam structures, the majority of the site that is tributary to Santa Anita Wash is undeveloped, pervious land. The proposed project would not add impermeable surface area to the site. Following construction of the proposed project, surface runoff would continue to drain towards Santa Anita Wash.

GROUNDWATER

The project area is situated within the Los Angeles-San Gabriel Hydrologic Unit, which covers most areas of Los Angeles County. Within this hydrologic unit, the project site overlies the Raymond Groundwater Basin, a 41-square-mile groundwater basin located in the northwest part of the San Gabriel Valley. The basin extends from La Cañada and the San Rafael Hills on the west to Santa Anita Canyon on the east and is bounded on the north by contact with consolidated basement rocks of the San Gabriel Mountains and on the south by the Raymond Fault.

The main water-bearing materials of the Raymond Basin are unconsolidated Quaternary alluvial sediments deposited by streams originating in the San Gabriel Mountains. Recharge in the basin mainly occurs from direct percolation of precipitation and percolation of ephemeral stream flow from the San Gabriel Mountains. Stream flow is also diverted into spreading grounds or collected behind dams, allowing water to infiltrate and recharge the basin. Additional water enters the basin as underflow through fractures systems in the San Gabriel Mountains. Precipitation averages in the basin range from about 19 inches in the valley, to 25 inches in upland areas, with the average precipitation over the basin approximating 21 inches annually (DWR 2004).

Historic high groundwater levels in the project area range from less than 40 feet below ground surface in the lower portion of the project area to greater than 100 feet below ground surface in the upper portion of the project area (CGS 1998).

FLOODING

Historically, stormwater flows from the San Gabriel Mountains were unpredictable and often led to damaging floods. Continued urbanization within the watershed has increased the amount of impermeable surface, resulting in an increase in surface flows and flooding. Ultimately, the Los Angeles County Flood Control District was created and flood control measures, such as dams, debris basins, and river channels were implemented to address the increased flows. Dams and detention basins, such as the Santa Anita Dam and Debris Basin, are designed to decrease peak flood flow and to discharge detained stormwater at controlled release rates. Debris Basins trap debris carried by floodwaters.

The Federal Emergency Management Agency Flood Insurance Rate Map indicates that the project site is located in Flood Zone D, which is an area that has been determined to be outside of the 100- and 500-year floodplains (Arcadia 1996). However, the majority of the project area is located within the inundation hazard area of the Santa Anita Dam (Arcadia 1996).

LACDPW does not have specific data for a 20-, 50- or 100-year flood event; however, the LACDPW hydrologic model for a 25-year flood event indicates that water would pass over the Santa Anita Dam's spillway, but the flows could be contained within the Santa Anita Wash downstream of the debris basin. There may be some flow overtopping the dam that could potentially erode the abutments.

The County design standard for a facility on a natural watercourse is the Capital Flood event. This is the runoff produced by a 50-year frequency design storm falling on a saturated watershed, while also adding the effects of fires and erosion under certain conditions. For Santa Anita Dam, the Capital Flood flow rate is 9,700 cfs. The current spillways do not have sufficient capacity to pass this flow. During a Capital Flood event, water would overtop the dam and could potentially erode the abutments, possibly compromising the stability of the dam. While Santa Anita Wash downstream of Santa Anita Debris Dam could contain the maximum flow rate from the Capital Flood, it is not designed to contain the expected flows should the dam fail.

3.6.2 REGULATORY SETTING

FEDERAL

The National Pollutant Discharge Elimination System (NPDES) storm water permitting program, under Section 402(p) of the Federal Clean Water Act (CWA), is administered by the Regional Water Quality Control Board (RWQCB) on behalf of the U.S. Environmental Protection Agency (EPA). Because construction activities associated with the proposed project would result in the disturbance of more than one acre, compliance with the statewide NPDES storm water general permit for construction activity would be required. The NPDES storm water permit would require the following:

- elimination or reduction of non-storm water discharges to storm water systems and other waters of the United States,
- development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for temporary construction activities,
- consideration of permanent post-construction water quality best management practices (BMPs), and
- inspections of storm water control structures and pollution prevention measures.

STATE

The State Water Resources Control Board (SWRCB) and nine associated RWQCBs enforce State of California statutes, which are equivalent to or more stringent than the federal statutes. The Los Angeles RWQCB (Region 4) issues permits for activities, including construction activities that could cause impacts on surface waters and groundwater. The Los Angeles RWQCB developed a Water Quality Control Plan (Basin Plan) to protect the quality of surface and ground waters of the region and is also responsible under Section 303(d) of the CWA for protecting surface waters and groundwater from both

point and non-point sources of pollution within the project site. The Basin Plan establishes water quality standards and objectives that protect the beneficial uses of various waters. In order to protect these uses, the State develops Total Maximum Daily Loads (TMDLs), which is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet Water Quality Objectives (WQOs) established in the Basin Plan.

There are several segments of waterbodies within the Los Angeles River Watershed that the Los Angeles RWQCB has established as 303(d) Water Quality Impacted Segments. The watershed has established TMDLs for metals and nutrients (ammonia, bacteria, nitrate as nitrogen, nitrite as nitrogen, nitrogen, algae, and organic enrichment/low dissolved oxygen) to meet WQOs. A trash TMDL was established for the watershed and approved by the SWRCB and EPA in 2002; however, the California Court of Appeals overturned the approvals in 2006 on the basis of the CEQA analysis prepared for the TMDL. The trash TMDL was set aside and remanded back to the RWQCB for revision of the CEQA analysis (RWQCB 2003). Segments to which Santa Anita Wash is tributary are listed in Table 3.6-1 along with their listed impairments and any applicable TMDLs.

TABLE 3.6-1 303(d) WATER QUALITY IMPACTED SEGMENTS DOWNSTREAM OF SANTA ANITA WASH

303(d) Listed Segments	TMDL Impairments
Rio Hondo Reach 1	metals, nutrients
Rio Hondo Reach 2	nutrients
Los Angeles River Reach 1	metals, nutrients
Los Angeles River Reach 2	metals, nutrients

Source: SWRCB 2003

LOCAL

The City of Arcadia is a co-permittee under the County of Los Angeles of Los Angeles municipal permit issued by the Los Angeles RWQCB. The permit consists of various stormwater management programs designed to reduce pollutants in stormwater and urban runoff. Under the City's NPDES stormwater permit requirements, construction projects must implement at a minimum, BMPs to reduce pollutants to the maximum extent practicable (MEP) for water quality protection. This includes sediment control, construction materials control, and erosion control to prevent stormwater pollutants from leaving construction sites. In the event soil is disturbed during the rainy season (generally defined as between October 15 and April 15), construction projects must also implement a Wet Weather Erosion Control Plan (WWECP). As discussed in Section 3.5, implementation and development of a Local SWPPP is also required for construction projects disturbing one or more acres. The City of Arcadia has also enacted ordinances to comply with stormwater regulations as specified above.

3.6.3 ENVIRONMENTAL ANALYSIS

The following hydrology and water quality analysis is based on review of the available technical reports, including California's Groundwater Bulletin 118 for the Raymond Groundwater Basin, prepared by the California Department of Water Resources (DWR 2004), and knowledge of the proposed type, intensity, and duration of project construction activities on the proposed project sites.

THRESHOLDS OF SIGNIFICANCE

The project would have a significant effect on hydrology and water quality if it would result in one or more of the following:

- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

EFFECTS DISMISSED IN THE INITIAL STUDY

The project was determined to have no impact or a less than significant impact with respect to the following thresholds of significance, which were dismissed from the analysis in the Initial Study:

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows;

- expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami or mudflow; or

- inundation by seiche, tsunami, or mudflow.

IMPACT ANALYSIS

HYDRO-1 *The proposed project site would alter the existing drainage pattern of the site, which would potentially result in substantial erosion or siltation.*

The proposed project would result in 300,000 to 500,000 cubic yards of sediment removal from behind Santa Anita Dam. The material would be removed by dry excavation Prior to sediment removal activities, the reservoir would be drained. A dry-out period, which could last several weeks, would be required before sediment removal would occur. Sediment would be removed from the reservoir and transported on a conveyor belt system through a tunnel to Arcadia Wilderness Park. All sediment removal activities would occur below the elevation of 1,300 feet.

Construction of the proposed project would result in temporary alterations of surface drainage characteristics at the project site during clearing, grading, and excavation activities. During storm events, exposed sediment could be carried from the site through exposure to stormwater and wind, resulting in on-site erosion. As discussed in Section 3.5, the proposed project would implement applicable BMPs for sediment control and erosion prevention in accordance with the NPDES permit requirements for construction. In the event construction of the proposed project requires the disturbance of soil during the rainy season as defined as October 15 through April 15, a WWECP would be developed, which would include measures to prevent on-site erosion that the contractor would be required to implement. Excavation, grading, and sediment placement activities would also be undertaken in accordance with LACDPW regulations for SPS sites, which establishes protocols for proper design of slopes and temporary sediment collecting structures. Adherence to these regulations and site design requirements would be enforced through plan check reviews and site inspection following the issuance of grading permits. Accordingly, impacts related to on-site erosion would be less than significant.

USACE has indicated that an Individual Permit would be required under Section 404 of the Clean Water Act for the proposed sediment removal and placement activities. A formal jurisdictional delineation was performed on October 15, 2007, to identify boundaries and acreages of all jurisdictional waters occurring within the project area that fall within USACE jurisdiction. All Waters of the United States have been delineated to their jurisdictional limits as defined by 33 CFR 328.4. Jurisdictional waters of the U.S. were delineated pursuant to the criteria outlined in and in accordance to the USACE 1987 Wetland Delineation Manual (Manual) (Environmental Laboratory 1987) and the December 2006 Interim Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region (Environmental

Laboratory 2006). The results of the jurisdictional delineation and associated mitigation measures are discussed in Section 3.3, Biological Resources.

Operation of the proposed project would result in permanent alterations of surface drainage characteristics of the site, as 500,000 cubic yards of sediment would be placed within the Lower SPS and the proposed 13-acre Middle SPS. Placement of the sediment would be undertaken in accordance with LADPW regulations for SPS sites, as described in Section 3.5. Proper placement and compaction of sediment, combined with the installation of surface drainage structures to direct stormwater around the fill area, would prevent on-site erosion of sediment. Additionally, the surface of the SPS would be revegetated or sown with grass seed mixture to further prevent erosion impacts. As such, impacts related to on-site erosion would be less than significant during operation of the proposed project. The project would not result in an increase in impervious surface area and no increase in the amount of surface runoff would increase. Accordingly, impacts related to off-site erosion would be less than significant.

3.6.4 MITIGATION MEASURES

No significant impacts to hydrology and water quality would occur as a result of the project; therefore, no mitigation measures are required.

3.6.5 SIGNIFICANCE AFTER MITIGATION

No significant unavoidable adverse impacts would occur as a result of the proposed project. Compliance with the NPDES construction permit and applicable LACDPW regulations for sediment placement sites would reduce potential erosion impacts to a less than significant level and

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3.7 NOISE

The purpose of this section is to identify, describe, and evaluate noise sources and noise impacts associated with the proposed action. The section analyzes the short-term construction noise generated by the construction equipment to be used on the proposed project, and determines whether there would be significant increases in noise levels or noise levels exceeding State or local guidelines.

3.7.1 EXISTING CONDITIONS

Noise is most often defined as unwanted sound. Noise has adverse effects on different receptors, such as hearing loss, speech interference, sleep interference, physiological responses, and annoyance. Criteria have been established to help protect the public health and safety and prevent disruption of certain human activities.

Hearing loss does not generally result from ambient or background noise. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. For example, mining employees may experience this effect. In contrast, noise levels in neighborhoods, even in very noisy airport environs, generally are not sufficiently loud to cause hearing loss.

Speech interference is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 decibels (dBA) and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. For example, the maximum sound level that permits relaxed conversation with 100 percent intelligibility is 45 dBA. This drops to 60 percent intelligibility at 70 dBA.

Physiological responses are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. For example, 50 percent of people report that noise levels of 75 dBA disturb sleep. While such effects can be induced and observed, the extent to which these physiological responses cause harm or are a sign of harm is not known.

Annoyance is a very individualized characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

TERMINOLOGY

A decibel (dB) is a logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called “sound level”), measured in dB. Environmental noise is usually measured in A-weighted decibels (dBA). A dBA is a dB corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels. In general, people

can perceive a 3 dBA difference in noise levels; a difference of 10 dBA is perceived as a doubling or halving of loudness. Some representative sounds and sound pressure levels are shown in Table 3.7-1.

TABLE 3.7-1 SOUND PRESSURE LEVELS OF COMMON SOUNDS AND NOISES

Sound Quality	dBA	Sound Sources
Threshold of Feeling/Pain	120	Rocket Engine Private Jet Turbojet: 7,000 lbs. thrust
Deafening	110	Propeller aircraft Boiler factory Nearby riveter Thunder Subway & elevated trains
Very loud	90	Woodsaw, punch press Loud street noises Noisy factory Screw machine Pneumatic drill
	80	Police whistle portable sander
Loud	70	Noisy office Average traffic Normal radio Average factory
Moderate	60	Noisy home
	50	Average office Ordinary conversation Quiet radio
Faint	40	Quiet home
	30	Private office Average auditorium Quiet conversation
Very Faint Threshold of Audibility	20	Rustle of leaves
	10	Whisper
	0	Sound proof room

Source: AMB Beaird, Inc. 1970.

In addition to individual sound levels, community noise can be expressed as L_{eq}, the Equivalent Noise Level. L_{eq} is the steady-state sound level containing the same total energy as a time-varying signal over a given sample period, i.e., L_{eq} is the "energy" average noise level.

SOUND PROPAGATION AND ATTENUATION

Sources of noise usually are typically analyzed as either "point sources" or "line sources," as explained below. The attenuation (reduction) of noise levels over a distance is different for point and line sources.

Construction noise is analyzed as one or more point sources. In an area which is relatively flat and free of barriers, the sound level resulting from a single "point source" of noise decreases by 6 dBA for each doubling of distance or 20 dBA for each factor of 10 in distance. This applies to fixed sources and mobile sources which are temporarily stationary, such as an idling truck or other heavy duty equipment operating within a confined area, such as a construction site.

For a "line source" of noise, such as a heavily traveled roadway, the noise level decreases by a nominal value of 3 dBA for each doubling of distance between the noise source and the noise receptor.

The values given above are for a reflective, or "hard," site at which the terrain between the source and receptor is paved, unvegetated soil, or water. In the case of an absorptive, or "soft," site at which there is vegetation between the source and receptor, the attenuation for each doubling of distance may increase by as much as 1.5 dBA. Soft site factors do not apply where the line of sight between source and receptor is more than 10 feet above the ground, or if the noise is refracted over the top of a barrier.

NOISE SENSITIVE RECEPTORS

Noise sensitive receptors are generally considered to be human activities or land uses that may be significantly affected by interference from noise. These areas typically include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Some threatened or endangered biological species are considered noise-sensitive and are also sensitive receptors.

Noise sensitive receptors in the vicinity of the proposed project are identified on Figure 2-4, and include the following:

- For the reservoir and dam, there are no sensitive human receptors within 1,800 feet; the nearest residences are located at the northeast end of Highland Vista Drive. There are ridges and valleys between the dam and the residences, thereby blocking the line of sight between the two locations.

- Park users of the Arcadia Wilderness Park are considered sensitive receptors for this project.

- Along the conveyance route, there are residences to the west of the Santa Anita Spreading Grounds, approximately 400 to 600 feet west of the proposed conveyance route between the reservoir and the Middle SPS. The residences are generally located at an elevation higher than the conveyance route.

- The residences closest to the Middle SPS are located on the east side of Highland Oaks Drive, south of Doshier Avenue, approximately 300 feet from the west edge of the Middle SPS at approximately the same elevation.

- The residences closest to the Lower SPS are located to the south on Oakglen Avenue and at the terminus of Oakhaven Road, at a distance of approximately 200 feet. West of the Lower SPS, the closest homes are on Highland Oaks Drive, approximately 275 feet to the west. East of the Lower SPS the closest homes are approximately 300 feet to the east, which are elevated above the Lower SPS.

Additional noise receptors in the project vicinity include Foothills Middle School, located approximately 0.20 miles south of the Lower SPS; Highland Oaks Elementary School, located approximately 0.33 miles west of the Lower SPS; and Arcadia Home Nursing & Health, located approximately 0.44 miles southeast of the Lower SPS. Other types of receptors (mobile homes, hotels, hospitals, or libraries) are not located in proximity to the proposed project.

No state or federally listed threatened or endangered species were identified within the project area that would be considered sensitive receptors. Impacts to biological resources are discussed further in Section 3.3, Biological Resources.

EXISTING NOISE SOURCES

The project area and environs are generally quiet. Local noise sources include residential neighborhood traffic, landscaping equipment, and natural sounds such as wind, birds, and rustling leaves. Low level background vehicle noise comes from Foothill Boulevard and I-210; these roadways are more than 0.4 miles away from the sensitive receptors near the project site.

EXISTING NOISE LEVELS

Noise levels were measured in the vicinity of the project site on September 12, 2007 between 2:00 PM and 3:30 PM. The locations and the results of the measurements are described in Table 3.7-2 and shown on Figure 3.7-1.



Source: GlobeXplorer, 2005.

Figure 3.7-1
Noise Measurement Locations

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TABLE 3.7-2. EXISTING NOISE LEVELS NEAR THE PROJECT SITE AND RECEPTORS

Site ID	Location	Start Time	Duration (Minutes) *	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Noise Source
1	West of and adjacent to the Santa Anita Wilderness Park	2:07 PM	16	40.4	35.0	51.2	Generally quiet with low noise sources such as birds, wind, rustling leaves, and very distant landscaping and aircraft
2	West of and adjacent to residences near the southern end of the site (Lower SPS)	2:34 PM	10	47.6	44.6	61.7	Generally quiet with low noise sources such as birds, wind, rustling leaves, and very distant landscaping and aircraft
3	At the nearest residence, west of the Middle SPS	2:52 PM	10	45.6	38.3	56.6	Primary noise source was traffic on nearby I-210 to the south. Two trucks passed by at approximately 15 miles per hour.
4	At the nearest residence, west of the conveyance route at the northern end of the Upper SPS	3:12 PM	10	43.8	36.2	54.3	Generally quiet with low noise sources such as birds, wind, rustling leaves, and very distant landscaping and aircraft. Distant engine and noise from adjacent residence.

* Measurement durations are to the extent necessary to capture the equivalent 1-hour noise level (Leq) required for noise analysis using SOUND2000 noise model; the noise sources were constant and additional duration would provide approximately the same Leq as shown.

VIBRATION DESCRIPTORS

Vibrations caused by construction activities can be interpreted as energy transmitted in waves through the soil mass. These energy waves generally dissipate with distance from the vibration source, due to spreading of the energy and frictional losses. The energy transmitted through the ground as vibration, if great enough, can result in structural damage. To assess the potential for structural damage associated with vibration from construction activities, the vibratory ground motion in the vicinity of an affected structure is measured in terms of peak particle velocity (ppv), typically in units of inches per second (in/sec). Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3.7-3 presents various vibration magnitudes and the related effect on humans and structures.

TABLE 3.7-3 EFFECTS ON PEOPLE AND STRUCTURES AT VARIOUS VIBRATION LEVELS

Vibration Level (in/sec ppv)	Effects on People	Effects on Structures
0.006-0.019	Threshold of perception; possibility of intrusion	Unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level for ruins and ancient monuments
0.1	Threshold of annoyance	Virtually no risk of damage
0.2	Annoying to people in buildings	Threshold of risk of architectural damage to normal dwelling with plastered walls and ceilings
0.4-0.6	Considered unpleasant	Architectural damage and possibly minor structural damage

Source: Caltrans 2002
Caltrans considers most construction vibrations, with the exception of pile driving and blasting to be continuous.

Construction operations generally include a wide range of activities that can generate ground-borne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers and pavement breakers can generate perceptible amounts of vibration at distances within 200 feet of the vibration sources. Heavy trucks can also generate ground-borne vibrations which vary, depending on vehicle type, weight and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions due to its unique characteristics. Typical vibration levels for various pieces of construction equipment are shown in Table 3.7-4.

TABLE 3.7-4 REPRESENTATIVE VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment		ppv at 25 feet (in/sec)
Pile Driver (impact)	upper range	1.518
	Typical	0.644
Pile Driver (sonic)	upper range	0.734
	Typical	0.170
Large Bulldozer		0.089
Loaded Trucks		0.076
Jackhammer		0.035
Small Bulldozer		0.003

Source: FTA 2006

3.7.2 REGULATORY SETTING

The proposed project site is located within the City of Arcadia and the Angeles National Forest. The Santa Anita Reservoir and the conveyor belt system route are located within the Angeles National Forest, and the conveyor belt system route continues to the SPS areas, which are located within the City of Arcadia. The applicable noise regulations of the City are provided.

CITY OF ARCADIA

General Plan Noise Element

The City adopted a General Plan Noise Element in September 1996 to quantify the City's noise environment for both short- and long-term growth, and use as a guide for the development of land uses to achieve noise compatibility within the City. The Noise Element specifies the implementation of noise policies and standards through the enforcement of the City's noise ordinance. The ambient noise level standard for residential uses is 65 dBA for outdoor activities and 45 dBA for indoor activities.

According to the Noise Element, construction noise, in general, can affect the serenity of existing neighborhoods. Some noise disturbance in areas adjacent to individual construction sites is to be expected. Although construction noise is a short-term impact, there is the potential for disruption of nearby residents if steps are not taken to limit the intensity and duration of their noise exposure. The City of Arcadia's Building Code limits construction-related activity to 7:00 a.m. through 7:00 p.m., Monday through Saturday unless otherwise permitted by the Development Services Department. Construction is prohibited on Sundays and major holidays. Compliance with these restrictions on construction activities help to minimize potential short-term construction impacts.

Land uses and/or receptors, considered to be noise sensitive by the City, include residences, schools, hospitals, convalescent facilities, rest homes, hotels, and places of worship. In addition, the Wilderness Park is considered to be a noise sensitive land use by the City.

Municipal Code

Article IV, Chapter 6, Section 4610.3 of the Arcadia Municipal Code establishes noise limits for the City (City of Arcadia 2007): "(a) It shall be unlawful for any person within the City of Arcadia to produce or cause or allow to be produced sound or noise which is amplified by the use of sound amplifying equipment and which amplified noise or sound is received on property occupied by another person within the designated region, in excess of the following levels, except as expressly provided otherwise or exempted hereinafter (Table 3.7-5):

TABLE 3.7-5 CITY OF ARCADIA NOISE ORDINANCE, NOISE LIMITS

Region	Day 7:00 a.m. to 10:00 p.m.	Night 10:00 p.m. to 7:00 a.m.
Residential Zone	55 dBA	50 dBA
Commercial Zone	65 dBA	60 dBA
Industrial Zone	70 dBA	70 dBA

At the boundary line between two of the above zones the noise level of the quieter zone shall be used.

(b) Corrections to Noise Limits. The numerical limits given in Section 4610.3(a) shall be adjusted by the following corrections, where appropriate:

Noise Condition	Correction (in dB)
1. Impulsive sounds, pure tone or sounds with a cyclically varying amplitude	-5
The following corrections apply during daytime only	
2. Noise occurring more than 5 but less than 15 minutes per hour	+ 5
3. Noise occurring more than 1 but less than 5 minutes per hour	+10
4. Noise occurring less than 1 minute per hour	+15

Source: City of Arcadia 2007.

Unlike many jurisdictions, the City of Arcadia does not exempt construction noise from the general noise limits above, nor have separate noise limits for construction been established. Therefore, the City's noise limits are the noise limits to be met during construction.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Caltrans provides vibration level thresholds for architectural and structural damage and human perception thresholds. Caltrans vibrations are provided in Table 3.7-3 for reference. To assess the potential for structural damage associated with vibration from construction activities, the vibratory ground motion in the vicinity of an affected structure is measured in terms of ppv, typically in units of inches per second (in/sec). As shown in Table 3.7-3, damage to structures occurs when vibration levels range from 2 to 6 inches per second (in/sec) ppv. One half this minimum threshold, or 1 inch per second ppv is considered a safe criterion that would protect against structural damage. Caltrans uses a vibration criterion of 0.2 in/sec ppv for its construction projects, except for pile driving and blasting.

3.7.3 ENVIRONMENTAL IMPACTS

Although the proposed project is being implemented by the County, the project is located on property within both the City and the Angeles National Forest. All applicable noise standards and regulations are considered in this noise analysis to determine the significance of the project's potential impacts. The noise sensitive receptors potentially affected by the project are the residences located within the City of

Arcadia. The project components located outside of the City are within the Angels National Forest, where no there are no residential areas. Therefore, project noise impacts would be limited to the receptors within the City. Accordingly, the project is analyzed using the City's noise requirements.

THRESHOLDS OF SIGNIFICANCE

The project would have a significant effect on noise and vibration if it would result in one or more of the following:

- generate or expose people to noise levels in excess of standards established in a local general plan or noise ordinance, or in other applicable local, state, or federal standards;
- generate or expose people to excessive groundborne vibrations or groundborne noise levels; or
- create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing without the project.

EFFECTS DISMISSED IN THE INITIAL STUDY

The Initial Study (see Appendix A) issued for the proposed project in May 2007 determined that three potential noise-related impacts would be less than significant, and therefore did not need to be analyzed in detail in the EIR. Specifically, the Initial Study determined that the proposed project would not:

- create a substantial permanent increase in ambient noise levels in the vicinity of the project (above levels without the project);
- for a project within an airport land use plan or within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or
- for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

As discussed in the Initial Study, noise levels in the vicinity of the project site would not increase permanently after the proposed project is complete because no new sources of noise would occur after the construction period (i.e., no operational impacts to consider). In addition, there are no public airports or private airstrips in the project vicinity. The closest airport to the project site is the El Monte Airport, approximately 5 miles to the south. Accordingly, the proposed project would not expose people residing or working in the project area to aircraft noise, and impacts associated with exposure to excessive noise levels from proximity to airports are not considered further.

IMPACT ANALYSIS

NOISE-1 *Construction of the proposed project would create a substantial temporary or periodic increase in ambient noise level in the vicinity of the project, in excess of existing noise levels without the project.*

As described in Section 2.5 of this EIR, construction equipment for sediment excavation and moving activities would principally include a crusher, excavators, dozers, loaders, graders, sheepsfoot rollers, heavy trucks, and an electric conveyor belt system; and the riser modifications would include a crane, a heavy truck, concrete mixer trucks, and a generator. Noise levels from the project construction equipment range from 80 to 86 dBA L_{max} at 50 feet from the source, which are identified in Table 3.7-6.

TABLE 3.7-6 PROJECT CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment Description	Lmax Noise Limit at 50 ft, dB, slow	Is Equipment an Impact[1] Device?	Acoustic Usage Factor[2]
Crusher	86	No	50%
Excavator	85	No	40%
Compactor roller (ground)	80	No	20%
Crane (mobile or stationary)	85	No	20%
Dozer	85	No	40%
Dump Truck	84	No	40%
Front End Loader	80	No	40%
Generator (more than 25 KVA)	82	No	50%
Grader	85	No	40%

1 "Impact" equipment is assumed to produce separate discernable sound pressure maxima.
2 "Acoustic Usage Factor" represents the percent of time that equipment is assumed to be running at full power while working on site

Source: Thalheimer 2000,

Typically, maximum noise levels of construction equipment range from approximately 70 dBA to 85 dBA L_{max} at 50 feet from the source. The equipment noise levels also vary based on different sizes and with different engines. Construction equipment noise levels also vary as a function of the activity level, or duty cycle. Construction equipment noise is considered as a point source, with attenuation (reduction) at a rate of 6 dBA per doubling of distance over a hard surface or when the source to receptor line of sight is more than 10 feet above the ground. For example, a noise level of 75 dBA at 50 feet will be 69 dBA at 100 feet, 63 dBA at 200 feet, etc. If the surface between the source and receptor is soft, such that noise energy would be absorbed, the attenuation rate will be more than 6 dBA per doubling distance, up to 7.5 dBA per doubling distance.

Typical construction projects, with equipment moving from one point to another, work breaks, and idle time, have long-term noise averages that are lower than loud, short-term noise events. As shown in

Section 2.5, as many as 10 to 15 pieces of equipment could be operating in the dam and reservoir area at one time: for sediment excavation, 1 crusher, 3 bulldozers, 2 excavators, and 3 loaders; and for riser construction, 1 truck, 6 to 10 concrete mixer trucks, 1 mobile crane, and 1 pump/generator. For the clearing of vegetation at the Middle and Lower SPS, and along the conveyor belt system route: 1 bulldozer, 1 backhoe/loader, 4 trucks. At the Middle and Lower SPS, there may be six pieces of equipment at work: 3 bulldozers, 1 grader, and 2 sheepfoot rollers. Not all of this equipment would be operating at full power at the same time. Therefore, for this project, a maximum noise level of 93 dBA at a distance of 50 feet from the center of construction activities is assumed to occur during the simultaneous excavation of sediment at the reservoir and modification to the dam outlet structures. A maximum of 90 dBA at 50 feet is assumed for the construction equipment activity at the Middle and Lower SPS areas.

The noise impacts associated with the various construction activity areas are described below.

Reservoir and Dam. Maximum short-term noise levels from the excavation at the reservoir and construction activities at the dam would be reduced by distance and topography to less than 50 dBA at the nearest residences. Therefore, the noise level would not exceed the City of Arcadia limit of 55 dBA, nor would it be substantially greater than the ambient noise levels. The construction equipment noise would likely be occasionally audible due to the low ambient noise levels and noise reflections from the canyons, hillsides, and weather phenomena that could occur.

Conveyance Route. Noise would be generated by the conveyance of excavated sediment from the reservoir to the Middle SPS. Noise levels from the conveyor belt system would be steady and constant could range from 70 to 80 dBA at 50 feet based on design (i.e., uncovered vs. covered). The drive units of the conveyor belts have been measured at 77 dBA Leq at 35 feet, with the conveyor belt rollers much lower at 53 dBA Leq. From the reservoir, the conveyor belt system would pass through the existing tunnel. Conveyance noise levels at the nearest residence would be reduced by the tunnel, and distance and topography to less than the City of Arcadia noise limit of 55 dBA.

Conveyance noise would be generated through the Wilderness Park, a sensitive noise receptor as defined in the City's Noise Element. Conveyance noise could interfere with some recreation activities within a range of 200 to 600 feet from the route, beyond which noise levels would be below the threshold.

The conveyance system would continue south for approximately 6,000 feet along the access road to the Middle SPS. Maximum conveyance noise of 77 dBA Leq would attenuate over distance on "soft" terrain to approximately 55 dBA, assuming a soft surface at the nearest residences approximately 400 from the conveyance. These noise levels would not exceed the City of Arcadia 55 dBA limit, not resulting in a significant impact.

Lower SPS. Maximum noise levels from the working perimeter of the Lower SPS area of 90 dBA to the nearest residences approximately 200 feet to the south would attenuate by distance to approximately 78

dBA. This noise level would exceed the City of Arcadia limit of 55 dBA and would be substantially greater than the ambient noise levels, resulting in a significant impact.

Once the maximum placement of approximately 250,000 cubic yards of sediment is achieved at the Lower SPS, the conveyor belt system would be shortened to connect with the Middle SPS, and conveyed sediment would be placed at the Middle SPS.

Middle SPS. Maximum noise levels from the working perimeter of the Middle SPS area of 90 dBA to the nearest residences approximately 350 feet to the west would attenuate by distance to approximately 73 dBA. Approximately ten residences west of the Middle SPS would experience intermittent noise levels in excess of local noise standards during sediment placement activities at this SPS area. This noise level would exceed the City of Arcadia limit of 55 dBA and would be substantially greater than the ambient noise levels, resulting in a significant impact.

For persons nearby and outside, the noise levels at several locations near the project site would be disturbing and would interfere with normal speech. These noise levels may also be disturbing at locations inside structures, especially if windows are open. As described, the construction noise at these levels would cause a "substantial temporary or periodic increase in ambient noise levels in excess of noise levels without the project." Although construction activities would be limited to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, periodic noise level increases during the 8-month construction period and would exceed City noise standards. Mitigation measures NOISE-A through NOISE-F are provided below to reduce these impacts; however, noise levels would still exceed the City's Municipal Code requirements after mitigation. As such, short-term noise impacts would be significant and unavoidable.

As described in Section 2.4, no operational changes would occur as a result of the proposed project that would generate noise within the project area. Accordingly, no long-term operational noise impacts would occur and no noise-related mitigation measures would be required after construction activities are completed.

NOISE-2 *The proposed project would not generate or expose people to excessive groundborne vibrations.*

Construction operations would result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, with low rumbling sounds, and detectable at moderate levels, and damaging to nearby structures at the highest levels. While ground vibrations from typical construction activities very rarely reach levels high enough to cause damage to structures, special consideration must be made when sensitive or historic land uses are near the

construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving, which are not required for this project.

As shown in Table 3.7-3, damage to structures occurs when vibration levels range from 2 to 6 inches per second (in/sec) ppv. One half this minimum threshold, or 1 inch per second ppv is considered a safe criterion that would protect against structural damage. Caltrans uses a vibration criterion of 0.2 in/sec ppv for its construction projects, except for pile driving and blasting.

Sediment movement and placement at the SPS by heavy equipment would occur in proximity to residences, and would produce low-level vibrations at the source. The maximum vibration generated at the work areas is anticipated to be in the range of 0.07 to 0.09 in/sec ppv at 25 feet for loaded trucks (as previously shown in Table 3.7-4), which is below the Caltrans criterion of 0.2 in/sec ppv. In addition, this vibration level would dissipate with distance at approximately 200 feet to the nearest residences. Therefore, a detailed vibration analysis is not required. As such, vibration from the project construction would not be a significant impact, and no mitigation is required.

NOISE-3 *The proposed project would expose people to noise levels in excess of standards established in a local general plan or noise ordinance, or in other applicable local, state, or federal standards.*

As described in NOISE-1 above, noise levels associated with sediment transfer and placement in the SPSs would exceed the standards of the City of Arcadia Noise Element of the General Plan and noise ordinance of the Municipal Code. Therefore, project construction noise would be a significant impact. Mitigation measures are included below to minimize the disturbance to nearby residents; however, short-term impacts would remain significant and unavoidable during the 8-month construction period.

3.7.4 MITIGATION MEASURES

The following mitigation measures would reduce noise associated with project construction or would reduce impacts to sensitive receptors:

NOISE-A At all areas except the reservoir-dam area, construction equipment shall be fitted with noise shielding and muffling devices to reduce noise levels to the maximum extent feasible. Where available, these devices shall be better than manufacturer's standard equipment.

NOISE-B Stationary sources, such as message boards for traffic control, that will be located within 500 feet of residences shall be solar or battery powered, or connected to the local power grid, i.e., not powered by an internal combustion engine.

NOISE-C At the SPS areas, equipment maintenance and staging areas shall be located within the project area.

NOISE-D At the Lower SPS, construction of a noise barrier on the west and southwest sides will be feasible. Therefore, at the commencement of sediment placement in the Lower SPS, LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west and southwest. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, the most efficient and economical barrier may be built by depositing the initial sediment along the affected boundaries of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.

NOISE-E At the commencement of sediment placement in the Middle SPS, the LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, a barrier may be built by depositing the initial sediment along the western boundary of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.

NOISE-F The LACDPW shall establish a noise complaint and response procedure that includes a 24-hour toll free or local telephone number for complaints, and a procedure where a field engineer/construction manager will respond within 48 hours as practicable, investigate the complaints, and take corrective action if necessary. Complaints after normal working hours may be received by voice mail.

3.7.5 SIGNIFICANCE AFTER MITIGATION

The mitigation measures NOISE-A through NOISE-F, described above, would reduce construction noise levels and impacts to residents near the work areas. It is not feasible to predict the noise reduction that would be achieved by the construction of noise barriers at the Middle and Lower SPS sites (NOISE-D and NOISE-E). Noise reduction will vary dependent on barrier type, barrier height relative to the equipment elevation, and the location of the equipment within the work site. Generally, the effectiveness of an earth berm or noise wall depends on the distance between the noise receptor and the noise source, the distance between the noise receptor and the noise berm/wall, and the height of the noise berm/wall above the line of sight between the noise receptor and the noise source. Mitigation measures NOISE-D and NOISE –E include the use of a barrier at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties

because the distance of approximately 350 feet warrants a barrier of this height and any barrier above the exhaust pipes would reduce construction noise at the residences near the Lower and Middle SPS areas. In some cases, earth berm barriers may reduce the noise levels down to the 55 dBA noise thresholds. However, it is likely that some noise levels from the SPS areas at the western residences would remain above 55 dBA, and therefore would be significant and unavoidable.

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3.8 RECREATION

The purpose of this section is to identify the recreational facilities near the proposed project and to evaluate the effects of the proposed project on these facilities. The analysis only addresses construction-related impacts, since no operational changes would occur as a result of the proposed project.

3.8.1 ENVIRONMENTAL SETTING

The majority of the project site is located in the City of Arcadia, with the northern portion located in the Angeles National Forest. The City of Monrovia is located adjacent to the project site to the east. The Angeles National Forest, a 662,983-acre area managed by the U.S. Forest Service, is located within Los Angeles, San Bernardino, and Ventura Counties. The U.S. Forest Service Chantry Flat Recreation Area is located approximately one-mile above the Santa Anita Dam north on Santa Anita Canyon Road. This recreation area contains a large picnic area and trailheads for many popular hiking trails. The gate on Santa Anita Canyon Road, which leads to Chantry Flat Recreation Area, is open from 6:00 a.m. to 10:00 p.m. and U.S. Forest Adventure Pass is required for parking and day use in this area.

There are six city parks within a one-mile radius of the proposed project (see Table 3.8-1). The proposed project is within the boundaries of one of these parks, the Arcadia Wilderness Park.

TABLE 3.8-1 PARKS WITHIN ONE-MILE OF THE PROPOSED PROJECT

Park Name	Distance from Project (miles)	Direction/City	City
Wilderness Park	0	-	Arcadia
Highland Oaks Park	0.19	west	Arcadia
Eisenhower Memorial Park	0.58	south	Arcadia
Newcastle Park	0.87	southwest	Arcadia
Forest Avenue Park	0.73	southwest	Arcadia
Sierra Vista Park	0.82	west	Sierra Madre

Amenities at Wilderness Park include a Nature Center, picnic areas, multi-purpose field, nature trails, barbeque, fire circle, and restrooms. The Wilderness Park is open from 8:30 a.m. to 4:30 p.m. Monday through Friday, October through April and 8:30 a.m. to 7:00 p.m. Monday through Friday, May through September. The Boy Scouts use the Wilderness Park for classes, which are offered on Monday and Wednesday evenings and Saturdays throughout the year. The City runs a Day Camp at Wilderness Park for nine weeks each summer, usually the last two weeks in June until the third week in August. The Day Camp hours run from 9:30 a.m. to 3:00 p.m., Monday through Friday, however, extended care is offered from 7:00 a.m. to 9:30 a.m. and from 3:00 p.m. to 6:00 p.m.

A Los Angeles County trail, County Trail #7 – Santa Anita Wash Trail Extension, is located on the project site (County of Los Angeles 2001). This trail connects to County Trail #6 – Santa Anita Wash Trail, and is designed to provide access to the Angeles National Forest connecting to the Santa Anita

Canyon Trail. However, currently access to this trail is restricted by locked gates near the southern end of the project site by the Lower SPS and on the north near the Arcadia Wilderness Park.

REGULATORY SETTING

The City of Arcadia General Plan

The City of Arcadia General Plan provides guidance in the following five areas related to open space and recreation: open space for the preservation of natural resources; open space for the managed production of resources; open space for outdoor recreation; open space for public health and safety; and trail-oriented recreational uses. The purpose of the project pertains to open space for public health and safety, specifically for removing sediment that has accumulated behind the dam since the last clean out and constructing a riser on the low-level outlet of the dam, both of which would ensure the DSOD's seismic stability standards are met and the Santa Anita Dam is safe for continued use.

3.8.2 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The project would have a significant effect on recreation if it would result in one or more of the following:

- increased the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- affect existing recreational opportunities.

EFFECTS DISMISSED IN THE INITIAL STUDY

The Initial Study (see Appendix A) issued for the proposed project in June 2007 determined that one potential recreation-related impact would have no impact, therefore, this issue does not require further analysis in the EIR. Specifically, the Initial Study determined that the proposed project would not:

- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

The proposed project does not include or require the construction of recreational facilities. The proposed project only includes construction activities that are necessary for the Santa Anita Dam riser modification and sediment excavation and placement. After the project is complete there would be no operational related activities outside of the normal maintenance of the LACDPW flood control facilities.

IMPACT ANALYSIS

REC-1 *The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur or be accelerated.*

Because the proposed project would construct a new dam riser, remove sediment from the dam, place the sediment in the SPSs, and would not result in the construction of new residences or facilitate the development of residences, the project would not result in increased population. Therefore, the proposed project would not increase demand for neighborhood or regional parks or other recreational facilities. The Wilderness Park would remain open during the construction period of April through December; however, the visitors of the park could choose to visit other nearby parks due to the construction activities and noise from the conveyor belt system that would pass through the Wilderness Park's parking lot. It is not anticipated that a substantial number of visitors would visit another park due to the construction activities of the proposed project because some visitors, such as school groups, come to the park to visit the Nature Center, which is a use that cannot be found in other nearby parks. The day use of the Wilderness Park is variable from day to day and can range anywhere from three to 150 visitors (Houghton, pers. comm., 2007). The proposed construction would only occur during the weekdays; therefore, visitors of Wilderness Park on the weekends would not be affected by the proposed construction activities. Existing recreational facilities within the project vicinity would not be impacted during the construction periods of the proposed project, and would maintain service to current users. The proposed project would not increase use of existing park or recreation facilities, such that substantial physical deterioration of the facility would occur or be accelerated. Impacts to existing parks and recreation facilities would be less than significant.

REC-2 *The proposed project would not affect existing recreational opportunities.*

The proposed project would not include any long-term changes to the existing operations of the Wilderness Park. The short-term impact during construction would affect visitors and day campers to the park when the conveyor belt system would pass through the Wilderness Park parking lot and extend south of the parking lot and west of the Nature Center following the access road to the Lower and Middle SPS area. The proposed project would impact the Day Camp during the two 8-month construction periods of April through December. During the Wilderness Park Day Camp up to 104 campers arrive by buses, are dropped off at the top of the hill, and are escorted down into the park as a group with camp leaders. Children enrolled in extended care are dropped off and picked up by their parents. The majority of the parents arrive between 7:00 to 7:30 a.m. and between 5:30 to 6:00 p.m., with up to approximately twenty cars in each time period (White, pers. comm., 2007). The proposed project would potentially result in a significant impact to visitors walking throughout the Wilderness Park, including campers participating in Day Camp of the Wilderness Park. However, as a project design feature the construction contractor would be required to ensure that no sediment would fall over the Wilderness Park parking lot, by using

netting, shielding, or other means. Thus, impacts related to recreation, in this case related to pedestrian safety, during construction would be less than significant.

The proposed project would not impact County Trail #7 – Santa Anita Wash Trail Extension, trails in the Wilderness Park, or trails in the Angeles National Forest. The proposed sediment removal and sediment placement activities would not impact any trails on- or off-site, only existing access roads would be used for the construction equipment. County Trail #7 – Santa Anita Wash Trail Extension is not publicly accessible, since the project site is currently being used for LACDPW flood control facilities. Because no publicly accessible trails would be affected by the project, impacts to trails would be less than significant.

3.8.3 MITIGATION MEASURES

No significant impacts to recreation would occur as a result of the project; therefore, no mitigation measures are required.

3.8.4 SIGNIFICANCE AFTER MITIGATION

No mitigation measures are required and no significant unavoidable adverse impacts would occur as a result of the proposed project.

3.9 TRANSPORTATION AND CIRCULATION

This section summarizes the existing traffic in the project area and traffic report conducted by KOA Corporation (KOA), dated March 2008. A complete copy of the traffic study is included as Appendix E. The purpose of this section is to describe existing and future traffic circulation and parking conditions and to evaluate the impacts of the proposed project on local traffic and parking. The analysis is limited to the effects of the construction phase of the proposed project, since the project would not generate any operational traffic impacts.

3.9.1 ENVIRONMENTAL SETTING

LOCAL ROADS

The following roadways would be sued by construction workers to access the project site: Highland Oaks Drive, Elkins Avenue, Santa Anita Avenue, and Interstate 210 (Foothill Freeway).

Highland Oaks Drive is a two-lane residential roadway that connects northeastern residential areas to Elkins Avenue. The speed limit is 25 miles per hour (mph) and on-street parking is permitted. The roadway also provides direct access to the entrance/exit driveway of the Arcadia Wilderness Park.

Elkins Avenue is a two-lane residential roadway that connects the project site east of Highland Oaks Drive with Santa Anita Avenue to the west. The typical curb-to-curb width of the roadway is 36 feet. Single-family homes are located along this roadway and on-street parking is provided. The speed limit is 25 mph. The Elkins Avenue intersection at Highland Oaks Drive is controlled by a stop sign on Highland Oaks Drive.

Santa Anita Avenue is a north-south oriented two-lane divided local roadway in the project vicinity. Santa Anita Avenue is designated an arterial roadway south of Foothill Boulevard and provides an interchange with Interstate 210. The roadway has a landscaped median and the northbound leg of the roadway is generally 28 feet in width and the southbound leg is generally 24 feet in width.

The speed limit on Santa Anita Avenue within the study area is 35 mph. The Santa Anita Avenue intersection at Elkins Avenue is controlled by a stop sign on Elkins Avenue. The Santa Anita Avenue intersections with Grandview Avenue and Sierra Madre Boulevard are controlled by stops on all approaches.

Grandview Avenue is a two-lane local residential roadway located to the south of Elkins Avenue. The roadway is 32-feet in width within the study area and traverses the area in an east-west orientation.

Sierra Madre Boulevard is a two-lane local residential roadway, located to the south of Grandview Avenue. The roadway is 36 feet in width and traverses the area in an east-west orientation.

Interstate 210 (Foothill Freeway) is generally an east-west freeway located to the south of the project site. The freeway functions as the primary linkage between many suburban cities and communities that surround Los Angeles to the north and east. In the project vicinity, Interstate 210 has four general purpose traffic lanes and one high-occupancy vehicle (HOV) lane in each direction. On- and off-road ramps are provided at Santa Anita Avenue.

3.9.2 REGULATORY SETTING

CONGESTION MANAGEMENT PROGRAM

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. A total of 164 intersections are identified for monitoring on the system in Los Angeles County (Metro 2004).

3.9.3 TRAFFIC ANALYSIS METHODOLOGY

The TRAFFIX software was used to perform the analysis of the study intersections, which are all unsignalized. The intersection analysis was performed utilizing the *2000 Highway Capacity Manual* (HCM) methodology for unsignalized intersections. None of the study intersections are signalized; therefore, only unsignalized methodology is discussed and analyzed for the proposed project. Additional information regarding the traffic study modeling and methodology is provided in the traffic study (see Appendix E).

TRAFFIC COUNTS

After consultation with the City of Arcadia, KOA conducted two-hour mid-day traffic counts at four intersections in the project vicinity as well as 24-hour machine counts on the roadway segments between the four intersections. The 24-hour counts were taken on October 25 and October 26, 2007. The four selected intersections and roadway segments are listed below:

Study Intersections

1. Highland Oaks Drive/Elkins Avenue
2. Santa Anita Avenue/Elkins Avenue
3. Santa Anita Avenue/Grandview Avenue
4. Santa Anita Avenue/Sierra Madre Boulevard

Roadway Segments

1. Highland Oaks Drive north of Elkins Avenue
2. Elkins Avenue between Wilson Avenue and White Oak Drive
3. Santa Anita Avenue south of Elkins Avenue
4. Santa Anita Avenue south of Andrea Lane
5. Santa Anita Avenue south of Sierra Madre Boulevard

The intersections that were selected were those in the project vicinity most likely to be used by contractor employees and trucks to travel between the project site and Interstate 210. The mid-day time period was selected to represent a typical period during the normal workday. No ambient traffic growth was added to the existing traffic counts to account for future conditions since the area is fully developed. There are no major planned developments in the area that would add significant volumes to the study area intersections and roadway segments. Often there is a potential within an analyzed study area for future regional growth to send new through traffic onto major roadways. As the study area is located away from major commute corridors and freeway bypass surface routes, the potential for any significant growth in area volumes within the project construction period is greatly diminished.

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service (LOS) has been developed to subjectively describe traffic performance. LOS can be measured at intersections and along key roadway segments.

Level-of-service categories are similar to report card ratings for traffic performance. Intersections are typically controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. LOS A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. LOS D and E are progressively worse peak hour operating conditions and LOS F conditions represent where demand exceeds the capacity of an intersection. Most urban communities in the United States set LOS D as the minimum acceptable LOS for peak hour operations and plan for LOS C or better for all times of the day. Communities in Southern California where traffic congestion is common sometimes set LOS E as the threshold of the minimum acceptable LOS. The HCM provides LOS calculation methodology for both intersections and arterials (Transportation Research Board 2000).

Per City of Arcadia traffic impact standards, the following thresholds define significant impact standards, based on computed volume-to-capacity (V/C) ratios and LOS values:

- When traffic generated by the project causes a signalized or unsignalized intersection to move to LOS E or F from LOS D or better, or

- When an intersection already at LOS E or F is worsened by 0.02 or greater change in volume/capacity ratio due to traffic added by the project *

** Per County Congestion Management Program standards, which are used by local jurisdictions that do not have established traffic study guidelines such as the City of Sierra Madre, the latter standard is the sole standard by which V/C-based impacts are determined.*

If these lower LOS values (E or F) are not anticipated to be reached by an analysis of a proposed project, a significant traffic impact is not defined.

ALL-WAY STOP CONTROLLED INTERSECTIONS

Unsignalized intersections and all-way stop controlled intersections are each subject to separate capacity analysis methodology. All-way stop controlled intersection operations are reported by leg of the intersection.

This method calculates a delay value for each approach to the intersection. The 2000 HCM describes the detailed methodology. Table 3.9-1 describes the amount of delay associated with each LOS.

TABLE 3.9-1 ALL-WAY STOP CONTROLLED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Delay (seconds)	Level of Service
0-10	A
10-15	B
15-25	C
25-35	D
35-50	E
>50	F

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

UNSIGNALIZED INTERSECTIONS (TWO-WAY STOP CONTROLLED)

Unsignalized intersection LOS is reported for the major street and minor street (generally, left-turn movements). The method assesses available and critical gaps in the traffic stream, which make it possible for side street traffic to enter the main street flow. The 2000 HCM describes the detailed methodology. It is not unusual for an intersection to experience LOS E or F conditions for the minor street left-turn movements. It should be understood that, often, a poor LOS is experienced by only a few vehicles and that the intersection as a whole operates acceptably. Unsignalized LOS definitions are described in Table 3.9-2.

TABLE 3.9-2 UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Expected Delay	(Seconds/Vehicle)
A	Little or no delay.	0-10.0
B	Short traffic delay.	>10.1 – 15.0
C	Average traffic delays.	>15.1 – 25.0
D	Long traffic delays.	>25.1 – 35.0
E	Very long traffic delays.	>35.1 – 50.0
F	Extreme delays potentially affecting other traffic movements in the intersection.	>50

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

3.9.4 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

The proposed project would have a significant effect on Transportation/Circulation if it would:

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- exceed, either individually or cumulatively, a level of service standard established by the County's congestion management agency for designated roads or highways; or
- result in inadequate parking capacity.

EFFECTS DISMISSED IN THE INITIAL STUDY

The Initial Study (see Appendix A) issued for the proposed project in June 2007 determined that four potential transportation impacts were less than significant and did not need to be analyzed in the EIR. Specifically, the Initial Study determined that the project would not:

- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

As discussed in the Initial Study, the proposed project would not result in any permanent changes in existing roadway design or any uses which would be incompatible with area traffic. As such, upon completion of project construction, traffic conditions would be expected to return to current conditions and there would be no traffic impacts during the operational phase of the proposed project. No impacts to emergency access would occur as a result of the proposed project, and the project would not conflict with any alternative transportation programs. Therefore, no further evaluation of these issues is required.

The closest airport to the project site is the El Monte Airport, approximately 5 miles to south, and the Bob Hope Airport in Burbank, over 18 miles to the west. Due to distance from the project site to the nearest commercial airport and the construction activities associated with the proposed project, no changes to air traffic patterns would occur. The proposed project would not alter the number of trips during the operational phase and as such, would not conflict with the CMP Traffic Impact Analysis Guidelines.

The following discussion of impacts pertains only to the construction phase of the proposed project as no impacts on transportation and circulation would occur during operation of the project.

IMPACT ANALYSIS

TRANS-1 *The proposed project would not result in an increase in traffic during construction that would create a substantial change in relation to the existing traffic load and capacity of the street system or cumulatively exceed any applicable level of service standards.*

LOCAL ROADS AND INTERSECTIONS

During the 6 to 8-month construction phase for each year of construction, the traffic impacts that would occur within public streets are related to construction worker trips. Once construction equipment is transported to the project site, it is assumed that the equipment would remain on-site until the end of the 6 to 8-month period and all project-related traffic impact would be related to workers entering and leaving the project site during the weekdays. No sediment hauling activities would occur on local streets as part of the proposed project, since the disposal site is located on County-owned property on-site.

In order to analyze the future construction traffic conditions from the proposed project, the project trip generation was estimated based on the number of new trips expected to be generated by the construction workers. The anticipated construction equipment shown in Table 2-1 was used to calculate a conservative estimate of total on-site construction workers. It was assumed that one person would be required to operate each construction vehicle and that four support/supervisory persons would be on site daily and that all activities may be going on concurrently. Accordingly, it is estimated that 43 employees would work on-site during the peak construction period when the riser modification and sediment excavation, hauling, and placement phases overlap. For purposes of this traffic analysis, a passenger car equivalent (PCE) factor of 2.5 was used for the proposed project.

For purposes of forecasting future mid-day peak hour trip generation, it is assumed that 39 PCE trips would occur during the mid-day hour as employees run errands or go to and return from lunch. It is also assumed the truck trips to the site for support purposes would occur randomly throughout the 8-hour work day so the total number of trips generated by support trucks rounded up would be 4 PCE trips during the mid-day peak hour. The total number of peak hour trips generated by the proposed project during the mid-day peak hour is 43 PCE peak hour trips with half leaving the site and half entering the site.

To evaluate a worst-case scenario, it is assumed each employee would drive to and from work and that each employee would generate one additional trip per employee during the day to account for lunch or errand trips. This would result in 117 PCE trips per day. For purposes of forecasting, it is also assumed that 5 trucks per day would arrive and depart the site per day to deliver supplies and equipment. This accounts for 10 one-way truck trips per day. Converting trucks to passenger car equivalents using a PCE factor of 2.5, construction activities would add an additional 25 PCE trips per day. Adding the employee trips and truck trips, it is estimated that the proposed project would generate 142 PCE trips per day.

The mid-day time period was selected to represent a typical period during the normal workday. It was assumed for the traffic analysis that off-site truck trip scheduling would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.).

Table 3.9 -3 shows a summary of the results of the weekday mid-day peak LOS analysis for existing conditions and with the construction of the proposed project. The intersections in the project vicinity currently operate at an acceptable LOS (LOS A and B) and with the additional trips from the proposed project; all intersections would operate at same LOS as the existing conditions. The City of Arcadia has a goal of LOS C or better on local residential streets; therefore, the impact from the proposed project would be less than significant.

TABLE 3.9-3 MID-DAY PEAK HOUR INTERSECTION LEVEL OF SERVICE CALCULATIONS

Intersection	Existing Condition Delay (second) - LOS	Proposed Project Delay (second) - LOS
Highland Oaks Drive/Elkins Avenue	8.7 – A	8.7 – A
Santa Anita Avenue/Elkins Avenue	10.1 – B	10.3 – B
Santa Anita Avenue/Grandview Avenue	7.9 – A	8.1 – A
Santa Anita Avenue/Sierra Madre Boulevard	8.8 – A	9.1 – A

Table 3.9-4 shows the collected 24-hour machine counts on the roadway segments with the average daily volume and compares the daily constructed-added traffic volumes (converted to PCEs) to the daily traffic volumes on the study roadway segments. As expected, the project would have the greatest increase in traffic volumes on Highland Oaks Drive and Elkins Avenue as traffic volumes are lighter than those on the Santa Anita Avenue roadway segments.

In addition to the project-related volumes on the segments summarized within Table 3.5-4, construction workers would also use Santa Anita Avenue to the north of Elkins Avenue to reach the Santa Anita Dam job site. The volumes on Santa Anita Avenue to the north of Elkins Avenue would be less than those to the south of Elkins Avenue, due to the area roadway hierarchy and the relative distance of the roadway to major arterials to the south.

All roadway segments have sufficient capacity to satisfactorily handle construction-generated traffic. Two-lane collector roads (such as Santa Anita Avenue and Elkins Avenue) can operate at satisfactory LOS with daily volumes approaching 10,000 vehicles per day. Two-lane local/residential roadways (such as Highland Oaks Drive) can similarly operate with daily volumes approaching 6,000 vehicles per day.

Volumes on the roadways in the project vicinity are well below the upper-end values for daily volumes for both collector roadways and local/residential roadways defined above. As impacts have not been defined on Santa Anita Avenue to the south of Elkins Avenue, any traffic impacts to the north would be unlikely. LOS E or F operations are not likely during the project period, and therefore the proposed project would not create any significant impacts that would require capacity-based mitigation measures. These impacts would be temporary and would result in a less than significant impact.

TABLE 3.9-4 AVERAGE DAILY TRAFFIC VOLUMES ON AREA ROADWAYS WITH PROJECTED DAILY VOLUMES

Roadway Segment	October 25, 2007 Volume (PCEs)	October 26, 2007 Volume (PCEs)	Average Weekday Daily Volume (PCEs)	Added Volume from Proposed Project (PCEs)	% Increase
Highland Oaks Drive north of Elkins Avenue	777	758	768	154	18.5
Elkins Avenue between Wilson Avenue and White Oak Drive	1,599	1,700	1,650		8.6
Santa Anita Avenue south of Elkins Avenue	2,504	2,431	2,468		5.8
Santa Anita Avenue south of Andrea Lane	2,555	2,764	2,660		5.3
Santa Anita Avenue south of Sierra Madre Boulevard	4,863	5,347	5,105		2.8

CONGESTION MANAGEMENT PROGRAM

According to the CMP Traffic Impact Analysis (TIA) Guidelines developed by Metro, a traffic impact analysis is required given the following conditions:

- CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project would add 50 or more trips during either the a.m. or p.m. weekday peak hours.

- CMP freeway monitoring locations where the proposed project would add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hours.

There are no CMP intersections north of the Foothill Freeway in the western San Gabriel Valley. Therefore, none of the project study intersections are part of the 164 CMP arterial monitoring locations or freeway system according to CMP guidelines and threshold of significance. The proposed project would not add more than 50 trips at any CMP arterial monitoring station during the a.m. or p.m. peak hour or add 150 or more trips to the freeway system. Therefore, no CMP intersection analysis is required in the EIR.

TRANS-2 *The proposed project would not result in inadequate parking capacity.*

No permanent or temporary parking facilities are included as part of the proposed project, nor would any be required as a result of the proposed project. The construction site is anticipated to accommodate all parking demand generated by construction activity. Construction workers would park by the reservoir, in the staging area, or other in other areas of the project site that are within the LACDPW maintenance facilities and outside of any public parking areas. Localized on-street parking impacts are not anticipated during the project construction period.

Demand within the Wilderness Park parking lot is low on weekdays and does not normally reach capacity levels. Even with large groups, over 100 visitors, the parking lot has sufficient capacity because groups typically would arrive in buses or vans. On weekends, the park facilities are available to groups by reservation only and general public access is prohibited. It is not anticipated that the proposed project would create any significant parking impacts within the Wilderness Park parking lot. However, to ensure construction workers do not park in the Wilderness Park or other public areas, including local streets, implementation of mitigation measure TRANS-A would reduce this impact to a less than significant level.

3.9.5 MITIGATION MEASURES

TRANS-A Prior to construction, a parking plan shall be prepared by the contractor for review and approval by LACDPW. The parking plan shall illustrate the parking locations for workers on the project site in areas that are not accessible by the public and clearly indicate that construction worker or equipment parking for non-maintenance and construction activities is prohibited in the Wilderness Park and on public roads. A parking map shall be provided to all construction workers prior to construction activities each year. LACDPW shall monitor parking compliance on a monthly basis throughout the construction period.

3.9.6 SIGNIFICANCE AFTER MITIGATION

Implementation of the above mitigation measure would mitigate project parking impacts to a less than significant level.

4 IMPACT OVERVIEW

This chapter provides an overview of the environmental effects of the proposed project, including significant unavoidable adverse impacts, impacts not found to be significant, cumulative impacts, significant irreversible environmental changes, and growth-inducing impacts. Cross-references are made throughout this chapter to other sections in this EIR where more detailed discussions of impacts of the proposed project can be found.

4.1 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

This section is prepared in accordance with Section 15126.2(b) of the *CEQA Guidelines*, which requires the discussion of any significant environmental effects that cannot be avoided if a project is implemented. These include impacts that can be mitigated but cannot be reduced to a less than significant level. An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR. Nine issue areas were analyzed in detail in Chapter 3. Two issues have been found to result in significant unavoidable adverse impacts – construction-related noise and global climate change. Short-term noise impacts would exceed the acceptable noise threshold for sensitive noise receptors in the City of Arcadia. The residences located closest to the project site, approximately 300 feet west of the Middle SPS and approximately 200 feet south of the Lower SPS would be subject to intermittent construction equipment noise that cannot be mitigated below the level of significance.

4.2 EFFECTS NOT FOUND TO BE SIGNIFICANT

Sections 15128 and 15143 of the *CEQA Guidelines* require the identification of impacts of a project that were determined not to be significant and that were not discussed in detail in the impact section of the EIR. For this project, it was determined that significant impacts would not occur in the following resource categories: Agricultural Resources, Hazards and Hazardous Materials, Land Use, Mineral Resources, Population and Housing, Public Services, and Utilities and Service Systems. An Initial Study (Appendix A) was prepared which outlines the reasons why these effects were found to be not significant. The following discussion summarizes these findings.

4.2.1 AGRICULTURAL RESOURCES

Based on farmland mapping provided by the Natural Resources Conservation Service, there is no designated farmland within the project area; therefore, no impacts to Prime, Unique, or Statewide Important Farmland would occur (DLRP 2004). There are also no Williamson Act contract lands in the project area. The project site is zoned as Public Facilities & Grounds and no agricultural activities presently occur on-site (City of Arcadia 1996). Therefore, the project would not conflict with any existing agricultural zoning and no impacts would occur.

4.2.2 HAZARDS AND HAZARDOUS MATERIALS

The project site is open space, which has not historically been used for industrial purposes and is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Construction of the proposed project would not require extensive or on-going use of acutely hazardous materials or substances. Construction activities would be short-term and may occur over two years, and would involve limited transport, storage, use, or disposal of hazardous materials. Adherence to the regulations set forth by Los Angeles County (County), state, and federal agencies would reduce the potential for hazardous materials impacts to a less than significant level and would not pose a safety hazard to sensitive receptors.

The project site is not located within a two-mile radius of any public airport or private airstrip; however, the site is located in an open space area adjacent to the Angeles National Forest. The potential for wildland fire is high due to the proximity of the open space and national forest that includes chaparral, brush, and trees that could be highly flammable during fire season. Wildfire avoidance measures would be coordinated with the U.S. Forest Service Fire Division and the City of Arcadia Fire Department prior to construction and impacts would be less than significant.

The proposed project would not interfere with any current emergency response plans or emergency evacuation plans for local, state, or federal agencies. Access to all local roads would be maintained during construction. Equipment staging would occur off of public roads and no detours or road closures are anticipated. Sediment conveyance would be limited to dirt access roads and fire roads; LACDPW has worked with the cities of Arcadia and Monrovia's fire departments and the Los Angeles County fire department to meet all the agency requirements to use these roads and ensure fire safety. Any emergency procedures required by County, state, and federal guidelines would be implemented during construction of the proposed project.

4.2.3 LAND USE

The proposed project would occur within the Angeles National Forest, the Arcadia Wilderness Park, and other City of Arcadia land. The project site is designated as Public Facilities & Grounds in the City of Arcadia General Plan. Construction of the proposed project would be consistent with the adopted use in the General Plan and with the current use of the reservoir, tunnel, access roads, and sediment placement site. There are no residential uses within the project site and no homes would be removed. No long-term activities would occur as a result of the project. Therefore, the project would not conflict with the applicable land use plan. As discussed in Section 3.3, Biological Resources, the project site is not located within a County-designated Significant Ecological Area (SEA), habitat conservation plan, or natural community conservation plan. No impacts to land use would occur as a result of the proposed project.

4.2.4 MINERAL RESOURCES

There are no known mineral deposits of economic importance underlying the project site. The only area in the City of Arcadia available for mining activity is the Livingston-Graham sand and gravel extraction site (City of Arcadia 1996). This site is located in the southerly portion of Arcadia, which is located north of Clark Street. While the California Department of Mines and Geology has designated the project area as an area for significant mineral resources, the flood control wash, the spreading basin, and other areas managed by LACDPW are required for flood control purposes, and are not available for mineral extraction. Sediment from the reservoir would be excavated and transported to a placement site less than two miles to the south. Construction activities during the proposed project would not result in the loss of availability of any known mineral resource and accordingly, no impacts would occur.

4.2.5 POPULATION AND HOUSING

The proposed project site is currently used by LACDPW for flood control and water conservation. There is no residential development on the project site that would be impacted by the proposed project. No housing units or persons would be displaced as a result of the proposed project, nor would the project necessitate the construction of housing elsewhere. Some short-term construction related jobs would be created by the project; however, these jobs would be filled by existing workers in the region. The project would not be expected to increase the demand for new housing or otherwise increase the local population directly or indirectly. The site would continue to serve flood control and water conservation purposes following construction and no impacts related to population and housing would occur.

4.2.6 PUBLIC SERVICES

FIRE PROTECTION

Fire protection in the project area is provided by the Arcadia Fire Department and the U.S. Forest Service. The Arcadia Fire Station that would respond to calls in the area of the project site Station 107, located at 79 West Orange Grove Avenue. Wildfire avoidance measures would be coordinated with the U.S. Forest Service Fire Division and the City of Arcadia Fire Department prior to construction. As discussed above, the proposed project would not interfere with any current emergency response plans or emergency evacuation plans for local, state, or federal agencies and access to all local roads would be maintained during construction. Any emergency procedures required by County, state, and federal guidelines would be implemented during construction of the proposed project. Operation of the proposed project would not require additional fire protective services. No impacts to fire protection services would occur as a result of implementation of the proposed project.

POLICE PROTECTION

The project area is served by the Arcadia Police Department located at 250 West Huntington Drive. The proposed project would not interfere with any current emergency response plans or emergency evacuation plans for local, state, or federal agencies and access to all local roads would be maintained during construction. Any emergency procedures required by County, state, and federal guidelines would be implemented during construction of the proposed project. Upon completion of the two 8-month construction periods, no changes to the operational use of the site would occur. Accordingly, no impacts to police protection, whether through an increase in the need for services or response times, would occur.

SCHOOLS

The proposed project area is within the Arcadia Unified School District. No schools are located within 1/4-mile of the project site; however, the closest school to the site is the Highland Oaks Elementary School (10 Virginia Road), located approximately 0.3 mile to the west. Implementation of the proposed project would not generate additional students within the District, nor would it increase the demand for schools, as the project would not induce population growth. Additionally, as discussed above, construction activities would not require extensive or on-going use of acutely hazardous materials or substances and activities would be short-term and involve limited transport, storage, use, or disposal of hazardous materials. No impacts to schools would occur as a result of implementation of the proposed project.

PARKS

There are five parks located within a one-mile radius of the proposed project: Highland Oaks Park, approximately 0.19 mile to the west; Eisenhower Memorial Park, approximately 0.58 mile south; Newcastle Park, approximately 0.87 mile southwest; Forest Avenue Park, approximately 0.73 mile southwest; and Sierra Vista Park, approximately 0.82 mile west. Additionally, the project area is located partially within the Angeles National Forest and the Arcadia Wilderness Park. Construction of the project would potentially result in a decrease in the number of visitors at the Wilderness Park due to noise; however, it is not anticipated that a significant number would avoid the park, as discussed in Section 3.8, Recreation.

The proposed project would not result in the construction of new residences or facilitate the development of residences, which would result in increased population. Therefore, the proposed project would not increase demand for neighborhood or regional parks or other recreational facilities. No change in the operational use of the project area, including the Wilderness Park or the Angeles National Forest would occur and impacts to parks would be less than significant.

OTHER PUBLIC FACILITIES

The nearest libraries to the project site are the Arcadia Public Library (20 West Duarte Road), located 1.9 miles south of the Lower SPS, the Sierra Madre Public Library (440 West Sierra Madre Boulevard), located approximately 2.1 miles west of the Lower SPS, and the temporary Monrovia Public Library (843 East Olive Avenue), approximately 2.3 miles southeast of the Lower SPS. Construction of the proposed project would not restrict access or prevent residents from using these libraries, nor would it increase use of these libraries. No changes in the operational use of the site would occur and the proposed project would not result in the need for additional library services; therefore, impacts to library services would not occur.

4.2.7 UTILITIES AND SERVICE SYSTEMS

Construction of the proposed project would not result in the generation of a substantial amount of solid waste. Solid waste would be limited to the riser modification component and any construction necessary for the tiered design of the proposed SPS. Solid waste could include material such as scrap lumber, concrete, other residual wastes, and garbage from the construction workers. Disposal and recycling of the construction debris would be required to comply with all federal, state, and local regulations, and no impacts would occur.

The proposed project would use water only during construction for dust control and for personal use by construction personnel. The contractor would supply the water necessary to accommodate project construction. All required water and wastewater connections are currently constructed and in operation. The project would not require the need for expanded facilities, and therefore no impact would occur.

The proposed project only involves short-term construction related to the sediment removal and conveyance; no operational changes in the use of the site would occur. No impacts to utilities and service systems would occur.

4.3 CUMULATIVE IMPACTS

According to Section 15355 of the *CEQA Guidelines*, cumulative impacts refer to:

> "Two or more individual effects which, when considered together, are considerable or which compound or increase other environmental effects. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

Sections 15130(a) and 15130(a)(3) of the *CEQA Guidelines* state that:

> "An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(c). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.
>
> An EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The lead agency shall identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable."

According to Section 15130 (b)(1)(A) of the *CEQA Guidelines*, a list of past, present, and probable future projects producing related or cumulative impacts may be used as the basis of the cumulative impacts analysis. The "list" approach was used for the cumulative impacts discussion in this EIR. The related projects within one mile of the project area are shown in Table 4-1 and on Figure 4-1 based on information provided by the cities of Arcadia, Sierra Madre, and Monrovia. A radius of one-mile around the project site was selected based on several factors, including:

Location: The proposed project is located in an area characterized by residential uses, open space, public facilities, and some commercial uses to the south and in proximity to three cities that are within the one-mile radius. Construction activities would primarily affect the immediate project site from the Santa Anita Reservoir to the Lower SPS; therefore, the one-mile radius would capture all cumulative projects that would contribute to short-term construction-related impacts.

Project type: As discussed in this EIR, the proposed project would not result in operational impacts, since the project would not alter the existing land use or create new features at the project site. The project would only create localized short-term impacts during the 8-month construction period over two years. Based on this project type, a one-mile radius for cumulative projects was determined by LACDPW to adequately capture the past, present, and probable future projects that would potentially contribute to cumulative impacts.

TABLE 4-1. RELATED PROJECTS WITHIN ONE-MILE OF THE PROPOSED SITE

No[1]	Description/Location	Project Type	Size		Jurisdiction
1	Two Single Family Units – Canyon Drive	Single Family Residential	2	DU[2]	Arcadia
2	Residential Subdivision – 1925 Stonehouse Road	Single Family Residential	22	DU	Sierra Madre
3	7 West Foothill Boulevard	Medical Office	6.6	KSF[3]	Arcadia
4	23 East Foothill Boulevard	General Office Building	9.4	KSF	Arcadia
5	Foothill Boulevard and 2nd Avenue	Walgreen's Rx/Drug Store	15	KSF	Arcadia
6	328 Terrace View	Single Family Residential	1	DU	Monrovia

[1] Refers to numbers on Figure 4-1

[2] DU = dwelling unit

[3] KSF = thousand/kilo square feet

4.3.1 AESTHETICS

No projects are located within a one- to two-block radius of the project site which would create a cumulative aesthetic impact. Any project located at a greater distance than one or two blocks would not have a view of the proposed project site. Three of the six projects located within one-mile from the project area are residential developments that are consistent with the types of uses within their respective area and, therefore, are not anticipated to have the potential to combine with the proposed project to create a cumulative aesthetic impact. The remaining three projects, a 15,000 square-foot Walgreen's Drug Store, a 9,400 square-foot general office building, and a 6,600 square-foot Medical Office respectively, would also be consistent with the existing use of the area and would not be expected to result in a cumulatively considerable aesthetic impacts when considered collectively. As discussed in Section 3.1, Aesthetics, the overall project impact on the visual character of the site and surroundings would be less than significant.

4.3.2 AIR QUALITY

The proposed project, in conjunction with other cumulative projects in the area, would generate short-term air pollutant emissions from construction over a two year period. No long-term emissions would result from operation of the project. Each of the related projects would have construction emissions and would generate additional vehicle trips in the project vicinity, contributing to existing air quality violations. All projects would be required to comply with the SCAQMD's air pollution control measures and rules. Implementation of these measures would reduce air emissions; however, cumulative air quality impacts related to pollutant emissions from construction of the project and other cumulative projects in the area would contribute to air quality pollution within the cities of Arcadia, Monrovia, and Sierra Madre. Given the location of these projects and their small size (the largest being 15,000 square feet), significant cumulative air quality impacts are not anticipated. Operation of the project would not contribute to cumulative air quality impacts.



Source: ESRI© Data & Maps and StreetMap™ USA, 2005.

NORTH

0 1,000 2,000 4,000 6,000 Feet

Figure 4-1
Related Projects

Global Climate Change

As discussed in Section 3.2, Air Quality, climate change is a global problem, and greenhouse gases (GHGs) are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, respectively. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for an enhancement of the Greenhouse Effect, which have led to a trend of unnatural warming of the Earth's climate, known as global warming or global climate change (Ahrens 2003). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors (California Energy Commission 2006). Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help slow or stop human-caused increase in average global temperatures and associated changes in climatic conditions. As such, this issue is discussed in a cumulative context only.

As discussed in Chapter 2, at the completion of the proposed project, no operational changes would occur at any of the areas that are used during the construction activities of the project. As such, the proposed project would not result in operational emissions and would not trigger any of the applicable operations thresholds. Accordingly, GHG emissions associated with the proposed project are focused on the construction period.

Short-term sources of project-generated GHG emissions would be the off-road construction equipment and on-road vehicles used for site preparation, grading, and construction of the site facilities. The combustion of gasoline and diesel fuel results in the generation of CO_2, methane, and nitrous oxide. As such, construction of the proposed project would generate emissions that would exceed existing levels and, therefore, the County is conservatively determining global warming impacts for the purposes of this EIR. Specifically, the project would generate 1,784 tons of CO_2 emissions during the construction period only (see URBEMIS worksheets for annual CO_2 emissions per year). Implementation of mitigation measure AIR-A during construction would reduce the proposed project's contribution of GHG emissions. In addition, at least 50 percent of the site materials would be recycled or salvaged in accordance with AB 939 further reducing the proposed project's contribution to GHG emissions during construction activities.

On September 27 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (See Statutes 2006, Chapter 488, enacting Health & Safety Code, Section 38500–38599),which requires the CARB to monitor and reduce greenhouse gas emissions. Specifically, AB 32 requires the CARB to:

- Establish a statewide greenhouse gas emissions cap for 2020, based on 1990 emissions by January 1, 2008

- Adopt mandatory reporting rules for significant sources of greenhouse gases by January 1, 2008

- Adopt a plan by January 1, 2009 indicating how emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms and other actions

- Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gases, including provisions for using both market mechanisms and alternative compliance mechanisms

- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise CARB

- Ensure public notice and opportunity for comment for all CARB actions

- Prior to imposing any mandates or authorizing market mechanisms, requires CARB to evaluate several factors, including but not limited to: impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability, conformance with other environmental laws, and to ensure that the rules do not disproportionately impact low-income communities

- Adopt a list of discrete, early action measures by July 1, 2007 that can be implemented before January 1, 2010 and adopt such measures.

As of this writing, there are no adopted Federal plans, policies, regulations, or laws addressing global warming. Further, although the California Global Warming Solutions Act of 2006 provides new regulatory direction towards limiting GHG emissions, no air districts in California, including SCAQMD, have a recommended emission threshold for determining significance associated with GHGs from development projects.

Senate Bill 97, enacted in 2007, amends CEQA to provide that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Office of Planning and Research (OPR) to develop draft CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emission by July 1, 2009," and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010.

In October of 2008, CARB published its *Climate Change AB 32 Scoping Plan (Scoping Plan)*, which is the State's plan to achieve GHG reductions in California required by AB 32 (CARB 2008a). The Scoping Plan was approved by the CARB on December 11, 2008. In addition to the *Scoping Plan,* CARB has also released the *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (CARB Draft Staff Proposal).* The Proposal includes interim performance standards for project types and emissions sources including construction, energy, water use, waste, transportation, and total mass GHG

emissions (CARB 2008b). However, specific thresholds and performance criteria for these categories have yet to be developed.

On June 19, 2008, OPR issued a Technical Advisory on addressing climate change impacts of a proposed project under CEQA (OPR Climate Change Advisory). The OPR Climate Change Advisory recommends that lead agencies quantify, determine the significance of, and (as needed) mitigate the cumulative climate change impacts of a proposed project. The OPR Climate Change Advisory identifies that each lead agency is required under CEQA to exercise its own discretion in choosing how to determine significance, in the absence of adopted thresholds or significance guidelines from the state, CARB, or the applicable local air district. At this time, the County of Los Angeles has not adopted a threshold for global climate change impacts nor does it do so herein.

On January 8, 2009, OPR issued *Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* pursuant to SB 97, which the Resources Agency has not approved. They are designed to be consistent with the existing CEQA framework for environmental analysis, including but not limited to the determination of baseline conditions, determination of significance, and evaluation of mitigation measures. OPR did not identify a specific threshold of significance for greenhouse gas emissions, nor has the OPR prescribed assessment methodologies or specific mitigation measures. The preliminary draft amendments encourage lead agencies to consider many factors in making their own determinations based on substantial evidence. This EIR has been prepared to be consistent with the *Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions.*

The landscaping in the Lower SPS area, restoration of removed vegetation, and oak woodland mitigation as required by the proposed project would also partially offset some the impacts associated with global climate change. However, even with restoration and replanting associated with mitigation measures, the County is conservatively estimating that global climate change impacts would remain significant and unavoidable.

Minimizing GHG emissions has been factored into the decision making process from early in the project development. Avoiding trucking the sediment to an offsite location was based on several factors, including GHG reduction. By using an electric conveyor belt from Wilderness Park to the SPS areas, tens of thousands of diesel truck trips would be avoided. Although trees would be removed to create the Middle SPS, this will allow for future sediment clean out projects of the Santa Anita Reservoir, which also eliminates future offsite truck trips for sediment removal and provides a local location for future and emergency sediment placement.

In the absence of defined regulation, the County has conservatively determined that for the purposes of this EIR, the proposed project's contribution to GHG emissions would be significant, although emissions would be temporary and limited to construction only. The anticipated global climate change impact of the proposed project would be negligible compared to the estimated 492 million gross metric tons of CO_2e gases for California in 2004 (see Section 3.2). The magnitude of the project's GHG impact is

relatively low (1,784 tons of CO_2 emissions, or 0.0004% of the total estimated CO_2 emissions in California) compared to statewide emissions. Mitigation measure AIR-A and other mitigation measures recommending restoration and replanting activities would reduce and partially offset the proposed project's contribution to climate change; however, the County is conservatively determining the cumulative global climate change impacts would remain significant and unavoidable.

4.3.3 BIOLOGICAL RESOURCES

The project site is situated in an area that is owned and operated by the LACDPW that is surrounded by open space to the east and the Angeles National Forest to the north. The flood control facilities that make up the project site include open areas, SPS sites, access roads, and vegetated areas that are a mix of native and non-native vegetation. The vegetation communities that are found on the project site are described in Section 3.3, Biological Resources. The one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative biological resource impacts. Related projects are unlikely to result in significant impacts to biological resources due to the types of projects and the primarily developed uses that surround the related projects. Impacts to vegetation communities, including oak trees would be mitigated to less than significant levels and no impacts to regionally significant resources would occur.

4.3.4 CULTURAL RESOURCES

The one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative cultural resource impacts. The proposed project, in conjunction with other cumulative projects in the area, could result in the disturbance of archaeological and/or historic resources in the area. However, each cumulative project would be responsible for implementing the necessary measures to protect any existing cultural resources in the area. Mitigation measures are provided for the proposed project in the event that buried cultural resources are encountered during construction. The cumulative projects are all located in existing developed areas and the likelihood of encountering archeological resources is low compared to the proposed project. Therefore, no significant cumulative impacts are anticipated to occur on these resources.

4.3.5 GEOLOGY AND SOILS

The one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative geologic impacts since construction activities would be confined to the proposed project site. The project would not contribute to long-term cumulative impacts as no change in the use of the site would occur. Short-term impacts would be limited to the immediate project area. The project would not contribute to cumulative geology and soils impacts outside of the one-mile radius.

The proposed project would not result in the exposure of new structures and people to seismic hazards. All new structures for related projects would incorporate the required seismic safety standards to reduce impacts associated with seismic hazards to less than significant levels. There are no cumulative geologic impacts anticipated as a result of the proposed project or the projects listed in Table 4-1.

4.3.6 HYDROLOGY AND WATER QUALITY

The one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative hydrology and water quality impacts. Short-term impacts would be limited to the immediate project area, since construction activities would be confined to the project site. Specifically, impacts related to erosion would be confined to the proposed SPS areas. The proposed project would not contribute to long-term cumulative impacts because the project does not involve any operational components. As discussed in Section 3.6, the new SPS would be designed in accordance with the LACDPW guidelines for avoiding erosion during and after construction.

The proposed project site would function in a manner similar to the existing conditions at the conclusion of construction. No substantial changes in absorption rates, surface and groundwater quality, groundwater flow and the quantity of groundwater are anticipated to occur as a result of implementation of the proposed project and other cumulative projects. The project would improve flood control conditions in the project area, thereby improving the existing hydrologic conditions in the project area. Related projects would be required to comply with water quality and waste discharge requirements to ensure that no impacts to groundwater or surface water quality would occur. No cumulative hydrology impacts would occur.

4.3.7 NOISE

Construction-related sound levels and groundborne noise and vibration attenuate rapidly from their source. Typically, noise produced by construction equipment is reduced at a rate of about 6 dBA for each doubling of distance or 20 dBA for each factor of 10 in distance. Accordingly, the one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative noise impacts. The project would not contribute to long-term cumulative impacts as the project would not result in changes to operational use of the site.

Increased levels of traffic associated with cumulative development would result in increased noise on local roadways. As the proposed project would not generate traffic in operation, no cumulative operational impacts would occur. During construction, project impacts would be significant and unavoidable due to construction noise by construction equipment that would be used at the SPS areas. However, all of the six related projects are located more than 1,000 feet away from the project site. Accordingly, the proposed project, when considered cumulatively with related projects in the area, would not contribute to cumulative noise effects during construction.

4.3.8 RECREATION

The one-mile cumulative project radius adequately captures the past, present, and probable future projects that would potentially contribute to cumulative recreation impacts since construction activities would be confined to the project site. The project would not contribute to long-term cumulative impacts as no changes in the operational use of the site would occur. Short-term impacts would be limited to the immediate project area. The project would not contribute to cumulative recreation impacts outside of the one-mile radius.

The proposed project is within the boundaries of two parks: the Angeles National Forest; and the Arcadia Wilderness Park. All construction activities would occur within County property and would not extend to public parkland. All amenities would be available to park users during project construction and operation and the project would not affect the provision of recreational services in the area. Temporary indirect impacts to the Wilderness Park (i.e., increased dust and noise during construction) would occur as a result of the proposed project; however, these will be minor and none of the six related projects has the potential to result in similar impacts to the park due to their distances. Accordingly, impacts would not be cumulatively significant.

4.3.9 TRANSPORTATION/CIRCULATION

The proposed project, in conjunction with other cumulative projects in the area, would not add traffic to local intersections within a one-mile radius of the project site. As discussed in Section 3.9, during construction, a limited number of construction vehicles would travel to the site, including worker commute trips and supply deliveries, resulting in approximately 154 trips per day. The six related projects located near the project site are single-family residential or small commercial developments which would have little impact on traffic. These projects, in addition to the proposed project, would not result in a cumulative traffic impact.

4.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 21100(b)(2)(B) and Section 15126.2(c) of the *CEQA Guidelines* require that an EIR analyze the extent to which the proposed project's primary and secondary effects would impact the environment and commit nonrenewable resources to uses that future generations will not be able to reverse.

Construction of the proposed project would result in the irreversible commitment of nonrenewable resources, including fossil fuels; water; and building materials such as lumber, concrete, and steel. However, the proposed project is not anticipated to consume substantial amounts of energy in a wasteful manner, and it is unlikely to result in significant impacts as a result of consumption of utilities. Aside from the riser modifications, only a limited amount of new construction would occur, involving new building materials. The SPS would be comprised primarily of sediment from the reservoir. The main use of non-renewable resources would come from the use of diesel powered construction equipment during

the two 8-month construction periods. Operation of the proposed project would not consume nonrenewable resources because no operational uses are part of the project. Although irreversible environmental changes would result from the proposed project, such changes would not be considered significant.

4.5 GROWTH-INDUCING IMPACTS

According to Section 15126.2 (d) of the *CEQA Guidelines*, growth-inducing impacts of the proposed project shall be discussed in the EIR. Growth-inducing impacts are those effects of the proposed project that might foster economic or population growth or the construction of new housing, either directly or indirectly, in the surrounding environment. Means by which a project may induce growth include creating jobs that attract economic or population growth to the area, promoting the construction of homes that would bring new residents to the area, or removing an existing obstacle that impedes growth in the area. According to CEQA, increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.

Induced growth is any growth that exceeds planned growth and results from new development that would not have taken place without implementation of the proposed project. The growth-inducing potential of a project would be considered significant if it results in growth or population concentration that exceeds those assumptions included in pertinent master plans, land use plans, or projections made by regional planning authorities. However, the creation of growth-inducing potential does not automatically lead to growth, whether it would be below or in exceedance of a projected level. Under CEQA, it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Any environmental effects of induced growth would be secondary or indirect impacts of the proposed project. Secondary effects of growth could result in significant, adverse environmental impacts, which could include increased demand on community or public services, increased traffic and noise, degradation of air and water quality, and conversion of agricultural land and open space to developed uses. If significant, indirect environmental effects of growth may occur, the final question is whether those effects have already been considered and mitigated, or overridden if unavoidable, in a completed CEQA process, or whether they instead need to be disclosed and analyzed in the proposed action's EIR. If the induced growth is consistent with an approved general plan or community plan for the area, and a CEQA document on that plan adequately addresses the effects of growth in the plan, the environmental effects of growth induced by the proposed action have already been evaluated. In this case, the EIR for the proposed action can refer to the completed CEQA document for the impact analysis and need not evaluate it in detail again. A project that would induce growth that is not consistent with general or community plans could indirectly cause additional significant environmental impacts beyond those evaluated in the earlier CEQA document on the plan. In this case, the EIR for the proposed action would need to disclose and evaluate potential additional significant effects and propose mitigation for those effects, if feasible.

Implementation of the proposed project would not directly induce growth, as it is an infrastructure and sediment management project that would serve improve the LACDPW flood control facilities associated with the Santa Anita Reservoir and Dam. In addition, the project site is managed by LACDPW and cannot be use for any development aside from the flood control facilities. Also, the immediate vicinity is already developed with urban land uses, including residential and commercial uses and public facilities, or designated as open space and the Angeles National Forest. Upon completion of the dam riser modification and the sediment removal and placement, the project site would be utilized as its existing condition, for LACDPW flood control purposes. As discussed in the Initial Study (Appendix A), the project would be consistent with the City of Arcadia's General Plan. No housing would be removed or created as a result of the project and no permanent jobs would be created. Construction activities would result in a temporary increase in jobs and population related to construction, which could increase demand for local services and housing. However, these temporary increases would be minimal, since the project would be expected to employ construction workers already living and working in the area. As such, the proposed project would not provide for or induce a population or job growth in the vicinity.

The project would not directly or indirectly introduce new uses inconsistent with the surrounding uses or create new housing or residential land uses which would cause an increase in population. No significant impacts would occur to public services or utilities which would require an increase in service or coverage which would require the employment of additional staff, and no increase in the use of adjacent areas would occur as a result of the construction of the proposed project. Secondary impacts associated with the construction of the project would be less than significant.

5 ALTERNATIVES

In accordance with Section 15126.6(a) of the *CEQA Guidelines*, an EIR must discuss a range of reasonable alternatives to the project ". . . which would feasibly attain most of the basic objectives of the project and evaluate the comparative merits of the alternatives." The factors that can determine feasibility are site suitability, other plan or regulatory limitations, and jurisdictional boundaries. An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. The alternatives analysis must also include a comparative evaluation of the No Project Alternative per Section 15126.6(e) of the *CEQA Guidelines*. Through comparison of the alternatives, the advantages and disadvantages of each alternative compared with the proposed project can be weighed and analyzed.

This chapter of the EIR is organized into three sections. Section 5.1 includes a discussion of alternatives considered but rejected. Section 5.2 provides a detailed description of the alternatives considered and discusses the environmental effects of each of the alternatives. Section 5.3 identifies the environmentally superior alternative.

5.1 ALTERNATIVES CONSIDERED BUT REJECTED

Section 15126.6(c) of the *CEQA Guidelines* requires that an EIR identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the lead agency's determination. Among factors that may be used to eliminate alternatives from detailed consideration in the EIR are: (1) failure to meet most of the basic project objectives, (2) infeasibility, and (3) inability to avoid significant environmental impacts.

The following presents a brief description of the alternatives that were identified but eliminated from further analysis and consideration.

5.1.1 SLUICING/FLOW ASSISTED SEDIMENT TRANSPORT (FAST)

A sluicing/ Flow Assisted Sediment Transport (FAST) operation consists of draining the reservoir and utilizing inflow to wash the accumulated sediment out of the reservoir through the lowest gate of the dam to the stream below. The sediment-laden flows would continue down along the existing natural streambed below the dam, into Santa Anita debris basin. The purpose of a sluice operation is to remove a large amount of accumulated sediment from the reservoir. It is usually done outside the storm season. A FAST operation is conducted during the beginning of a storm season to use the storm runoffs throughout the season to flush the sediment out of the reservoir. This method works effectively when sediment deposition behind the dam is minimal. A FAST operation if performed regularly can be used to prevent sediment accumulation in the reservoir and thus help maintain its design capacity. A sluicing operation

typically removes more sediment than a FAST operation due to the use of mechanical assistance during sluicing.

To implement a FAST operation, excavating equipment would be required in the reservoir bottom to push the sediment into the flow. Fire hoses would also be required to supplement inflows. Since the function of a debris basin is to trap sediment, the sediment from the sluice/FAST operation would settle in the debris basin. The water would drain out of the facility via the debris basin's outlet tower. The dewatered sediment would then be excavated out of the basin and trucked either to a Santa Anita SPS or off-site SPS.

A sluice/FAST operation was performed at Santa Anita Reservoir during the 1992-1993 storm season. Fire hoses were used to supplement the storm runoff to wash the sediment from the reservoir because inflows into Santa Anita Reservoir tend to drop off quickly. The flushed sediment was excavated from the debris basin and trucked to the SPS for placement. In 1992-1993 the debris basin did not contain significant riparian habitat that could be impacted by sediment deposition and subsequent excavation. In addition, the volume of sediment removed in the 1992-1993 sluice/FAST operation was only 75,000 cubic yards, significantly less than the current sediment removal target of 500,000 cubic yards.

Since 1993, regulatory requirements on the maintenance of flood protection facilities have been changed. Regulatory agencies and other stakeholders have objected to sluicing subsequently performed or proposed at other facilities such as San Gabriel Reservoir due to concerns about water quality and residual streambed sedimentation issues. Regulatory agencies and other stakeholders have also objected to past FAST proposals at other facilities such as Cogswell Reservoir. Although FAST flows would occur during the same periods that sediment-laden flows from erosive watersheds naturally occur, and sediment accumulation in the streambed and at the constrictions during a FAST operation would not be as much as that for sluicing, regulators and stakeholders had concerns about the adequacy of the resultant post-storm season reservoir levels for beneficial uses. Regulatory restrictions at the Santa Anita debris basin have also decreased the extent to which the basin can be kept clear of vegetation and the frequency that sediment can be removed, resulting in more riparian vegetation in the debris basin. A sluice operation can remove greater volumes of sediment than a FAST operation, but they both are hampered by the availability of water to do the flushing effectively as stated above. A sluice/FAST operation at Santa Anita Reservoir requires the use of purchased water to supplement the natural inflow to wash the sediment to the downstream facilities.

An alternative to excavating at the debris basin would be to let the sediment flow continue through the debris basin, down the concrete-lined Santa Anita Wash channel, and deposit in the pit at the Peck Road Water Conservation Park. The Peck Road Water Conservation Park is located southwest of Live Oak Avenue and Peck Road in the City of Arcadia. The park is operated by the Los Angeles County Department of Parks and Recreation. Due to the continual presence of water in the pit, the recreational activities supported at the park consist of fishing, walking, bird watching, and picnicking. Recreational amenities include picnic areas and play areas. The park is a major recreational resource for the residents

of El Monte. The pit is also within the viewshed of a golf course owned and operated by the City of Arcadia. Located near the park are high-density residential structures. The pit at Peck Road Water Conservation Park is a former gravel pit (Century Pit) that the LACDPW operates for water storage and groundwater recharge. The pit contains water year-round, due to its limited percolation capacity and the location of its sole outlet structure being approximately 40 feet above the bottom of the pit. Water in the pit below the level of the outlet structure can only be removed by pumping. To move sediment in the pit with excavation, the water would be pumped out and the sediment in the pit would have to dry out before excavation can occur. The excavated material would then be trucked to Manning Pit in Irwindale. If sediment is dredged from the pit, the sediment/water slurry would be stockpiled in a drying area that would be established adjacent to the pit and dried out before it is loaded on to trucks for transport to Manning Pit.

In the event there is sufficient flow and momentum to push the sediment into the pit at Peck Road Water Conservation Park, dewatering the pit and the sediment and removing the sediment would also result in environmental impacts. During a sluice/FAST operation and its subsequent sediment removal activities, the Park would have to be closed to the public due to health and safety issues associated with construction activities. The sediment deposition in the pit would also pose aesthetic and water quality impacts. Sediment removal, drying and transport activities would pose aesthetic, air quality, traffic, noise, recreational and vector (e.g., insects, odor) impacts to the surrounding community and adjacent golf course.

A sluicing/FAST operation requires sustained inflows at levels sufficient to carry the sediment downstream to the debris basin for later removal. Because inflow cannot be sustained, consequently, the operation cannot guarantee adequate volumes of sediment would be removed. The streambed below the Santa Anita Dam is constricted in several ways, including its narrow winding alignment, the presence of the Headworks facility, and the bridge over the stream at the Wilderness Park entrance. Significant amounts of sediment have accumulated in the reservoir since the last cleanout in 1993. There may not be sufficient flow or momentum to transport this large volume of sediment through the streambed in this proposed reservoir cleanout. The sediment would likely settle out at the constrictions in the streambed and the trapped sediment would need to be removed. The narrow width and winding alignment of the canyon severely limits access and maneuverability for the heavy equipment needed to remove sediment trapped within the streambed. The sluice/FAST operation would be more effective if the amount of sediment accumulation behind the dam is significantly less than 500,000 cubic yards.

The debris basin currently contains a healthy riparian community that is considered potential habitat for the least Bell's vireo and the southwestern willow flycatcher, species that are listed as threatened under the Federal Endangered Species Act. Trapping the flushed sediment at the debris basin for subsequent removal would require removal of all of the vegetation in the debris basin prior to the flushing operation. The trapped sediment would have to be excavated out of the basin, placed in a SPS or trucked off-site. The area of project impact would increase due to the removal of the healthy riparian habitat within the debris basin.

Passing the sediment-laden flow through the debris basin instead of hauling it out would require construction of a flow channel through the basin bottom. Constructing the channel would still require removal of a significant portion of the riparian vegetation. The concrete lining and sizing of the debris dam's outlet tunnel was designed to carry "de-bulked" flows, not sediment-laden flows; likewise for the concrete channel downstream. Therefore, passing the sediment-laden flow through the outlet tunnel and channel would greatly damage (i.e., wear away) the concrete lining of the outlet tunnel and channel and may cause plugging of the tunnel and overflow of the channel during storms. The damaged tunnel and channel would have to be re-lined with concrete afterwards, a separate construction project in itself with its own duration and environmental impacts (e.g., dust, noise, water quality).

Current conditions severely limit the ability to conduct a sluice/FAST operation at Santa Anita Reservoir at this time. A sluice/FAST operation depends greatly on storm runoff, post-storm inflows and groundwater levels to provide the water needed to wash the sediment to downstream facilities. If the weather does not provide sufficient flows, adequate sediment volumes cannot be moved out of the reservoir and down to the facilities from which the sediment can then be removed. Past drought seasons in southern California significantly limit the availability and increases the cost of obtaining the supplemental water. The volume of sediment that currently needs to be removed is significantly higher than the amounts removed by past sluice/FAST operations. The riparian habitat currently in the debris basin is of sufficient value to provide potential habitat for sensitive species. All these factors affect the feasibility of performing a sluice/FAST operation at this time.

A sluice/FAST operation is not feasible for the purposes of the proposed project due to its greater environmental impacts than the dry excavation approach and the other technical issues discussed above. The science and benefit of the sluice/FAST operation are still being discussed and under continuous evaluation. Additionally, these operations would not eliminate the use of construction equipment and activities similar to the proposed project to complete sediment transport and place sediment in the proper areas of the Santa Anita Reservoir flood control facilities. Therefore, this alternative was not considered a feasible alternative and was eliminated from further consideration in this EIR.

5.1.2 DREDGING/SLURRY PIPELINE

A dredging operation typically requires a dredging barge and a pipeline to transport the slurry-like dredged material, booster stations along the pipeline, and a large dewatering area to treat the dredged material. Santa Anita Reservoir is very narrow and small. It would accommodate only a smaller capacity-dredging barge, which limits its removal rate and volume. The dewatering area would have to be larger than the staging area footprint needed for a dry excavation transport operation. The potential sediment dewatering areas would be Santa Anita Debris Basin and Peck Road Water Conservation Park. Treating/dewatering the dredged sediment would face even greater environmental impacts than a sluice/FAST operation because of the higher water content in the slurry sediment. The economic cost of dredging/slurry pipeline is usually higher than dry excavation because dredging requires more

complicated equipment and it is a specialized technique in today's construction market. Therefore, a dredging is not feasible for this project due to its environmental impacts.

5.1.3 TRUCKING ALONG SANTA ANITA CANYON ROAD

Bypassing the downstream streambed, access road, Wilderness Park, and debris basin would require trucking along the access road from the dam to Santa Anita Canyon Road and along Santa Anita Canyon Road to Santa Anita Avenue down to Elkins Avenue or to the 210 Freeway. The dam's access road to Santa Anita Canyon Road is structurally inadequate for major, sustained trucking operations. The winding and narrow nature of Santa Anita Canyon Road is also not suitable for major, sustained trucking operations. Due to the increase in transportation and air quality impacts, this alternative was eliminated from further consideration in this EIR.

5.1.4 FULL BUTTRESS

Constructing a large concrete buttress on the downstream face of Santa Anita Dam is an alternative to the riser modification portion of the proposed project. It would mitigate for the DSOD's concerns about the seismic stability of the dam and would restore use of the full reservoir capacity for water storage; it would not eliminate the need for future sediment management activities within the canyon. This option is currently being explored as a possible future project. The LACDPW has been working with the cities of Arcadia and Sierra Madre on possible future implementation of this alternative, including obtaining grants and/or other state and federal funding. However, there is an immediate need to ensure the dam meets DSOD's seismic safety requirements. Implementation of the full buttress alternative, from preparation of design plans to construction, is not realistic within the required timeframe due to the complexity of the technical design work and securing the necessary funding estimated at $70 to $100 million. Therefore, this alternative was not considered a feasible alternative and was eliminated from further consideration in this EIR.

5.1.5 CONVEYOR BELT SYSTEM IN SANTA ANITA WASH

The concreted lined Santa Anita Wash was built for the purpose of flood control. The use of the Santa Anita Wash for the conveyor belt system alignment was proposed as an alternative to the proposed alignment along existing roads to the SPS areas. If the conveyor belt system is placed inside Santa Anita Wash, there is the potential, even during the anticipated 6 to 8 -month construction period of April through October, of a significant rain event. The use of the channel for the conveyor belt system during a rain event would cause damage to the equipment and hinder the flood control capability of the Santa Anita Wash. Due to short-term the potential for equipment damage and loss of flood protection during the operation of the conveyor belt system in the Santa Anita Wash, this alternative was eliminated from further consideration in this EIR.

5.2 ALTERNATIVES CARRIED FORWARD FOR DETAILED ANALYSIS

In addition to the proposed project, these other alternatives were carried forward for detailed analysis because it would feasibly attain most of the basic objectives for the proposed project and would avoid or substantially lessen significant environmental effects. In addition, the "No Project" alternative was evaluated, as required under CEQA. Based on the environmental analysis conducted for the proposed project, significant unavoidable impacts have been identified regarding construction-related noise, even with the implementation of mitigation. Significant impacts requiring mitigation were identified for air quality, biological resources, cultural resources, recreation, and transportation and circulation.

The following alternatives are evaluated in this EIR and are summarized below:

- Alternative 1: No Project
- Alternative 2: Convey to Wilderness Park, Truck to SPS
- Alternative 3: Convey to Clearing North of the SPS, Truck Off Site
- Alternative 4: Convey to Wilderness Park, Truck Off Site

5.2.1 OVERVIEW OF ALTERNATIVES AND IMPACTS

In accordance with *CEQA Guidelines* Section 15126.6(d), each alternative was evaluated in sufficient detail to determine whether the overall environmental impacts would be less, similar, or greater than the corresponding impacts of the proposed project. Table 5-1 provides a comparison of alternatives to the proposed project.

5.2.2 NO PROJECT ALTERNATIVE (ALTERNATIVE 1)

According to the *CEQA Guidelines* (Section 15126.6(e)(3)(b)), the No Project Alternative is defined as the "circumstance under which the project does not proceed." The impacts of the No Project Alternative shall be analyzed "by projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services." The purpose of describing and analyzing the No Project Alternative is "to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." Under the No Project Alternative, the proposed dam riser modification would not be constructed and sediment would not be removed from the Santa Anita Reservoir. The environmental characteristics would generally be the same as those described in the environmental setting sections of Chapter 3.0.

The No Project Alternative assumes that the Santa Anita Dam and the Santa Anita Reservoir would remain non-compliant with DSOD dam safety requirements for emergency drawdowns. The sediment

level in the reservoir would continue to increase and exceed that deemed by DSOD as adequate for dam stability. The LACDPW facility may become inoperable/structurally unstable in the future due to no construction, and the outlet would eventually silt up, making the dam inoperable. Additional consequences of Alternative 1 would be the potential loss of water supply, continued decrease in water storage capacity, and the inability to control releases if the dam outlet silts up.

Impacts associated with the proposed project would be avoided because no construction would occur under the No Project Alternative. Because the proposed riser modification, dry excavation, and sediment transport and placement would not occur, no impacts related to aesthetics, biological resources, cultural resources, hydrology and water quality, recreation, and transportation/circulation would occur. Additionally, no construction-related air quality and noise impacts associated with the construction of the riser modification or sediment excavation and placement would occur.

However, the No Project Alternative would not benefit from the positive features of the proposed project in that it would not comply with DSOD dam safety requirements. Sediment level in the reservoir would continue to increase and the outlet would eventually silt up, making the dam inoperable. The No Project Alternative would not provide an adequate flood control or water conservation facility for the project area.

TABLE 5-1 COMPARISON OF IMPACTS FOR THE PROPOSED PROJECT AND THE ALTERNATIVES

Impact Area	Proposed Project	Alternative 1: No Project	Alternative 2: Convey to Wilderness Park, Truck to SPS	Alternative 3: Convey to Clearing of the North SPS, Truck Off Site	Alternative 4: Convey to Wilderness Park, Truck Off Site
Aesthetics	III	IV (Less)	III (Similar)	IV (Less)	IV (Less)
Air Quality	II	IV (Less)	I (Greater)	I (Greater)	I (Greater)
Biological Resources	II	IV (Less)	II (Similar)	IV (Less)	IV (Less)
Cultural Resources	II	IV (Less)	II (Similar)	II (Similar)	II (Similar)
Geology and Soils	III	IV (Less)	III (Similar)	III (Similar)	III (Similar)
Hydrology and Water Quality	III	IV (Less)	III (Similar)	III (Similar)	III (Similar)
Noise	I	IV (Less)	I (Greater)	I (Greater)	I (Greater)
Recreation	II	IV (Less)	II (Similar)	II (Similar)	II (Similar)
Transportation and Circulation	II	IV (Less)	II (Similar)	II (Greater)	II (Greater)

Notes:

I: Significant Unavoidable Impact
II: Significant Impact Unless Mitigated
III: Less Than Significant Impact
IV: No Impact

Less: Impact is lower in magnitude than impacts of the proposed project
Similar: Impact is similar in magnitude to impacts of the proposed project
Greater: Impact is greater in magnitude than impacts of the proposed project

5.2.3 CONVEY TO WILDERNESS PARK, TRUCK TO SPS (ALTERNATIVE 2)

Alternative 2, like the proposed project, would remove 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir (see Figure 5-1). Alternative 2 would convey the sediment directly to the Wilderness Park area via conveyor belt system then, the sediment would be transported by truck to the Lower and Middle SPSs. The conveyance system would be approximately 5 feet wide and up to 15 feet high. Public access to the park would be maintained during sediment conveyance activities. All other project characteristics of Alternative 2 would be the same as the proposed project.

Sediment removal activities are anticipated to occur over the two 8-month periods of April through December (weather permitting). The removal of vegetation in a portion of the Middle and Lower SPSs is anticipated to occur prior to May. Dewatering of the reservoir would begin in early April and last for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May and last up to three weeks, depending on the magnitude of recession flows and the weather.

As with the proposed project, approximately 250,000 cubic yards of sediment would be placed at the already disturbed Lower SPS, which would then be landscaped, and closed out to future sediment placement; the remainder of the excavated sediment, approximately 250,000 cubic yards would be placed in an approximately 13-acre area in the Middle SPS, located east of the Santa Anita Wash, below the existing Upper SPS (see Figure 5-1). Spreading and compaction of sediment at the proposed SPS areas would be the same as the proposed project. Construction crews would implement standard BMPs during construction and adhere to all applicable construction safety guidelines.

AESTHETICS

Aesthetic and visual impacts associated with this alternative would be similar to those associated with the proposed project. Alternative 2 would not result in alterations to the scenic quality of any buildings or other scenic resources and would not affect designated scenic views. Due to the location of the SPS areas, this alternative would not create substantial shade and shadow effects on any development that is near the project site. No significant aesthetic impacts would be anticipated, due to the location of the dam and reservoir and the proposed modification to the riser would not be visible to any viewers after the construction would be complete. Additionally, the SPS areas that would be affected by the project would be visually similar to the existing conditions, would not substantially impact sensitive viewers in the project vicinity, and would be landscaped upon completion of Alternative 2 like the

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Santa Anita Reservoir

Wilderness Park

Santa Anita Canyon Road

Santa Anita Debris Basin

Elkins Avenue

Santa Anita Spreading Grounds

Santa Anita Avenue

Santa Anita Wash

LEGEND

- Sediment Removal Area
- Staging Area
- Existing Sediment Placement Site
- Proposed Sediment Placement Site
- Conveyor Belt (existing tunnel)
- Conveyor Belt
- Truck Route

Source: GlobeXplorer 2005

NORTH

0 500 1,000 2,000 Feet

Figure 5-1
Alternative 2- Convey to Park, Truck to Sediment Placement Site

Back of Figure 5-1

proposed project. Accordingly, no mitigation is required, and similar to the proposed project, impacts would be less than significant.

AIR QUALITY

Under Alternative 2, the sediment volumes and type of construction activities would be similar to the proposed project, except for a shorter conveyance and the use of trucks for sediment hauling. Alternative 2 would convey the sediment via conveyor belt system to Wilderness Park and the sediment would be transported by truck to the Lower SPS and Middle SPS.

The construction phases, durations, and assumptions are the same as the proposed project, except eight trucks instead of four would be required for sediment hauling. Under the maximum overlap of construction activities, the maximum daily project emissions would exceed the maximum daily emission thresholds for NO_X, PM_{10} and $PM_{2.5}$, as shown in Table 5-2.

TABLE 5-2 ALTERNATIVE 2 ESTIMATED DAILY CONSTRUCTION EMISSIONS (UNMITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
SPS preparation	2	21	11	<1	35	8
Dam Riser construction	4	38	15	<1	2	1
Sediment excavation, transfer and placement	18	**149**	85	<1	**456**	**103**
Maximum Overlap (concurrent construction activities)						
Dam Riser construction	4	38	15	<1	2	1
Sediment excavation and conveyance	12	**97**	56	<1	**229**	523
Sediment placement	6	52	30	<1	**227**	49
Total for maximum overlap	22	**188**	100	<1	**458**	**102**
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding

Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.

Bold – emissions exceeds threshold

The predicted emissions from sediment excavation and placement are the greatest contributors to exceeding the PM thresholds. However, the URBEMIS model assumes dry sediment, which would not be the case since the excavated sediment would be damp from recent draining, particularly with the excavation depth. Therefore, PM construction measures equivalent to the requirements of SCAQMD Rule 403, Dust Control, were added to the project URBEMIS model. Construction mitigation measure (AIR A) was also added to the project URBEMIS model, as was for the proposed project, and the predicted emissions are shown in Table 5-3.

TABLE 5-3 ALTERNATIVE 2 ESTIMATED DAILY CONSTRUCTION EMISSIONS (MITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
SPS preparation	2	22	11	<1	19	5
Dam Riser construction	4	23	15	<1	2	1
Sediment excavation, transfer and placement	18	93	85	<1	67	20
Maximum Overlap (concurrent construction activities)						
Dam Riser construction	4	23	15	<1	2	1
Sediment excavation and conveyance	12	62	56	<1	35	11
Sediment placement	6	31	30	<1	32	9
Total for maximum overlap	22	**116**	100	<1	68	21
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding

Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.

Bold – emissions exceeds threshold

As with the proposed project, PM_{10} and $PM_{2.5}$ emissions would be reduced to less than their threshold levels with the dust control measures corresponding to SCAQMD Rule 403 added. NO_X emissions would be reduced with the identified mitigation, however, would exceed the threshold for NO_X during the maximum construction overlap period due the NO_X emissions. However, sediment moving activities would be at the NO_X threshold; the addition of the non-sediment moving component of the overlap, construction of the dam riser, results in exceeding the threshold.

Mitigation measure AIR-A would not reduce project NO_X emissions below the significance threshold for NO_X. Accordingly, project NO_X emissions for Alternative 2 would be significant and unavoidable.

BIOLOGICAL RESOURCES

Alternative 2 would result in similar impacts to those associated with the proposed project. The biological impacts associated with this alternative would occur in the Middle SPS. Impacts to vegetation, jurisdictional waters, and habitat communities, including oak trees would be significant due to the removal of approximately 11 acres of native vegetation in the Middle SPS. Mitigation measures BIO-A through BIO-F specified for the proposed project would also be required for Alternative 2.

CULTURAL RESOURCES

Similar to the proposed project, this alternative would not significantly affect any historic buildings or cultural significance on the site. Mitigation measures would still be required to reduce impacts to buried archaeological resources and human remains to a less than significant level.

GEOLOGY AND SOILS

As with the proposed project, Alternative 2 is not located within an Alquist-Priolo Earthquake Fault Zone or on an expansive soil. It would not involve the installation of septic tanks or construction of habitable

structures. Disturbed sediments are more susceptible to erosion; however, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites. Similar to the proposed project, this alternative would be required to adhere to all applicable construction standards with regard to erosion control and applicable seismic design codes to reduce impacts associated with loss of topsoil and liquefaction, respectively, to a less than significant level.

Because the sediment would not experience excessive loading or intrusion of water and the sediment would be properly placed and compacted within the SPS sites, the proposed project would not be expected to result in subsidence or collapse. Additionally, per LACDPW standards, the sediment would be placed in horizontal layers and would ultimately result in a slope no steeper than 2:1 horizontal to vertical ratio. As such, Alternative 2 would not be expected to result in on or off site landslides. This alternative would have similar geological impacts as identified for the proposed project because the construction footprint and the proposed construction activities would be similar to those for the proposed project. As with the proposed project, impacts to geology and soils would be less than significant, and no mitigation is required.

HYDROLOGY AND WATER QUALITY

Under Alternative 2, construction-related water quality and hydrology impacts would be similar to the proposed project. During construction, adherence to the BMPs established in the SWPPP would reduce sediment-laden runoff, prevent the migration of contaminants from construction areas to the adjacent residential uses, and ensure that stormwater discharges would not violate applicable water quality standards. In the event construction of the proposed project requires the disturbance of soil during the rainy season as defined (October 1 through April 15), a WWECP would be developed, which would include measures to prevent on-site erosion that the contractor would be required to implement. Excavation, grading, and sediment placement activities would also be undertaken in accordance with LACDPW regulations for SPS sites, which establish protocols for proper design of slopes and temporary sediment collecting structures. Adherence to these regulations and site design requirements would be enforced through plan check reviews and site inspection following the issuance of grading permits. Accordingly, impacts related to on-site erosion would be less than significant, and no mitigation is required. The impact of Alternative 2 to hydrology and water quality would be similar to the proposed project. As with the proposed project, impacts to hydrology and water quality would be less than significant, and no mitigation is required.

NOISE

Under Alternative 2, the excavated sediment would be conveyed via conveyor belt system to the Wilderness Park for transfer to trucks for hauling to the Lower and Middle SPSs for placement. Noise sensitive receptors in addition to those identified for the proposed alternative:

- The residences closest to the Wilderness Park located at the northeast end of Highland Vista Drive, approximately 320 feet from the Park and approximately 150 feet higher than the staging area.

- The residences west of the Santa Anita Spreading Grounds, approximately 400 to 600 feet west of the proposed project haul route and generally located at a higher elevation than the haul route.

The maximum noise levels from the sediment transfer activities at the Wilderness Park staging area of 88 dBA to the nearest residences approximately 320 feet to the west would attenuate by distance to approximately 72 dBA. This noise level would exceed the City of Arcadia limit of 55 dBA, and would be substantially greater than the ambient noise levels, resulting in a significant impact. Noise from the staging area would also intrude into the Wilderness Park, a sensitive noise receptor as defined in the City's Noise Element, and therefore, would interfere with some recreation activities within a range of 1,000 to 2,000 feet from the staging area, beyond which noise levels would be below the threshold.

Noise would also be generated by trucks hauling sediment from the staging area to the SPS areas. It is assumed that trucks on the haul road would be limited to a speed of 15 miles per hour. At that speed, the pass-by noise of a heavy truck is 75 dBA at a distance of 50 feet. There would be approximately 81 round trips per day, and the hourly average noise level for that volume of trips would be approximately 61 dBA at 50 feet. North of the Middle SPS, the haul road is on the west side of the Upper SPS and the truck noise would be heard at the homes to the west, which are approximately 400 to 600 feet away. The pass-by short noise levels are estimated approximately 62 to 64 dBA, and the hourly average noise levels would be approximately 58 to 60 dBA. While these noise levels would be audible, they would not interfere with normal speech. These noise levels would exceed the City of Arcadia 55 dBA limit, resulting in a significant impact.

Mitigation measures specified for the proposed project would also be required for Alternative 2. Although Alternative 2 would result in significant unavoidable impacts, the overall impact to noise would be greater than the proposed project due to the longer truck hauling route.

RECREATION

Impacts to recreation under Alternative 2 would be similar to those under the proposed project. Alternative 2 would use the Wilderness Park as a staging area because the conveyor belt system would end at the proposed staging area located in an open dirt area immediately north of the Wilderness Park's northwest parking lot, which is used to access the Santa Anita Headworks.

TRANSPORTATION/CIRCULATION

Impacts to Transportation/Circulation would be similar for this alternative as for the proposed project. Alternative 2 would not result in any permanent changes in existing roadway design or any uses which

would be incompatible with area traffic. Upon completion of project construction, traffic conditions would return to current conditions and there would be no traffic impacts during the operational phase of Alternative 2. Alternative 2 would generate 154 daily forecast trips, which includes 47 mid-day peak hour forecast trips. Because the anticipated number of trips is similar to the proposed project all intersection and street segment LOS would remain unchanged and meet acceptable LOS standards during construction of this alternative, like the proposed project. Mitigation measure TRANS-A provided in Section 3.9, Transportation/Circulation, would reduce parking impacts from this alternative to a less than significant level. Impacts of Alternative 2 to traffic and parking would be similar to the proposed project.

5.2.4 CONVEY TO THE CLEARING OF THE NORTH SPS, TRUCK OFF SITE (ALTERNATIVE 3)

Alternative 3, like the proposed project, would remove up to 500,000 cubic yards of sediment from Santa Anita Reservoir (see Figure 5-2). Alternative 3 would convey the sediment to a staging area above the Upper SPS area, where it would be loaded onto trucks and hauled to an off site disposal location in Irwindale (Manning Pit SPS). Trucks would exit the Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS, in the City of Irwindale. Alternative 3 would require clearing, grubbing, and grading of various locations along the existing maintenance road. All other characteristics of Alternative 3 would be the same as the proposed project.

As with the proposed project, areas along the maintenance road to the south of the Wilderness Park would require vegetation clearing where a stream crosses the existing access road, to allow for adequate truck access. It is estimated that approximately 20 trucks would be used at one time to transport sediment and that approximately 160 truck trips would occur per eight-hour day.

AESTHETICS

Aesthetic and visual impacts associated with Alternative 3 would be less than those associated with the proposed project. Alternative 3 would not result in alterations to the scenic quality of any buildings or other scenic resources and would not affect designated scenic views. No significant aesthetic impacts would be anticipated due to the location of the dam and reservoir and the proposed modification to the riser would not be visible to any viewers after the construction would be complete. This alternative would use the Manning Pit SPS instead of the SPS areas on the project site; therefore, no significant aesthetic impacts would result from construction activities related to Alternative 3, and no mitigation measures would be required.

AIR QUALITY

Under Alternative 3 the amount of sediment excavated and type of construction activities would be similar to the proposed project. The only difference is that the sediment would be hauled to an off site disposal location in Irwindale (Manning Pit SPS). This alternative would have a longer trip distance for hauling the excavated sediment. In addition, Alternative 3 would require clearing, grubbing and grading of various locations along the existing access road. Because the Middle SPS would not be used for depositing the sediment, a site preparation phase is not required for Alternative 3.

The worst case, maximum daily project emissions would exceed SCAQMD daily thresholds for NO_x, PM_{10}, and $PM_{2.5}$ as shown in Table 5-4.

TABLE 5-4 ALTERNATIVE 3 ESTIMATED DAILY CONSTRUCTION EMISSIONS (UNMITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction of Dam Riser	4	38	15	<1	2	1
Maximum Overlap of Activities						
Construction of Dam Riser	4	38	15	<1	2	1
Sediment Excavation at Dam, Transfer to Trucks and Haul to SPS	17	**156**	80	<1	**235**	55
Sediment Placement at SPS	6	45	24	<1	**230**	50
Total for maximum overlap	27	**240**	119	<1	**466**	**106**
Sediment Excavation, Transfer and Placement Alone						
	23	**202**	104	<1	**465**	**104**
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.
Bold – emissions exceeds threshold

Construction mitigation measures, the same as the ones used for the proposed project, were added to the project URBEMIS model and the calculated emissions are shown in Table 5-5.



Source: GlobeXplorer, 2005.

NORTH

0 500 1,000 2,000 Feet

Figure 5-2
Alternative 3 - Convey to SPS Staging Area, Truck Offsite

Back of Figure 5-2

TABLE 5-5 ALTERNATIVE 3 ESTIMATED DAILY CONSTRUCTION EMISSIONS (MITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC [a]	**NO_X**	**CO** [a]	**SO_X** [a]	**PM_{10}**	**$PM_{2.5}$**
Construction of Dam Riser	4	23	15	<1	2	1
Maximum Overlap of Activities						
Construction of Dam Riser	4	23	15	<1	2	1
Sediment Excavation at Dam, Transfer to Trucks and Haul to SPS	17	94	80	<1	38	13
Construction of Dam Riser	6	27	24	<1	32	9
Total for maximum overlap	27	**144**	119	<1	72	23
Sediment Excavation, Transfer and Placement Alone						
	23	**121**	104	<1	70	22
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
a – Mitigation measures are not required for these pollutants
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.
Bold – emissions exceeds threshold

As shown in Table 5-5, emissions with mitigation would exceed the daily thresholds for NO_X under Alternative 3. Worst case daily NO_x, PM_{10}, and $PM_{2.5}$ emissions would be higher than the proposed action since this alternative involves hauling the sediment off site. The impact of Alternative 3 would be significant and unavoidable, and would be greater than the proposed project.

BIOLOGICAL RESOURCES

Alternative 3 would result in fewer biological resources impacts than the proposed project because the use of the Middle SPS would not be required for this alternative. The sediment would be transported to Irwindale, and placed in the Manning Pit SPS. No impacts associated with biological resources would occur as a result of Alternative 4 because no vegetation would be removed and no jurisdictional waters would be impacted by the construction activities under this alternative.

CULTURAL RESOURCES

Similar to the proposed project, this alternative would not significantly affect any historic buildings or cultural significance on the site. Mitigation measures would still be required to reduce impacts to buried archaeological resources and human remains to a less than significant level.

GEOLOGY AND SOILS

As with the proposed project, Alternative 3 is not located within an Alquist-Priolo Earthquake Fault Zone or on an expansive soil and would not involve the installation of septic tanks or construction of habitable structures. Disturbed sediments are more susceptible to erosion; however, excavation, grading, and

sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites. Similar to the proposed project, this alternative would be required to adhere to all applicable construction standards with regard to erosion control and applicable seismic design codes to reduce impacts associated with loss of topsoil and liquefaction, to a less than significant level.

The sediment would place in the Manning Pit SPS, which is currently used as a SPS for the region. This SPS would not be expected to be subject to subsidence or collapse. This alternative would have similar geological impacts as identified for the proposed project except the SPS seismic impacts would be off site compared to in the Middle and Lower SPS for the proposed project. As with the proposed project, impacts to geology and soils would be less than significant, and no mitigation is required.

HYDROLOGY AND WATER QUALITY

Under Alternative 3, construction-related water quality and hydrology impacts would be similar to the proposed project. During construction, adherence to the BMPs established in the SWPPP would reduce sediment-laden runoff, prevent the migration of contaminants from construction areas to the adjacent residential uses, and ensure that stormwater discharges would not violate applicable water quality standards. In the event construction of the proposed project requires the disturbance of soil during the rainy season (October 1 through April 15) a WWECP would be developed, which would include measures to prevent on-site erosion that the contractor would be required to implement. Excavation, grading, and sediment placement activities would also be undertaken in accordance with LACDPW regulations for SPS sites, which establish protocols for proper design of slopes and temporary sediment collecting structures. Adherence to these regulations and site design requirements would be enforced through plan check reviews and site inspection following the issuance of grading permits. Accordingly, impacts related to on-site erosion, hydrology, and water quality would be less than significant.

NOISE

Under Alternative 3, the excavated sediment would be conveyed to a different staging area located above the Upper SPS and hauled by truck to an off site placement location in Irwindale (Manning Pit SPS). The clearing, grubbing, and grading along the existing access road and the preparation of a staging area above the Upper SPS would generate short-term noise levels to residents west of the Upper SPS, in addition to the truck hauling activities originating out of this location. The on-site truck haul route from the Wilderness Park parking lot staging area to the Lower SPS would be eliminated under Alternative 3, and the residents along this segment would not be affected as they are under the proposed project. However, Alternative 3 would result in a longer truck haul route in proximity to sensitive receptors in the residential area west of the SPS.

The haul route would pass off site though a residential area in close proximity to houses west of the Middle SPS to access the 210 Freeway, and then exit on a commercial primary arterial to an industrial

area for placement in an industrial area. The haul trucks would exit the Santa Anita SPS to the west into the residential area via Elkins Avenue, Santa Anita Avenue, the 210 Freeway, Irwindale Avenue, Gladstone Street, and Vincent Avenue to enter Manning Pit SPS in the City of Irwindale. The trucks to transport sediment would result in approximately 160 one way truck trips per eight-hour day along this approximately 10-mile route. Noise sensitive receptors are primarily located along Elkins Avenue and Santa Anita Avenue west of the SPS.

The on-site haul route for the proposed project was analyzed based on speed limits of 15 mph on unimproved dirt pathways. The off site haul route through the residential area west of the SPS would be on improved paved streets with a speed limit of 25 mph on Elkins Avenue and 35 mph on Santa Anita Avenue. Therefore, the noise generated from the haul trucks would be greater at this higher speed than on the unpaved haul roads that would be used for the proposed project. Both Elkins Avenue and Santa Anita Avenue have residences adjacent to the roadways.

Based on data from the project traffic report, the existing average daytime hourly traffic noise level on Elkins Avenue is estimated at 52 dBA Leq at a distance of 50 feet from the center of the roadway. The addition of 25 heavy truck trips in one hour would increase the average noise level to 62 dBA Leq. These noise level estimates assume that the trucks would travel at the posted speed limit. The existing average daytime hourly traffic noise level on Santa Anita Avenue between Elkins Avenue and Sierra Madre Boulevard is estimated at 57 dBA Leq at a distance of 50 feet from the center of the roadway. The addition of 25 heavy truck trips in one hour would increase the average noise level to 64 dBA Leq. On Santa Anita Avenue south of Sierra Madre Boulevard, the existing estimated noise level of 60 dBA Leq would be increased to 65 dBA Leq with the addition of 25 heavy trucks per hour. Individual truck passby noise levels would be in the range of 75 to 80 dBA at a distance of 50 feet.

On Elkins Avenue, the truck noise would increase the average daytime noise level from below the City of Arcadia 55 dBA standard to above the standard, and the increase of 10 dBA would be significant. On Santa Anita Avenue, the existing noise levels exceed the 55 dBA standard; the noise level increases of 7 dBA north of Sierra Madre Boulevard and 5 dBA south of Sierra Madre Boulevard would be heard and may be considered disturbing. The traffic noise impacts would be temporary and significant. No mitigation in the nature of barriers would be feasible. While reduced speeds would reduce truck noise levels, the impacts on traffic may not be acceptable. Therefore, the impact is considered significant and unavoidable.

RECREATION

Impacts to recreation under Alternative 3 would be similar to those under the proposed project. Alternative 3 would not require the staging area in the Wilderness Park because the conveyor belt system would extend through the park to a staging area above the Upper SPS. As with the proposed project, Alternative 3 would not result in significant operational impacts to recreation.

TRANSPORTATION/CIRCULATION

Under Alternative 3, construction traffic is not sufficient to make a significant difference in the calculated mid-day delay at the study intersections, even with the addition of 476 daily forecast trips, compared to the 154 daily forecast trips of the proposed project. Alternative 3 would generate noticeably more traffic compared to the proposed project as this alternative involves the transport of sediment on public roadways from the project site.

Alternative 3 would have the greatest increase in traffic volumes on Highland Oaks Drive and Elkins Avenue as traffic volumes are lighter than those on the Santa Anita Avenue roadway segments. Alternative 3 would increase traffic on area roadways on a percentage basis approximately four times more than the proposed project. However, all roadway segments have sufficient capacity to satisfactorily handle construction-generated traffic. Two-lane collector roadways (such as Santa Anita Avenue and Elkins Avenue) can operate at satisfactory levels of service with daily volumes approaching 10,000 vehicles per day. Two-lane local/residential roadways (such as Highland Oaks Drive) can similarly operate with daily volumes approaching 6,000 vehicles per day. The forecasted volumes on the roadways in the project vicinity are well below the upper-end values for daily volumes for both collector roadways and local/residential roadways.

As there would be capacity to handle project-related truck volumes and employee vehicle traffic under Alternative 3, and as the project area roadway segments are projected to operate at acceptable LOS values, there would not be significant traffic impacts at the roadway segment locations. LOS E or F operations are not likely during the Alternative 3, and therefore this alternative, like the proposed project, would not create any significant impacts that would require capacity-based mitigation measures.

The local roadways have sufficient geometric characteristics to accommodate construction-generated traffic for Alternative 3. The roadways in the project vicinity are relatively narrow and are not well suited to handle heavy truck traffic. For example, Elkins Avenue is 36-feet wide, which would provide two travel lanes of nine feet in width each when on-street parking area (each of eight feet in width) are occupied by vehicles. In order to facilitate the movement of large truck to haul sediment, as would be required in Alternative 3, restrictions of on-street parking along the narrower portions of Highland Oaks Drive, Elkins Avenue, and Santa Anita Avenue may be required during sediment haul hours.

It was assumed for the traffic analysis that off site truck trip scheduling under Alternative 3 would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.) Such scheduling would avoid any potential overlap with peak-hour commute traffic to and from the local residential areas and project-related truck trips.

Alternative 3 would require truck trips be spaced and trucks to be held at the eastern end of Elkins Avenue and at the Irwindale SPS to provide gaps between trucks and avoid the stacking of trucks on local residential streets within the study area.

A public school is located along the east side of Santa Anita Avenue immediately adjacent to the intersection of Santa Anita Avenue and Virginia Drive. This intersection has been signalized to provide safe access during school pick-up/drop-off activity periods. The routing of project trucks under Alternative 3 during off-peak periods would avoid conflicts with pick-up/drop-off activity at the school during the a.m. peak period, but could overlap with afternoon activity at the school. Scheduling of truck trips to avoid traffic congestion would avoid the creation of any significant impacts in the vicinity of this school.

Alternative 3 impacts to the local roadways would be greater than the proposed project; however, due construction related trips and increase volume of the local roadways, intersections would operate at acceptable LOS during the short-term construction-related traffic impact of this alternative. Mitigation measure TRANS-A provided in Section 3.9, Transportation/Circulation, would reduce parking impacts from this alternative to a less than significant level.

5.2.5 CONVEY TO WILDERNESS PARK, TRUCK OFF SITE (ALTERNATIVE 4)

Alternative 4, like the proposed project, would remove up to 500,000 cubic yards of sediment from Santa Anita Reservoir (see Figure 5-3). Alternative 4 would convey the sediment to the Wilderness Park staging area, located above and within part of the park's western parking lot, truck the sediment along the existing maintenance road, truck the sediment to Irwindale, and place the sediment in the Manning Pit SPS. All other characteristics of Alternative 4 would remain the same as the proposed project.

Trucks would exit Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS in the City of Irwindale. Alternative 4 would require clearing, grubbing, and grading at various locations along the existing maintenance road below Santa Anita Dam. As with the other project alternatives, some areas along the maintenance road to the south of the Wilderness Park would require vegetation clearing where a stream crosses the existing maintenance road, to allow for adequate truck access. It is estimated that about 20 trucks would be used at one time to transport sediment and that approximately 160 truck trips would occur per eight-hour day.

AESTHETICS

Aesthetic and visual impacts associated with this Alternative 4 would be less to those associated with the proposed project. Alternative 3 would not result in alterations to the scenic quality of any buildings or other scenic resources and would not affect designated scenic views. No significant aesthetic impacts would be anticipated, due to the location of the dam and reservoir and the proposed modification to the riser would not be visible to any viewers after the construction would be complete. This alternative would use the Manning Pit SPS instead of the SPS areas on the project site; therefore, no aesthetic impacts would result from construction activities related to Alternative 4, and no mitigation measures are required.

AIR QUALITY

Alternative 4 is similar to Alternative 3 except that the sediment would be conveyed to the Wilderness Park staging area and then hauled to the Manning Pit SPS. The trip distance would be slightly higher in this case.

Worst case emissions daily emissions associated with Alternative 4 would exceed the SCAQMD thresholds for NO_x, PM_{10} and $PM_{2.5}$ as shown in Table 5-6.

TABLE 5-6 ALTERNATIVE 4 ESTIMATED DAILY CONSTRUCTION EMISSIONS (UNMITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction of Dam Riser	4	38	15	<1	2	1
Maximum Overlap of Activities						
Construction of Dam Riser	4	38	15	<1	2	1
Sediment Excavation at Dam, Transfer to Trucks and Haul to SPS	17	**159**	81	<1	**235**	55
Construction of Dam Riser	6	45	24	<1	**230**	50
Total for maximum overlap	27	**243**	120	<1	**467**	**106**
Sediment Excavation, Transfer and Placement Alone						
	23	**205**	105	<1	**465**	**104**
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.
Bold – emissions exceeds threshold

Construction mitigation measures, the same ones used for the proposed project, were added to the project URBEMIS model and the predicted emissions are shown in Table 5-7.

TABLE 5-7 ALTERNATIVE 4 ESTIMATED DAILY CONSTRUCTION EMISSIONS (MITIGATED)

Construction Activity	Estimated Emissions (lbs/day)					
	VOC [a]	**NO_X**	**CO** [a]	**SO_X** [a]	**PM_{10}**	**$PM_{2.5}$**
Construction of Dam Riser	4	23	15	<1	2	1
Maximum Overlap of Activities						
Construction of Dam Riser	4	23	15	<1	2	1
Sediment Excavation at Dam, Transfer to Trucks and Haul to SPS	17	**118**	81	<1	38	14
Construction of Dam Riser	6	27	24	<1	32	9
Total for maximum overlap	27	**168**	120	<1	72	23
Sediment Excavation, Transfer and Placement Alone						
	23	**145**	105	<1	70	22
Daily Thresholds for Construction Emissions	***75***	***100***	***550***	***150***	***150***	***55***

Totals may not add due to rounding
a – Mitigation measures are not required for these pollutants
Note: Construction assumptions, including the estimated number and type of construction equipment, construction-related trips, area of disturbance, etc., are presented in the URBEMIS data sheets in Appendix F.
Bold – emissions exceeds threshold



Source: GlobeXplorer, 2005.

NORTH

0 500 1,000 2,000 Feet

Figure 5-3
Alternative 4 - Convey to Park, Truck Offsite

Back of Figure 5-3

The mitigated emissions would not exceed PM_{10} and $PM_{2.5}$ thresholds despite the implementation of standard Rule 403 measures. Project emissions with mitigation would exceed the daily thresholds for NO_X. Worst case daily NO_x emissions would be higher than the proposed action since this alternative involves hauling the sediment over a longer distance. The impact of Alternative 4 would be significant and unavoidable.

BIOLOGICAL RESOURCES

Alternative 4 would result in fewer biological resources impacts than the proposed project because the use of the Middle SPS would not be required for this alternative. The sediment would be transported to Irwindale, and placed in the Manning Pit SPS. No impacts associated with biological resources would occur as a result of Alternative 4 because no vegetation would be removed and no jurisdictional waters would be impacted by the construction activities under this alternative.

CULTURAL RESOURCES

Similar to the proposed project, this alternative would not significantly affect any historic buildings or cultural significance on the site. Santa Anita Avenue and Elkins Avenue are paved residential roadways in the City of Arcadia and make up the central and southwestern portion of the proposed project area. Because no ground surface is exposed within the roadway or immediately adjacent (no unpaved roadway shoulders exists along these street alignments), this portion of the proposed project area was not surveyed for archaeological resources. Mitigation measures would still be required to reduce impacts to buried archaeological resources and human remains to a less than significant level.

GEOLOGY AND SOILS

As with the proposed project, Alternative 4 is not located within an Alquist-Priolo Earthquake Fault Zone or on an expansive soil and would not involve the installation of septic tanks or construction of habitable structures. Disturbed sediments are more susceptible to erosion; however, as discussed in Section 2.0, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites. Similar to the proposed project, this alternative would be required to adhere to all applicable construction standards with regard to erosion control and applicable seismic design codes to reduce impacts associated with loss of topsoil and liquefaction, to a less than significant level.

The sediment would be placed in the Manning Pit SPS, which is currently used as a SPS for the region. This SPS would not be expected to be subject to subsidence or collapse. This alternative would have similar geological impacts as identified for the proposed project except the SPS seismic impacts would be off site compared to in the Middle and Lower SPS for the proposed project. As with the proposed project, impacts to geology and soils would be less than significant, and no mitigation is required.

HYDROLOGY AND WATER QUALITY

Under Alternative 4, construction-related water quality and hydrology impacts would be similar to the proposed project. During construction, adherence to the BMPs established in the SWPPP would reduce sediment-laden runoff, prevent the migration of contaminants from construction areas to the adjacent residential uses, and ensure that stormwater discharges would not violate applicable water quality standards. In the event construction of the proposed project requires the disturbance of soil during the rainy season (October 1 through April 15) a WWECP would be developed, which would include measures to prevent on-site erosion that the contractor would be required to implement. Excavation, grading, and sediment placement activities would also be undertaken in accordance with LACDPW regulations for SPS sites, which establish protocols for proper design of slopes and temporary sediment collecting structures. Adherence to these regulations and site design requirements would be enforced through plan check reviews and site inspection following the issuance of grading permits. Accordingly, impacts related to on-site erosion, hydrology, and water quality would be less than significant.

NOISE

Alternative 4 is similar to Alternative 3, except that the sediment would be conveyed to the Wilderness Park staging area and hauled south along the SPS haul route, and would then follow the same route as Alternative 3 to Irwindale (the Manning Pit SPS). Therefore, the off-site hauling noise impacts would be the same as Alternative 3 and would be significant and unavoidable. Noise impacts would be greater than the proposed project under this alternative.

RECREATION

Impacts to recreation under Alternative 4 would be similar to those under the proposed project. Alternative 4 would use the staging area in the Wilderness Park because the conveyor belt system would end at this located as with the proposed project. As with the proposed project, Alternative 4 would not result in significant operational impacts to recreation.

TRANSPORTATION/CIRCULATION

Under Alternative 4, the construction traffic is not sufficient to make a significant difference in the calculated mid-day delay at the project study intersections, even with the addition of 476 daily forecast trips, compared to the 154 daily forecast trips of the proposed project. Alternative 4 would generate noticeable more traffic compared to the proposed project as this alternative involves the transport of sediment on public roadways from the project site. Because LOS would remain at an acceptable level, there would be no significant traffic impacts at the study intersections.

Alternative 4 would have the greatest increase in traffic volumes on Highland Oaks Drive and Elkins Avenue as traffic volumes are lighter than those on the Santa Anita Avenue roadway segments.

Alternative 4 would increase traffic on area roadways, on a percentage basis approximately four times more than the proposed project. However, all roadway segments have sufficient capacity to satisfactorily handle construction-generated traffic. Two-lane collector roadways (such as Santa Anita Avenue and Elkins Avenue) can operate at satisfactory levels of service with daily volumes approaching 10,000 vehicles per day. Two-lane local/residential roadways (such as Highland Oaks Drive) can similarly operate with daily volumes approaching 6,000 vehicles per day. The forecasted volumes on the roadways in the project vicinity are well below the upper-end values for daily volumes for both collector roadways and local/residential roadways.

As there would be capacity to handle project-related truck volumes and employee vehicle traffic under Alternative 4, and as the project area roadway segments are projected to operate at acceptable LOS values, there would not be significant traffic impacts at the roadway segment locations. LOS E or F operations are not likely during the Alternative 4, and therefore this alternative, like the proposed project, would not create any significant impacts that would require capacity-based mitigation measures.

The local roadways have sufficient geometric characteristics to accommodate construction generated traffic for Alternative 4. The roadways in the project vicinity are relatively narrow and are not well suited to handle heavy truck traffic. For example, Elkins Avenue is 36-feet wide, which would provide two travel lanes of nine feet in width each when on-street parking area (each of eight feet in width) are occupied by vehicles. In order to facilitate the movement of large truck to haul sediment, as would be required in Alternative 4, restriction of on-street parking along the narrower portions of Highland Oaks Drive, Elkins Avenue and Santa Anita Avenue may be required during sediment haul hours.

It was assumed for the traffic analysis that off-site truck trip scheduling under Alternative 4 would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.) Such scheduling would avoid any potential overlap with peak-hour commute traffic to and from the local residential areas and project-related truck trips.

Alternative 4 would required truck trips be spaced and trucks to be held at the eastern end of Elkins Avenue and at the Irwindale SPS to provide gaps between trucks and avoid the queuing of trucks on local residential streets within the study area.

A public school exists along the east side of Santa Anita Avenue, immediately adjacent to the intersection of Santa Anita Avenue and Virginia Drive. This intersection has been signalized to provide safe access during school pick-up/drop-off activity periods. The routing of project trucks under Alternative 4 during off-peak periods would avoid conflicts with pick-up/drop-off activity at the school during the a.m. peak period, but could overlap with afternoon activity at the school. Scheduling of truck trips to avoid traffic congestion would avoid the creation of any significant impacts in the vicinity of this school.

Alternative 4 impacts to the local roadways would be greater than the proposed project; however, due construction related trips and increase volume on the local roadways and intersections would operate at

acceptable LOS during the short-term construction-related traffic and circulation impacts of this alternative. Mitigation measure TRANS-A provided in Section 3.9, Transportation/Circulation, would reduce parking impacts from this alternative to a less than significant level.

5.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from a range of reasonable alternatives to the proposed project. This alternative would result in fewer significant unavoidable impacts and impacts requiring mitigation. Of the alternatives analyzed in this document, the No Project Alternative is considered the environmentally superior alternative as it would avoid the all of the potential environmental impacts related to the proposed project. However, in accordance with Section 15126.6(e)(2) of the *CEQA Guidelines*, if the environmentally superior alternative is the No Project Alternative, then the EIR shall also identify an environmentally superior alternative among the other alternatives. Of the three remaining alternatives, Alternatives 2 and 3 would result in a lesser magnitude of impacts compared to Alternative 4. Impacts associated with Alternative 2 would be similar to the proposed project for aesthetics, biological resources, cultural resources, geology and soils, hydrology and water quality, recreation, and transportation and circulation. Alternative 2 would result in greater impacts associated with air quality and noise because of the need for trucks sediment hauling operations. Alternative 2 would not result in off site truck hauling trips, since the sediment would be placed in the Lower and Middle SPS areas; therefore, traffic impacts on the surrounding neighborhood streets would be only from construction worker trips, as with the proposed project. However, Alternative 3 would result in increased impacts to the surrounding neighborhood streets because approximately 160 truck trips per day are anticipated to leave the project site. Impacts associated with Alternative 3 would be similar to the proposed project for cultural resources, geology and soils, hydrology and water quality, and recreation. Conversely, some impacts would be greater than the proposed project including air quality, noise, and transportation and circulation and air quality would be a significant unavoidable impact, which would not be the case under the proposed project. In addition, Alternative 3 would use a truck haul route through local residential neighborhood that would be avoided under Alternative 2. These additional impacts are associated with the use of trucks for hauling sediment off site to the Manning Pit SPS. While Alternative 3 would result in reduced impacts to aesthetics and biological resources, the impacts to air quality and noise on the surrounding neighborhood would be greater than the proposed project. The air quality impact form Alternative 3 after the required mitigation would be 144 lbs/day for NOx during the overlap of construction from the dam riser, sediment excavation, and sediment conveyance, which exceeds the significance threshold, compared to 116 lbs/day for NOx for Alternative 2 (3 lbs/day over the significance threshold). Furthermore, Alternative 3 would result in human health effects form toxic air contaminants during trucking off site activities that are not part of the analysis in this EIR. Therefore, Alternative 2 is considered the environmentally superior alternative.

6 CLARIFICATIONS AND MODIFICATIONS

The following clarifications and revisions are intended to update the Draft EIR in response to the comments received during the public review period. These changes, which have been incorporated into the Draft EIR, constitute the Final EIR, to be presented to the County of Los Angeles Board of Supervisors for certification and approval. These clarifications and modifications clarify, amplify, or make insignificant changes to the EIR. Revisions to the EIR have not resulted in new significant impacts or mitigation measures, nor has the severity of an impact increased. None of the criteria for recirculation set forth in CEQA Guidelines section 15088(a) have been met, and recirculation of the EIR is not required.

The changes to the Draft EIR are listed by section, and page number. Text which has been removed is shown in this chapter with a strikethrough line, while text that has been added is shown underlined. All of the changes shown described in this section have also been made in the corresponding Final EIR sections. Minor editorial corrections (e.g. typographical, grammatical, etc.) have been made throughout the document and are not indicated by strikethrough line or underlined text. Please refer to Section 7.0, Response to Comments, for referenced comment letters and corresponding comments.

SECTION 0.0 EXECUTIVE SUMMARY

PAGE CLARIFICATION/REVISION

ES-1 *Second paragraph under Section ES.1 has been added as follows:*

The proposed project is subject to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for sediment removal and placement activities under the jurisdiction of the U.S. Army Corps of Engineers. As the federal lead agency, the U.S. Army Corps of Engineers is preparing an Environmental Assessment (EA) for this project under the National Environmental Policy Act (NEPA). The NEPA and CEQA processes are being undertaken concurrently for this project in separate environmental documents.

ES-2 *Third paragraph under Section ES.2 has been revised as follows:*

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,212 feet, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately ~~300,000 to~~ 500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves and to ensure DSOD's requirements are met. LACDPW proposes to start the removal of the sediment in the summer of 2009.

ES-3 *Paragraphs under 'Dry Excavation' subheading has been revised as follows:*

The proposed project would remove approximately ~~300,000 to~~ 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the El. 1,300 feet.

ES-3 to -4 *Paragraphs under 'Sediment Conveyance' subheading has been revised as follows:*

The proposed project would transport sediment from the reservoir to the proposed SPS areas using an electric conveyor belt system. The conveyor belt system would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot, ~~(not obstructing traffic or emergency vehicles),~~ south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS. <u>The conveyor belt system would be raised over portions of the parking lot and access roads and would not obstruct traffic and emergency vehicles.</u>

The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. <u>The conveyor belt system would be connected to the main electricity grid.</u> The existing access road north of the Headworks is about 12 to 15 feet wide, which would allow for maintenance <u>and emergency</u> vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and LACDPW access road to the SPS areas. <u>Within the City of Arcadia, the conveyor belt would operate from 7:00 a.m. to 7:00 p.m.</u>

<u>Inflows to the dam would hinder construction activities at the dam, so</u> ~~Because~~ modification of the riser would requires the dam's outlet to be completely dry. ~~, a~~ <u>As such,</u> ~~a PVC pipe would be used to bypass~~ reservoir inflow<u>s will be bypassed</u> through the ~~tunnel to the~~ <u>construction areas to the</u> downstream area. ~~The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.~~

ES-5 *Paragraphs under 'Significant Unavoidable Adverse Impacts' subheading has been revised as follows:*

This section is prepared in accordance with Section 15126.2(b) of the *CEQA Guidelines*, which requires the discussion of any significant environmental effects that cannot be

avoided if a project is implemented. These include impacts that can be mitigated but cannot be reduced to a less than significant level. An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR. Nine issue areas were analyzed in detail in Chapter 3. ~~One~~ Two issue<u>s</u> ~~has~~ <u>have</u> been found to result in significant unavoidable adverse impacts – construction-related noise <u>global climate change</u>. Short-term noise impacts would exceed the acceptable noise threshold for sensitive noise receptors in the City of Arcadia. The residences located closest to the project site<u>, approximately 300 feet</u> west of the Middle SPS and <u>approximately 200 feet</u> south of the Lower SPS would be subject to intermittent construction equipment noise that cannot be mitigated below the level of significance.

ES-6 *Paragraphs under 'Cumulative Impacts' subheading has been revised as follows:*

According to Section 15130 (b)(1)(A) of the *CEQA Guidelines*, a list of past, present, and probable future projects producing related or cumulative impacts may be used as the basis of the cumulative impacts analysis. The "list" approach was used for the cumulative impacts discussion in this EIR. The related projects within one mile of the project area used for the cumulative project list are based on information provided by the cities of Arcadia, Sierra Madre, and Monrovia. A radius of one mile was selected, since the cumulative impacts would primarily be limited to construction effects <u>and the surrounding uses are mainly residential in the vicinity of the project site, aside from the adjacent open space and Angeles National Forest.</u> As discussed in this EIR, the project would not result in operational impacts after the dam riser modification and sediment excavation and conveyance activities are complete. However, cumulative air quality impacts related to Greenhouse Gas (GHG) emissions from construction of the project and other cumulative projects in the area would be significant and unavoidable. The related projects, when combined with the proposed project, would not contribute to any other cumulative impacts.

ES-9 *Mitigation measures AIR-A and AIR-B in Table ES-1 have been revised as shown below in the revisions to Section 3.2 Air Quality.*

ES-16 *Mitigation measures CUL-A and CUL-B in Table ES-1 have been revised as shown below in the revisions to Section 3.4 Cultural Resources.*

ES-16 to -18 *Mitigation measures NOISE-A through NOISE-F in Table ES-1 have been revised as shown below in the revisions to Section 3.7 Noise.*

ES-10 to -16 *Mitigation measures BIO-A through BIO-F in Table ES-1 have been revised as shown below in the revisions to Section 3.3 Biological Resources.*

SECTION 1.0 INTRODUCTION

1-2 *Third paragraph under Section 1.1 under the heading 'Summary of the Proposed Project' has been revised as follows:*

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,220, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately ~~300,000 to~~ 500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves to ensure DSOD's requirements are met.

SECTION 2.0 PROJECT DESCRIPTION

PAGE CLARIFICATION/REVISION

2-1 *Third paragraph in Section 2.1 under the heading 'Project Location and Setting' has been revised as follows:*

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, ~~and~~ Santa Anita Headworks, Santa Anita debris basin, and the Santa Anita Sediment Placement Site (SPS). These facilities are owned and operated by the Los Angeles County Department of Public Works (LACDPW) under easements from the U.S. Forest Service and the City of Arcadia. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia.

2-5 *Third paragraph in Section 2.2 under the heading 'Purpose and Need for the Proposed Project' has been revised as follows:*

The California Department of Water Resources, Division of Safety of Dams (DSOD), currently restricts long-term water storage in the reservoir behind Santa Anita Dam to ensure the facility's compliance with the agency's seismic stability requirements. The ~~maximum~~ restricted reservoir ~~pool~~ level at Santa Anita Dam was previously held at an elevation of 1,280 feet (El. 1,280 feet). Currently, the restriction limits the ~~maximum~~ reservoir pool to an elevation of 1,258 feet. A recent seismic analysis of Santa Anita Dam showed the safe long-term ~~maximum~~ restricted reservoir level is at El. 1,230 feet, or 28 feet below the current restricted level. Due to concerns regarding the dam's

compliance with DSOD's seismic stability standards, DSOD has mandated a lower long-term maximum reservoir level of El. 1,230 feet, effective May ~~2008~~2009.[1] In May ~~2008~~2009, DSOD will require that the dam's outlet works always be capable of draining the reservoir to this elevation.

2-6 *Fourth paragraph in Section 2.2 under the heading 'Purpose and Need for the Proposed Project' has been revised as follows:*

Currently, the sediment level in Santa Anita Reservoir is nearing El. 1,212 feet, which is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately ~~300,000 to~~ 500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves and to ensure DSOD's requirements are met. LACDPW proposes removing the sediment in the summer and fall.

2-6 *Second to last paragraph on the page has been revised as follows:*

A structural analysis of Santa Anita Dam was conducted by LACDPW. Modeled stresses on the dam were compared to the assumed maximum allowable stresses of the existing concrete of the dam to determine if there would be potential for damage. The seismic structural analysis of the dam was modeled for the existing condition and post construction of the proposed project. In its current condition, the modeled dam stresses during a Maximum Credible Earthquake (MCE) event exceed the concrete strength, resulting in significant cracking of the dam. This could compromise the dam's stability during a MCE. DSOD concurred with the findings of the structural analysis and as a result, lowered the long term maximum allowable water elevation behind the dam to 1,230 feet.

2-8 *Paragraph under Section 2.4.2 under the heading 'Dry Excavation' has been revised as follows:*

The proposed project would remove ~~approximately~~ over 300,000 ~~to 500,000~~ cubic yards of sediment from Santa Anita Reservoir. Because the sediment is submerged in the

[1] The DSOD Certificate of Approval for Big Santa Anita Dam (signed December 18, 2006) allows water to be temporarily impounded to an elevation of 1,258 feet behind the dam until May 2008. During storm events, a temporary impound elevation of 1,316 feet is allowed. DSOD issued a letter on May 7, 2008 to LACDPW for an extension of the temporary reservoir elevation variance of 1,258 feet behind the dam until May 2009.

reservoir, it is difficult to predict the exact amount of sediment to be removed. Additionally, it is unknown how much sediment will enter the reservoir during storm events during the project. Approximately 500,000 cubic yards of sediment can be expected. Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required. Sediment would be removed from the 3.2-acre excavation area in the reservoir and transported on the conveyor belt system described below. The excavation area is mostly open water, with a combination of bare ground and some native and invasive vegetation. This area behind the Santa Anita Dam is inundated seasonally and much of the native and exotic vegetation is naturally washed out by storm flows. All sediment removal activities would occur below the El. 1,300 feet within the footprint shown on Figure 2-6.

2-8 Second p*aragraph under Section 2.4.3 under the heading 'Sediment Conveyance' has been revised as follows:*

The conveyor belt would transport sediment approximately 1.5 miles. The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. South of the Headworks, the conveyor belt system would follow the existing dirt maintenance road and LACDPW access road to the SPS areas.

2-16 *First paragraph in Section 2.5 under the heading 'Construction Scenario' has been revised as follows to address the breeding bird season and bat roosting and nursery habitat.*

LACDPW would attempt to complete the sediment removal within the summer and fall of 2009, but sediment removal activities may last over the two 6 to 8 -month periods of April through October (possibly to December, weather permitting). The removal of vegetation in a portion of the Middle SPS area is anticipated to occur ~~after September 2008 and prior to~~ after ~~March~~ May 2009. The riser construction would likely occur from May 2009 to December 2009, although the contractor may choose an alternate construction sequence. Dewatering of the reservoir would occur for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May 2009 and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below. Construction equipment required for the proposed project is summarized in Table 2-1.

2-17 *First paragraph in Section 2.5.1 under the heading 'Dam Outlet Modification' has been revised as follows:*

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. LACDPW anticipates the outlet work to commence in ~~May~~ late 2009. The dry excavation activities, described in Section 2.5.2 below, would clear sediment away from the work area.

2-20 *Table 2-2 Project Entitlements and Regulatory Permits has been revised as follows:*

Agency	Permit/Action
Federal	
U.S. Forest Service	Special Use Permit
U.S. Army Corps of Engineers	Section 404 Individual Permit for the discharge of dredged or fill material into Santa Anita Wash.
U.S. Fish and Wildlife Service	Section 7 consultation
State	
California Department of Fish and Game	Section 1600 Streambed Alteration Agreement
California Regional Water Quality Control Board, Los Angeles Region	Construction General Permit for ground disturbing activities; Section 401 Permit for discharge of storm water into Santa Anita Wash
Local	
City of Arcadia	Various ministerial approvals (e.g., ~~tree removal~~, grading, drainage, and traffic control)
Southern California Edison	Utility relocation

SECTION 3.1 AESTHETICS

PAGE CLARIFICATION/REVISION

3.1-1 *First two paragraphs in Section 3.1.1 under the subheading 'Local Setting' has been revised as follows:*

The project area is shown on Figure 3.1-1, and includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Wilderness Park staging area, and the SPS areas. These facilities are owned and operated by LACDPW under easements with the U.S. Forest Service and the City of Arcadia. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest north of the City of Arcadia. The Arcadia Wilderness Park and SPS areas are located in the City of Arcadia.

Other land uses adjacent to the project area include single-family residential uses to the west and south, and the City of Monrovia open space to the east of the project site.

The proposed dam outlet modification and dry excavation activities would occur at the Santa Anita Reservoir in the northern portion of the project site. The Santa Anita Reservoir and Dam can be viewed from portions of the Santa Anita Canyon Road and from some hiking trails of the Angeles National Forest, from areas that are located above the reservoir and dam. The reservoir and the concrete dam are characteristic of the other LACDPW dams and reservoirs in the San Gabriel Mountains, in terms of aesthetics of the dam and the surrounding hillsides and vegetation. The area adjacent to the reservoir is a mix of scrub and riparian species, and along the access road to the west of the reservoir is a mix of non-native plants. The vegetation above the reservoir contains chaparral and scrub that is characteristic of the foothills to the mountains in the project vicinity. The area south of the dam is a rocky streambed with riparian habitat with scrubs and willow species. An existing tunnel from the reservoir leads to the downstream access road along the streambed that leads south of the Headworks to the proposed Wilderness Park staging area, which is an open dirt area, located north of the northwest parking lot area of the park. The tunnel was constructed through approximately 1,500 feet of a hillside to the east of the dam. It was installed in 1968 to accommodate a conveyor belt system to remove about 825,000 cubic yards of debris from the drained reservoir.

3.1-5 *Third paragraph in Section 3.1.3 under the subheading 'Environmental Analysis' has been revised as follows:*

~~Three~~Two KOPs were selected and analyzed to determine the impacts of the proposed project on surrounding views. Figure 3.1-1, Key Observation Points, illustrates the location from which photos were taken. Figures 3.1-2 through 3.1-5 illustrate existing views and visual simulations of the proposed project from the ~~three~~two KOPs. Simulations of the proposed project from these locations were prepared to provide a comparison of the conditions prior to project construction activities and to allow for visual comparison as well as provide a qualitative description of the aesthetic changes that would result from the proposed project. Two simulations represent the proposed project as it would appear after construction, including a view of the Middle SPS from residents to the west and an overview of the project area from the Santa Anita Canyon Road. Because the Middle SPS would be visible for some adjacent residences, KOP 1 was selected for a visual simulation. The second KOP provides an overview of the project site from public views from the north and above the project. Other KOPs are not necessary for this analysis, since the Lower SPS is currently visible by surrounding residents and public views would be from views similar to KOP 2.

3.1-9 *Paragraphs in Section 3.1.3 under the heading 'Middle and Lower SPS' has been revised as follows:*

Middle and Lower SPS. Prior to the use of the approximately 13-acre Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. The remaining two acres of the sediment placement footprint is comprised of existing access roads. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area. The visual impact of clearing the Middle SPS would be a temporary impact because sediment placement activities are anticipated to occur in June 2009. Figure 3.1-2 shows the existing view of the area where the Middle SPS would join the Upper SPS. The proposed height of the Middle SPS would rise to 30 feet from the current elevation of the southern end of the Middle SPS, as shown on Figure 2-7. The western edge of the Middle SPS would be landscaped to serve as a visual buffer for the residences to the west, which are adjacent to the Santa Anita Spreading Grounds. As depicted in the simulation, shown on Figure 3.1-3, the existing trees and other vegetation would provide a visual buffer to areas of the Middle SPS and other areas where vegetation does not exist would be landscaped as a project ~~design feature~~ mitigation measure. Refer to Section 3.3 mitigation measures BIO-D and BIO-E. Additionally, some backyards of the residences along Santa Anita Spreading Grounds have fences that already provide a visual barrier to the Middle SPS or the viewers already have obstructed views due to trees in the Spreading Grounds. Sediment would be visible through or next to vegetated areas of the western slope of the Middle SPS (Figure 3.1-3). After completion of the proposed project and the landscaping of the western edge of the Middle SPS, this SPS area would visually transition to a natural vegetated area along the western edge of this SPS. While the trees would not be mature oak and sycamores, the visual impact on the residences to the west of this area would be less than significant.

As described in Section 2.5.4, the proposed construction scenario assumes the Lower SPS sediment placement would occur prior to the Middle SPS sediment placement activities. Preliminary estimates anticipate approximately 250,000 cubic yards of sediment would be placed at the already disturbed Lower SPS, which would then be landscaped as a project mitigation measure, and then closed out for future sediment placement. This addition of the approximately 250,000 cubic yards of sediment would increase the height of the existing Lower SPS up to thirty feet above its current elevation (see Figure 2-8). Currently residences south of the Lower SPS along Oakglen Avenue are below the grade of the Lower SPS and have views of the southern slope of the SPS. Other residences, also located south of the Lower SPS that are located on cul-de-sac of Oakhaven Road are higher in elevation than the Oakglen Avenue residences, but are still below the grade of the Lower SPS. Residences to the west of the Santa Anita Wash and east of the Lower

SPS on Whispering Pines Drive also have views of the SPS. All of the views of the Lower SPS would improve after the construction of the project because the new sediment would be eventually landscaped as part of biological resources mitigation, and closed for future sediment placement. The visual character of the Lower SPS at the completion of the project would be similar as the existing condition with a higher elevation of the sediment and more vegetation that would be characteristic of the LACDPW flood control area that makes up the project site. Accordingly, the impact would be less than significant.

SECTION 3.2 AIR QUALITY

PAGE CLARIFICATION/REVISION

3.2-6 *Before the 'Air Pollution Sources' subheading in Section 3.213 the following section has been added for greenhouse gases:*

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back to space, but the properties of the radiation have changed from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This radiation that would have otherwise escaped back to space is now "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Without the Greenhouse Effect, Earth would not be able to support life as we now know it.

Prominent GHGs contributing to the Greenhouse Effect include carbon dioxide (CO_2), methane (CH4), O3, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for an enhancement of the Greenhouse Effect, which has led to a trend of unnatural warming of the Earth's climate, known as global warming or global climate change. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gasing associated with agricultural practices and landfills. Processes that absorb CO_2, often referred to as sinks, include uptake by vegetation and dissolution into the ocean.

Carbon dioxide-equivalent (CO_2e) is a value used to account for different GHGs having different potential to retain infrared radiation in the atmosphere and contribute to the Greenhouse Effect. This is known as the Global Warming Potential of a GHG, and is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the Greenhouse Effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in carbon-dioxide equivalents takes the Greenhouse Effect contribution of all GHG emissions and converts them to a single unit equivalent to the effect if all emissions were CO_2.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern, respectively. The strong majority of the scientific community concurs that global warming will lead to adverse climate change effects around the globe and that the phenomenon is anthropogenic, i.e., caused by humans.

In 2004, California produced 492 million gross metric tons of CO_2e gases. Fossil fuel consumption in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state. This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent).

Various local and statewide initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way and there is a real potential for severe adverse environmental, social, and economic effects over the long term. Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help slow or stop human-caused increase in average global temperatures and associated changes in climatic conditions. As such, global climate change and the proposed project's contribution of GHGs are discussed in Section 4.3.2, Cumulative Impacts of this EIR.

3.2-10 *After the second paragraph in Section 3.2.3 the following sentence has been added as follows:*

Subsequent environmental analysis would be carried out under future projects as required under CEQA.

3.2-11 *First bullet on the page has been revised as follows:*

- At the end of the draining period, the ~~drying of the~~ reservoir sediment ~~would start~~ would be allowed to dry (based on the weather and recession flows) ~~and last up to~~ for three or more weeks to facilitate sediment transport and placement;

3.2-13 *First paragraph under Table 3.2-5 has been revised as follows:*

Without mitigation, the maximum daily project emissions for NO_X, $PM_{10,}$ and $PM_{2.5}$ would exceed their maximum daily emission thresholds for sediment movement, and the worst-case condition ~~in June to July~~, when ~~the~~ riser construction and sediment cleanout occur simultaneously and there would be a maximum overlap of activities and emissions ~~would occur~~.

3.2-17 *Mitigation measures AIR-A and AIR-B and text in Section 3.2.4 have been revised as follows. Due to the requirement of mitigation measure AIR-A, mitigation measure AIR-B is no longer necessary because all significant air quality impacts would be mitigated by AIR-A.*

To reduce impacts from pollutants emitted from the proposed project, mitigation measure AIR-A would be incorporated into the project. AIR-A would reduce project NO_X emissions during the maximum emissions overlap period (during dam riser construction and sediment movement) by 40 percent and by 20 percent during the non-overlap period, as shown in Table 3.2-6, which reduces project NO_X emissions to below its NO_X threshold limit for the worst-case daily project NO_X emissions ~~(during dam riser construction and sediment movement)~~.

AIR-A ~~To reduce project NO_X levels by 40 percent during the maximum emissions overlap period (riser modifications and sediment movement occurring simultaneously), t~~ The construction contractor shall provide a NOx reduction plan, for LACDPW approval, demonstrating that construction equipment shall not exceed the 100 lbs/day NOx threshold for the duration of the project. The plan shall provide a detailed equipment list for the overlap and non-overlap construction periods using the construction equipment emissions from URBEMIS 2007, which will be provided by LACDPW, or an equivalent verifiable source approved by CARB or SCAQMD. Measures to reduce emissions may include the use of oxygenated catalysts or Tier 2 or Tier 3 engines. ~~retrofit construction equipment with the use of oxygenated catalysts and/or Tier 2 or Tier 3 engines to achieve a 40 percent NO_X reduction. The LACDPW shall include wording in bid specifications that contractors who propose the use of low-NOx emitting equipment, either through the use of oxygenated catalyst or Tier 2 or Tier 3 engines, shall be given preference in the selection of contractors.~~

~~To reduce impacts from pollutants emitted from the proposed project during sediment movement (excavation, conveyance, and placement) without dam riser construction (the~~

~~non-overlap period), mitigation measure AIR-B, would be incorporated into the project. AIR-B would reduce NO_x levels by 20 percent, which reduces project NO_x emissions during the non-overlap period to its threshold limit.~~

~~**AIR-B** To reduce project NO_x levels by 20 percent during sediment movement without dam riser construction (the non-overlap period), the construction contractor shall retrofit construction equipment with oxygenated catalysts and/or Tier 2 or Tier 3 engines to achieve a 20 percent NO_x reduction. The LACDPW shall include wording in bid specifications that contractors who propose the use of low-NO_x emitting equipment, either through the use of oxygenated catalyst and/or Tier 2 or Tier 3 engines, shall be given preference in the selection of contractors.~~

SECTION 3.3 BIOLOGICAL RESOURCES

PAGE CLARIFICATION/REVISION

3.3-10 *Third and fourth paragraphs in Section 3.3.1 under the heading 'Sensitive Plan Species' has been revised as follows:*

Three areas were surveyed for the presence of sensitive plant species during the months of March, June, and July of 2007: the northern boundary of the reservoir just outside of the project site, the access road, and the Middle SPS. Due to unfavorably dry weather conditions, however, it was determined that many plants may not have been detectable during the 2007 surveys. Additional surveys for sensitive plant species were therefore conducted in April and May of 2008. Methods used for the rare plant surveys comply with the CDFG's *Guidelines for Assessing the Affects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities* (CDFG 2000). A floristic survey was conducted, so that all species observed were identified to the point where their status could be determined. The assessment included a 100% pedestrian survey of the project site. The search pattern used was a random meander within the project site. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological resources including habitats that may support special status plant species. ~~A c~~Complete discussions of the sensitive plant surveys conducted in 2007 and 2008 are ~~is~~ included in Appendix C.

~~No sensitive plant species were detected in the project site. It is possible, however, that due to extremely dry weather conditions in the spring of 2007, potentially occurring sensitive plant species could not be detected during surveys.~~ One federally listed plant species, San Diego ragweed (*Ambrosia pumila*), was observed in the Santa Anita Debris Basin, more than 250 feet west of the access road (personal communication K. Kurtz, UltraSystems, 2007). This species has a low potential for occurrence within the project

disturbance area due to the lack of suitable habitat. No other sensitive plant species were detected during 2007 or 2008 surveys.

3.3-10 *Paragraph under subheading 'Mammals' has been revised as follows:*

No sensitive mammals ~~are known from the project vicinity and none~~ were detected during general surveys. Three sensitive mammal species are known to occur in the vicinity of the project site: Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*). Descriptions, status, habitat requirements, and other information regarding these sensitive bats are included in Appendix C.

The project site and adjacent areas contain suitable habitat for bats south of the reservoir along the streambed and in the Middle SPS. Pallid bat, Townsend's big-eared bat, and western red bat are all U.S. Forest Service sensitive species. While Pallid bat is also CDFG Species of Special Concern and the Townsend's big-eared bat is a Federal Species of Special Concern.

3.3-18 *Paragraph under subheading 'City of Arcadia Oak Tree Protection' has been revised as follows:*

Article IX, Chapter 7 of the Arcadia Municipal Code provides that Engelmann oaks and coast live oaks (with a trunk diameter larger than 4 inches measured at a point 4 ½ feet above the crown root, or 2 or more trunks measuring 3 inches each or greater in diameter, measured at a point 4 ½ feet above the crown root) and any other living oak (with a trunk diameter larger than 12 inches measured at a point 4 ½ feet above the crown root, or 2 or more trunks measuring 10 inches each or greater in diameter measured at a point 4 ½ feet above the crown root) shall not be removed, relocated, damaged, or half their protected zones encroached upon unless an Oak Tree permit is granted. The City of Arcadia sent a letter to LACDPW on August 7, 2008 regarding the application of the City's Oak Tree Preservation Ordinance to the proposed project. The City stated that an Oak Tree Removal permit was unnecessary for projects requiring oak tree removal for public purposes under Section 9701 of the Arcadia Municipal Code; therefore, the proposed project would not be subject to the City of Arcadia's Oak Tree Preservation Ordinance.

3.3-19 *First and second paragraphs in Section 3.3.3 under the heading 'BIO-1' have been revised as follows:*

No sensitive plant species were detected in the project site during focused botanical surveys during the appropriate survey periods. Due to unfavorably dry weather conditions, it was determined that many plants may not have been detectable during the

2007 surveys. Per mitigation measure BIO-A of the Draft EIR, additional surveys for sensitive plant species were conducted in April and May of 2008 (see Appendix C). Because no sensitive plant species were detected during focused surveys in 2007 or 2008, no sensitive plant species are expected to occur within the project area and impacts to sensitive plant species are not anticipated. ~~Due to extremely dry weather conditions in the spring of 2007, potentially occurring sensitive plant species may not have been detectable during surveys. Take of a sensitive plant species could violate state and/or federal laws and result in a significant impact requiring mitigation, depending on the sensitivity status of the species affected, and the type and extent of the impact.~~ To ensure that no sensitive plant species are impacted by the proposed project, mitigation measure BIO-A has been provided to require that focused surveys for sensitive plants are repeated prior to removal of vegetation in the Santa Anita Reservoir, Lower and Middle SPS areas or wherever ground-disturbing activities would affect vegetated areas.~~, which is anticipated to occur after September 2008.~~ With implementation of this mitigation measure,~~ the absence of sensitive plant species can be confirmed and no further measures would be required. However,~~ if listed plant species are detected, consultation with USFWS and/or CDFG would be required to document the finding and determine appropriate mitigation requirements to ensure that impacts to listed plant species would be less than significant.

Tree and vegetation removal would occur in the Middle SPS and construction activities with potentially adverse noise levels would occur in the vicinity of other trees (e.g., the Southern Sycamore Alder Riparian Woodland adjacent to the access road), which would significantly affect nesting birds and roosting bats, if present. Disturbance of active nests would violate the MBTA and result in a significant impact requiring mitigation. To ensure compliance with the MBTA and reduce adverse impacts to bats, mitigation measure BIO-B has been provided to require nesting bird and roosting bat surveys prior to the start of project construction. With implementation of this mitigation measure, impacts to nesting birds and roosting bats would be less than significant.

3.3-21 *Paragraph in Section 3.3.3 under the heading 'BIO-3' has been revised as follows:*

No jurisdictional waters in the form of wetlands were determined within the SPS project footprint. The proposed project would impact 0.12 acre of ephemeral wash (OHWM) under the jurisdiction of the USACE in the Middle SPS. No permanent impacts to jurisdictional waters within the Santa Anita Reservoir would occur because the proposed project would not result in the loss of habitat in the reservoir and the reservoir would continue to operate within the normal range of water level fluctuation upon completion of the project. Impacts to ephemeral wash would result in a significant impact requiring mitigation. To minimize impacts due to loss of ephemeral wash, mitigation measure

BIO-F has been provided. With implementation of this mitigation measure, impacts to federally protected wetlands would be reduced to a level below significance.

3.3-21 *Paragraph in Section 3.3.3 under the heading 'BIO-5' has been revised as follows:*

The proposed project would remove 177 coast live oak and 1 Engelmann oak (the trunks of two of these trees are not within the project site, however, significant portions of their crowns are and so they have therefore been included in the total number) from the Middle SPS. Removal of oak trees would not require an Oak Tree Permit from the City of Arcadia, as stated in a letter dated August 7, 2008 from the City of Arcadia to LACDPW. Implementation of measure BIO-D ~~in conjunction with the oak tree permit~~ would reduce impacts to city protected oak trees to a level below significance.

3.3-22 to -25 *Mitigation measures BIO-A though BIO-E have been revised as follows.*

BIO-A ~~The project site, specifically the Middle SPS, contains suitable habitat for four sensitive plants. Although none of these plants were identified during the rare plant surveys in spring 2007, their presence/absence cannot be confirmed, due to the extremely dry weather conditions. As such, p~~ Prior to commencement of project construction, a rare plant survey shall be completed within the Santa Anita Reservoir, the Middle SPS and anywhere else project ground-disturbing activities would affect vegetated areas to determine the presence or absence of sensitive plant species with potential to occur within this project site. Surveys within the Middle SPS ~~should~~ will focus on Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass where suitable habitat for these species occurs. However, all sensitive plant species that have potential to occur in the project area based on the presence of suitable habitat or the known presence of the species in neighboring areas ~~should~~ will be searched for during their blooming periods to confirm presence or absence. In addition, all other biological requirements of the U.S. Forest Service shall be implemented to minimize impacts to federal species. Surveys shall be conducted in accordance with the following CNPS guidelines:

• A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas.

• If a state, U.S. Forest Service, or federally listed plant species is detected (e.g., slender-horned spineflower or San Diego ambrosia), then consultation with USFWS and/or, U.S. Forest Service, and/or CDFG must occur to document the finding and determine

appropriate mitigation requirements to ensure that impacts to the listed plant species would be less than significant.

• Rare plants listed as CNPS List 1B, protected by the California Endangered Species Act, shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project activities to allow for salvage of the plants.

BIO-B Should tree and vegetation removal in the Santa Anita Reservoir or Middle SPS or commencement of other construction activities in the project site occur during the breeding season for migratory non-game native bird species (February 1~~5 September 15 –~~August 31), weekly bird surveys ~~would~~ shall be performed to detect any protected native birds in the trees to be removed and other suitable nesting habitat within 300 feet of the construction work area (500 feet for raptors). The surveys ~~would~~ shall be conducted 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys ~~would~~ shall continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, LACDPW shall halt all clearance/construction disturbance activities in suitable nesting habitat or within 300 feet of nesting habitat (within 500 feet for raptor nesting habitat) until ~~September 15~~ August 31 or continue the surveys in order to locate any nests. If an active nest is located during the survey, clearing and construction with 300 feet of the nest (within 500 feet for raptor nests) shall be postponed until the nest is naturally vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The results of this measure ~~would~~ shall be recorded to document compliance with applicable State and Federal laws pertaining to the protection of native birds.

A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to removal of trees or structures on the site. If no active roosts are found, then no further action will be warranted. If either a maternity roost or hibernacula (structures used by bats for hibernation) is present, the following measures shall be implemented:

• If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in consultation with CDFG shall be observed during the maternity roost season (March 1 - July 31).

• If a non-breeding bat hibernacula is found in a structure or tree scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial disturbance for airflow. This action shall allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Structures or trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

• If special-status bats are found roosting within trees or structures onsite that require removal, appropriate replacement roosts shall be created at a suitable location onsite or offsite in coordination with a qualified biologist, the CDFG, and the LACDPW.

BIO-C In order to reduce impacts to sensitive reptiles potentially occurring in the Santa Anita Reservoir, the Middle SPS and along the access road adjacent to the debris basin LACDPW shall implement the following measures:

• ~~The footprint of g~~Grading and other habitat disturbing activities shall be limited to the footprint of the SPS and reservoir areas. ~~smallest area practicable.~~

• To prevent injury or damage to coast (San Diego) horned lizard, two-striped garter snake, and other reptiles, an animal exclusion fence shall be placed along the boundary of the Middle SPS area and along the portion of the access road adjacent to the debris basin. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded "T" steel posts. Fence material should also be buried a minimum of 12 inches below the ground surface.

• Prior to construction, a qualified biologist shall conduct a pre-construction survey for the coast (San Diego) horned lizard and two-striped garter snake and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion fenced area, the biologist shall safely relocate these species to a suitable area outside of the fenced area.

• Drift nets or other exclusionary fencing shall be placed around excavations to reduce the potential for individuals entering excavated areas. If excavations with the potential for entrapment are to remain open for more than 12 hours they must include some means for small mammals, reptiles, and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavation. Before an excavation is backfilled, it must be checked to ensure that

there are no live individuals inside. Backfilling shall not occur until the excavation is clear of all live individuals.

• Personnel involved in project implementation shall receive a briefing from a qualified biologist to identify and describe sensitive resources that may be encountered in the project area. Wildlife of any kind that is encountered during the course of project implementation shall either be moved or provided the opportunity to vacate the site.

• Personnel shall be reminded that harassment, handling, or removal of wildlife from the project site shall not be permitted.

BIO- D– LACDPW shall mitigate for impacts to 6.7 acres of ~~Mitigation for impacts to~~ coast live oak woodlands through a combination of on-site creation of coast live oak woodland, ~~contribution of funds to the Oak Woodlands Conservation Fund or equivalent, or~~ and/or by permanently protecting at least 6.7 acres of comparable habitat in the watershed or by ~~using credits from~~ establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of on site creation and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 6.7 acres. ~~shall be accomplished through a combination of measures.~~

~~Specifically, In addition, LACDPW shall implement one or a combination of the following measures through consultation with CDFG.~~

~~1)~~ Oak woodland restoration shall occur within the Lower SPS, which includes approximately 8 acres available for restoration activities.

~~2)~~ Establishment of a conservation easement that ~~would~~ shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW. ~~equivalent oak woodlands;~~

~~3) Contribution of funds to the Oak Woodlands Conservation Fund or equivalent for the purpose of purchasing oak woodlands conservation easements; and~~

~~4) Planting of an appropriate number equivalent area of trees, including maintaining plantings and replacing dead or diseased trees for a period of up to seven years.~~

~~Mitigation may include salvage of seed or specimen from the impacted area for use in planting. One potential mitigation site is the Lower SPS, which includes approximately 8 acres of space available for restoration.~~

The final size of a conservation easement~~, amount of funding for contribution to the Oak Woodlands Conservation Fund~~ and~~/or~~ the number of trees planted for mitigation shall be

determined through consultation with CDFG. ~~and~~ The City of Arcadia shall be consulted regarding restoration activities on the Lower SPS. ~~If feasible, an oak woodland conservation easement shall occur within the Big Santa Anita watershed. Any contributions to the Oak Woodlands Conservation Fund, or an acceptable alternative shall be allocated to specific localities approved by CDFG. Contributed funds shall be sufficient to acquire and manage a conservation easement in perpetuity.~~

Mitigation for impacts to coast live oak individuals shall be negotiated in conjunction with mitigation with impacts to coast live oak woodland. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels.

Details of planting for mitigation ~~would~~ shall be described in both a conceptual restoration plan and a mitigation and monitoring plan for oak woodland, which shall be submitted and approved by CDFG prior to implementation of the project.

BIO-E Mitigation for impacts to 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub ~~may~~ shall be accomplished through a combination of restoration of a suitable area on ~~or off~~-site and/or by permanently protecting at least 3.88 acres of comparable habitat by establishing a conservation easement at the Big Tujunga Mitigation. The combined total of on site restoration and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 3.88 acres.

~~One potential mitigation site is t~~The Lower SPS~~, which~~ includes approximately 8 acres available for restoration. ~~Mitigation shall include salvage of seed or specimen from the impacted area.~~ Mitigation for impacts to Riversidean alluvial fan sage scrub shall be negotiated with CDFG. A conceptual restoration plan ~~would~~ shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation ~~would~~ shall be described in a mitigation and monitoring plan approved by CDFG.

Establishment of a conservation easement that shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW.

BIO-F Clean Water Act Section 404 (b)(1) guidelines shall be followed as a framework for compensatory mitigation. Through 404(b)(1) negotiations with the USACE and negotiations with CDFG under Fish and Game Code Sections 1600-1616, a determination of the functions and values of impacted jurisdictional waters shall result in the coordination of appropriate mitigation measures for sediment removal and the impacted ephemeral wash and riparian habitat in the excavation area of the reservoir and Middle SPS. ~~Once appropriate compensatory mitigation measures have been determined, c~~Compensatory mitigation of permanently protecting a minimum of 0.15 acres of comparable habitat shall occur at the Big Tujunga Mitigation Bank or through restoration and permanent protection on Mountains Recreation Conservation Authority (MRCA) land. ~~shall take place through on-site and/or off-site mitigation options and/or purchasing mitigation bank credits (provided a mitigation bank is available within the watershed). Preparation of a conceptual mitigation plan would~~ shall be prepared for the on/off-site ~~mitigation following the Los Angeles District of the USACE Mitigation Guidelines and Monitoring Requirements and regional conditions, which shall be obtained from the District's office. If the available SPS areas do not provide sufficient acreage to compensate for all necessary habitat mitigation, then an offsite area will need to be identified in the conceptual mitigation plan. If an offsite area is needed, then documentation of pending purchase will need to be provided before project impacts to jurisdictional waters can occur. Mitigation for impacts will be accomplished through restoration of the available SPS areas and establishment of an offsite conservation easements at Big Tujunga Mitigation Bank, which will be identified in the conceptual mitigation plan.~~

SECTION 3.4 CULTURAL RESOURCES

PAGE CLARIFICATION/REVISION

3.4-19 *Mitigation measures CUL-A and CUL-B have been revised as follows:*

CUL-A If archaeological materials are encountered during ground disturbing activities, work in the vicinity shall be immediately halted ~~until~~. The resource ~~is~~ shall be assessed by a qualified archaeologist and the appropriate treatment determined in accordance with state law and standard archaeological practices consistent with those outlined by the California Office of Historic Preservation prior to the resumption of construction.

CUL-B If human remains are encountered on the property during ground disturbing activities, the Los Angeles County Coroner's Office shall be contacted and all activities in the vicinity of the discovery shall cease until appropriate disposition of the remains is determined by the Coroner's Office, who will follow their standard protocols.

SECTION 3.5 GEOLOGY AND SOILS

PAGE CLARIFICATION/REVISION

3.5-9 *First paragraph under the GEO-2 subheading has been revised as follows:*

The proposed project would excavate up to 500,000 cubic yards of sediment from Santa Anita Reservoir and deposit it first at the Lower SPS and the later at the proposed 13-acre Middle SPS, which would be graded as part of the project. Disturbed sediments are more susceptible to erosion; however, as discussed in Section 2.0, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites (see Figure 3.5-2). Additionally, the contractor would be required to prepare a Local Stormwater Pollution Prevention Plan (SWPPP) and a Wet Weather Erosion Control Plan (WWECP) in accordance with the National Pollution Discharge Elimination System (NPDES) Permit for construction activities disturbing more than one acre of land. With the implementation of these requirements, construction-related erosion impacts would be less than significant for the proposed project.

SECTION 3.6 HYDROLOGY AND WATER QUALITY

PAGE CLARIFICATION/REVISION

3.6-4 *Paragraph under the 'Local' subheading has been revised as follows:*

The City of Arcadia is a co-permittee under the County of Los Angeles of Los Angeles municipal permit issued by the Los Angeles RWQCB. The permit consists of various stormwater management programs designed to reduce pollutants in stormwater and urban runoff. Under the City's NPDES stormwater permit requirements, construction projects must implement at a minimum, BMPs to reduce pollutants to the maximum extent practicable (MEP) for water quality protection. This includes sediment control, construction materials control, and erosion control to prevent stormwater pollutants from leaving construction sites. In the event soil is disturbed during the rainy season (generally defined as between October 15 and April 15), construction projects must also implement a Wet Weather Erosion Control Plan (WWECP). As discussed in Section 3.5, implementation and development of a Local SWPPP is also required for construction projects disturbing one or more acres. The City of Arcadia has also enacted ordinances to comply with stormwater regulations as specified above.

SECTION 3.7 NOISE

PAGE CLARIFICATION/REVISION

3.7-14 *Third paragraph on the page after the 'Middle SPS' subheading has been revised as follows:*

Middle SPS. Maximum noise levels from the working perimeter of the Middle SPS area of 90 dBA to the nearest residences approximately 350 feet to the west would attenuate by distance to approximately 73 dBA. Approximately ten residences west of the Middle SPS would experience intermittent noise levels in excess of local noise standards during sediment placement activities at this SPS area. This noise level would exceed the City of Arcadia limit of 55 dBA and would be substantially greater than the ambient noise levels, resulting in a significant impact.

3.7-15 *Second paragraph under the NOISE-2 subheading has been revised as follows:*

Sediment movement ~~transport by heavy truck~~ and placement at the SPS by heavy equipment would occur in proximity to residences, and would produce low-level vibrations at the source. The maximum vibration generated at the work areas is anticipated to be in the range of 0.07 to 0.09 in/sec ppv at 25 feet for loaded trucks (as previously shown in Table 3.7-4), which is below the Caltrans criterion of 0.2 in/sec ppv. In addition, this vibration level would dissipate with distance at approximately 200 feet to the nearest residences. Therefore, a detailed vibration analysis is not required. As such, vibration from the project construction would not be a significant impact, and no mitigation is required.

3.7-15 to -16 *Mitigation measures NOISE-A though NOISE-F have been revised as follows.*

NOISE-A At all areas except the reservoir-dam area, construction equipment shall be fitted with ~~state-of-the-art~~ noise shielding and muffling devices to reduce noise levels to the maximum extent feasible. Where available, these devices shall be better than manufacturer's standard equipment.

NOISE-B Stationary sources, such as message boards for traffic control, that ~~would~~ will be located within 500 feet of residences shall be solar or battery powered, or connected to the local power grid, i.e., not powered by an internal combustion engine.

NOISE-C At the SPS areas, equipment maintenance and staging areas shall be located ~~as far away from the residences as feasible~~within the project area.

NOISE-D At the Lower SPS, construction of a noise barrier on the west and southwest sides ~~would~~ will be feasible. ~~On the southeast side, construction of a noise barrier would not be feasible because the homes off the north end of Oakhaven Road are at least 40 feet above the Lower SPS.~~ Therefore, at the commencement of sediment placement in the Lower SPS, ~~the County~~ LACDPW shall construct a barrier that ~~would~~ shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west and southwest. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, the most efficient and economical barrier may be built by depositing the initial sediment along the affected boundaries of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.

NOISE-E ~~At the Middle SPS, construction of a temporary noise barrier on the west side of the site is feasible. Therefore, a~~ At the commencement of sediment placement in the Middle SPS, the LACDPW shall construct a barrier that ~~would~~ shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, ~~the most efficient and economical~~ a barrier may be built by depositing the initial sediment along the western boundary of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.

NOISE-F The ~~contractor~~ LACDPW shall establish a noise complaint and response procedure that includes a 24-hour toll free or local telephone number for complaints, and a procedure where a field engineer/construction manager will respond within 48 hours as practicable, ~~and~~ investigate the complaints, and take corrective action if necessary. ~~in a timely manner.~~ Complaints after normal working hours may be received by voice mail.

3.7-16 *Section 3.7.5 'Significance After Mitigation' has been revised as follows.*

The mitigation measures NOISE-A through NOISE-F, described above, would reduce construction noise levels and impacts to residents near the work areas. It is not feasible to predict the noise reduction that would be achieved by the construction of noise barriers at the Middle and Lower SPS sites (NOISE-D and NOISE-E). Noise reduction will vary dependent on barrier type, barrier height relative to the equipment elevation, and the location of the equipment within the work site. Generally, the effectiveness of an earth

berm or noise wall depends on the distance between the noise receptor and the noise source, the distance between the noise receptor and the noise berm/wall, and the height of the noise berm/wall above the line of sight between the noise receptor and the noise source. Mitigation measures NOISE-D and NOISE –F include the use of a barrier at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties because the distance of approximately 350 feet warrants a barrier of this height and any barrier above the exhaust pipes would reduce construction noise at the residences near the Lower and Middle SPS areas. In some cases, earth berm barriers may reduce the noise levels down to the 55 dBA noise thresholds. However, it is likely that some noise levels from the SPS areas at the western residences would remain above 55 dBA, and therefore would be significant and unavoidable.

SECTION 4.0 IMPACT OVERVIEW

PAGE	CLARIFICATION/REVISION
4-1	*Paragraphs under 'Significant Unavoidable Adverse Impacts' subheading has been revised as follows:*

This section is prepared in accordance with Section 15126.2(b) of the *CEQA Guidelines*, which requires the discussion of any significant environmental effects that cannot be avoided if a project is implemented. These include impacts that can be mitigated but cannot be reduced to a less than significant level. An analysis of environmental impacts caused by the proposed project has been conducted and is contained in this EIR. Nine issue areas were analyzed in detail in Chapter 3. ~~One~~ Two issues ~~has~~ have been found to result in significant unavoidable adverse impacts – construction-related noise and global climate change. Short-term noise impacts would exceed the acceptable noise threshold for sensitive noise receptors in the City of Arcadia. The residences located closest to the project site, approximately 300 feet west of the Middle SPS and approximately 200 feet south of the Lower SPS would be subject to intermittent construction equipment noise that cannot be mitigated below the level of significance.

4-3 and 4-4 *Paragraph under the 'Police Protection' subheading has been revised as follows:*

The project area is served by the Arcadia Police Department located at 250 West Huntington Drive. The proposed project would not interfere with any current emergency response plans or emergency evacuation plans for local, state, or federal agencies and access to all local roads would be maintained during construction. Any emergency procedures required by County, state, and federal guidelines would be implemented during construction of the proposed project. Upon completion of the two 8-month

construction periods, ~~the project site would be returned to its existing condition and~~ no changes to the operational use of the site would occur. Accordingly, no impacts to police protection, whether through an increase in the need for services or response times, would occur.

4-9 *Second paragraph under the 'Global Climate Change' subheading has been revised as follows:*

Short-term sources of project-generated GHG emissions would be the off-road construction equipment and on-road vehicles used for site preparation, grading, and construction of the site facilities. The combustion of gasoline and diesel fuel results in the generation of CO_2, methane, and nitrous oxide. As such, construction of the proposed project would generate emissions that would exceed existing levels and, therefore, the County is conservatively determining ~~contribute to~~ global warming impacts for the purposes of this EIR. Specifically, the project would generate 1,784 tons of CO_2 emissions during the construction period only (see URBEMIS worksheets for annual CO_2 emissions per year). Implementation of mitigation measure~~s~~ AIR-A ~~and AIR-B~~ during construction would likely reduce the proposed project's contribution of GHG emissions. In addition, at least 50 percent of the site materials would be recycled or salvaged in accordance with AB 939 further reducing the proposed project's contribution to GHG emissions during construction activities.

4-10 *Paragraph under the 'Global Climate Change' subheading has been revised as follows:*

As of this writing, there are no adopted Federal plans, policies, regulations, or laws addressing global warming. Further, although the California Global Warming Solutions Act of 2006 provides new regulatory direction towards limiting GHG emissions, no air districts in California, including SCAQMD, have a recommended emission threshold for determining significance associated with GHGs from development projects.

4-10 *Paragraphs under the 'Global Climate Change' subheading has been added as follows:*

Senate Bill 97, enacted in 2007, amends CEQA to provide that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Office of Planning and Research (OPR) to develop draft CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emission by July 1, 2009," and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010.

In October of 2008, CARB published its *Climate Change AB 32 Scoping Plan (Scoping Plan)*, which is the State's plan to achieve GHG reductions in California required by AB

32 (CARB 2008a). The Scoping Plan was approved by the CARB on December 11, 2008. In addition to the *Scoping Plan*, CARB has also released the *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (CARB Draft Staff Proposal).* The Proposal includes interim performance standards for project types and emissions sources including construction, energy, water use, waste, transportation, and total mass GHG emissions (CARB 2008b). However, specific thresholds and performance criteria for these categories have yet to be developed.

On June 19, 2008, OPR issued a Technical Advisory on addressing climate change impacts of a proposed project under CEQA (OPR Climate Change Advisory). The OPR Climate Change Advisory recommends that lead agencies quantify, determine the significance of, and (as needed) mitigate the cumulative climate change impacts of a proposed project. The OPR Climate Change Advisory identifies that each lead agency is required under CEQA to exercise its own discretion in choosing how to determine significance, in the absence of adopted thresholds or significance guidelines from the state, CARB, or the applicable local air district. At this time, the County of Los Angeles has not adopted a threshold for global climate change impacts nor does it do so herein.

On January 8, 2009**,** OPR issued *Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* pursuant to SB 97, which the Resources Agency has not approved. They are designed to be consistent with the existing CEQA framework for environmental analysis, including but not limited to the determination of baseline conditions, determination of significance, and evaluation of mitigation measures. OPR did not identify a specific threshold of significance for greenhouse gas emissions, nor has the OPR prescribed assessment methodologies or specific mitigation measures. The preliminary draft amendments encourage lead agencies to consider many factors in making their own determinations based on substantial evidence. This EIR has been prepared to be consistent with the *Preliminary Draft CEQA Guideline Amendments for Greenhouse Gas Emissions.*

The landscaping in the Lower SPS area, restoration of removed vegetation, and oak woodland mitigation as required by the proposed project would also partially offset some the impacts associated with global climate change. However, even with restoration and replanting associated with mitigation measures, the County is conservatively estimating that global climate change impacts would remain significant and unavoidable.

Minimizing GHG emissions has been factored into the decision making process from early in the project development. Avoiding trucking the sediment to an offsite location was based on several factors, including GHG reduction. By using an electric conveyor belt from Wilderness Park to the SPS areas, tens of thousands of diesel truck trips would

be avoided. Although trees would be removed to create the Middle SPS, this will allow for future sediment clean out projects of the Santa Anita Reservoir, which also eliminates future offsite truck trips for sediment removal and provides a local location for future and emergency sediment placement.

~~To date there is little guidance and there are no local, regional, state, or federal regulations to global warming. Therefore,~~ In the absence of defined regulation, ~~LACDPW~~ the County has conservatively determined that for the purposes of this EIR, the proposed project's contribution to GHG emissions would be significant, although emissions would be temporary and limited to construction only. ~~Mitigation measures AIR-A and AIR-B would reduce the project's contribution to global climate change; however, given the magnitude of the impact (1,784 tons of CO_2 emissions), the impacts would remain significant and unavoidable.~~ The anticipated global climate change impact of the proposed project would be negligible compared to the estimated 492 million gross metric tons of CO_2e gases for California in 2004 (see Section 3.2). The magnitude of the project's GHG impact is relatively low (1,784 tons of CO_2 emissions, or 0.0004% of the total estimated CO_2 emissions in California) compared to statewide emissions. Mitigation measure AIR-A and other mitigation measures recommending restoration and replanting activities would reduce and partially offset the proposed project's contribution to climate change; however, the County is conservatively determining the cumulative global climate change impacts would remain significant and unavoidable.

SECTION 5.0 ALTERNATIVES

PAGE CLARIFICATION/REVISION

5-5 *Section 5.1.5 'Conveyor Belt System in the Santa Anita Wash' has been added to the Final EIR as an alternative considered but rejected due to public comments at meetings that were outside of the official CEQA comment forums for this proposed project.*

The concreted lined Santa Anita Wash was built for the purpose of flood control. The use of the Santa Anita Wash for the conveyor belt system alignment was proposed as an alternative to the proposed alignment along existing roads to the SPS areas. If the conveyor belt system is placed inside Santa Anita Wash, there is the potential, even during the anticipated 6 to 8 -month construction period of April through October, of a significant rain event. The use of the channel for the conveyor belt system during a rain event would cause damage to the equipment and hinder the flood control capability of the Santa Anita Wash. Due to the potential for equipment damage and the short-term loss of flood protection during the operation of the conveyor belt system in the Santa Anita Wash, this alternative was eliminated from further consideration in this EIR.

5-24 *First sentence of the first paragraph under Section 5.2.4, under the heading 'Transportation/Circulation' has been revised as follows:*

A ~~private~~ public school is located along the east side of Santa Anita Avenue immediately adjacent to the intersection of Santa Anita Avenue and Virginia Drive.

5-30 *First sentence of the sixth paragraph under Section 5.2.5, under the heading 'Transportation/Circulation' has been revised as follows:*

A ~~private~~ public exists along the east side of Santa Anita Avenue, immediately adjacent to the intersection of Santa Anita Avenue and Virginia Drive.

SECTION 11.0 ACRONYMS, ABBREVIATIONS, AND GLOSSARY

PAGE CLARIFICATION/REVISION

11-3 *The following glossary has been added to the Final EIR:*

Conveyor Belt System – a series of continuously moving belts that transports material from one place to another.

Debris Basin – A specially constructed basin used to store and contain large amounts of sediment and debris moving in a channel.

Inlet – an opening/passage where water flows in.

Outlet –an opening/passage where water flows out.

Riser – A vertical pipe.

Slide Gate – a sliding barrier used for regulating the flow of water through a dam.

Spillway – A dam structure used to carry excessive water flows over or around the dam and into the channel.

Spreading Grounds – Shallow basins which retain water and are used to allow water to seep into and recharge local groundwater.

Trash Rack – A grate used to keep large debris and floating objects out of the outlet system.

GRAPHICS

PAGE	FIGURE
2-9	Figure 2-4 Proposed Project – Convey to Sediment Placement Site
2-11	Figure 2-5 Existing Conditions and Proposed Riser Modification
2-12	Figure 2-6 Excavation Area
3.5-10	Figure 3.5-2 Sediment Placement Slope Details
5-9	Figure 5-1 Alternative 2 – Convey to Park, Truck to Sediment Placement Site
5-17	Figure 5-2 Alternative 3 – Convey to SPS Staging Area, Truck Offsite
5-25	Figure 5-3 Alternative 4 – Convey to Park, Truck Offsite

TECHNICAL APPENDICES

APPENDIX	CLARIFICATION/REVISION
C	EDAW Letter Report for the 2008 Rare Plant Surveys has been added to the front of Appendix C.
C	UltraSystems November 2007 Biological Evaluation has been replaced with a revised report. This report was revised based on a request from the U.S. Forest Service to include additional information.
E	Figure named “Project Trip Distribution” has been added to the end of Appendix E

7 RESPONSE TO COMMENTS

According to CEQA Section 15088(a), "the lead agency shall evaluate comments on environmental issues received from persons who reviewed the Draft EIR and shall prepare a written response." This chapter provides responses to oral comments received through the CEQA public meeting process and written comments received during the public comment period that address environmental issues. Each letter has been assigned a number code, and individual comments in each letter have been coded as well to facilitate responses. For example, the letter from the Native American Heritage Commission is identified as letter 3, with comments noted as 3-1, 3-2, 3-3, etc. Copies of each comment letter are provided prior to each response. All of the comment letters are listed in the following table and the corresponding LACDPW responses are provided in this section.

The Draft EIR was distributed for public review on May 5, 2008, initiating a 45-day public review period pursuant to CEQA and its implementing guidelines. During this public review period, a total of 12 letters were received.

LACDPW held one public meeting to solicit additional comments from the public during the review period. Comments made during the meeting and responses to those comments are included in Table 7-2 at the end of this section.

TABLE 7-1 LIST OF COMMENT LETTERS FROM DRAFT EIR

Letter No.	Agency/Organization/Individual
1	State of California, Governor's Office of Planning and Research, State Clearinghouse and Planning Unit *Signed: Terry Roberts*
2	Southern California Association of Governments *Signed: Laverne Jones, Planning Technician*
3	Native American Heritage Commission *Signed: Dave Singleton, Program Analyst*
4	State of California, Department of Water Resources, Division of Safety of Dams *Signed: Mike Zumo , Acting Chief*
5	County of Los Angeles, Department of Parks and Recreation *Signed: Jui Ing Chien, Park Planner*
6	State of California, Department of Fish and Game *Signed: Edmund Pert, Regional Manager*
7	United States Fish and Wildlife Service *Signed: Karen Goebel, Assistant Field Supervisor*
8	City of Arcadia, Development Services Department *Signed: Jason Kruckeberg, AICP, Development Services Director*
9	Edward Jung
10	John Pigott
11	Diane Supple
12	Mike San Miguel

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

June 19, 2008

Long Thang
Los Angeles County Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91802-1460

Subject: Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project
SCH#: 2007061093

Dear Long Thang:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 18, 2008, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

1-1

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2007061093
Project Title Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project
Lead Agency Los Angeles County

Type EIR Draft EIR

Description The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in an existing sediment placement site. The proposed project would remove ~300,000 to 500,000 cubic yards of sediment from the reservoir. The proposed project also includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser.

Lead Agency Contact

Name Long Thang
Agency Los Angeles County Department of Public Works
Phone (626) 458-6134 **Fax**
email
Address 900 S. Fremont Avenue
City Alhambra **State** CA **Zip** 91802-1460

Project Location

County Los Angeles
City Arcadia
Region
Lat / Long 34° 9' 52" N / -118° 1' 30" W
Cross Streets Elkins Ave. and Highland Oaks Drive
Parcel No.
Township 1N **Range** 11W **Section** 22 **Base**

Proximity to:

Highways I-210
Airports
Railways
Waterways Santa Anita Wash, Santa Anita Dam, Santa Anita Reservoir
Schools Highland Oaks Park, Foothill
Land Use Public facilities
Z: RM (Residential Mountainous)
GP: Public Facilities and Grounds

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Biological Resources; Flood Plain/Flooding; Geologic/Seismic; Noise; Recreation/Parks; Soil Erosion/Compaction/Grading; Traffic/Circulation; Vegetation; Water Quality; Wetland/Riparian; Wildlife; Cumulative Effects

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Reviewing Agencies Resources Agency; Department of Fish and Game, Region 5; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 7; Department of Health Services; State Water Resources Control Board, Clean Water Program; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4; Department of Toxic Substances Control; Native American Heritage Commission; State Lands Commission; San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy

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Date Received 05/05/2008 **Start of Review** 05/05/2008 **End of Review** 06/18/2008

Note: Blanks in data fields result from insufficient information provided by lead agency.

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

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May 14, 2008

Mr. Long Thang, Project Planner
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
900 South Fremont Avenue
Alhambra, CA 91803

Re: SCH#2007061093; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Santa Anita Dam Riser Modification/Reservoir Sediment Removal Project; Arcadia Community; Los Angeles County, California

Dear Mr.Thang:

The Native American Heritage Commission is the state agency designated to protect California's Native American Cultural Resources. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c (CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE)', and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS) for possible 'recorded sites' in locations where the development will or might occur.. Contact information for the Information Center nearest you is available from the State Office of Historic Preservation (916/653-7278)/ http://www.ohp.parks.ca.gov. The record search will determine:

- If a part or the entire APE has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey. 1-2

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

* A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity that may have additional cultural resource information. Please provide this office with the following citation format to assist with the Sacred Lands File search request: USGS 7.5-minute quadrangle citation with name, township, range and section: .

- The NAHC advises the use of Native American Monitors to ensure proper identification and care given cultural resources that may be discovered. The NAHC recommends that contact be made with Native American Contacts on the attached list to get their input on potential project impact (APE). In some cases, the existence of a Native American cultural resources may be known only to a local tribe(s).

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- A culturally-affiliated Native American tribe may be the only source of information about a Sacred Site/Native American cultural resource.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

MAY 19 2008

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MAY 21 2008
STATE CLEARING HOUSE

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Mr. Long Thang
County Department of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, California 91803

SCH #2007061093 Draft Environmental Impact Report (EIR) for Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, May 5, 2008
Los Angeles County

Dear Mr. Thang:

We have reviewed the subject report which addresses the outlet modifications at Big Santa Anita Dam. Big Santa Anita Dam, No. 31-22, is under State jurisdiction for dam safety. An alteration application has been filed with this office and is currently under review. 1-3

If you have any questions, or need additional information, you may contact Gina Ladd at (916) 227-4634 or Regional Engineer Mutaz Mihyar at (916) 227-4600.

Sincerely,

ORIGINAL SIGNED BY

Mike Zumot, Acting Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section, DPLA
901 P Street
Sacramento, California 95814

Governor's Office of Planning
and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044

Letter 1: **State of California OPR, State Clearinghouse**

Comment No.	Response
1-1	The Santa Anita Dam Riser Modification and Reservoir Sediment Removal Draft EIR was received by State Clearinghouse and copies of the document were forwarded to the appropriate reviewing agencies. Two agencies, the Native American Heritage Commission (NAHC) and the California Department of Water Resources, Division of Safety of Dams (DSOD) submitted letters in response to the EIR. These agencies also submitted letters to LACDPW, which are included later in this section. As such, the complete LACDPW responses to NAHC and DSOD are provided in letter 3 and 4 respectively.
1-2	See response to comments 3-1 through 3-7 regarding the NAHC comment letter.
1-3	See response to comment 4-1 regarding the DSOD comment letter.

WRD

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Main Office

818 West Seventh Street

12th Floor

Los Angeles, California

90017-3435

t (213) 236-1800

f (213) 236-1825

www.scag.ca.gov

Officers

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Harry Baldwin, San Gabriel

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Administration
Ronald O. Loveridge, Riverside

Community, Economic and Human Development
Jon Edney, El Centro

Energy and Environment
Debbie Cook, Huntington Beach

Transportation and Communications
Mike Ten, South Pasadena

June 12, 2008

Mr. Long Thang
County of Los Angeles
Department of Public Works
900 South Freemont Avenue
Alhambra, CA 91803

RE: SCAG Clearinghouse No. I 20080270 Santa Ana Dam Riser Modification and Reservoir Sediment Removal

Dear Mr. Thang:

Thank you for submitting the **Santa Ana Dam Riser Modification and Reservoir Sediment Removal** for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Santa Ana Dam Riser Modification and Reservoir Sediment Removal**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time. 2-1

A description of the proposed Project was published in SCAG's **May 1-31, 2008** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1857. Thank you.

Sincerely,

Laverne Jones

LAVERNE JONES, Planning Technician
Environmental Planning Division

Letter 2: **Southern California Association of Governments**

Comment No.	Response
2-1	The Southern California Association of Governments (SCAG) determined that the proposed project is not regionally significant per SCAG Intergovernmental Review Criteria and CEQA Guidelines, and thus has no comments. SCAG verified that a description of the proposed project was published in SCAG's May 1-31, 2008 Intergovernmental Review Clearinghouse Report for public review and comment. No further response is required.

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
e-mail: ds_nahc@pacbell.net

May 14, 2008

Mr. Long Thang, Project Planner
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
900 South Fremont Avenue
Alhambra, CA 91803

Re: SCH#2007061093; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Santa Anita Dam Riser Modification/Reservoir Sediment Removal Project; Arcadia Community; Los Angeles County, California

Dear Mr.Thang:

The Native American Heritage Commission is the state agency designated to protect California's Native American Cultural Resources. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c (CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ... objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE)', and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS) for possible 'recorded sites' in locations where the development will or might occur.. Contact information for the Information Center nearest you is available from the State Office of Historic Preservation (916/653-7278)/ http://www.ohp.parks.ca.gov. The record search will determine: 3-1

- If a part or the entire APE has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure. 3-2
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

* A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity that may have additional cultural resource information. Please provide this office with the following citation format to assist with the Sacred Lands File search request: USGS 7.5-minute quadrangle citation with name, township, range and section; . 3-3

- The NAHC advises the use of Native American Monitors to ensure proper identification and care given cultural resources that may be discovered. The NAHC recommends that contact be made with Native American Contacts on the attached list to get their input on potential project impact (APE). In some cases, the existence of a Native American cultural resources may be known only to a local tribe(s).

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities. 3-4
- A culturally-affiliated Native American tribe may be the only source of information about a Sacred Site/Native American cultural resource.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

* CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens. 3-5

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the California Code of Regulations (CEQA Guidelines) mandate procedures to be followed, including that construction or excavation be stopped in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery until the county coroner or medical examiner can determine whether the remains are those of a Native American. . Note that §7052 of the Health & Safety Code states that disturbance of Native American cemeteries is a felony. 3-6

√ Lead agencies should consider avoidance, as defined in §15370 of the California Code of Regulations (CEQA Guidelines), when significant cultural resources are discovered during the course of project planning and implementation 3-7

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Attachment: List of Native American Contacts

Cc: State Clearinghouse

Native American Contacts
Los Angeles County
May 14, 2008

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th Street, Rm. 403
Los Angeles , CA 90020
(213) 351-5324
(213) 386-3995 FAX

Gabrielino/Tongva Council / Gabrielino Tongva Nation
Sam Dunlap, Tribal Secretary
761 Terminal Street; Bldg 1, 2nd floor Gabrielino Tongva
Los Angeles , CA 90021
office @tongvatribe.net
(213) 489-5001 - Office
(909) 262-9351 - cell
(213) 489-5002 Fax

Ti'At Society
Cindi Alvitre
6515 E. Seaside Walk, #C Gabrielino
Long Beach , CA 90803
calvitre@yahoo.com
(714) 504-2468 Cell

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Tribal Chair/Cultural Resources
5450 Slauson, Ave, Suite 151 PMB Gabrielino Tongva
Culver City , CA 90230
gtongva@verizon.net
562-761-6417 - voice
562-925-7989 - fax

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
310-570-6567

Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
ChiefRBwife@aol.com
(626) 286-1632
(626) 286-1758 - Home
(626) 286-1262 Fax

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

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

This list is only applicable for contacting local Native American with regard to cultural resources for the proposed, SCH#2007061093; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Santa Anita Dam Riser Modification/Reservoir Sediment Removal Project; ; Arcadia Community; Los Angeles County, California.

Letter 3: **Native American Heritage Commission**

Comment No.	Response
3-1	As discussed in Section 3.4.2 of the Final EIR, an archaeological records search was conducted at the South Central Coastal Information Center at California State University, Fullerton on January 29, 2007. The search indicated that seven cultural resources investigations have taken place within a ½-mile radius of the project area. Additionally, eight historical resources have been previously recorded in the project area; none of these were located within the boundaries of the project site. No prehistoric resources have been previously recorded within a ½-mile radius of the project area.
3-2	As discussed in Section 3.4.2 of the Final EIR, an archaeological field survey of the project area was required for the proposed project. The field survey was conducted on February 20, February 23, and October 11, 2007. As described on pages 3.4-12 to 3.4-14 of the Final EIR, no archaeological resources were encountered in the proposed project area during the three days of field surveys.
3-3	The NAHC has been contacted for a Sacred Land File search of the project area. No sacred lands were reported by the NAHC. In addition, a Native American contact program was conducted to inform interested parties of the proposed project and to address any concerns regarding Traditional Cultural Properties or other cultural resources that might be affected by the proposed project. Initial contact was made in writing, with letters and response forms having been mailed to each representative on the NAHC list, on September 18, 2007. Aside from a general concern about proposed project impacts to unknown cultural resources, none of the Native American representatives contacted provided information pertaining to specific known resources of concern.
3-4	As discussed in Section 3.4 of the Final EIR, although no evidence of archaeological resources were observed or document on the project site because the project involves ground disturbing activities, it is possible that surface artifacts obscured by surface vegetation or subsurface artifacts may be accidentally encountered by these construction activities. Mitigation measure CUL-A, per CEQA Section 15064.2, requires work to halt if archaeological resources are accidentally discovered during construction. If encountered, any finds shall be evaluated by a qualified archaeologist and appropriate treatment measures implemented.
3-5	As discussed in Section 3.4 of the Final EIR, archival research and archaeological survey did not indicate the presence of any known human remains

in the project area and the site does not contain any formal cemeteries. However, mitigation measure CUL-B includes provisions for the discovery of Native American remains or unmarked cemeteries.

3-6 The Final EIR did not identify the presence or likely presence of human remains with the project area. As stated in response to comment 3-5, mitigation measure CUL-B includes provisions for the discovery of human remains.

3-7 As discussed in Section 3.4 of the Final EIR, no cultural resources, including historic, paleontological, and archaeological resources are expected to be encountered during the construction activities of the proposed project. Mitigation measures CUL-A and CUL-B will mitigate any impacts that occur during construction activities and LACDPW will comply with the requirement of CEQA Guidelines sections 15064.5(e) and (f) and 15370, and no further avoidance measures would be required.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 942360001
(916) 653-5791

MAY 19 2008

Mr. Long Thang
County Department of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, California 91803

SCH #2007061093 Draft Environmental Impact Report (EIR) for Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, May 5, 2008
Los Angeles County

Dear Mr. Thang:

We have reviewed the subject report which addresses the outlet modifications at Big Santa Anita Dam. Big Santa Anita Dam, No. 31-22, is under State jurisdiction for dam safety. An alteration application has been filed with this office and is currently under review. 4-1

If you have any questions, or need additional information, you may contact Gina Ladd at (916) 227-4634 or Regional Engineer Mutaz Mihyar at (916) 227-4600.

Sincerely,

ORIGINAL SIGNED BY

Mike Zumot, Acting Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section, DPLA
901 P Street
Sacramento, California 95814

Governor's Office of Planning
and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044

RECEIVED
MAY 23 2008
EDAW, INC., LOS ANGELES, CA

Letter 4: **State of California, Department of Water Resources, DSOD**

Comment No.	Response
4-1	The comment states that the Division of Safety of Dams is reviewing an alteration application for the proposed project. No further response is necessary as the comment does not address specific environmental concerns.

COUNTY OF LOS ANGELES

DEPARTMENT OF PARKS AND RECREATION

"Creating Community Through People, Parks and Programs"

Russ Guiney, Director

June 2, 2008

RECEIVED

JUN 04 2008

EDAW, INC., LOS ANGELES, CA

EDAW, Inc.
Attn: Pete Choi
515 South Floor Street, 9th floor
Los Angeles, CA 90071

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACTS REPORT (NOA/DEIR) FOR THE SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT

The Department of Parks and Recreation has reviewed the NOA/DEIR for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. The Department concurs with the analysis of County trail issue identified in the Draft Environmental Impact Report. The trail coordinator at Parks and Recreation will coordinate with Department of Public Works regarding the future accessibility of Santa Anita Wash Extension Trail upon project completion. 5-1

Thank you for including this department in the review of this notice. If we may be of further assistance, please contact me at (213) 351-5129.

Sincerely,

Chien, Jui Ing

Jui Ing Chien
Park Planner

c: Robert Ettleman – Department of Parks and Recreation

Letter 5: **County of Los Angeles Department of Parks and Recreation**

Comment No.	Response
5-1	The County Department of Parks and Recreation agrees with the impact analysis regarding the less than significant impact to County Trail #7 – Santa Anita Wash Trail Extension

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

WRD 473

June 24, 2008

Mr. Long Thang
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

Draft Environmental Impact Report for Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, SCH # 2007061093, Los Angeles County

Dear Mr. Thang:

The Department of Fish and Game (Department) reviewed the Draft Environmental Impact Report (DEIR) for the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. The project proposes to drain the Santa Anita Reservoir to allow the removal of 300,000 to 500,000 cubic yards of sediment and debris from the reservoir by dry excavation. The sediment would then be transported from the reservoir via conveyer belt, loaded onto trucks and transported to an existing disturbed five acre lower Sediment Placement Site (LSPS). Approximately 0.4 acres of Venturan coastal sage scrub would be removed in the LSPS. When the LSPS reaches capacity the remaining sediment would be trucked into a 13 acre Middle Sediment Placement Site (MSPS) on which approximately 6.7 acres of coast live oak riparian woodland, 3.8 acres of Riversidian alluvial fan sage scrub (RAFSS), 0.08 acres of disturbed RAFFS and 0.3 acres of Venturan coastal sage scrub would be removed for this purpose. Four alternative sediment placement sites, including trucking to offsite disturbed locations are proposed as project alternatives. The project also includes improvement to the Santa Anita Dam which would involve modification to the dam's inlet/outlet works including the construction of a new riser. The project is located at the Santa Anita Reservoir near Elkins and Highland Oaks Drive in the community of Arcadia on the south slope of the San Gabriel Mountains.

We prepared the following statements and comments pursuant to our authority as Trustee Agency with jurisdiction over natural resources affected by the project under the California Environmental Quality Act (CEQA Section 15386) and Responsible Agency (Section 15381) over those aspects of the proposed project that come under the purview of the California Endangered Species Act (Fish and Game Code Section 2050 et seq) and Fish and Game Code Section 1600 et seq. regarding impacts to streams and lakes.

Project Alternatives

1. Biologically Preferred Alternative - The DEIR states that project alternatives 3 and 4 will result in less impact to biological resources. These alternatives employ off-site disposal of the sediment at the Manning Sediment Placement Site which is already being used for such purposes. Alternative 3 and 4 do not necessitate the removal of 6.7 acres of coast live oak riparian woodland, 3.8 acres of Riversidian alluvial fan sage scrub (RAFSS), 0.08 acres of disturbed RAFSS and 0.3 acres of Venturan coastal sage scrub. 6-1

   a. The Department recommends that Alternative 3 or 4 be selected as the project as these alternatives greatly reduce impacts to sensitive biological resources held in public trust.

Impacts to Biological Resources

1. Impacts to Special Status Aquatic Species - The DEIR did not discuss the potential for occurrence of southwestern pond turtle (*Actinemys marmorata pallida)* or coast range newt (*Taricha torosa torosa*) both of which are species of special concern (CSSC) which may occur within the reservoir and adjacent upland habitat. Draining the reservoir and disturbing sediment could result in take or injury to these species. CSSC meet the CEQA definition of rare, threatened or endangered species (CEQA Guidelines 15065). Adverse impacts to CSSC could require a mandatory finding of significance by the Lead Agency, (CEQA Guidelines 15065). The Department recommends live trapping for southwest pond turtle and coast range newt within any appropriate habitat on site. Presence of one or both of these species would require further consultation with the Department for avoidance, salvage and/or mitigation measures to avoid take and loss of habitat. 6-2

2. Impacts to Special Status Bird Species – The DEIR states that focused protocol surveys were conducted for least Bell's Vireo (*Vireo bellii pusillus* or LBV), and southwestern willow flycatcher (*Epidonax traillii extimus* or SWWF) in 2007 and that survey results were negative for both species.

   a. The Department recommends that U.S. Fish and Wildlife protocol level surveys for state and federally endangered LBV and SWWF be repeated if project disturbances within and adjacent to appropriate habitat occur greater than one year following the last survey for these species. The site also supports habitat for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*) and therefore focused U.S. Fish and Wildlife protocol surveys should also be conducted within the RAFSS and Venturan coastal sage scrub habitat to be removed or disturbed by project activities. The Department and U.S. Fish and Wildlife should be consulted prior to project activities as further authorization under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) may be required to address incidental take of listed bird species and implement appropriate avoidance and mitigation measures. 6-3

3. General Project Impacts to Native Bird Species - The project as presently proposed will result in the permanent impact to several vegetative communities and dam structures supporting habitat for native nesting birds. To avoid take of native birds the DEIR suggests that the nesting season generally commences on February 15 for nesting bird avoidance purposes.

   a. Early nesting raptors may be adversely impacted if project activities are conducted prior to February 15 to avoid take of native birds as recommended in the DEIR. Migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). 6-4

   b. Proposed project activities (including disturbances to native and non-native vegetation, structures and substrates) should take place outside of the breeding bird season which generally runs from March 1- August 31 (as early as February 1 for raptors) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). Take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86). 6-5

c. If avoidance of the breeding bird season is not feasible, the Department recommends that beginning thirty days prior to the disturbance of suitable nesting habitat the project proponent should arrange for weekly bird surveys to detect protected native birds occurring in the habitat that is to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors) as access to adjacent areas allow. The surveys should be conducted by a qualified biologist with experience in conducting breeding bird surveys. The surveys should continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, the project proponent should delay all clearance/construction disturbance activities within 300 feet of suitable nesting habitat (within 500 feet for suitable raptor nesting habitat) until August 31. Alternatively, the qualified biologist could continue the surveys in order to locate any nests. If an active nest is located, clearing and construction within 300 feet of the nest (within 500 feet for raptor nests) or as determined by a qualified biological monitor, must be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing marking the protected area 300 feet (or 500 feet) from the nest. Construction personnel should be instructed on the sensitivity of the area. The project proponent should record the results of the recommended protective measures described above to document compliance with applicable State and Federal laws pertaining to the protection of native birds.

6-6

4. Impacts to Bats – The project will result in the removal of trees and dam structures and therefore may result in take and/or disturbances to bats. The likelihood that bats reside on the project site is high given the roosting and feeding habitat afforded on the project site and adjacent areas.

a. Bats are considered non-game mammals and are afforded protection by state law from take and/or harassment, (Fish and Game Code Section 4150, California Code of Regulations, Section 251.1). Several bat species are also considered CSSC. The Department recommends avoiding disturbances to all bat roosting and nursery habitat including on site structures between March 1 and September 15 to avoid the breeding season for bats unless preconstruction surveys are conducted by a qualified biologist and no bat roosts or nurseries are found within the project area.

6-7

5. Special Status Botanical Species – The DEIR proposes focused surveys for special status plant species and consultation with the Department and U.S. Fish and Wildlife Service to determine appropriate mitigation measures if a state and/or federal listed plant species is detected. The DEIR further states that if a 1B listed rare plant or a plant protected under the California Endangered Species Act (CESA) is detected, any such plants will be avoided or if avoidance is not feasible, a 10 day salvage notice will be sent to the Department.

a. A 10 day salvage notice to the Department is not adequate for the mitigation of state listed plant species. The lead agency should consult with the Department under (CESA) to determine appropriate avoidance and measures to fully mitigate for incidental take of state listed plants. Surveys should be completed for sensitive plant species that may be impacted by the project foot print, and results of those surveys and any proposed mitigation should be included in the DEIR to allow for full disclosure of impacts to the public. Simply stating a preconstruction survey to detect most sensitive plant species, which may occur out of season, and proposing salvage if they are found does not provide adequate protection to these resources.

6-8

b. CEQA provides protection not only for state listed species, but for any species which can be shown to meet the criteria for State listing (CEQA Section 15380). The Department recognizes that Lists 1A, 1B and 2 of the California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California consist of plants that, in a majority of cases, would qualify for listing. 6-9

c. Occupied habitat for special status botanical species should be avoided and preserved in perpetuity from further development. Alternative 3 and 4 will avoid much of the native plant habitat on the project site. If avoidance is not feasible, off-site occupied habitat should be acquired in consultation with and approval by the Department. All mitigation lands preserved on-site or acquired off-site should be deeded to a local land conservancy and protected in perpetuity under a conservation easement to prohibit incompatible uses on the site. 6-10

6. Impacts to Native Vegetative Communities – The DEIR states that 3.88 acres of RAFFS 0.3 acres of VCSS and 6.7 acres of coast live oak woodland will be removed as the result of the project proposal. The DEIR proposes restoration of on-site or off-site areas to mitigate for RAFFS as negotiated with the Department. Impacts to coast live oak woodland include on- and/or off-site creation and acquisition of oak habitat or contributing to the oak woodlands conservation fund for the purpose of purchasing oak woodland conservation easements.

a. The Department recommends avoidance of RAFSS and VCSS as it is difficult to create these habitats and success is not assured. The majority of these vegetative communities may be avoided by project alternatives 3 and 4. If avoidance is not feasible, existing areas of RAFSS and VCSS within the watershed should be acquired and protected in perpetuity under a conservation easement. 6-11

b. The majority of impacts to coast live oak woodland may be avoided by project alternatives 3 and 4. If avoidance of coast live oak woodland is not feasible any contribution to the oak woodland conservation fund should fully explain where any conservation easements are to be acquired. The Department recommends that oak woodland conservation take place within the same watershed in which the impacts have occurred and that funding to manage the conserved land in perpetuity is considered in the cost for such mitigation parcels. 6-12

Impacts to Riparian Resources

1. Department Jurisdictional Drainages - The DMND states 0.15 acres of Department jurisdiction will be impacted within the Middle SPS. Restoration of impacted Department jurisdiction is proposed in consultation with the Department under a Streambed Alteration Agreement (SAA).

a. The Department concurs that a SAA, pursuant to Section 1600 et seq. of the Fish and Game Code, will be required with the applicant prior to impacts to riparian habitat from not only impacts from the project within the MSPS but also from any other areas of impacts to Department jurisdiction. Other impacts such as vegetation removal along the maintenance roads requiring improvements within the riparian zone, drawing down of the reservoir, removal of sediment and any other impacts from placement of the conveyers within Department Jurisdiction may need to be included under a SAA. 6-13

b. Based upon a site visit by the Department and the description of project impacts in the DEIR, it appears that the entire MSPS is within Department jurisdiction and therefore a significantly greater area of Department jurisdiction may be impacted. The Department's issuance of a SAA 6-14

is considered a project that is subject to CEQA. To facilitate our issuance of the Agreement, the Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to any lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

6-14 cont.

The Department recommends that the above comments be addressed in the final EIR prior to project approval by the lead agency.

Thank you for this opportunity to provide comment. Please contact Mr. Scott Harris, Environmental Scientist, at (626) 797-3170 for further coordination on the proposed project, or if you have any questions.

Sincerely,

For Edmund J. Pert
Regional Manager
South Coast Region

cc: Ms. Helen Birss, Los Alamitos
Ms. Terri Dickerson, Laguna Niguel
Ms. Kelly Schmoker, Glendora
Mr. Scott Harris, Pasadena
Mr. Naeem Siddiqui, Los Alamitos
HabCon-Chron, Department of Fish and Game
State Clearinghouse, Sacramento

Jennifer Wise
U.S. Fish and Wildlife Service
6010 Hidden Valley Rd
Carlsbad, CA 92011

California Native Plant Society
San Gabriel Mountains Chapter
1750 North Altadena Drive
Pasadena, CA 91107-1046

Los Angeles Audubon Society
7377 Santa Monica Blvd
West Hollywood, CA 90046-6694

Sierra Club
San Fernando Valley Chapter
P.O. BOX 370485
Reseda, CA 91337

EP:sph

spharris/LACDPW Santa Anita Reservoir Cleanout Project/DEIR 2008

Letter 6: California Department of Fish and Game

Comment No.	Response

6-1 The introduction to the comment letter states that four alternative SPS areas, including offsite disposal, were evaluated in the EIR. However, as described in Chapter 5 of the EIR, three alternatives are evaluated in the EIR, in addition to the mandatory No Project Alternative. Haul trucks would not be used as part of the proposed project although alternatives were evaluated which included offsite sediment hauling. The comment of support of Alternatives 3 and 4 has been noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project. However, Alternatives 3 and 4 will not meet one of the project's objectives, which is to prepare the Middle SPS for future and emergency cleanouts.

6-2 Section 3.3 of the Draft EIR is based on the biological resources reports found in Appendix C (Biological Technical Report and Biological Assessment and Biological Evaluation) of the EIR. As stated in the Biological Assessment and Biological Evaluation that was prepared for the proposed project and reviewed by U.S. Forest Service biologists, the project site does not contain suitable habitat for the southwestern pond turtle. Nine 7.5-minute quadrangles surrounding the project site were queried in California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) to search for known occurrences of the southwestern pond turtle (refer to table below). No recent occurrences (within last 50 years) have been documented within the project quadrangle (Mount Wilson), and no occurrences within 5 miles of the project site on the surrounding quadrangles. There were no incidental observations of southwestern pond turtle recorded during the general field surveys which were performed by UltraSystems biologists that are highly familiar with southwestern pond turtle morphology and behavior.

Southwestern Pond Turtle (*Actinemys marmorata pallida*)

7.5-minute quadrangle	CNDDB Results
Mount Wilson (project quadrangle)	No occurrence documented
Azusa (Adjacent eastern quadrangle)	Four occurrences documented in 1996/2005 7.0 miles north of the project site
Baldwin Park (Adjacent southeastern quadrangle)	No occurrence documented in quadrangle
El Monte (Adjacent southern quadrangle)	1991 & 1995 exact location information suppressed, but general occurrence location outside project vicinity in lower elevations

7.5-minute quadrangle	CNDDB Results
Los Angeles (Adjacent southwestern quadrangle)	No occurrence documented in quadrangle
Pasadena (western quadrangle)	1991-7.5 miles northeast of the project site.
Condor Peak (northwestern quadrangle)	No occurrence documented in quadrangle
Chilao Flat (Adjacent northwestern quadrangle)	No occurrence documented in quadrangle
Waterman Mountain (Adjacent northeastern quadrangle)	1991 exact location information suppressed, but general occurrence location outside project vicinity in lower elevations

In addition, nine 7.5-minute quadrangles surrounding the project site were queried in CDFG's CNDDB to search for known occurrences of the coast range newt (refer to table below). No recent occurrences (within last 50 years) have been documented within the project quadrangle (Mount Wilson), and no occurrences within 5 miles of the project site on the surrounding quadrangles. There were no incidental observations of coast range newt recorded during the general field surveys which were performed by UltraSystems biologists that are highly familiar with coast range newt morphology and behavior. It was determined that the coast range newt would not occur on the project site for the these reasons.

Coast Range Newt (*Taricha torosa torosa*)

7.5-minute quadrangle	CNDDB Results
Mount Wilson (project quadrangle)	No occurrence documented
Azusa (Adjacent eastern quadrangle)	Four occurrences documented in 1996/2005 7.0 miles north of the project site
Baldwin Park (Adjacent southeastern quadrangle)	No occurrence documented in quadrangle
El Monte (Adjacent southern quadrangle)	1991 & 1995 exact location information suppressed, but general occurrence location outside project vicinity in lower elevations
Los Angeles (Adjacent southwestern quadrangle)	No occurrence documented in quadrangle
Pasadena (western quadrangle)	1991-7.5 miles northeast of the project site.
Condor Peak (northwestern quadrangle)	No occurrence documented in quadrangle
Chilao Flat (Adjacent northwestern quadrangle)	No occurrence documented in quadrangle

Waterman Mountain (Adjacent northeastern quadrangle)	1991 exact location information suppressed, but general occurrence location outside project vicinity in lower elevations

6-3 The proper baseline for analysis of the proposed project is the physical environmental conditions in the vicinity of the project as they exist at the time the notice of preparation is published (CEQA Guidelines Section 15125). The baseline for the environmental analysis in the Draft EIR consists of the physical environmental conditions in the vicinity of the project as they existed at the time the notice of preparation was published on June 20, 2007. Focused protocol surveys for least Bell's vireo and southwestern willow flycatcher were completed in July of 2007 in order to describe baseline conditions as accurately as possible. As a result of those surveys, no least Bell's vireo or southwestern willow flycatcher were observed within suitable habitat or adjacent to the project area. Survey guidelines from the U.S. Fish and Wildlife Service (USFWS) for these species require surveys to be conducted during specific survey periods in the spring and summer. Because project construction activities are anticipated to begin in spring of 2009, additional protocol surveys for these species prior to project implementation would not be possible. Given the lack of suitable habitat within the project area and the negative results of the 2007 surveys, no impacts to these bird species are anticipated.

Coastal California gnatcatcher surveys were not conducted as part of the Draft EIR because the species is not known to occur in the vicinity of the project[1], there is a lack of suitable habitat, and because knowledgeable wildlife specialists determined that they were not warranted. However, based on the comment, protocol-level surveys were conducted for coastal California gnatcatcher in the Middle and Lower SPS areas.

As part of the field studies conducted for the Biological Technical Report completed for the proposed project, UltraSystems biologists assessed the habitat of the project site and its immediate vicinity, including the vegetation adjacent to

[1] Queries of the California Natural Diversity Database indicate that coastal California gnatcatcher has not been known to occur in the vicinity of the project site. The closest known occurrences of this species to the Project site are from the vicinity of Santa Fe Dam Regional Park in the City of Irwindale in 2007 and the vicinity of Montebello Hills Oil Field in 2005. One female and one male were observed in different areas of the Santa Fe Dam Regional Park, located approximately 4.5 miles southeast of the Project site. Santa Fe Dam Regional Park is a known historical location for this species, but this 2007 documentation was the first account of this species in 30 years.

the reservoir, for its suitability to support sensitive wildlife. The biologists determined that the vegetation present is not suitable for the coastal California gnatcatcher.

Prior to conducting focused coastal California gnatcatcher surveys, EDAW biologists consulted historical biological information, including the California Natural Diversity Database (as described above), and conducted general wildlife and habitat surveys to determine the extent of suitable coastal California gnatcatcher habitat within and adjacent to the project area. EDAW biologists do not consider coastal sage scrub habitat within the Middle and Lower SPS areas to be suitable for this species. Similarly, in a November 2008 email, USFWS informed the LACDPW that they did not consider focused protocol surveys for coastal California gnatcatcher to be necessary for the proposed project. To address CDFG's comment, however, five focused coastal California gnatcatcher surveys were conducted between December 4, 2008 and February 2, 2009 within the Middle and Lower SPS areas. No coastal California gnatcatcher were observed, heard, or otherwise detected during the focused surveys. The letter report for the coastal California gnatcatcher surveys for the proposed project is included in Appendix C of the Final EIR.

In addition, UltraSystems informally consulted with biologists from the U.S. Fish and Wildlife Service, CDFG, U.S. Angeles National Forest District on July 6, 2006 in order to determine the focused surveys for sensitive wildlife necessary for the project site. Local bird expert Mike San Miguel was also consulted at the recommendation of the U.S. Angeles National Forest District. It was determined that focused surveys for least Bell's vireo, southwestern willow flycatcher, coast horned lizard, and silvery legless lizard would be necessary, but not for coastal California gnatcatcher.

6-4 Mitigation measure BIO-B of the Final EIR addresses early nesting raptors. The stated breeding season for migratory non-game native bird species has been revised to February 1 to August 31. See the revision to mitigation measure BIO-B in Chapter 6 and Section 3.3.4 of the Final EIR Removal of vegetation for the project would occur after June 2009 (see section 2.5 of the Final EIR).

6-5 See response to comment 6-4.

6-6 This comment is in agreement with mitigation measure BIO-B of the Final EIR. No further response is required.

6-7 As stated in the Biological Assessment and Biological Evaluation that was prepared for the proposed project (see Appendix C), suitable habitat for sensitive

bats, including pallid bat, western red bat, and Townsend's big-eared bat, occurs along the streambed south of the Santa Anita Dam and in the Middle SPS. The area south of the dam by the streambed would not be directly impacted by the proposed project. However, the Middle SPS and removal of the dam structure would potentially affect roosting bats; therefore, revisions to Section 3.3 have been made in the Final EIR, as shown in Chapter 6, and mitigation measure BIO-B has been revised accordingly.

6-8 Mitigation measure BIO-A of the Draft EIR required focused surveys for sensitive plants prior to removal of vegetation and/or ground disturbing activities. Since vegetation removal activities are scheduled to occur in the 2009, rare plant surveys were conducted in April and May 2008, to confirm the presence/absence of sensitive plant species. No sensitive plants were detected during the spring 2008 surveys. Because no sensitive plant species were detected during focused surveys in March, June, and July 2007 or in April and May of 2008, no sensitive plant species are expected to occur within the project area. No impacts to sensitive plant species are anticipated; however, mitigation measure BIO-A will still be implemented prior to the commencement of project construction. The letter report for the 2008 Rare Plant Surveys for the proposed project is included in Appendix C of the Final EIR.

6-9 The biological resources reports found in Appendix C (Biological Technical Report, Rare Plant Survey, and Biological Assessment and Biological Evaluation) of the EIR reviewed commonly used and accepted databases utilized in CEQA analysis including the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2006) and the CDFG's CNDDB for the Mount Wilson, Azusa, and El Monte 7.5-minute series topographic quadrangles.

6-10 See response to comment 6-8. The comment of support of Alternatives 3 and 4 and avoidance of sensitive species is noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project. Based on the comment, mitigation measure BIO-D and BIO-E have been revised to include mitigation land to be protected in perpetuity under conservation easements.

6-11 The comment of support of Alternatives 3 and 4 avoidance of Riversidean alluvial fan sage scrub (RAFSS) and Venturan Coastal Sage Scrub (VCSS) vegetation communities is noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project. Based on the comment, mitigation measure BIO-E has been revised to include mitigation land to be protected in perpetuity under a conservation easement.

6-12 The comment of support of Alternatives 3 and 4 and avoidance of coast live oak woodland is noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.

To mitigate for impacts to coast live oak woodlands, mitigation measure BIO-D of the Final EIR is provided. If feasible, an oak woodland conservation easement would occur within the same watershed in which impacts occur. Any contributions to the Oak Woodlands Conservation Fund, or an acceptable alternative, would be allocated to specific localities approved by CDFG. Contributed funds would be sufficient to acquire and manage a conservation easement in perpetuity (see sections 3.3.4 and 6.0 of the Final EIR).

6-13 Any potential impacts to jurisdictional habitat due to the proposed project, including impacts associated with maintenance of roads, drawing down of the reservoir, removal of sediment, and placement of conveyer belts would be considered under a Streambed Alteration Agreement (SAA) at the discretion of CDFG. As discussed in Section 3.3.3 of the Final EIR, the project would impact 0.15 acre waters under jurisdiction of CDFG in the Middle SPS. Currently CDFG is reviewing the SAA application that was submitted by LACDPW.

6-14 Potential impacts to lake, stream, and riparian resources have been described to the extent feasible in the EIR, as well as impacts to other sensitive plant communities and sensitive wildlife due to project activities in all areas of the project site, including the Middle SPS. To mitigate for impacts to biological resources, mitigation measures BIO-A through BIO-F have been provided. These mitigation measures, including all avoidance, mitigation, monitoring and reporting, would be implemented in consultation with CDFG and other appropriate agencies. As discussed above and in Section 3.3.4 of the Final EIR, the project would require a SAA and additional coordination with CDFG regarding the mitigation requirement for the project.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92011

In Reply Refer To:
FWS-LA-08B0517-08TA0581

JUN 17 2008

Pete Choi
EDAW, Inc.
515 South Flower Street, 9th floor
Los Angeles, California 90071

Subject: Draft Environmental Impact Report for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, City of Arcadia, Los Angeles County

Dear Mr. Choi:

We have reviewed the Draft Environmental Impact Report (DEIR) for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, received on May 9, 2008. The proposed project will remove sediment from the reservoir to comply with the California Department of Water Resources, Division of Safety of Dams' (DSOD) recent mandate that the maximum reservoir level is 1,230 feet in elevation. The current reservoir level is 1,212 feet in elevation and removal is planned for summer 2009. In addition to sediment removal, the project proposes to modify the riser on the dam to allow water above an elevation of 1,230 feet to pass through the dam.

We offer the following comments and recommendations regarding project-associated biological impacts based on our review of the DEIR and our knowledge of declining habitat types and species within Los Angeles County. We provide these comments in keeping with our agency's mission to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Specifically, we administer the Endangered Species Act (Act) of 1973, as amended.

The project proposes to place excess sediment at the Middle Sediment Placement Site (SPS), which would impact 12.78 acres of vegetation. This vegetation consists of coastal sage scrub (CSS), Riversidean alluvial fan sage scrub (RAFSS), and coast live oak woodland, all of which are sensitive habitat types. Protocol surveys were conducted for rare plant species, least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*), and the silvery legless lizard (*Anniella pulchra pulcrha*). No sensitive wildlife or plant species were observed within the project vicinity during these surveys.

TAKE PRIDE IN AMERICA

The proposed project site contains 0.3 acres of CSS and 3.8 acres of RAFSS, which are suitable habitat types for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"). Therefore, we recommend that a qualified biologist conduct protocol surveys for gnatcatchers in suitable habitat within 500 feet of project site to determine whether or not the proposed project may affect gnatcatchers. 7-1

To avoid impacting sensitive habitat we recommend using an alternative SPS that would not involve removal of native vegetation. For example, Alternatives 3 and 4 of the DEIR identify an alternative SPS that is currently devoid of vegetation. We recommend utilizing this already disturbed SPS in order to minimize impacts to biological resources while allowing the reservoir to remain compliant with DSOD mandates. 7-2

We strongly recommend avoidance of the existing native habitat as the first option, but if the proposed SPS is impacted, we recommend that a restoration plan for the site be developed that includes salvage and replanting of the affected vegetation and supplemental reseeding and replanting of the affected area with appropriate native plant species of local genetic stock. We recommend that any restoration plan include detailed methodology for how the site will be prepared, planted and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. We recommend that a draft restoration plan be prepared and submitted to appropriate agencies, such as the California Department of Fish and Game, the U.S. Army Corps of Engineers, the U.S. Forest Service, and the U.S. Fish and Wildlife Service for review prior to project implementation. 7-3

We appreciate the opportunity to comment on the referenced DEIR. Should you have any questions regarding this letter, please contact Fish and Wildlife Biologist Jennifer Wise of my staff at (760) 431-9440, extension 276.

Sincerely,

Jonathan Snyder

for Karen A. Goebel
Assistant Field Supervisor

cc:
Nancy Sandburg, Angeles National Forest
Scott Harris, CDFG
Kenneth Wong, US Army Corps of Engineers

Letter 7: **United States Fish and Wildlife Service**

Comment No.	Response
7-1	Refer to response to comment 6-3 regarding the coastal California gnatcatcher.
7-2	As stated in Section 2.1, the Santa Anita Dam flood protection facilities are comprised of three SPS areas, the Upper, Middle, and Lower SPS areas, as shown in Figure 2-3. The Middle SPS area has always been planned for sediment storage use by the LACDPW. The proposed project would initially use the existing Lower SPS. The placement of approximately 250,000 cubic yards of excavated sediment would fill the Lower SPS area to capacity. Thus, the proposed project would utilize the Middle SPS for the remainder of sediment, approximately 250,000 cubic yards. The Upper and Middle SPS areas would remain open for future sediment storage for routine and emergency cleanout activities, which is one of the primary project objectives. The comment of support of Alternatives 3 and 4 has been noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.
7-3	As discussed in Section 3.3, the proposed project would be required to implement mitigation measures BIO-D and BIO-E for impacts to vegetation, including oak trees. Mitigation measure BIO-D would mitigate for impacts to coast live oak woodlands that would be removed in the Middle SPS area. Mitigation may include salvage of seed or specimen from the impacted area for use in planting. A conservation easement and/or the amount of funding for contribution to the Oak Woodlands Conservation Fund and/or the number of trees planted for mitigation shall be determined through consultation with CDFG and City of Arcadia. Mitigation measure BIO-D in this Final EIR requires a conceptual restoration plan once mitigation ratios are negotiated with CDFG, and the details of the plan would be subject to CDFG approval. Mitigation measure BIO-E shall be required to mitigate impacts to 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub. As with BIO-D mitigation for impacts to Riversidean alluvial fan sage scrub would be negotiated with CDFG and CDFG would ultimately approve a conceptual restoration plan. Details of planting for mitigation would be described in a mitigation and monitoring plan approved by CDFG for both BIO-D and BIO-E. Based on the comment, mitigation measures BIO-D and BIO-E have been revised to include the suggested details of the restoration plans (see sections 3.3.4 and 6.0 of the Final EIR).

City of Arcadia

Development Services Department

Jason Kruckeberg
Development Services Director

June 16, 2008

EDAW, Inc.
Attn: Pete Choi
515 South Flower Street, 9th Floor
Los Angeles, CA 90071

RE: SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL EIR (SCH NO. 20070611093) – CITY OF ARCADIA COMMENTS

Dear Mr. Choi:

Thank you for the opportunity to comment on the Draft Environmental Impact Report for the proposed Santa Anita Dam Riser Modification and Sediment Removal project. The document has been circulated to all applicable City Departments for their comments. It is our understanding that the proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir, transporting the sediment via a conveyor system, and placing it on the lower and middle portions of the Santa Anita sediment placement sites. According to the document, approximately 300,000 to 500,000 cubic yards of sediment will be removed from the Dam area. In addition, a new Dam Riser will be constructed.

This project is necessary to meet requirements for water volume and seismic safety as mandated by the California Department of Water Resources, Division of Safety of Dams. The City of Arcadia agrees with the preferred alternative to convey sediment from the Dam all the way to the sediment placement sites (SPS). Each of the Alternatives studied in the EIR involves large increases in truck trips through the City's jurisdiction. As a result, the City agrees that these Alternatives should be rejected. 8-1

Despite the fact that the City understands this project is timely and necessary, additional analysis, information, and mitigation is necessary for this project. The City's comments have been organized by topic of study to follow the EIR's organization. We request that these comments be analyzed in the Final EIR for this project.

240 West Huntington Drive
Post Office Box 60021
Arcadia, CA 91066-6021
(626) 574-5414
(626) 447-3309 Fax

Aesthetics

This project will transport sediment for 1.5 miles in a conveyor 5 feet wide and 15 feet high. Much of this conveyor system will be placed in City of Arcadia jurisdiction, including a portion "over the Wilderness Park" area. However, nowhere in the document is there a graphic or an image of this conveyor system. Most importantly, there is no indication of the appearance of the conveyor system through Wilderness Park. If park visitors are to go "under" the conveyor belt, what safety measures are in place and how will this appear? (More information provided under Public Services below). 8-2

In addition, the document references Sound Curtains but does not have any information on the appearance or location of these structures. This should be carefully studied and information should be provided in the final EIR (additional information in Noise section). 8-3

Finally, there is mention that the SPS will be landscaped following the completion of the project. However, there is no information as to how this will occur and/or the plan for re-vegetation. This SPS is changing in elevation up to 30 feet according to the document. It is important to the City of Arcadia to understand what type of landscaping and long term maintenance is proposed for this area. 8-4

Air Quality

It is our understanding that the sediment will be transported in an uncovered conveyor the length of the route. Please provide a detail plan on how the contractor will control dust from conveyor belt operation as well as from construction operation and how this will be required part of contract specifications. 8-5

Biological Resources

We appreciate the detailed analysis in the Biological resources section, including the flora and faunal studies provided and the Mitigation Measures proposed. The City is supportive of Mitigation Measure BIO-A, BIO-B, BIO-C, and BIO-F. The City's primary concern with regard to Biological Resources has to do with the loss of oak trees and oak tree woodland in the SPS area. 8-6

The two Mitigation Measures that address oaks and oak woodlands are BIO-D and BIO-E. While we appreciate the intent of these measures, they are vague and appear as more of a list of potential mitigations rather than a recommended set of mitigations. The mitigations describe options such as restoration of both oak woodlands and Riversidean alluvial fan sage scrub, establishment of a conservation easement, contribution of funds to an existing easement or Oak Protection Fund, planting of additional trees, and a mitigation and monitoring plan for oak woodland that would be approved prior the implementation for the project. The City is 8-7

interested in pursuing several of these options to offset the loss of up to 179 oak trees as a result of the project. The City requests to be included in all mitigation options for this area in consultation with the California Department of Fish and Game and requests that the mitigation plan be agreed upon prior to the implementation of the project. 8-7 cont.

It is particularly important that the County re-establish native vegetation including Live Oaks after the construction throughout the finished and compacted sediment placement area.

Geology

In reference to Figure 3.5-2, all fill should be compacted to some degree, possibly 80% or as recommended by the geologist. Placing buttresses on un-compacted fill is not recommended. 8-8

Has the County accounted for the seismic stability of the elevated section of the conveyor belt as it crosses over the parking lot at Wilderness park? Is there a plan to evacuate the children, families and workers from the park in the event the elevated section of the conveyor belt falls due to an earthquake or a car running into the structure? This issue should be addressed in the Final EIR. 8-9

Hydrology and Water Quality

With regard to Section 3.6.2 (Regulatory Setting), in addition to obtaining a Storm Water Pollution Prevention Plan (SWPPP) for temporary construction activities, the County/Contractor will need to get a Local SWPPP from the City of Arcadia Public Works Services Department. This should be added to the Mitigation Measures. 8-10

Also, the County must ensure that spreading operations will continue throughout the duration of the Project at both the Arcadia and Sierra Madre Spreading Grounds. Both Arcadia and Sierra Madre rely on the spreading of water from the Santa Anita Dam as a source of drinking water. This issue should also be addressed in the Final EIR. 8-11

Noise

The City is very concerned about the noise expected from this project. The project traverses Wilderness Park and runs fairly close to a number of residential properties. Based on the EIR, noise is judged to be Significant and Unavoidable after mitigation for BOTH construction noise and operational noise. Although we understand that the EIR acknowledges the project will not meet the City's noise standards during 8-12

each of these periods, to attain 55 dBA at property line of residential properties should the goal of the County throughout the project. 8-12 cont.

To minimize the noise as much as feasible, the use of sound walls or sound curtains or noise barriers with sound insulation mats can improve noise level immensely and is recommended as described in Measures NOISE-D and NOISE-E. Detailed engineering for sound attenuation materials and exact location of barriers should be part of the design of the project and should be described in detail in the Final EIR. Currently, there is no specificity as to the location or appearance of these barriers. 8-13

The EIR references noise in Wilderness Park yet there is no specific Mitigation Measure for the Park. The EIR references a dBA of 70 to 80 for the conveyor at a distance of 50 feet. In addition, the EIR mentions that park activities may be impacted within 200-600 feet of the conveyor. The City requests that a map be provided with the Final EIR that shows the proposed location of the conveyor and the area of expected impact within the Park as well as any feasible mitigation measure to reduce expected noise in this location. 8-14

Public Services

The EIR lists Public Services among the "Effects Not Found to Be Significant". The City of Arcadia disagrees with this assertion. The Arcadia Fire Department has the following concerns on the project which should be incorporated in the EIR Analysis and considered as Mitigation Measures. These issues could also be considered under "Transportation and Circulation". 8-15

Page 4-3: "No impact to fire protection services would occur as a result of implementation of the proposed project". The Arcadia Fire Department believes the EIR is not adequately addressing the potential impact to life safety and the protection of threatened structures in the event of a wildland fire.

1. The road that leads north from the Santa Anita Debris Basin to the Lower Clam Shell Truck Trail east into Monrovia is an important evacuation route for residents residing in the hills east of the Sediment Placement Sites (SPS). Fire apparatus will use this road as well as the Lower Clam Shell Truck Trail for access to evacuate the residents and protect structures in this area in the event of a fire. The Lower Clam Shell turnoff leading into this Truck Trail must be widened to maintain vehicle access into and out of this area. Refer to attached map. 8-16

2. If possible, access on the dirt road running north from Sycamore Ave. between the SPS and the flood control channel should be kept open to allow fire crews access to the dirt roads east of the Lower Santa Anita SPS, Future Middle Santa Anita SPS and Proposed Santa Anita SPS. The electric conveyance system will impinge on this road significantly and should be 8-17

positioned to allow for vehicle access. A fire in the brush east of these three SPS will immediately threaten the homes located on the hill to east, and a quick unimpeded response by fire crews can significantly reduce or eliminate the fire threat. If the electric conveyance system can not be repositioned, it should be removed as soon as the Lower Santa Anita SPS has been filled. Refer to attached map. 8-17 cont.

Pages ES-4 and 2-8: "The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road north of the Headworks is about 12 to 15 feet wide" and page 4-2: "The potential for wildland fire is high due to the proximity of the open space…that could be highly flammable during fire season." The Arcadia Fire Department believes the EIR is not adequately addressing road width and brush clearance. 8-18

1. If possible, the road running south from the tunnel into Wilderness Park and the road running south from Wilderness Park to the Lower Clamshell Truck Trail should be widened to accommodate fire apparatus and brush removed 10 feet from the edge of the road per section 304.1.2 of the Wildland Urban Interface Code to prevent possible ignition from vehicles or a malfunction of the electric conveyance system. The application of PhosCheck may be considered to protect the brush adjacent to the road as an alternative to brush removal due to the sensitive nature of vegetation and wildlife. PhosCheck is water soluble and biodegradable fire retardant and must be reapplied after any precipitation in the area. Refer to attached map. 8-19

2. Fire vehicles are approximately 8 feet wide; a 12 foot road would only provide 7 feet of clearance for vehicles to pass. 8-20

The City believes that the conveyor equipment traversing Wilderness Park creates both security and safety concerns. The conveyor equipment would be an attractive nuisance to minor aged visitors to the park. The conveyor system also creates the risk of debris falling on vehicles or persons in the parking lot of the park. The Arcadia Police Department requires that the conveyor system be adequately contained and secured through Wilderness Park so as to deter persons from vandalizing or tampering with the equipment, and to reduce the likelihood of debris damaging property or injuring persons. 8-21

Recreation

The impact to Recreation (Wilderness Park) has been mentioned above under Noise and Public Services. 8-22

Transportation and Circulation

The following comments pertain to both the Transportation section of the EIR and the Traffic Analysis in Appendix E.

1. It is unclear what access points are being proposed for the project area. We would assume the project will have access to both the Dam as well as the Spreading Grounds. The traffic analysis should include a map of the proposed access route(s) and points of entry to the project area. 8-23

2. There are actually two intersections of Elkins Avenue and Highland Oaks Dr. Highland Oaks Dr. is offset by one block at Elkins Ave. Figures 8, 9, 10 and 11 of the Traffic Analysis are unclear which intersection is being referred to. The numbers and directional arrows don't fully agree with the locations. As examples, the Figures don't account for the through movement on Elkins Ave. to the east into the spreading grounds, nor does the 777 ADT appear reasonable for the Oaks Pl. short cul-de-sac. 8-24

3. The traffic volume projections (EIR Table 3.9-4) evaluate the traffic volumes on Santa Anita Avenue, Elkins Avenue and Highland Oaks Drive north of Elkins Avenue. Is the County proposing the use of Highland Oaks Drive north of Elkins Avenue as an access route? The only point of access in that area to our knowledge is via the Wilderness Park Access Road. We would not recommend the use of Highland Oaks Drive and would encourage the County to use the access road into the spreading grounds to access the park site and points further north. 8-25

4. The report identifies the analysis of peak hour trips based on the peak activity when 43 employees are working on-site both at the Dam and down at the SPS sites. However, all the trips are being routed on Elkins Drive and Highland Oaks Drive (Table 3.9-4). It would appear that some trips would use Santa Anita Canyon Road to the dam and some would use Elkins Drive into the spreading grounds to the SPS sites. A trip distribution diagram would be helpful to show the distribution of trips. 8-26

5. On page 3.9-8 of the EIR and page 35 of the Traffic Analysis, it states that "Two-lane local/residential roadways . . . can similarly operate with daily volumes approaching 6,000 vehicles per day." Although this may be true from a theoretical or operational standpoint, residential neighborhood sensitivity to slight traffic volume increases can be a significant impact. Table 3.9-4 identifies an increase of 18.5% in traffic volume on Highland Oaks Drive which the City would consider significant in terms of neighborhood sensitivity. Refer to comment #2 above. 8-27

Once again, thank you for the opportunity to comment on the Santa Anita Dam project. Please feel free to contact the City at 626-574-5414 if you have any questions.

Sincerely,

Jason Kruckeberg, AICP
Development Services Director

Attachment: Facility Location Map to show Emergency Access/Egress

CC: Don Penman, City Manager
Pat Malloy, Assistant City Manager/Director of Public Works Services
Tony Trabbie, Fire Chief
Bob Sanderson, Chief of Police
Sara Somagyi, Director of Recreation and Parks
Phil Wray, City Engineer/Deputy Director of Development Services


Santa Anita Dam
Tunnel
Wilderness Park
Santa Anita Debris Dam
Upper Santa Anita SPS
Santa Anita Spreading Grounds
Middle Santa Anita SPS (proposed)
Middle Santa Anita SPS (future)
Lower Santa Anita SPS
Conveyor Belt Alignment
500 0 500 1000 Feet
Note:
SPS - Sediment Placement Site
PREPARED BY
LTT
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DATE
05/05/08
N
Santa Anita Dam
Riser Modification and Reservoir
Sediment Removal Project
Facility Location Map

Letter 8: **City of Arcadia Development Services Department**

Comment No.	Response
8-1	The City of Arcadia understands the critical need for the proposed project and states that the alternatives in the EIR should be rejected from further consideration, due to the increase in truck trips when compared to the proposed project. In addition, the City is requesting additional information that is addressed in the response to comments below. The comment has been noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.
8-2	The aesthetics impacts of the conveyor belt system through the City of Arcadia's Wilderness Park would be a short-term impact only during the construction activities. Because the conveyor belt system would be a temporary impact that would not cause a significant adverse impact any scenic view or vistas or degrade the existing visual character of the project site or surroundings, no visual simulations of the conveyor belt system are required in the EIR. Below is a photograph of a comparable conveyor belt system that is currently operated at a LACDPW facility. It is anticipated that the contractor for the proposed project would use a conveyor belt system that is visually comparable to photo shown here.



Note: The conveyor belt system shown is shown as an example. The actual conveyor belt system for the proposed project may differ in appearance.

As stated in Section 2.4.3, LACDPW would require the construction contractor to use netting, shielding, or other system belt designs over the Wilderness Park parking lot to ensure no sediment would fall over vehicle and pedestrian access areas. LACDPW's project specifications would require safety measures by the contractor throughout the project area, particularly at the Wilderness Park parking lot. The conveyor belt system would be structurally sound. The conveyor belt system spanning over the parking lot would be seismically designed would have safety nets to guard visitors passing under the conveyor belt system should any sediment happen to fall off; the final details would be determined with the expertise of the chosen contractor. The contractor would also be responsible for periodic inspections throughout the day as well as the assignment of a "Conveyor Safety Officer" to ensure the conveyor belt is operating in a safe manner. In addition, access to the conveyor belt system will be restricted through the use of fencing and signage. LACDPW would work closely with the contractor to ensure safety and minimize the degradation of aesthetics.

8-3 The approximate location of the temporary noise barriers as required by mitigation measures NOISE-D and NOISE-E are discussed in Section 3.7.4 and described in this response. As discussed the temporary barriers would be erected along the west and southwest sides of the Lower SPS and along the west side of the Middle SPS. The barriers would be constructed using at least ¾ inch thick plywood or by depositing sediment along the boundary at sufficient heights to create a noise barrier, based on the line of sight between the exhaust pipes of the equipment and the sensitive receptors (5 feet above the ground at the property line). Additional detailed design of the proposed noise barriers in mitigation measures NOISE-D and NOISE-E are not required for the EIR, and would be provided by the contractor during final project plans and specifications. The Mitigation Monitoring and Reporting Program (MMRP) is included as Chapter 8 of the Final EIR. As required by CEQA Guidelines, the MMRP will be implemented, by LACDPW to ensure that the mitigation measures are enforced. Monitoring of the noise barriers as required by mitigation measures NOISE-D and NOISE-E will be done during the construction phase of the project. Aside from the Middle SPS tree and vegetation removal and preparation, the project construction noise would be consistent with the normal maintenance operations by construction equipment that occasionally occurs during the year.

8-4 As discussed in Section 3.3, the proposed project would be required to implement mitigation measures BIO-D and BIO-E for impacts to vegetation, including oak trees. The top and slopes of the Lower SPS and the slopes of the Middle SPS will be revegetated or sown with a native grass seed mixture to further prevent erosion impacts, as a best management standard for SPS areas. However, the

permanent revegetation of the Lower SPS area is not a project design feature, rather it will be included as part of the required mitigation for the project. The Lower SPS may be used as a restoration site and would be determined by consultation, negotiation, and ultimate agency approval as required mitigation measures BIO-D and BIO-E.

8-5 Dust control for the sediment on the conveyor belt system would not be required due to the anticipated dampness (moisture content) of the excavated sediment from the reservoir, which would limit fugitive dust emissions from the conveyance of sediment. The dampness is assumed since the reservoir will have been recently drained with excavation occurring after sufficient draining and dry-out period; which could last several weeks. The sediment transport time would be sufficient to not require further watering. In addition, SCAQMD Rule 403 includes dust abatement requirements to ensure the inclusion of best management practices for addressing construction-related dust, such as using fogger nozzles to dampen sediment as necessary. The project would be required to adhere to these requirements as part of the construction permits and as standard practice for all LACDPW projects. LACDPW anticipates any dust issues from this project will be mitigated by these requirements.

8-6 As required in mitigation measure BIO-D, LACDPW will consult with the City of Arcadia and CDFG for the mitigation of the oak woodland that would be removed in the Middle SPS area. The size of a conservation easement, amount of funding for contribution to the Oak Woodlands Conservation Fund and/or the number of trees planted for mitigation shall be determined through consultation with CDFG and City of Arcadia. In addition to restoring oak woodland on site, any additional oak woodland conservation easements will occur within the same watershed in which impacts occur if feasible. Additionally, mitigation measure BIO-D has been revised per comments from the U.S. Fish and Wildlife Service (USFWS) and CDFG. The timing of mitigation measure BIO-D will be dependent upon CDFG requirements.

8-7 The list of feasible mitigation included in mitigation measure BIO-D and BIO-E are feasible mitigation measures that are common to CEQA and accepted by agencies that would be involved in consultation, negotiation, and final approval of conceptual restoration plans. The details of the mitigation requirements would be more fully defined upon completion of the U.S. Army Corps of Engineers (USACE) 404 permit process and CDFG SAA process for this project. As stated above the City of Arcadia will be involved in the implementation of the oak tree mitigation measure (BIO-D), which includes the conceptual restoration plan.

8-8 In response to the comment, Figure 3.5-2 has been updated in the Final EIR (see Section 3.5 and Section 6). "Uncompacted Fill" has been changed to read "Unclassified Fill". Both "Buttress Fill" and "Unclassified Fill" at the SPS areas shall be compacted to a relative compaction of 90 percent.

8-9 LACDPW's project specifications will require the elevated portion of the conveyor belt system at the Wilderness Park to be seismically designed to comply with California seismic standards. The project specifications would also require the foundations of the elevated portion of the conveyor belt system at the Wilderness Park to be protected by k-railings, or another form of protection, to prevent cars from colliding into the conveyor belt system. In the case that the conveyor belt system does collapse at the Wilderness Park, LACDPW would work with the City to safely evacuate everyone from the premises with minimal delay. The contractor would be responsible for periodic inspections as well as a "Conveyor Safety Officer" to minimize the potential for accidents at the conveyor belt system. If the elevated conveyor belt system does collapse, LACDPW would assist the people within the Wilderness Park to traverse the un-elevated portion of the conveyor belt system, approximately up to 5 feet tall, on the northern part of the parking lot.

8-10 In response to the comment, text in Sections 3.5 and 3.6 have been revised to clarify that the City of Arcadia would require a Local Stormwater Pollution Prevention Plan (SWPPP). Because a Local SWPPP is required by the City of Arcadia in accordance with the National Pollution Discharge Elimination System (NPDES) no additional mitigation measures are required in the EIR.

8-11 The existing reservoir pool behind the dam will be drained to facilitate project construction. LACDPW will drain this pool in a manner to ensure that the water can be used for water conservation purposes. During sediment removal and riser construction activities, no water would be stored behind the dam. The inflow that would bypass the reservoir would be conserved, as feasible. The City of Arcadia will be able to retain water from the reservoir as a source of drinking water as it is available during the construction period. LACDPW will impound water behind the dam for use in water conservation efforts if feasible. LACDPW will coordinate with the City of Arcadia and Sierra Madre to maximize water conservation throughout the construction period.

8-12 LACDPW's goal is to attain the 55 dBA limit on the nearby residential properties and Wilderness Park, through implementation of all feasible mitigation measures. Project noise is evaluated in the EIR to be a significant and unavoidable impact for the extended construction periods (sediment movement); there is no sediment movement during project operation, thus no operational noise impacts. The

City's noise ordinance establishes a noise limit of 55 dBA for daytime residential operation. Unlike some municipalities, the City's ordinance does not specify this limit to be an hourly average; therefore, it is implied to be an instantaneous maximum. Further, the ordinance does not provide a construction noise limit, which is typically a higher threshold of 75-80 dBA and an hourly average (Leq), which allows typical construction activity to occur within the ordinance limits. Therefore, for the project analysis in the EIR, the City's ordinance a noise level of 55 dBA limit for daytime residential, used as the construction limit, is rigorous compared to the allowance of a typical construction noise limit average. As such, typically construction activity would easily exceed this limit, and would require substantial distance or barriers to be below this limit. In addition, the City's General Plan, Noise Element identifies the Wilderness Park as a noise sensitive receptor, but does not identify any noise limit for it in the noise ordinance; thus, the residential limit of 55 dBA was applied to the park.

8-13 Refer to response to comment 8-3.

8-14 As stated in Section 2.4.3, the conveyor belt system would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot (not obstructing traffic or emergency vehicles), south on the fire access roads, and terminating at the SPS areas. It is anticipated that the conveyor belt system would travel in the straightest path possible through the Wilderness Park parking lot. The exact location of the conveyor belt system through the parking lot would be specified on final plans and specifications submitted by the contractor.

The Wilderness Park is identified as a noise sensitive receptor; however, it differs from a residence in that human receptors can choose to occupy others areas of the park not affected by project noise. The park is 120 acres of natural land area; however, 8.5 acres of which is a passive recreation area, which implies a peaceful, quiet environment (not active recreation- like ballfields and playground). Mitigation measure NOISE-A provides measures to reduce conveyor belt system noise to the extent feasible. In addition, the range from 70 to 80 dBA at 50 feet for the conveyor belt system was used as a conservative estimate to provide a worst-case analysis of the noise impact. An example of sound sources for 70 to 80 dBA could be average traffic and a police whistle. Typically, electric conveyor belt systems operate at quieter levels than is assumed in the EIR.

8-15 Refer to response to comments 8-16 and 8-17.

8-16 LACDPW has worked closely with the Fire Departments of Arcadia, Monrovia, and Los Angeles County. At the November 19, 2007, field visit with the fire chiefs from all three fire departments, the Arcadia Fire Department found the entire conveyor belt system alignment acceptable as long as there was 15-feet vertical clearance at the Wilderness Park parking lot and the Lower Clamshell Trail junction be graded so residents' cars could use it as an escape route to make up for the space occupied by the conveyor belt system. On August 5, 2008, LACDPW met with the City of Arcadia, including Fire Chief Trabbie, and it was agreed that elevating the conveyor belt system at the Lower Clamshell Road junction would accommodate the evacuation route. The 15-foot vertical clearance at the Wilderness Park and elevating the conveyor belt system at the junction with Lower Clamshell Road have been incorporated into the project's specifications and plans. In addition, the City of Arcadia Fire Department would be allowed access for all areas of the Wilderness Park and project site. Emergency vehicle access to the project site has been incorporated into the project's specifications and plans.

8-17 The access road north of Sycamore Avenue, between the SPS area and the flood control channel would be occupied by the conveyor belt system down to the northern portion of the Lower SPS where it would be elevated to reach the top of the Lower SPS. Fire crew access to the dirt roads east of the SPS areas would be available at this location. Furthermore, the portion of the conveyor belt system feeding the Lower SPS would also be removed once the Lower SPS has been filled, which would be allow for a clear access route for fire crews. The removal of the conveyor system to the Lower SPS after sediment placement is complete has been incorporated into the project's specifications and plans.

8-18 Refer to response to comments 8-19 and 8-20.

8-19 Prior to construction LACDPW will consult with the City of Arcadia, including the Fire Department to review the project's specifications and plans. As discussed in a meeting with the City of Arcadia on August 5, 2008, either a 10 to 15-foot clearance along the access roads or the application of a water soluble and biodegradable fire retardant (known as PhosCheck) will be required for wildland fire maintenance. The brush extending onto the access roads would be cleared and kept clear during the duration of the project where necessary to provide a safe road width. PhosCheck would be used on the adjacent vegetation along the roads of the conveyor belt system alignment, as recommended by the comment, as an alternative to brush clearing where minimal brush clearing is required. The use of PhosCheck has been included in the project description. PhosCheck would be reapplied after periods of rain and the LACDPW with the assistance

from the City of Arcadia Fire Department would reassess proper fire protection for the conveyor belt system alignment.

8-20 On November 19, 2007, LACDPW met with the City of Arcadia Fire Department, the City of Monrovia Fire Department, and the County of Los Angeles Fire Department to perform a site visit of the access roads in the project area. The fire departments all agreed that it was acceptable for the conveyor belt system to occupy both the access road north of the Headworks to the tunnel and the access road between the Wilderness Park and the Lower Clamshell Trail for the duration of this project. Their decisions were based on their examination of the surrounding area and the existence of alternative egress.

8-21 As stated in Section 2.4.3, LACDPW will require the construction contractor to use netting, shielding, or other conveyor belt system designs over the Wilderness Park parking lot to ensure no sediment would fall over vehicle and pedestrian access areas. Signage and fencing will be used to prevent and discourage pedestrian access to the conveyor belt. The safety feature of the conveyor belt system design over the entire Wilderness Park parking lot has been incorporated into the project's specifications and plans.

The issue of vandalizing the conveyor belt system or other construction equipment is speculative and analysis of such issues it is not required by CEQA. Refer to response to comment 8-2 regarding safety.

8-22 As stated in Section 3.8 the proposed project would not affect the operations of the Wilderness Park. The Wilderness Park would remain open during the construction period of April through December. Refer to response to comment 8-14 regarding noise in Wilderness Park.

8-23 The traffic study assumed that construction employee vehicle traffic would primarily use the Wilderness Park as a primary access point for the proposed project. Construction trucks were assumed to enter the overall project area at the haul road that would interface with the east end of Elkins Avenue at the intersection of Highland Oaks Drive.

A supplemental analysis was conducted in response to the City's comments. The project distribution used for this analysis included employee trips distributed primarily to the dam site and the eastern terminus of Elkins Avenue (into the SPS areas). The overall conclusions of the traffic study have not changed based on the supplemental analysis. The distribution used for the supplemental analysis is illustrated within the figure named "Project Trip Distribution" and is added at the end of Appendix E.

8-24 The diagrammatic representation of the Highland Oaks Drive and Elkins Avenue study intersection was misrepresented in the traffic study figures, although the configuration of the study intersection was correct within the inputs to the traffic impact and level of service analysis. The figures in the traffic study are not directly linked to the software used for the level of service analysis.

The modified study intersection geometry figure is provided in the figure named "Intersection Geometrics and Control" and is added at the end of Appendix E. The configuration of the Highland Oaks Drive & Elkins Avenue in this figure represents the correct existing geometry and the input geometry used for the traffic analysis.

8-25 As indicated in the response to comment 8-23, Highland Oaks Drive was not analyzed as a truck/haul route for the project. In order to provide a conservative supplemental analysis, however, five percent of the analyzed trips were assumed to enter the Wilderness Park to represent some employee trips in and out of that site.

8-26 Refer to response to comment 8-23 and the figure provided at the end of Appendix E.

8-27 Based on the supplemental traffic analysis in responses to the City's comments, a new roadway volume table was created. The updated table below, which was originally provided as Table 10 within the traffic study report (Appendix E of the EIR), is provided below.

SUPPLEMENTAL ANALYSIS – REVISED ROADWAY VOLUME TABLE

	Added Construction Volume and % Daily Traffic Increase by Alternative									
	Preferred		1		2		3		4	
Roadway Segment	Added Volume	% Increease	Added Volume		Added Volume		Added Volume		Added Volume	
Highland Oaks Drive north of Elkins Avenue	7	0.9%	0	0.0%	8	1.0%	24	3.1%	24	3.1%
Elkins Avenue between Wilson Avenue and White Oak Drive	64	3.9%	0	0.0%	69	4.2%	214	13.0%	214	1.4%
Santa Anita Avenue south of Elkins Avenue	142	5.8%	0	0.0%	154	6.2%	476	19.3%	476	19.3%
Santa Anita Avenue south of Andrea Lane		5.3%		0.0%		5.8%		17.9%		17.9%
Santa Anita Avenue south of Sierra Madre Boulevard		2.8%		0.0%		3.0%		9.3%		9.3%

Under this supplemental analysis, the percentage increases on Highland Oaks Drive are reduced to approximately three percent or lower. All roadway volume increases would be less than six percent under the proposed project. The conclusions of no significant impacts within the traffic study remain valid based on the supplemental analysis.

EDAW, Inc.
Attn: Pete Choi
515 South Flower Street, 9th floor
Los Angeles, CA 90071

May 14, 2008

Mr. Pete Choi,

I am an homeowner whose home is located next to the middle Santa Anita SPS proposed sediment site. I am writing you to express my concern regarding the Santa Anita Dam Riser project. The following are my concerns:

1. The environmental impact report (EIR) states, impact to air quality would be less than significant with the implementation of recommended mitigation measures. What are these measures? I am very concern that the air quality will be degraded and will affect the health of my son who have asthma and allergies. If his health is affected, I will have to find alternate means to isolated him from the poor surrounding air, at an expense I should not have to incurred. I would like to know what the County of Los Angeles plans are to address this potential problem. 9-1

2. The EIR also states, impact to aesthetics would be less than significant. However, at the last meeting held at the Highland Oaks Elementary School, it was said that the vegetation in the SPS sites will be removed and sediments will be deposited as high as 30 feet. I believe this will impact the property values of the homes located around these sites. What are the plans to restore the scenic value to the affected areas? Will the old vegetation be replaced and maintain? 9-2

3. With this particular project lasting at least 1 year, dust have to be a major concerned. As a minimum, pool maintenance and air condition operating expenses will increased. Again, these expenses should not have to be incurred by the homeowners. I would also like to know what the County of Los Angeles plans are to address this problem. 9-3

I would appreciate a prompt response to these concerns as soon as possible.

Thank you,

Edward Jung
1816 Highland Oaks Dr.
Arcadia, Ca 91006
(626) 836-8888

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MAY 23 2008
EDAW, INC., LOS ANGELES, CA

Letter 9: **Edward Jung**

Comment No.	Response
9-1	LACDPW will address air quality issues related to the project construction activities with implementation of mitigation measure AIR-A described in Section 3.2.4. This mitigation measure would reduce the project-related pollutant emissions of NO_X below the South Coast Air Quality Management District (SCAQMD)/CEQA significance threshold for NO_X. Accordingly, project NO_X emissions would not be significant. The principal source of NO_X emissions would be from operating diesel-engine powered construction equipment (i.e. off-road equipment) during earth-moving activities. Because the proposed project would implement applicable construction dust control procedures approved by SCAQMD, dust emissions during construction would not significantly affect residences surrounding the project site.
9-2	The aesthetic analysis in Section 3.1.3 of the EIR concludes a less than significant impact with regard to degrading the existing visual character of the site and its surroundings. The scenic value or character of the Middle and Lower SPS areas would be affected by the proposed project in the short-term due to the removal of vegetation and the placement of sediment at the SPS areas. However, with implementation of mitigation measures BIO-D and BIO-E, vegetation, including trees, would be planted in the impacted SPS areas. The conceptual restoration plan would include maintenance and monitoring of the restoration areas during a timeframe that would be approved by the resource agencies. The visual character of the Middle and Lower SPS would ultimately match the surrounding landscape of the foothills with similar types of vegetation. Refer to figures 3.1-2 through 3.1-5.
9-3	As standard best management practices for all LACDPW projects, SCAQMD's Rule 403 dust abatement requirements would be implemented to address construction-related dust. As discussed in Section 3.2.3, emissions of particulate matter (dust particles) with the implementation of dust control methods would be less than half of the SCAQMD thresholds. Thus, dust during construction activities would not negatively affect residences surrounding the project site.

JOHN T. PIGOTT
2228 HIGHLAND VISTA DRIVE
ARCADIA, CALIFORNIA 91006

16 May, 2008

EDAW Inc.
Attn: Pete Choi
515 S. Flower Street, 9th Floor
Los Angeles, CA 90071

Re: Draft EIR, Santa Anita Dam Reservoir Sediment Removal Project

Dear Sir:

As shown by this letterhead, our home is within the area impacted by the project.

10-1

The project is clearly necessary, and the Plan has been carefully tailored to minimize adverse affects on nearby residents.

The proposed electric conveyor belt system, extending from the reservoir to the spreading grounds:

1) Eliminates the unacceptable noise level produced by heavy dump trucks;

10-2

2) Permits continuous transportation of sediment by automatic transfer of material from the end of one conveyor belt to the beginning of the other; and

3) Eliminates labor-intensive trucking costs.

The suggested alternatives -- conveyor belt transportion combined with a short haul by trucks -- should be rejected. Each would reintroduce the unacceptably high noise level of trucks plus the added costs of trucks and drivers, without adequate justification.

10-3

Respectfully submitted,

John T. Pigott

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MAY 23 2008
EDAW, INC., LOS ANGELES, CA

Letter 10: John Pigott

Comment No.	Response
10-1	The commenter agrees that the proposed project is necessary and has been designed to minimize impacts to the surrounding residents. The comment is noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.
10-2	The commenter notes that the conveyor belt system reduces truck noise that would be present under Alternative 2, 3, and 4 and allows for the continuous movement of sediment from the reservoir to the SPS areas. The comment is noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.
10-3	The comment of support for the proposed project and recommended rejection of Alternatives 2, 3, and 4 has been noted and will be provided to the Board of Supervisors for consideration in the decision-making process for the project.

June 14, 2008

Dear Mr. Pete Choi

I would like to comment on the Santa Anita Riser Modification Reservior Sediment Removal Project, No. 200706109 3. It is my understanding that the removal of sediment will cause the level of water to drop a considerable amount. If this is so,

1) How many vertical feet will the level of the water drop? 11-1

2) Will "water" helicopters still be able to get into the narrow canyon safely to fill up in case of fire? 11-2

3) Would it be possible to have some trucks remove the sediment and also use the conveyors? 11-3

Thank you for all your time in this project.

Sincerely,

Diane M. Supple

Letter 11: **Diane Supple**

Comment No.	Response
11-1	The current maximum water elevation at the face of the dam is 1,258 feet. The maximum water elevation after the project would be 1,230 feet. The maximum water level would drop 28 vertical feet.
11-2	The proposed project would not interfere with emergency wildland firefighting in the project vicinity. The LACDPW would not restrict the use of the Santa Anita Reservoir if firefighting helicopters need to use water for emergency uses to combat wildland fires. LACDPW has been working closely with local fire departments in the project area to ensure impacts to fire fighting capabilities and public safety are minimized.
11-3	The use of trucks in combination with the conveyor belt system is described in the EIR as Alternative 2 (see Section 5). Alternative 2, Convey to Wilderness Park Truck to SPS, is being considered in the EIR as one of the alternatives carried forward for detailed analysis. However, this alternative would not be preferable for sediment transport since the project could require more time and increase environmental impacts compared to a continuous sediment conveyance of the conveyor belt system. Therefore, LACDPW is recommending the Board of Supervisors consider the proposed project over any of the alternatives.

RECEIVED
JUN 23 2008
EDAW, INC., LOS ANGELES, CA

June 18, 2008

Mike San Miguel
2132 Highland Oaks Drive
Arcadia CA 91006
626 355-5058
Email: sanmigbird@aol.com

Mr. Pete Choi
EDAW, Incorporated
515 South Floor Street, 9th floor
Los Angeles, CA 90071

Subject: Santa Anita Dam Riser Modification and Sediment Removal, EIR comments

Dear Mr. Choi,

Thank you for the opportunity to provide the following comments on the project EIR:

- On Page 3.3-23 you state that oak woodland restoration shall occur within 8-acres of the Lower SDS. Because the SDS is perched significantly above the water table and previous sediment placement has been heavily compacted that site might not be suitable for successful and long-term mitigation. Oak-sycamore woodlands, as do most natural habitats, require ground water for survival. Irrigation runoff from adjacent residential development provides some water to the SDS but that source is unreliable and could be eliminated at any time. To determine the viability of the lower SDS as a mitigation site soils and hydrology tests should be performed. 12-1

  An alternative to the Lower SDS site would be an equivalent amount of land in the lower portions of the spreading grounds. Because the LADPW does not use that portion of the spreading grounds for their intended purpose, they provide a viable site for in-kind mitigation. Moreover, that site is at original grounds level and provides natural ground water required for oak-sycamore woodland. 12-2

- Any oak-sycamore mitigation must include native shrubs, herbs and grasses to properly replicate the understory and complexity of the natural habitat being removed. A restoration plan should be prepared well in advance of habitat removal and seed stock storage and plant propagation should also be started as soon as possible. 12-3

- When natural habitat is removed so too is the capacity of that habitat to absorb green house gasses. Nowhere in the EIR is there a discussion or impacts analysis of the capability of the habitat to be removed to absorb or offset greenhouse gases. This is no longer an emerging issue but is reality and should be recognized and addressed in the document. 12-4

I wish to be involved in the negotiations and mitigation planning for this project. I believe I provide intimate knowledge of the habitat to be impacted by this project and would bring a local perspective to planning efforts of the City of Arcadia, the California Department of Fish and Game and the County. 12-5

Sincerely,

CC: Scott Harris, CDFG
Centers for Biological Diversity
City of Arcadia

Letter 12: **Mike San Miguel**

Comment No.	Response
12-1	The approximately 8-acre Lower SPS would be a possible on-site area for oak woodland restoration after the sediment removal and placement activities are completed. As stated in mitigation measure BIO-D, in section 3.3.4, a conceptual restoration plan for mitigation for impacts to coast live oak would be submitted to the City of Arcadia and CDFG and approved by CDFG. The restoration plan would include native shrubs, grasses, and other vegetation as required by CDFG. The final location for oak woodland restoration and/or establishment of an oak woodland conservation easement and contribution of funds to the Oak Woodlands Conservation Fund would be determined through consultation with CDFG and the City of Arcadia and ultimately approved by CDFG. CDFG and USFWS have commented on the EIR (see response to comment letters 6 and 7) and revisions have been made to Section 3.3 of the Final EIR.
12-2	The Santa Anita spreading grounds are currently used by LACDPW as an area for water conservation (groundwater recharge) and could be used for emergency cleanouts. The spreading grounds would not be a feasible site for an oak tree mitigation site due to its function in the Santa Anita flood control area.
12-3	Refer to response to comment 12-1.
12-4	The comment is noted regarding the capacity of natural habitat to absorb greenhouse gases (GHG). As stated in Section 4.3.2 of the EIR, the air quality modeling estimated the proposed project would generate 1,784 tons of CO_2 emissions during construction activities. This global climate change impact of the proposed project would be negligible compared to the estimated 492 million gross metric tons of CO_2e gases for California (see Section 3.2). Although the magnitude of the impact is low (1,784 tons of CO_2 emissions), mitigation measure AIR-A would assist in the reduction of the project's contribution to global climate change. The landscaping in the Lower SPS area, restoration of removed vegetation, and oak woodland mitigation as required by the proposed project would also partially offset the impacts associated with global climate change. However, even with restoration and replanting associated with mitigation measures, BIO-D and BIO-E, global climate change impacts would remain significant and unavoidable.

Reduction of the GHGs has been factored into the decision making process from early in the project development. The decision not to truck the sediment to an offsite location was based on several factors, including GHG reduction. By using an electric conveyor belt from Wilderness Park to the SPS areas, tens of thousands of diesel truck trips would be avoided. Although trees would be removed to create the Middle SPS, this will allow for future sediment clean out projects of the Santa Anita Reservoir, which also eliminates future offsite truck trips for sediment removal.

12-5 LACDPW will work with the appropriate regulatory agencies to finalize the necessary permits and mitigation measures within their jurisdictions. LACDPW will coordinate with the Arcadia Homeowners Association to address landscaping and revegetation of the SPS areas.

TABLE 7-2 RESPONSES TO COMMENTS RECEIVED DURING THE PUBLIC MEETING

No.	Comment	Response
June 4, 2008 Public Meeting		
13-1	When would construction action activities occur?	As discussed in Section 2.5, LACDPW would attempt to complete the sediment removal within the summer and fall of 2009, but sediment removal activities may last over the two 6 to 8 -month periods of April through October (possibly to December, weather permitting). The removal of vegetation in a portion of the Middle SPS area is anticipated to occur after June 2009. The riser construction would likely occur between May 2009 and December 2009, although the contractor may choose an alternate construction sequence.
13-2	How long would construction last?	Refer to response to comment 13-1.
13-3	Does the conveyor belt system need to be removed after the first year?	The removal of the conveyor belt system after the first year of construction would be determined by the contractor selected by LACDPW.
13-4	Would the contractor design the conveyor belt system?	The contractor would design the conveyor belt system in consultation with LACDPW. See response to comment 8-2.
13-5	How many notices were sent out?	Approximately 550 notices were distributed for the Notice of Preparation on June 20, 2007 and over 1,100 notices were distributed for the Notice of Availability of the Draft EIR to interested parties, adjacent property owners and residents, and agencies on May 5, 2008.
13-6	What time of day would the conveyor belt system run? How many days per week?	As discussed in Section 3.7.2, the City of Arcadia's Building Code limits construction-related activity to 7:00 a.m. through 7:00 p.m., Monday through Saturday unless otherwise permitted by the Development Services Department. Construction is prohibited on Sundays and major holidays.
13-7	Project site security – will the access gates remain unlocked? How do homeowners know that the trucks and the workers are part of the staff? Will security be provided at the gates (Elkins, Highland Oaks, etc.)	All LACDPW access gates will remain locked during non-construction hours, including gates at Elkins Avenue and Highland Oaks Drive, at the Wilderness Park, and any other gates at the southern end of the project area. LACDPW will periodically check the locks on the gates as the public has indicated some gates have recently been found to be unlocked and open to trespassers. Homeowners will be notified prior to construction activities to inform the homeowners of the anticipated hours of construction during the weekdays and a 24-hour telephone number for noise complaints, as required by mitigation measure NOISE-F. The contractor will be required to control public access to the construction area and conveyor belt system to maintain a safe environment.

No.	Comment	Response
13-8	Where would the employees park?	Mitigation measure TRANS-A in Section 3.9.5 of the EIR requires a parking plan shall be prepared by the contractor for review and approval by LACDPW. The parking plan will illustrate the parking locations for workers on the project site in areas that are not accessible by the public and clearly indicate that construction worker or equipment parking is prohibited in the Wilderness Park and on public roads.
13-9	Traffic assumptions - count locations, count times, and access routes. How were they determined?	The traffic consultant for the project consulted with the City of Arcadia prior to conducting two-hour mid-day traffic counts at four intersections in the project vicinity. In addition 24-hour machine counts on the roadway segments between the four intersections were utilized for the traffic assumptions used in the EIR traffic analysis. The access routes were determined through discussions with LACDPW and using the current access to the Santa Anita Reservoir and other flood control facilities access.
13-10	Traffic assumptions – where will employees access the site? Highland Oaks? Elkins?	Refer to response to comment 8-23.
13-11	Will a traffic control plan be prepared? Will designated haul routes be identified?	As discussed in Section 3.9.4, traffic impacts that would occur within public streets are related to construction worker trips. Once construction equipment is transported to the project site, it is assumed that the equipment would remain on-site until the end of the 6 to 8-month period and all project-related traffic impact would be related to workers entering and leaving the project site during the weekdays. No sediment hauling activities would occur on local streets as part of the proposed project, since the disposal site is located on County-owned property on-site.
13-12	Wilderness Park – how will the day camp be affected? Safety? Noise? Dust?	The proposed project would not impact the operation of the Wilderness Park or the day camp. LACDPW has met with the City Recreation and Community Services Department regarding the proposed project and Wilderness Park operations and will continue to work with the City regarding any issues with day campers or other park users during the duration of the project. Refer to response to comment 8-2, regarding safety at Wilderness Park. Refer to response to comment 8-5, regarding dust at Wilderness Park. Refer to response comments 8-12 and 8-14, regarding noise at Wilderness Park.
13-13	Will the sediment on the conveyor belt system be wet or dry? Will	Refer to response to comment 8-5.

No.	Comment	Response
	dust-control measures be implemented?	
13-14	Will large rocks be placed on the conveyor belt system?	The exact size of the sediment has not been determined and may depend on the conveyor/contractor, but it is anticipated that no rocks greater than 12 inches would be placed on the conveyor belt system. It is expected that some large rocks will be crushed for conveyor belt system transport.
13-15	After Lower SPS is filled and closed, would any public use of the site be provided? Would the SPS be revegetated?	Currently, there are no plans for public use of the Lower SPS after the proposed project and the area is closed for future sediment placement. LACDPW in the short-term plans to use this area as a potential mitigation site for the proposed project's impacts to oaks tree and other vegetation. Refer to response to comment 7-3 regarding the Lower SPS restoration.
13-16	Typo – page 5-24 and 5-30 of the Draft EIR has the incorrect type of school (public, not private).	See Chapter 6.0 of this Final EIR for revisions to Section 5.2.4 and 5.2.5 and the corresponding revisions to Chapter 5 of the Final EIR.
13-17	Was the new administration building currently being constructed at Highland Oaks School considered for the cumulative impacts analysis?	During the preparation of the Draft EIR the City of Arcadia was consulted to provide a list of past, present, and probable future projects producing related or cumulative impacts to the proposed project. At that time, the City of Arcadia did not identify the Highland Oaks School administration building as a related project. The list of related projects analyzed in the EIR is presented in Table 4-1.

8 MITIGATION MONITORING AND REPORTING PROGRAM

Public Resources Code, Section 21081.6 (Assembly Bill 3180) requires that mitigation measures identified in environmental review documents prepared in accordance with CEQA are implemented after a project is approved. Therefore, this Mitigation Monitoring and Reporting Program (MMRP) has been prepared to ensure compliance with the adopted mitigation measures during the pre-construction, construction, and post-construction phases of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal project.

The LACDPW is carrying out this project on behalf of the County of Los Angeles and LACDPW is the agency responsible for implementation of the mitigation measures identified in the EIR. This MMRP provides the County with a convenient mechanism for quickly reviewing all the mitigation measures including the ability to focus on select information such as timing. The MMRP includes the following information for each mitigation measure:

- the phase of the project during which the required mitigation measure must be implemented;
- the phase of the project during which the required mitigation measure must be monitored;
- the enforcement agency; and
- the monitoring agency.

The MMRP also includes a checklist to be used during the mitigation monitoring period. The checklist will verify the name of the monitor, the date of the monitoring activity, and any related remarks for each mitigation measure.

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TABLE 8-1 MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementation Phase[1]	Monitoring Phase[1]	Enforcement Agency	Verification of Compliance		
				Initial	Date	Remarks
AIR QUALITY						
AIR-A The construction contractor shall provide a NOx reduction plan, for LACDPW approval, demonstrating that construction equipment shall not exceed the 100 lbs/day NOx threshold for the duration of the project. The plan shall provide a detailed equipment list for the overlap and non-overlap construction periods using the construction equipment emissions from URBEMIS 2007, which will be provided by LACDPW, or an equivalent verifiable source approved by CARB or SCAQMD. Measures to reduce emissions may include the use of oxygenated catalysts or Tier 2 or Tier 3 engines.	Final Plans and Specifications; Pre-construction; Construction	Final Plans and Specifications; Pre-construction; Construction	Los Angeles County Department of Public Works			
BIOLOGICAL RESOURCES						
BIO-A Prior to commencement of project construction, a rare plant survey shall be completed within the Santa Anita Reservoir, the Middle SPS and anywhere else project ground-disturbing activities would affect vegetated areas to determine the presence or absence of sensitive plant species with potential to occur within this project site. Surveys within the Middle SPS will focus on Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass where suitable habitat for these species occurs. However, all sensitive plant species that have potential to occur in the project area based on the presence of suitable habitat or the known presence of the species in neighboring areas will be searched for during their blooming periods to confirm presence or absence. In addition, all other biological requirements of the U.S. Forest Service shall be implemented to minimize impacts to federal species. Surveys shall be conducted in accordance with the following CNPS guidelines: • A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas. • If a state, U.S. Forest Service, or federally listed plant species is detected (e.g., slender-horned spineflower or San Diego ambrosia), then consultation with USFWS and/or, U.S. Forest Service, and/or CDFG must occur to document the finding and determine appropriate mitigation requirements to ensure that impacts to the listed plant species would be less than significant. • Rare plants listed as CNPS List 1B, protected by the California Endangered Species Act, shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project activities to allow for salvage of the plants.	Pre-construction	Pre-construction	Los Angeles County Department of Public Works			
BIO-B Should tree and vegetation removal in the Santa Anita Reservoir or Middle SPS or commencement of other construction activities in the project site occur during the breeding season for migratory non-game native bird species (February 1 - August 31), weekly bird surveys shall be performed to detect any protected native birds in the trees to be removed and other suitable nesting habitat within 300 feet of the construction work area (500 feet for raptors). The surveys shall be conducted 30 days prior to the disturbance of suitable nesting habitat by a qualified biologist with experience in conducting nesting bird surveys. The surveys shall continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, LACDPW shall halt all clearance/construction disturbance activities in suitable nesting habitat or within 300 feet of nesting habitat (within 500 feet for raptor nesting habitat) until August 31 or continue the surveys in order to locate any nests. If an active nest is located during the survey, clearing and construction with 300 feet of the nest (within 500 feet for raptor nests) shall be postponed until the nest is naturally vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The results of this measure shall be recorded to document compliance with applicable State and Federal laws pertaining to the protection of native birds. A pre-construction survey for roosting bats shall be performed by a qualified biologist within 30 days prior to removal of trees or structures on the site. If no active roosts are found, then no further action will be warranted. If either a maternity roost or hibernacula	Pre-construction	Construction	Los Angeles County Department of Public Works			

[1] The Implementation and Monitoring phases are broken down into four categories: Final Plans and Specifications, Pre-Construction, Construction, and Operation. "Final Plans and Specifications" indicates that the mitigation measure must be incorporated into the final approved design, plans, and specifications for the project. "Pre-Construction" refers to measures that are required prior to the start of construction. "Construction" refers to all aspects of project construction, including, but not limited to, SPS site preparation, dam outlet modification, dry excavation, sediment conveyance, and sediment placement. "Operations" includes all measures that must be implemented during routine operations of the dam outlet and SPS areas.

	Mitigation Measure	Implementation Phase[1]	Monitoring Phase[1]	Enforcement Agency	Verification of Compliance		
					Initial	Date	Remarks
	(structures used by bats for hibernation) is present, the following measures shall be implemented: • If an active maternity roost is located and the project cannot be redesigned to avoid removal of the occupied tree or structure, demolition shall commence before maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). Disturbance-free buffer zones as determined by a qualified biologist in consultation with CDFG shall be observed during the maternity roost season (March 1 - July 31). • If a non-breeding bat hibernacula is found in a structure or tree scheduled for removal, the individuals shall be safely evicted, under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow airflow through the cavity. Demolition shall then follow at least one night after initial disturbance for airflow. This action shall allow bats to leave during darkness, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Structures or trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours. • If special-status bats are found roosting within trees or structures onsite that require removal, appropriate replacement roosts shall be created at a suitable location onsite or offsite in coordination with a qualified biologist, the CDFG, and the LACDPW.						
BIO-C	In order to reduce impacts to sensitive reptiles potentially occurring in the Santa Anita Reservoir, the Middle SPS, and along the access road adjacent to the debris basin LACDPW shall implement the following measures: • Grading and other habitat disturbing activities shall be limited to the footprint of the SPS areas. • To prevent injury or damage to coast (San Diego) horned lizard, two-striped garter snake, and other reptiles, an animal exclusion fence shall be placed along the boundary of the Middle SPS area and along the portion of the access road adjacent to the debris basin. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded “T” steel posts. Fence material should also be buried a minimum of 12 inches below the ground surface. • Prior to construction, a qualified biologist shall conduct a pre-construction survey for the coast (San Diego) horned lizard and two-striped garter snake and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion fenced area, the biologist shall safely relocate these species to a suitable area outside of the fenced area. • Drift nets or other exclusionary fencing shall be placed around excavations to reduce the potential for individuals entering excavated areas. If excavations with the potential for entrapment are to remain open for more than 12 hours they must include some means for small mammals, reptiles, and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavation. Before an excavation is backfilled, it must be checked to ensure that there are no live individuals inside. Backfilling shall not occur until the excavation is clear of all live individuals. • Personnel involved in project implementation shall receive a briefing from a qualified biologist to identify and describe sensitive resources that may be encountered in the project area. Wildlife of any kind that is encountered during the course of project implementation shall either be moved or provided the opportunity to vacate the site. • Personnel shall be reminded that harassment, handling, or removal of wildlife from the project site shall not be permitted.	Pre-construction	Construction	Los Angeles County Department of Public Works			
BIO-D	LACDPW shall mitigate for impacts to 6.7 acres of coast live oak woodlands through a combination of on-site creation of coast live oak woodland and/or by permanently protecting comparable habitat in the watershed or by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of on site creation and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 6.7 acres. Oak woodland restoration shall occur within the Lower SPS, which includes approximately 8 acres available for such restoration activities. Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW.	Pre-construction	Construction; Operation	Los Angeles County Department of Public Works			

	Mitigation Measure	Implementation Phase[1]	Monitoring Phase[1]	Enforcement Agency	Verification of Compliance		
					Initial	Date	Remarks
	The final size of a conservation easement and the number of trees planted for mitigation shall be determined through consultation with CDFG. City of Arcadia will be consulted regarding restoration activities on the Lower SPS. Mitigation for impacts to coast live oak individuals shall be negotiated in conjunction with mitigation for impacts to coast live oak woodland. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation shall be described in both a conceptual restoration plan and a mitigation and monitoring plan for oak woodland, which shall be submitted and approved by CDFG prior to implementation of the project.						
BIO-E	Mitigation for impacts to 3.8 acres of Riversidean alluvial fan sage scrub and 0.08 acre of disturbed Riversidean alluvial fan sage scrub will be accomplished through a combination of restoration of a suitable area on-site and/or by permanently protecting comparable habitat by establishing a conservation easement at the Big Tujunga Mitigation Bank. The combined total of on site restoration and/or permanent protection at the Big Tujunga Mitigation Bank shall be a minimum of 3.88 acres. The Lower SPS includes approximately 8 acres available for restoration. Mitigation for impacts to Riversidean alluvial fan sage scrub shall be negotiated with CDFG. A conceptual restoration plan shall be provided once mitigation ratios are negotiated. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels. Details of planting for mitigation shall be described in a mitigation and monitoring plan approved by CDFG. Establishment of a conservation easement shall permanently protect comparable habitat at the Big Tujunga Mitigation Bank, which includes land purchased by the LACDPW.	Final Plans and Specifications; Construction	Construction; Operation	Los Angeles County Department of Public Works			
BIO-F	Clean Water Act Section 404 (b)(1) guidelines shall be followed as a framework for compensatory mitigation. Through 404(b)(1) negotiations with the USACE and negotiations with CDFG under Fish and Game Code Sections 1600-1616, a determination of the functions and values of impacted jurisdictional waters shall result in the coordination of appropriate mitigation measures for sediment removal and the impacted ephemeral wash and riparian habitat in the excavation area of the reservoir and Middle SPS. Compensatory mitigation of permanently protecting a minimum of 0.15 acres of comparable habitat shall occur at the Big Tujunga Mitigation Bank or through restoration and permanent protection on Mountains Recreation Conservation Authority (MRCA) land.	Pre-construction	Construction; Operation	Los Angeles County Department of Public Works			
CULTURAL RESOURCES							
CUL-A	If archaeological materials are encountered during ground disturbing activities, work in the vicinity shall be immediately halted. The resource shall be assessed by a qualified archaeologist and the appropriate treatment determined in accordance with state law and standard archaeological practices consistent with those outlined by the California Office of Historic Preservation prior to the resumption of construction.	Construction	Construction	Los Angeles County Department of Public Works			
CUL-B	If human remains are encountered on the property during ground disturbing activities, the Los Angeles County Coroner's Office shall be contacted and all activities in the vicinity of the discovery shall cease until appropriate disposition of the remains is determined by the Coroner's Office, who will follow their standard protocols.	Construction	Construction	Los Angeles County Department of Public Works			
NOISE							
NOISE-A	At all areas except the reservoir-dam area, construction equipment shall be fitted with noise shielding and muffling devices to reduce noise levels to the maximum extent feasible. Where available, these devices shall be better than manufacturer's standard equipment.	Construction	Construction	Los Angeles County Department of Public Works			
NOISE-B	Stationary sources, such as message boards for traffic control, that will be located within 500 feet of residences shall be solar or battery powered, or connected to the local power grid, i.e., not powered by an internal combustion engine.	Construction	Construction	Los Angeles County Department of Public Works			
NOISE-C	At the SPS areas, equipment maintenance and staging areas shall be located within the project area.	Construction	Construction	Los Angeles County Department of Public Works			
NOISE-D	At the Lower SPS, construction of a noise barrier on the west and southwest sides will be feasible. Therefore, at the commencement of	Final Plans and	Construction	Los Angeles			

Mitigation Measure	Implementation Phase[1]	Monitoring Phase[1]	Enforcement Agency	Verification of Compliance		
				Initial	Date	Remarks
sediment placement in the Lower SPS, LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west and southwest. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, the most efficient and economical barrier may be built by depositing the initial sediment along the affected boundaries of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.	Specifications; Construction		County Department of Public Works			
NOISE-E At the commencement of sediment placement in the Middle SPS, the LACDPW shall construct a barrier that shall be at least one foot higher than the line of sight between the exhaust pipes of the construction equipment and receptors that are located 5 feet above the ground on the residential properties immediately to the west. The necessary height of the barrier will vary with the elevation of the SPS as it is built up. The barrier may be made of plywood, and if so, the wood should be at least ¾ inch thick to prevent noise transmission through the barrier. Alternatively, a barrier may be built by depositing the initial sediment along the western boundary of the site and building an earth berm as a barrier, always keeping the remainder of the working area behind the earth berm relative to the receptors.	Final Plans and Specifications; Construction	Construction	Los Angeles County Department of Public Works			
NOISE-F The LACDPW shall establish a noise complaint and response procedure that includes a 24-hour toll free or local telephone number for complaints, and a procedure where a field engineer/construction manager will respond within 48 hours as practicable, investigate the complaints, and take corrective action if necessary. Complaints after normal working hours may be received by voice mail.	Construction	Construction	Los Angeles County Department of Public Works			
TRANSPORTATION						
TRANS-A Prior to construction, a parking plan shall be prepared by the contractor for review and approval by LACDPW. The parking plan shall illustrate the parking locations for workers on the project site in areas that are not accessible by the public and clearly indicate that construction worker or equipment parking for non-maintenance and construction activities is prohibited in the Wilderness Park and on public roads. A parking map shall be provided to all construction workers prior to construction activities each year. LACDPW shall monitor parking compliance on a monthly basis throughout the construction period.	Final Plans and Specifications; Construction	Final Plans and Specifications; Construction	Los Angeles County Department of Public Works			

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10 AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED

US ARMY CORPS OF ENGINEERS

Ken Wong, Project Manager
Valisa Nez, Project Manger

CITY OF ARCADIA

Don Penman, City Manager
Pat Malloy, Assistant City Manager/Director of Public Works Services
Jason Kruckeberg, Development Services Director
Tom Tait, Deputy Public Works Service Director
Phil Wray, City Engineer/Deputy Director of Development Services
Tony Trabbie, Fire Chief
Sara Somagyi, Director of Recreation and Parks
Ed Cline, Traffic Engineer
Jim Kasama, Acting Senior Planner
Brie Houghton, Wilderness Park Clerk

CITY OF MONROVIA

Dan Iwata, Facilities Division Manager

CITY OF SIERRA MADRE

Jae Hill, Associate Planner

COUNTY OF LOS ANGELES

Robert Ettleman, Off-Highway Vehicle and Trails Planner, Parks and Recreation

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

James Koizumi, Air Quality Specialist

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11 ACRONYMS, ABBREVIATIONS, AND GLOSSARY

ACRONYMS AND ABBREVIATIONS

µg/m3	micrograms per cubic meter
AQMD	Air Quality Management Plans
ANF	Angeles National Forest
B.P.	years before present
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CALTRANS	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CFGC	California Fish and Game Code
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGS	California Geological Survey
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CWA	Federal Clean Water Act
dB	decibel
dBA	A-weighted decibels
DBH	diameter breast height
DPR	Department of Parks and Recreation
DSOD	California Department of Water Resources, Division of Safety of Dams
DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAST	Flow-Assisted Sediment Transport
GPS	Global Position System
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HOV	high-occupancy vehicle
IS	Initial Study
KOA	KOA Corporation
KOPs	Key Observation Points
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
lbs	pounds

Ldn	Day-Night Average Level
Leq	Equivalent Noise Level
Lmax	maximum noise level
LOS	Levels-of-service
LST	Localized Significance Thresholds
MBTA	Migratory Bird Treaty Act
MCE	Maximum Credible Earthquake
MEP	Maximum Extent Practicable
Metro	Los Angeles County Metropolitan Transportation Authority
mm/yr	millimeters per year
MMRP	mitigation monitoring and reporting program
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plans
NEPA	National Environmental Policy Act
NO2	Nitrogen Dioxide
NO	Nitric Oxide
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OHWM	Ordinary High Water Mark
Pb	Lead
PCE	passenger car equivalent
PGA	Peak ground acceleration
PM10	Respirable Particulate Matter
PM2.5	Fine Particulate Matter
PMP	Probable Maximum Precipitation
ppm	parts per million
ppt	parts per thousand
ppv	peak particle velocity
RWQCB	Regional Water Quality Board
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCEDC	Southern California Earthquake Data Center
SEA	Significant Ecological Area
SIP	State Implementation Plan
SO2	Sulfur Dioxide
SPS	Sediment Placement Site
SRA	source/receptor area
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control
TAC	Toxic Air Contaminant
TMDL	Total Maximum Daily Load
TIA	Traffic Impact Analysis
UBC	Uniform Building Code

USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	Volume to Capacity Ratio
VOC	volatile organic compounds
WQO	Water Quality Objectives
WWECP	Wet Weather Erosion Control Plan

GLOSSARY

Conveyor Belt System – a series of continuously moving belts that transports material from one place to another.

Debris Basin – A specially constructed basin used to store and contain large amounts of sediment and debris moving in a channel.

Inlet – an opening/passage where water flows in.

Outlet –an opening/passage where water flows out.

Riser – A vertical pipe.

Slide Gate – a sliding barrier used for regulating the flow of water through a dam.

Spillway – A dam structure used to carry excessive water flows over or around the dam and into the channel.

Spreading Grounds – Shallow basins which retain water and are used to allow water to seep into and recharge local groundwater.

Trash Rack – A grate used to keep large debris and floating objects out of the outlet system.

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12 EIR PREPARERS

The following firms, individuals, and agency staff contributed to the preparation of this EIR:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS (LEAD AGENCY)

900 South Fremont Avenue
Alhambra, CA 91803

- Pat Wood
- Sterling Klippel
- Keith Lilley
- James Mak
- Ken Zimmer
- Wendy La
- Long Thang
- Belinda Kwan
- Crystal Franco
- Aracely Lasso

EDAW, INC. (ENVIRONMENTAL CONSULTANT)

515 South Flower Street, 9th Floor
Los Angeles, CA 90071

- Eric Wilson, Project Director
- Pete Choi, Project Manager
- Sheryll Del Rosario, Environmental Analyst
- Marisa Grivas, Environmental Analyst
- Monica Strauss, Archaeologist
- Sara Dietler, Archaeologist
- Christy Dolan, Architectural Historian
- James Kurtz, Air Quality and Noise Specialist
- Bill Maddux, Air Quality and Noise Specialist
- Jeff Goodson, Air Quality and Noise Specialist
- Poonam Boparai, Air Quality and Noise Specialist
- Paula Jacks, Senior Biologist
- Jeanette Duffels, Botanist

- Josh Zinn, Arborist and Wetlands Specialist
- Donna Germann, Wildlife Biologist
- Shawn Godkin, Visual Simulation Specialist
- Peter Augello, GIS Specialist
- Dan Brady, Graphics Specialist

KOA CORPORATION (TRANSPORTATION CONSULTANT)

1055 Corporate Center Drive, Suite 300
Monterey Park, CA 91754

- Brian Marchetti, AICP, Transportation Planner

SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT

Final Environmental Impact Report Technical Appendices

State Clearinghouse No. 2007061093

Prepared For:
County of Los Angeles
Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803

Prepared By:
EDAW, Inc.
515 South Flower Street, 9th Floor
Los Angeles, California 90071

May 2009

APPENDIX A

NOTICE OF PREPARATION, INITIAL STUDY, AND

RESPONSES TO NOTICE OF PREPARATION

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NOTICE OF PREPARATION AND NOTICE OF PUBLIC SCOPING MEETING

To: State Clearinghouse, Responsible and Trustee Agencies, and Interested Individuals

Subject: Notice of Preparation of an Environmental Impact Report and **Scoping Meeting** for the **Santa Anita Reservoir Sediment Removal Project**

Project Title: Santa Anita Reservoir Sediment Removal Project

Lead Agency: County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, CA 91802-1460
Contact: Ms. Belinda Kwan, Project Manager

The County of Los Angeles Department of Public Works, as the lead agency, will be preparing an Environmental Impact Report for the proposed project described below. Public Works is soliciting input from members of the public, organizations, and government agencies on the scope and content of the information to be included and analyzed in the Environmental Impact Report. Agencies should comment on the elements of the environmental information that are relevant to their statutory responsibilities in connection with the proposed project.

The project description, location, and potential environmental effects of the proposed project (to the extent known) are described in this Notice of Preparation. A public scoping meeting will be held in July 2007 to solicit input from interested parties on the scope and content of the Environmental Impact Report in conformance with Section 21083.9 of the Public Resources Code.

The scoping meeting will be held on Wednesday, July 11, 2007, from 7 p.m. to 8:30 p.m.
Location: 1st Avenue Elementary
301 South 1st Street
Arcadia, California 91006

Scoping comments on the Environmental Impact Report should be sent to Public Works ***no later than 30 days*** after the posting of this notice, which will occur on June 20, 2007. Accordingly, letters should be postmarked by July 20, 2007. Please send your written response to Ms. Belinda Kwan, Project Manager, Los Angeles County Department of Public Works, at the address shown above. Responses should include the name of a contact person.

Project Location/ Description

The Santa Anita Reservoir Sediment Removal Project (proposed project) is located on the northern border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles (see Figure 1). As shown on Figure 2, the project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in an existing sediment placement site. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south. The proposed project also includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. Sediment removal activities are anticipated to occur over two years from April through December of 2009 and 2010 (weather permitting). The removal of native vegetation

in the sediment placement site is anticipated to occur during after September 2008 and prior to March 2009. The riser construction would likely occur from May to December 2009. Dewatering of the reservoir would occur before the riser construction and would last for approximately two weeks. The dry-out of the reservoir would start at the end of the dewatering cycle, which is anticipated to last up to three weeks, depending on the magnitude of recession flows and the weather.

Potential Environmental Effects

The NOP and Initial Study are available for public review on-line at: http://dpw.lacounty.gov/wrd/reservoir/index.cfm. As discussed in the Initial Study, the following potentially significant environmental effects will be addressed in the Environmental Impact Report:

- Direct impacts to native vegetation at the proposed sediment disposal site, including the removal of mature oak trees.
- Aesthetic impacts associated with the new sediment placement site.
- Temporary air quality impacts on nearby residential areas from earthwork and operation of heavy equipment during construction.
- Temporary increase of noise levels in the residential areas from the use of heavy equipment during sediment transport activities.
- Geologic hazards, such as fault rupture, strong seismic ground shaking, liquefaction, and erosion at the sediment placement site.
- Short-term impacts to hydrology and water quality during sediment removal, transport, and disposal activities.
- Potential impacts to buried archaeological resources at the sediment disposal site.
- Cultural resource impacts to the potentially historic Santa Anita Dam.
- Temporary recreation impacts during construction due to closed or limited access to Arcadia Wilderness Park.

If you have any questions regarding the project, please contact Ms. Belinda Kwan, our Project Manager, at (626)458-6135, bkwan@dpw.lacounty.gov, between the hours of 7:15 a.m. and 5 p.m., Monday through Thursday. In case of an emergency, please contact our help desk at (800) 675-4357.

Si necesita asistencia con la traducción a Español, por favor comuniquese con el representante del departamento de Obras Públicas del Condado de Los Angeles, Sr. Art Correa (626) 458-3971.



Upon 72 hours' notice, Public Works can provide program information and publications in alternate formats or make other accommodations for people with disabilities. In addition, program documents are available at our main office in Alhambra (900 S. Fremont Ave.), which is accessible to individuals with disabilities. To request accommodations ONLY or for more Americans with Disabilities Act information, please contact our departmental Americans with Disabilities Act Coordinator at (626) 458-4081 or TDD (626) 282-7829, Monday through Thursday, from 7 a.m. to 5:30 p.m.

Attachments: Project Location Map (Figure 1); Project Vicinity Map (Figure 2)

Los Angeles County Department of Public Works

Santa Anita Reservoir Sediment Removal
CEQA Initial Study

1. Project title: Santa Anita Reservoir Sediment Removal

2. Lead agency: Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91802

3. Contact person: Belinda Kwan, Water Resources Division
Phone: (626) 458-6135
Email: bkwan@dpw.lacounty.gov

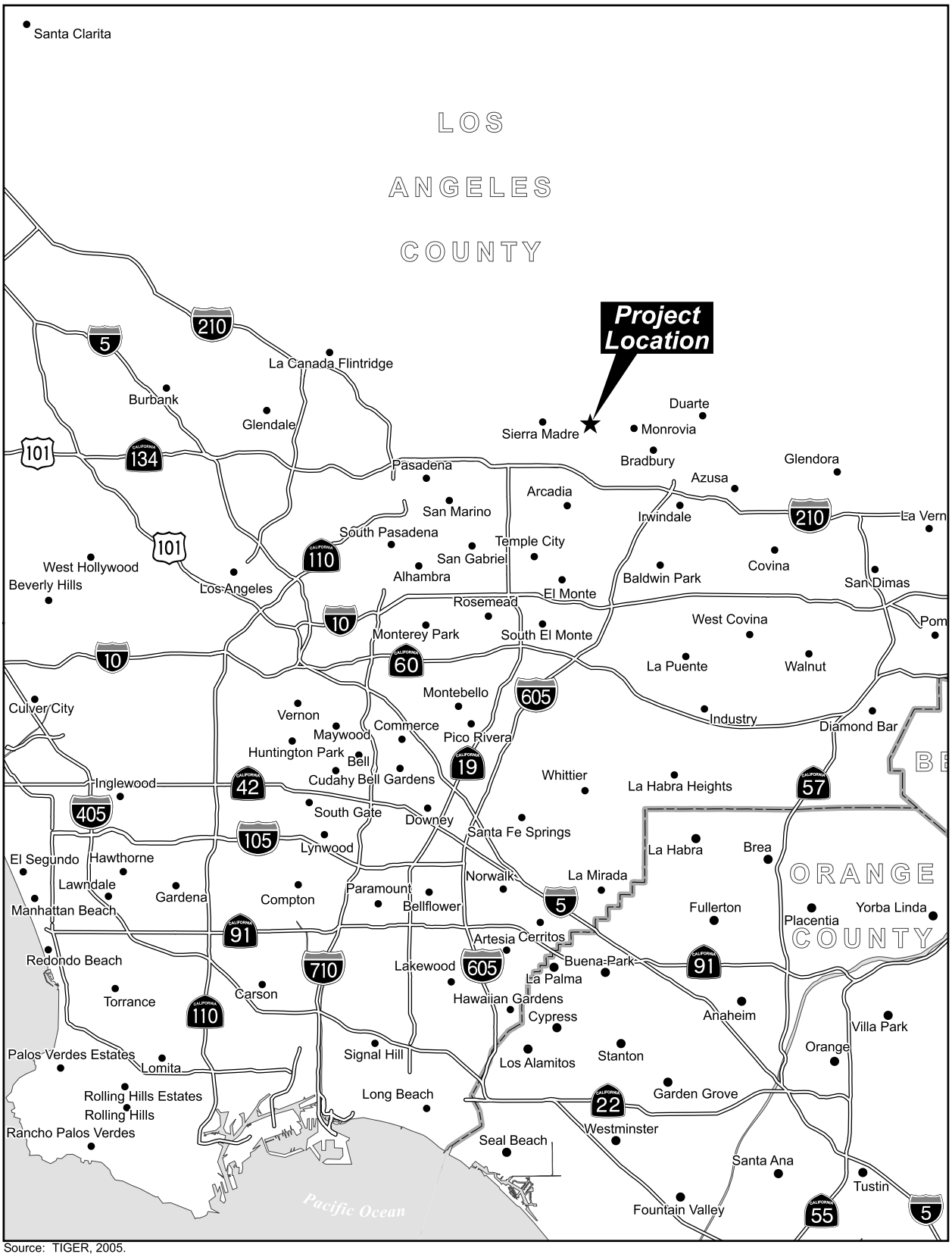
4. Project location:

The Santa Anita Reservoir Sediment Removal Project (proposed project) is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles (see Figure 1).

As shown on Figure 2, the project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Santa Anita Debris Basin (DB), and the Santa Anita Sediment Placement Site (SPS). These facilities are owned and operated by the Los Angeles County Department of Public Works (LADPW). The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, DB, and SPS are all located below the reservoir in the City of Arcadia.

The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area that is filled to capacity with sediment from previous cleanouts of the reservoir, debris basin and other local flood



Source: TIGER, 2005.

Figure 1
Regional Location Map

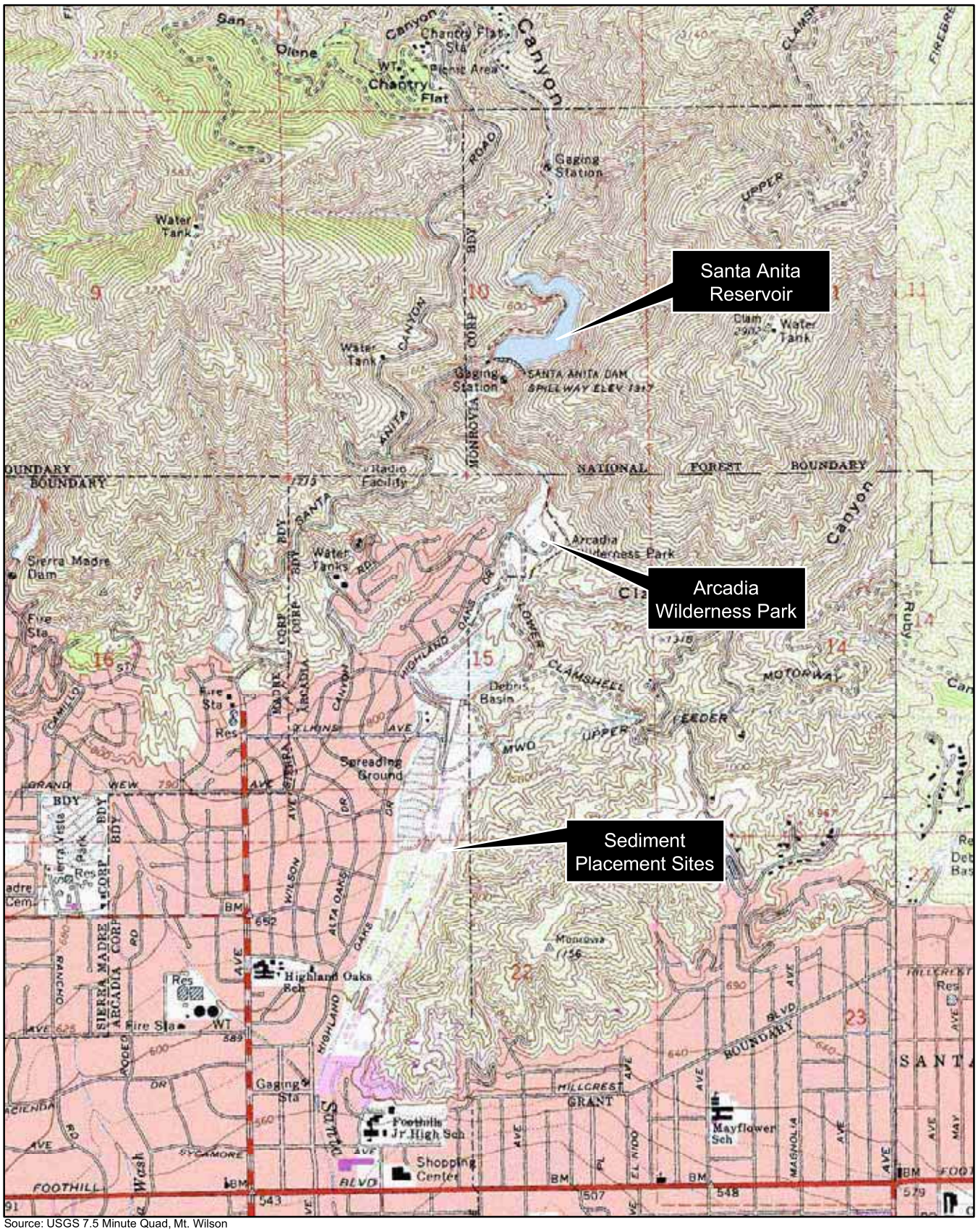


Figure 2
Vicinity Map

protection facilities. The Middle SPS area has capacity for sediment storage; apart from existing access roads it is relatively undisturbed and characterized by native vegetation. The Lower SPS area, located in the southerly end of the SPS, is an already disturbed area that contains sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities; it has a remaining capacity of approximately 250,000 cubic yards. Subsequent to the establishment of Santa Anita SPS, several residences have been built adjacent to the Lower SPS area. The City of Arcadia has conveyed to LADPW concerns it has received from adjacent residents about the impacts from sediment placement activities in the Lower SPS area, and has inquired about the feasibility of relocating sediment placement activities away from the Lower SPS area. The location of the SPS and its Upper, Middle, and Lower SPS areas is shown in Figure 3.

The topography to the north of the project site is characterized by the foothills and steep slopes of the San Gabriel Mountains, the area to the west and south of the project area is generally flat with scattered rolling hills, and the area to the east contains mostly rolling hills.

There are two schools located within ¼ mile of the project site: the Highland Oaks Elementary School (10 Virginia Drive), located to the west, and the Foothill Middle School (171 East Sycamore Avenue), located to the south.

5. General plan designation: Public Facilities & Grounds

6. Zoning: RM (Residential Mountainous)

7. Description of project:

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in the Santa Anita SPS, as shown on Figure4. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south.

DAM MODIFICATION

The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal project.

The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet (see Figure 5). The existing trash rack in front of this gate would be moved to



Source: GlobeXplorer, 2006.

N

0 300 600 1,200 Feet

Figure 3
Sediment Placement Sites

the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 to freely pass through the dam, thus meeting DSOD's seismic safety requirements.

DRY EXCAVATION

The proposed project would remove approximately 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal activities, the reservoir would be drained. A dry-out period, which could last several weeks, would be required before sediment removal would occur. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the elevation of 1,300 feet within the footprint shown on Figure 6.

SEDIMENT CONVEYANCE

The proposed project would transport sediment from the reservoir to the proposed SPS using an electric conveyor belt and haul trucks. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, and terminating at a staging area south of the Headworks. Sediment would then be loaded onto the haul trucks and transported across the Wilderness Park parking lot, past the upper portion of the DB, to the proposed SPS area via an existing fire road (see Figure 4). It is estimated that about eight trucks at a time would be used to transport the sediment to the SPS.

The approximate dimensions of electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road above the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt fire road and DPW access road to the SPS.

Because modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

SEDIMENT PLACEMENT

Sediment placement would occur in an approximately 13-acre area in the upper portion of the Middle SPS, located between the access road and the stream, below the existing Upper SPS (see Figure 4). The base of the 13-acre area would be tiered in order to accommodate up to 750,000 cubic yards of material. The ultimate height of the placement area would be 60 feet, as shown on Figure 7. Landscaping trees would be planted on the western edge of the SPS as a visual buffer for the residences to the west.



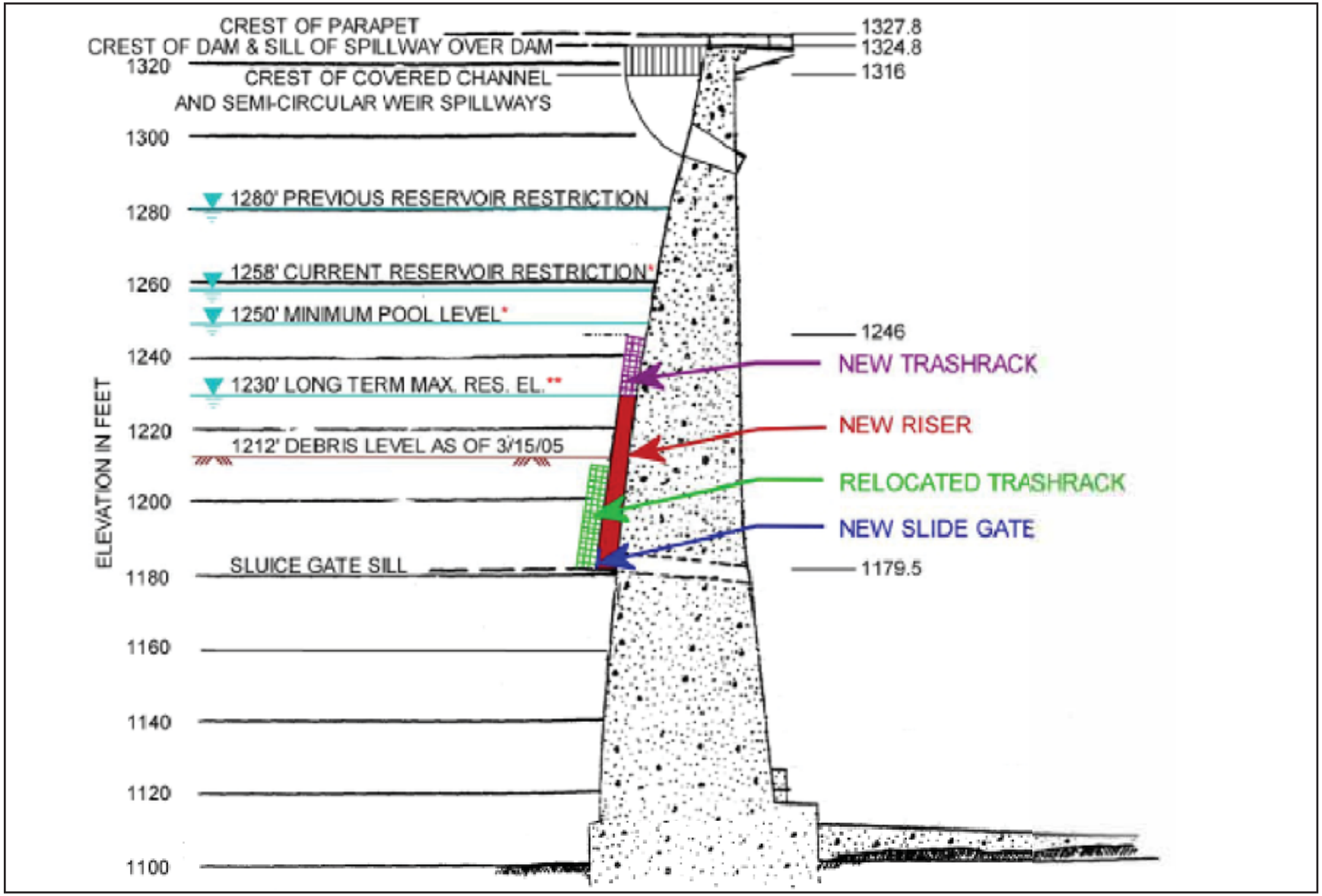
Source: GlobeXplorer, 2005.

N

0 375 750 1,500 2,250 3,000 Feet

Figure 4
Proposed Project
Convey to Park, Truck to Sediment Placement Site

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* New restriction and minimum pool approved by DSOD in letter dated August 24, 2006

** New restricted elevation effective May 2008

Figure 5
Proposed Riser Modification

Not to Scale

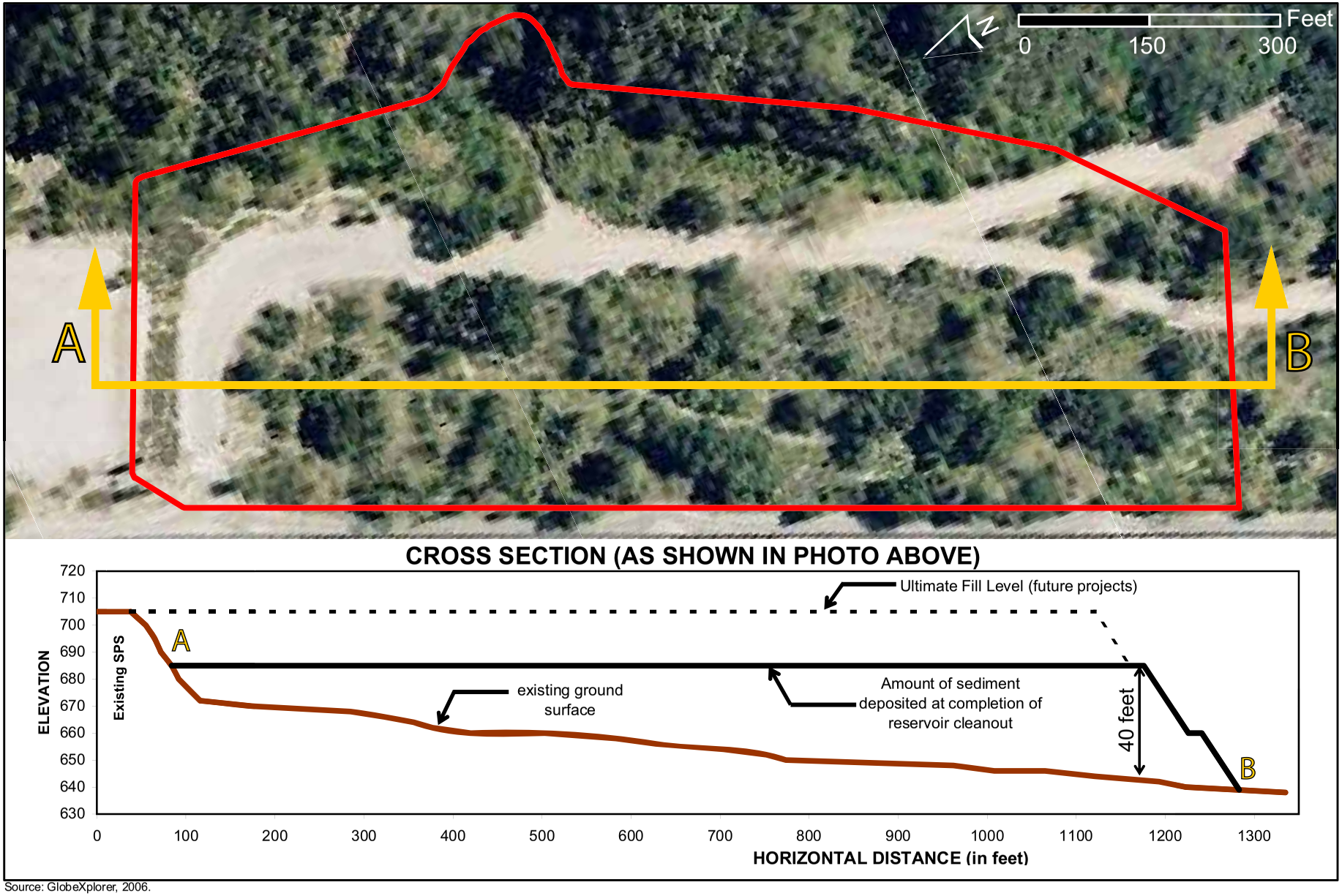


Source: GlobeXplorer, 2006.

N

0 200 400 800 Feet

Figure 6
Excavation Area



Source: GlobeXplorer, 2006.

Figure 7
Santa Anita SPS Cross Section

The proposed project would require the removal of approximately 12 acres of native vegetation in a portion of the undeveloped Middle SPS. The remaining one acre of the sediment placement footprint comprises of existing access roads. Approximately 500,000 cubic yards of sediment would be transported to the new SPS as part of the proposed project. The 250,000 cubic yards of space remaining would offset the loss of storage resulting from abandoning sediment placement at the Lower SPS area. This storage would be used in future clean-out activities. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.

CONSTRUCTION SCENARIO

Sediment removal activities are anticipated to occur over two years from April through December of 2009 and 2010 (weather permitting). The removal of vegetation in a portion of the Middle SPS area is anticipated to occur during after September 2008 and prior to March 2009. The riser construction would likely occur from May to December 2009, although the contractor may choose an alternate construction sequence. Dewatering of the reservoir would begin in early April and last for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below.

DAM MODIFICATION

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. LADPW anticipates the outlet work to commence in May 2009. The dry excavation activities, described below, will clear sediment away from the work area.

DRY EXCAVATION

Construction workers would access the reservoir via an existing access road on the east side of Santa Anita Canyon Road (see Figure 6). Based on cleanout operations at LADPW's other reservoirs, construction equipment at the reservoir during the dry excavation will likely consist of three bulldozers, two excavators, and three loaders. The actual configuration may vary depending on the contractor chosen for the project. Sediment and debris from the reservoir would be loaded on to the conveyor belt using the bulldozers and loaders. Equipment staging would occur within the reservoir area and along the existing access road. Best Management Practices (BMPs) would be implemented within the reservoir area to reduce downstream water quality impacts, as described below.

SEDIMENT CONVEYANCE

As discussed above, sediment would be transported to the SPS using a conveyor belt, likely 5 feet wide, (north of the Headworks) and haul trucks (south of the Headworks). Use of this route would require clearing, grubbing, and grading of various locations along existing access and fire roads. Some vegetation clearing may be required along the access road, including a stream crossing approximately 600 feet south of the Wilderness Park parking area. No tunnel improvements would be required to accommodate the conveyor belt and PVC bypass pipe.

SEDIMENT PLACEMENT

Prior to the use of the proposed SPS, approximately 12 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur in after September 2008 and prior to March 2009, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Construction equipment at the proposed SPS will likely consist of three bulldozers, one grader, and two sheepfoot rollers. The actual configuration may vary depending on the construction contractor chosen for the project. The equipment would be used for the clearing, grubbing, and any grading that is necessary to prepare the proposed SPS area. The equipment would also be used during sediment placement activities to spread and compact sediment throughout the tiered placement area. Construction equipment required for the proposed project is summarized in Table 1.

TABLE 1 CONSTRUCTION EQUIPMENT REQUIRED FOR PROPOSED PROJECT

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Water Truck 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt/Haul Route	2 Bulldozers 2 Loaders 8 Trucks
SPS	3 Bulldozers 1 Grader 2 Sheepfoot Rollers
Entire Project Site (Haul Route and SPS)	1 Water Truck

8. **Surrounding land uses and setting:** The project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia.

9. **Other public agencies whose approval is required:** (e.g., permits, financing approval, or participation agreement.)

   Various permits and approvals would be required in order to approve and implement the project. Other regulatory agencies and local jurisdictions would also require permits or approvals in order to construct and operate the proposed project. These entitlements and permits are listed below.

PROJECT ENTITLEMENTS AND REGULATORY PERMITS

Agency	Permit/Action
Federal	
U.S. Forest Service	Special Use Permit
U.S. Army Corps of Engineers	Section 404 Individual Permit for the discharge of dredged or fill material into Santa Anita Wash.
U.S. Fish and Wildlife Service	Section 7 consultation
State	
California Department of Fish and Game	Section 1600 Streambed Alteration Agreement
California Regional Water Quality Control Board, Los Angeles Region	Construction General Permit for ground disturbing activities; Section 401 Permit for discharge of storm water into Santa Anita Wash
Local	
City of Arcadia	Various ministerial approvals (e.g., tree removal, grading, drainage, and traffic control)
Southern California Edison	Utility relocation

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

X	Aesthetics		Agricultural Resources	X	Air Quality
X	Biological Resources	X	Cultural Resources	X	Geology/Soils
	Hazards & Hazardous Materials	X	Hydrology/Water Quality		Land Use/Planning
	Mineral Resources	X	Noise		Population/Housing
	Public Services	X	Recreation	X	Transportation/Traffic
	Utilities/Service Systems	X	Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.
X	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Signature _____ **Date:** _____

Printed Name_____

EVALUATION OF ENVIRONMENTAL IMPACTS:

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The analysis of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
1. AESTHETICS. Would the project:				
a. Have a substantial adverse effect on a scenic vista?			X	
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	X			
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?				X
e. Create a new source of substantial shade or shadow that would adversely affect daytime views in the area?				X

The proposed project site is located within the U.S. Forest Service, Angeles National Forest and the City of Arcadia. The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest north of the City of Arcadia boundary. The Wilderness Park, DB, SPS, and Spreading Grounds are all located south of the reservoir in the City of Arcadia. Public views of the project site are available from the areas of the Angeles National Forest, the Wilderness Park, and City of Monrovia open space to the east. Portions of the project site would also be visible from private properties along the western edge of the DB and SPS. The short-term aesthetic impacts during construction would be minimal, involving the conveyor belt and movement of haul trucks and other construction equipment. The views from public vantage points adjacent to the project site would remain similar to existing conditions and would not change in the short-term. Upon completion of the project, the 5-acre extension of the SPS would be visible from some adjacent residences; however, no scenic vistas would be affected. The proposed project would not have an adverse effect on a scenic vista or scenic resource. No further study of this issue is required.

There are no designated state scenic highways near the project site; the closest designated scenic highway is State Route 2, Angeles Crest Highway located approximately six miles north of the project site.[1] The project area is not visible from State Route 2; Therefore, adverse impacts related to scenic highways would not occur. No further study of this issue is required.

Implementation of the proposed project would require clearing and grubbing of vegetation in the middle SPS including the removal of mature oak and sycamore trees. The proposed 5-acre middle SPS

[1] Caltrans. *California Highway Scenic Mapping System.* website http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, accessed January 22, 2007.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
area would accommodate up to 750,000 cubic yards of material. This area for sediment placement would extend from the existing upper SPS area to the north to the proposed middle SPS area using a tiered design with the ultimate height of the placement area approximately 100 feet above the existing ground surface. This new feature would change the visual quality of the project site and alter views from some residences to the west and east on the ridge above the project site. Changes to the existing visual character and quality of the project site will be further analyzed in the EIR. The proposed project would not develop or require any buildings with lighting. All construction activity would occur during the daytime. Thus, the proposed project would not create a source of substantial light or glare above the existing conditions. No further study of this issue is required. The proposed 5-acre middle SPS area would extend to an ultimate height up to about 100 feet above the existing ground surface. This SPS area would extend southward from the existing upper SPS area and would be expected to cast similar shade and shadow patterns as the current SPS property and would not substantially affect daytime views. No further study of this issue is required.				
2. AGRICULTURE RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
c. Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
The project site is designated as Public Facilities & Grounds by the City of Arcadia and no agricultural activities presently occur on-site.[2] The site is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and there are no farmlands in the immediate project area. There are no Williamson Act contracts applicable to the project site.[3] Thus, the proposed project would not convert farmland to non-agricultural uses. No impact would result, and no further study of this issue is required.				
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?				X
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	X			
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	X			
d. Expose sensitive receptors to substantial pollutant concentrations?	X			
e. Create objectionable odors affecting a substantial number of people?			X	
The project is located in the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The proposed project plans to remove approximately 300,000 to 500,000				

[2] City of Arcadia. *General Plan Land Use Map*. website http://www.ci.arcadia.ca.us/docs/ch2_-_community_development.pdf, accessed March 27, 2007.

[3] California Department of Conservation. *Farmland Mapping and Monitoring Program*. website http://www.consrv.ca.gov/DLRP/fmmp/overview/survey_area_map.htm, accessed January 22, 2007.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*

cubic yards of sediment from Santa Anita Reservoir and place the sediment in the SPS. Construction impacts would occur in the summer and fall of both 2008 and 2009 and no long-term operational impacts would occur.

The proposed project does not include any residential development, housing, or large local or regional employment centers and would not result in significant population or employment growth. The proposed project would not conflict with or obstruct implementation of an applicable air quality management plan. No further study of this issue is required.

The SCAQMD has established standards for air quality constituents generated by construction and by operational activities for such pollutants as ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM_{10}).[4] The SCAQMD maintains an extensive air quality monitoring network to measure criteria pollutant concentrations throughout the SCAB. The SCAB is designated a non-attainment area for O_3, PM_{10}, and particulate matter smaller than or equal to 2.5 microns in diameter ($PM_{2.5}$). The construction and operation of the proposed project would contribute to an increase in air quality emissions for which the region is non-attainment. As such, air quality impacts from construction and operation of the new facilities will be evaluated using the thresholds of significance established by the SCAQMD and presented in their *CEQA Air Quality Handbook*. Short-term emissions would result from the use of construction equipment and trips generated by construction workers and haul/material delivery trucks. These emissions could result in the violation of air quality standards or the exceedance of air quality thresholds of significance, which may contribute to an existing or projected air quality violation. Therefore, air quality impacts will be further evaluated in the EIR to determine the level of significance of the short- impacts. Long-term impacts will not be evaluated, since no continual operational activities would occur as a result of the project.

Sensitive receptors include nearby residences to the west and south of the project site, the Highland Oaks Elementary School (10 Virginia Drive), located to the west, and the Foothill Middle School (171 East Sycamore Avenue), located to the south within ¼ mile of the project site. Construction and operation of the proposed project may expose these sensitive receptors to increased pollutant concentrations. This issue will be further analyzed in the EIR.

Some objectionable odors may be temporarily created during construction activities, which are expected to result mostly from diesel exhaust. These odors would not affect a substantial number of people and would only occur in localized areas during project construction. Impacts related to objectionable odors would be less than significant. No further study of this issue is required.

[4] SCAQMD. *CEQA Air Quality Handbook*. November 1993. p. 6.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
4. BIOLOGICAL RESOURCES. Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	X			
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	X			
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	X			
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X			
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Project implementation would result in direct and indirect impacts to biological resources in the project area. Several special status wildlife species have the potential to occur in the project vicinity including least Bell's vireo, southwestern flycatcher, Townsend's bat, and pallid bat.[5] Habitat types on the project site include riparian woodland/scrub, sage scrub, and chaparral. These habitat types may contain vegetation communities that are considered sensitive by the California Department of Fish and Game (CDFG). One Federal and State endangered plant species, slender-horned spineflower, has a moderate potential to occur in part of the project site.[6] Although most direct impacts would affect

[5] County of Los Angeles Department of Public Works. *Biological Evaluation for Sensitive Species Santa Anita Reservoir Sediment Removal Project.* Prepared by UltraSystems. July 18, 2006.

[6] County of Los Angeles Department of Public Works. *Biological Technical Report Santa Anita Reservoir Debris Basin.* Prepared by UltraSystems. July 15, 2006.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
upland habitats, some indirect or minor direct impacts to riparian woodland/scrub may occur along the access roads used for hauling sediments. Riparian woodland/scrub habitat in the project site may support special status species and may also be within the U.S. Army Corps of Engineers (ACOE) and/or CDFG jurisdiction associated with wetlands, waters of the U.S., or streambeds.[7] Biological surveys will be undertaken and a detailed biological resources technical report completed for the project in order to fully characterize the existing biological conditions of the project site and to evaluate the potential impacts associated with the Santa Anita Reservoir Sediment Removal project. The technical report will be included as an appendix to the EIR and the results of the biological resource surveys will be summarized and incorporated into the EIR. If necessary, mitigation measures will be provided in the EIR to address potential impacts to biological resources resulting from the project. The project site contains mature trees including oaks, which are protected by the City of Arcadia local ordinance. The project site is not within a County-designated Significant Ecological Area (SEA), habitat conservation plan, or natural community conservation plan. No further study of this issue is required.				
5. CULTURAL RESOURCES. Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	X			
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	X			
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d. Disturb any human remains, including those interred outside of formal cemeteries?			X	
The Santa Anita Dam and Santa Anita Canyon Road were constructed more than 50 years ago and are of historic age. The Santa Anita Canyon Road would be used to transport construction vehicles to the reservoir and the Santa Anita Dam would be modified to accommodate the new riser construction. Both of these resources will be evaluated in the EIR because they may qualify for listing as a historic resource. It should be noted, however, that the segment of the road that project vehicles will be using has already undergone extensive repair and restoration work by the U.S. Forest Service, the City of Arcadia, City of Sierra Madre, and Los Angeles County in the wake of the January 2005 storm, which was a federal- and State-declared disaster.				

[7] *Ibid.*

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
There are also recorded cultural resources in the project vicinity and field surveys determined that there is the potential to encounter buried resources during project construction. Accordingly, a records search, site survey, and cultural resources technical report will be prepared for the proposed project. The technical report will be included as an appendix to the EIR and the results of the site survey will be summarized and presented in the EIR. If necessary, mitigation measures will be provided in the technical report to address potential impacts to cultural resources resulting from the proposed project. Paleontological resources are remains of plants and animals, fossilized and predating human occupation. Paleontological resources are generally found in sedimentary rocks that have been uplifted, eroded or otherwise exposed. The San Gabriel Valley is composed of alluvial fan sediments that have a range of ages coincident with the rise of the San Gabriel Mountains. Because the fans were built up naturally with sediments shed from the mountains, their composition reflects the rocks eroded by various streams. Arcadia is underlain by old alluvium consisting of unconsolidated gravel, sand, silt and clay containing decomposed boulders of granitic rock from the mountains to the north and west that form the upland portions of the City. The upper alluvium is usually a loose to medium dense silty sand underlain by discontinuous beds of moderately dense sand and gravelly sand. As such, paleontological resources are not likely to occur at the project site. The impact to paleontological resources would be a less than significant. No further study of this issue is required. No known human remains are known to exist on the project site, and the project site is not designated nor has it been designated for use as a cemetery. As with any project, if human remains are discovered in the course of project construction, the County Coroner would be contacted and provisions of State CEQA Guidelines Section 15064.5 would be followed. Given the low potential for human remains on-site, impacts would be less than significant and no further study of this issue is required.				
6. GEOLOGY AND SOILS. Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?	X			
iii) Seismic-related ground failure, including liquefaction?	X			
iv) Landslides?	X			

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
b. Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill?	X			
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	X			
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

As with most of southern California, the project site is located in a seismically active region. The project site is not located within a fault rupture zone or within a currently established Alquist-Priolo Earthquake Fault Zone.[8] There are no active faults that traverse the project site; however, the Raymond fault is a designated Alquist-Priolo Earthquake Fault Zones that lies immediately south of the project site and several potentially active faults are located in the project vicinity: Verdugo, Hollywood, Whittier, and Elysian Park fault zones. Although the potential for surface rupture at the site is low, the site could be subject to strong ground shaking in the event of an earthquake. Although no habitable structures are proposed, the project would result in a new 5-acre landfill in the middle SPS area. The issue of exposing people and property to potential adverse effects from fault rupture and strong seismic ground shaking will be examined in the EIR.

According to the Los Angeles County Seismic Safety Element, the project site is located within an area identified by the California Division of Mines and Geology (CDMG) as having the potential for earthquake-induced landslides.[9,10] In addition, the project site is located within an area identified as having a potential for seismic slope instability.[11] There are no known landslide areas near the project site, nor is the project site in the path of any known potential landslides. The proposed project site is

[8] California Geological Survey. *Special Study Zones (Alquist-Priolo Map), Mt. Wilson Quadrangle*. January 1, 1977.

[9] County of Los Angeles. *County of Los Angeles General Plan Safety Element*. Adopted December 6, 1990.

[10] California Geological Survey. *Seismic Hazards Mapping Program, Mt Wilson Quadrangle*. March 25, 1999. website http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_mtwil.pdf, accessed February 1, 2007.

[11] Ibid

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*

surrounded by steep topography in some areas, including a hillside immediately east of the proposed 5-acre SPS. Both landslides and lurching could potentially occur in this area; therefore, this issue will be further analyzed in the EIR and appropriate mitigation measures will be provided if necessary.

The relatively flat nature of the proposed SPS fill area precludes it from being readily susceptible to erosion. However, construction of the proposed project would result in ground surface disruption during grading, clearing, and grubbing activities that could create the potential for erosion to occur. Erosion could also occur within the reservoir during excavation and sediment loading and along the sides of the sediment transport route. Since the proposed project site is greater than one acre, the construction contractor would prepare and comply with a Storm Water Pollution Prevention Plan (SWPPP), which would feature erosion control measures.[12] In addition, the construction contractor would comply with the Storm Water Construction Activities General Permit and obtain a National Pollution Discharge Elimination System (NPDES) permit.[13] Adherence to existing regulations and implementation of standard construction practices would address potential erosion effects during construction. Impacts related to excavation, transport, and placement of up to 500,000 cubic yards of material will be further evaluated in the EIR.

Liquefaction is the process in which sediments below the water table temporarily lose strength and behave as a liquid rather than a solid. Liquefaction generally occurs in sand and silts in areas with high groundwater levels. Due to the presence of loose alluvium materials deposited by the Santa Anita Wash and various creeks and streams, the project site falls within a liquefaction hazard zone.[14] The proposed SPS site is located in a liquefaction hazard zone; therefore, this issue will be further analyzed in the EIR.

Expansive soils are soils that swell when they absorb water and shrink as they dry. Pure clay soils and claystone are good examples of expansive soils. The hazard associated with expansive soils is that structural damage may occur when buildings are placed on these soils. Since no buildings or other habitable structures are proposed and the SPS would be required to comply with County design requirements and seismic safety standards, no impacts related to expensive soils are anticipated. No further study of this issue is required.

Land subsidence is the loss of surface elevation due to the removal of subsurface support. Subsidence is caused by activities that contribute to the loss of support materials within the underlying soils, such as agricultural practices or the overdraft of an aquifer. The proposed project would not include any construction activities that would remove subsurface support or draw down groundwater levels. In

[12] Clean Water Act. United States Code, Title 33, Sections 101-607. Amended November 27, 2002.

[13] EPA. *National Pollution Discharge Elimination System*. website http://cfpub2.epa.gov/npdes/stormwater/cgp.cfm, accessed February 6, 2007.

[14] California Geological Survey. *Seismic Hazards Mapping Program, Mt Wilson Quadrangle*. March 25, 1999. website http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_mtwil.pdf, accessed February 1, 2007.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
addition, no habitable structures are proposed. Thus, the impacts associated with subsidence would be less than significant. No further study of this issue is required. The proposed project does not include the construction of any buildings or septic system. No impacts associated with use of a septic system would occur. No further study of this issue is required.				
7. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Construction of the proposed project would not require extensive or on-going use of acutely hazardous materials or substances. Construction activities would be short-term and may occur over two years, and would involve the limited transport, storage, use, or disposal of hazardous materials. Some examples of hazardous materials handling include fueling and servicing construction equipment on-site, and the transport of fuels, lubricating fluids, and solvents. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials is regulated by the California Department of Toxic Substances Control (DTSC), U.S. Environmental Protection Agency (EPA), the Occupational Safety & Health Administration (OSHA), the Los Angeles County Fire Department, and the Los Angeles County Health Department. The proposed project mainly includes the conveyance and transport of sediment that currently exists on the project site. Adherence to the regulations set forth by County, state, and federal agencies would reduce the potential for hazardous materials impacts to a less than significant level and would not pose a safety hazard to sensitive receptors, including Highland Oaks Elementary School and the Foothill Middle School. No further study of this issue is required. The project site is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[15,16,17] The project site is open space and has not historically been used for industrial purposes. Accordingly, no impacts related to such sites would occur. No further study of this issue is required. The project site is not located within a two-mile radius of any public airport or private airstrip. The closest airport to the project site is the El Monte Airport, approximately 5 miles to south. As such, the proposed project would not result in an airplane safety hazard for people residing or working in the project area. No further study of this issue is required. The proposed project would not interfere with any current emergency response plans or emergency evacuation plans for local, state, or federal agencies. Access to all local roads would be maintained during construction. Equipment staging would occur off of public roads and no detours or road closures are anticipated. Sediment hauling would be limited to dirt access roads and fire roads, which would remain open during construction. Any emergency procedures required by County, state, and federal guidelines would be implemented during construction of the proposed project. No further study of this issue is required.				

[15] Department of Toxic Substances Control. *DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List)*. website http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm, accessed January 24, 2007.

[16] EPA. *CERCLIS Hazardous Waste Sites*. website http://www.epa.gov/superfund/sites/cursites/index.htm, accessed January 24, 2007.

[17] EPA. *National Priorities List*. website http://www.epa.gov/superfund/sites/npl/index.htm, accessed January 24, 2007.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
The project site is located in an open space area adjacent to the Angeles National Forest and the City of Monrovia open space. The potential for wildland fire is high due to the proximity of the open space and national forest that includes chaparral, brush, and trees that could be highly flammable during fire season. As described in the project description, wildfire avoidance measures will be coordinated with the U.S. Forest Service Fire Division and the City of Arcadia Fire Department prior to construction. Impacts related to wildland fires would be less than significant and no further analysis of this issue is required.				
8. HYDROLOGY AND WATER QUALITY. Would the project:				
a. Violate any water quality standards or waste discharge requirements?			X	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	X			
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?			X	
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f. Otherwise substantially degrade water quality?			X	
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				X

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j. Inundation by seiche, tsunami, or mudflow?			X	

The California Regional Water Quality Control Board (RWQCB) has developed a *Water Quality Control Plan, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura County* (Basin Plan) (1994) to protect the water quality of surface and ground waters of the region. The Basin Plan designated beneficial uses, sets narrative and numerical objectives to protect beneficial uses of water resources, and describes implementation programs. Beneficial uses are processes, habitats, organisms, or features that require water and are considered worthy of protection.

The San Gabriel River flows from the San Gabriel Mountains in the north through the San Gabriel Valley and into the Los Angeles Coastal Plain where it empties into the Los Angeles/Long Beach Harbor. Storm water runoff from the project site currently drains to the Santa Anita Wash.

During sediment excavation, hauling, and placement, adherence to all applicable water quality requirements would be required. Because construction activities would disturb greater than one acre of land, the project would be required to comply with the RWQCBs NPDES storm water requirements. Implementation of these requirements, including preparation of a SWPPP, would address potential water quality impacts during construction; however, further analysis will be undertaken in the EIR to determine if additional mitigation measures are needed to reduce impacts to a less than significant level. Operation of the proposed project would not violate any water quality standards or waste discharge requirements, or exceed the capacity of the storm drain system because no operational activities are anticipated Long-term impacts would be less than significant.

The proposed project includes the removal of sediment from the reservoir and conveyance to the SPS. Preparation of the access road for the proposed project would require the removal of vegetation at some stream crossings and some bank stabilization along the eastern edge of Santa Anita Wash. As discussed above, impacts related to erosion will be further evaluated in the EIR. Due to the amount of sediment removal that is required and the potential impacts to biological resources, an individual 404 Permit may be required for this project from the U.S. Army Corps of Engineers. In addition, a Streambed Alteration Agreement from CDFG may be required. These requirements will be discussed further in the EIR.

The proposed project would not increase the impervious surface area on the project site and would not require the use of any groundwater supplies, nor would it significantly increase polluted runoff originating from the project site. During the riser modification process, dry-season flows would be diverted through the tunnel, which would temporarily bypass a 0.5-mile stretch of Santa Anita Wash

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
immediately downstream of the dam. This reach is already often subject to prolonged dry periods. The effects of this diversion and other short-term hydrological changes will be evaluated in the EIR. The proposed project does not include construction of any housing or other structures a FEMA 100-year flood hazard area. No flood-related impact will result; therefore, no further analysis of this issue is required. Due to the distance of the project site to the Pacific Ocean (approximately 30 miles west of the project site) and the numerous structures between the project site and the ocean, there is virtually no risk of on-site hazard due to tsunamis (seismically-induced waves). The Santa Anita Reservoir has the potential to seiche; however, during the construction period, water will be drawn down to remove the sediment, eliminating the potential for seiche during sediment excavation. Mudflows could occur during construction of the project due to the topography the surrounding the project site. However, the reservoir and debris basin would continue to provide debris and mudflow protection downstream. Impacts from inundation of a tsunami, seiche, or mudflow would be less than significant. No further study of this issue is required.				
9. LAND USE AND PLANNING. Would the project:				
a. Physically divide an established community?				X
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
The proposed project would occur within the Angeles National Forest, the Arcadia Wilderness Park, and other City of Arcadia land. There are no residential uses within the project site and no roadways would be closed as a result of the project. No long-term activities would occur as a result of the project and no homes would be removed. Accordingly, no communities would be physically divided by the proposed project. No further study of this issue is required. The project site is designated as Public Facilities & Grounds in the City of Arcadia General Plan. The proposed sediment removal and placement in the SPS would be consistent with the adopted use in the General Plan and with the current use of the reservoir, tunnel, access roads, and sediment placement site. Therefore, the project would not conflict with the applicable land use plan. No further study of this issue is required.				

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
As discussed in Section 4, Biological Resources, the project site is not located within a County SEA, habitat conservation plan, or natural community conservation plan. No further evaluation of this issue is required in the EIR.				
10. MINERAL RESOURCES. Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
There are no known mineral deposits of economic importance underlying the project site.[18] As stated in the Arcadia General Plan, the only area in the City of Arcadia available for mining activity is the Livingston-Graham sand and gravel extraction site. This site is located in the southerly portion of Arcadia, which is located north of Clark Street.[19] While the California Department of Mines and Geology has designated the project area as an area for significant mineral resources, the flood control wash, the spreading basin, and other areas managed by Public Works are required for flood control purposes, and are not available for mineral extraction. Sediment from the reservoir would be excavated and transported to a placement site less than two miles to the south. Construction activities during the proposed project would not result in the loss of availability of any known mineral resource. No further evaluation of this issue is required in the EIR.				
11. NOISE. Would the project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	X			
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	X			
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X

[18] County of Los Angeles Department of Regional Planning. *County of Los Angeles General Plan Special Management Areas Map*. website http://planning.co.la.ca.us/doc/gp/gpMaps/08pdf_special_areas.pdf, accessed January 22, 2007.

[19] City of Arcadia. *Arcadia General Plan, Environmental Resources Element.* Adopted September 3, 1996.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	X			
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Construction of the proposed project would generate high noise levels on and adjacent to the project site. Excavation activities within the reservoir would not be expected to affect sensitive receptors, given the isolated nature of the site. Sediment hauling activities, however, would potentially disturb nearby sensitive receptors, including nearby residences to the west and south of the project site, the Highland Oaks Elementary School (10 Virginia Drive), and Foothill Middle School (171 East Sycamore Avenue). Construction activities would occur during the summer and fall of both 2008 and 2009. Construction noise would be a short-term adverse effect of the project and mitigation measures may be required to reduce these impacts to a less than significant level. Noise levels in the vicinity of the project site would not increase permanently after the proposed project is complete because no new sources of noise would occur after the construction period. Noise impacts generated by the construction of the proposed project and their effects on adjacent sensitive receptors will be further evaluated in the EIR. Noise measurements will be undertaken to accurately quantify the potential change in ambient noise levels as a result of the proposed project.

There are no public airports or private airstrips in the project vicinity. The closest airport to the project site is the El Monte Airport, approximately 5 miles to south. Accordingly, the proposed project would not expose people residing or working in the project area to aircraft noise. No further evaluation of this issue is required in the EIR.

12. POPULATION AND HOUSING. Would the project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

The proposed project site is currently used by Public Works for flood control and water conservation. There is no residential development on the project site that would be impacted by the proposed project. No housing units or persons would be displaced as a result of the proposed project, nor would the project necessitate the construction of housing elsewhere. Some short-term construction related jobs would be created by the project; however, these jobs would be filled by existing workers in the region. The project would not be expected to increase the demand for new housing or otherwise increase the local population. No further evaluation of this issue is required in the EIR.

13. PUBLIC SERVICES.				
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?				X
ii) Police protection?				X
iii) Schools?				X
iv) Parks?				X
v) Other public facilities?				X

Fire protection for the project area is currently provided by the Arcadia Fire Department and the U.S. Forest Service. The Arcadia Fire Station that would respond to calls in the area of the project site Station 107, located at 79 West Orange Grove Avenue. Police protection for the project site is currently provided by the Arcadia Police Department located at 250 West Huntington Drive. The project is not expected to increase the need for police protection services, since construction activities would not change existing land uses or increase the number of service calls. Construction activities may temporarily increase the need for fire protection services, however, measures will be taken as part of the proposed project to reduce the potential for accidental fire during construction. The impacts to fire and police protection services would be less than significant.

No impacts to schools and other public facilities are anticipated to result from project implementation.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
No changes in existing land uses would occur and the demand for public services would not be affected by the proposed project. No further study of this issue is required. Please refer to Section 14, Recreation, for a discussion of the project's effects on nearby parks. No changes in existing land uses would occur and the demand for public services would not be affected by the proposed project. No further study of this issue is required.				
14. RECREATION.				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	X			
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X
c. Would the project affect existing recreational opportunities?	X			
The roads and trails of the Angeles National Forest and Wilderness Park would remain operational during the construction period and after the proposed project is complete. During sediment transport activities, users of Arcadia Wilderness Park would be affected by truck traffic, noise, and air pollutant emissions. Some areas of the park may be closed during the sediment hauling phase, which would limit existing recreational opportunities. No long-term impacts are anticipated; however, short-term impacts would occur, which will be evaluated further in the EIR.				
15. TRANSPORTATION/TRAFFIC. Would the project:				
a. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	X			
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	X			
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e. Result in inadequate emergency access?			X	
f. Result in inadequate parking capacity?	X			
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X

Construction workers would access the site on a daily basis during the various stages of project construction. The excavation and hauling equipment would be stored on-site in dedicated staging areas, reducing the number of daily construction-related trips on the local roadway network. The EIR will evaluate the affects of project-related traffic on the local streets and, if necessary, mitigation measures will be provided to reduce traffic impacts.

The proposed project would not result in a change in air traffic patterns or result in any air safety risks; no impacts to air safety would occur. Construction of the proposed project would not generate a substantial number of new jobs, construct housing, or otherwise induce substantial population growth in the surrounding area that would increase air traffic. The proposed project does not propose any buildings that would require re-routing air traffic. The proposed project is not anticipated to result in inadequate emergency access. No street closures are proposed as part of the project. As part of the project, Public Works would coordinate with the City of Arcadia Fire Department and the U.S. Forest Service Fire Division to ensure emergency access is available to the project site and nearby residences at all times.

The proposed project does not include the construction of additional parking areas for the short-term construction project. Construction workers would park in the designated staging areas by the reservoir and the upper SPS. Some parking areas may temporarily be removed in Arcadia Wilderness Park, resulting in parking impacts to recreational uses. This issue will be further evaluated in the EIR.

The proposed project would not impact the circulation, roadway, or community transit in the project vicinity. Therefore, the project would not conflict with adopted policies, plans, or programs supporting alternative transportation.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
16. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g. Comply with federal, state, and local statutes and regulations related to solid waste?			X	

The proposed project only involves short-term construction related to the sediment removal and conveyance. The project would not involve any short- or long-term change to the current wastewater, stormwater drainage, or water supply. The impact on utilities and service systems would be less than significant.

Construction of the proposed project would not result in the generation of a substantial amount of solid waste. Solid waste would be limited to the riser modification component and any construction necessary for the tiered design of the proposed SPS. Solid waste could include material such as scrap lumber, concrete, other residual wastes, and garbage from the construction workers. Disposal and recycling of the construction debris would be required to comply with all federal, state and local regulations, and no impacts would occur. Compliance with existing regulations would ensure a less than significant impact to area landfills.

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
17. MANDATORY FINDINGS OF SIGNIFICANCE.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	X			
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	X			
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	X			

The proposed project has the potential to degrade the quality of the environment through the reduction of natural habitat. In addition, the proposed project has the potential to reduce habitat of wildlife species and uncover buried archaeological resources. As discussed above, some sensitive species have the potential to occur in the project area that could be affected by project construction activities. These issues would be further analyzed in the EIR.

The proposed project has the potential to result in significant cumulative impacts. It is anticipated that the project may occur at the same time as other projects in the area, and the incremental effect of this project may be cumulatively considerable. This issue will be further examined in the EIR.

The proposed project has the potential to result in substantial adverse effects on human beings, either directly or indirectly. Specifically construction activities would generate traffic, noise, and air pollutants that would directly and indirectly affect nearby residents and recreational users. Further analysis will be provided in the EIR to determine potentially significant impacts and identify mitigation measure that would reduce impacts to the extent feasible.

Santa Anita Reservoir Sediment Removal
Scoping Meeting Comments
July 11, 2007

A public meeting was held at the 1st Avenue Middle School in Arcadia on July 11, 2007 to discuss the Santa Anita Reservoir Sediment Removal project. Approximately 7 people attended the meeting to receive information about the project description, potential impacts, alternatives, and about the CEQA process. Attendees provided spoken comments and questions regarding their concerns for the proposed project and for the EIR.

GENERAL COMMENTS

- The CEQA process inadequate for this project.

  One more public hearing is needed.

- Notice all houses on Project Description Figure; especially Highland Oaks Drive.
- What is the timetable for EIR process?
- Does Arcadia have any sanction power over project?
- What is the guarantee of maintenance of the SPS after the project is complete?
- Why is there no landscape maintenance on existing SPS?
- Preserve the beauty of middle SPS. It is one of the last areas of natural beauty in the flood control area.

PROJECT DESCRIPTION COMMENTS

- How much sediment will be removed from the reservoir?
- What is in the sediment – any contamination?
- How often does sediment removal occur?
- Expand purpose and need of project.
- What are the worst case, most likely scenario, and probabilities of a:

  100 Year Flood?

  50 Year Flood?

  20 Year Flood?
- What is the lowest elevation of the sediment and existing riser?
- How many truck trips per day?
- What is the capacity per truck?

- Will trash be buried in SPS?
- What is reservoir capacity now and after project?
- What will happen to SPS after project?
    1. Re-vegetation?
    2. Future Uses?
- What will be days and hours of construction? Will construction occur on the weekends?

ENVIRONMENTAL IMPACT COMMENTS

- How will dust be controlled?
- How will drainage on east side of proposed SPS be affected?
- What is worst case scenario if nothing is done?
- What will most likely occur if the project does not occur?
- Any impacts on air/water from exposed SPS?
- How safe is reservoir now; and after the project?
    1. Seismic
    2. Factor of safety
    3. Static

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

June 21, 2007

To: Reviewing Agencies

Re: Santa Anita Sediment Removal Project
SCH# 2007061093

Attached for your review and comment is the Notice of Preparation (NOP) for the Santa Anita Sediment Removal Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Belinda Kwan
Los Angeles County Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91802-1460

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2007061093
Project Title Santa Anita Sediment Removal Project
Lead Agency Los Angeles County Department of Public Works

Type NOP Notice of Preparation

Description The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in an existing sediment placement site. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south. The proposed project also includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. Sediment removal activities are anticipated to occur over two years from April through December of 2009 and 2010 (weather permitting). The removal of native vegetation in the sediment placement site is anticipated to occur during after September 2008 and prior to March 2009. The riser construction would likely occur from May to December 2009. Dewatering of the reservoir would occur before the riser construction and would last for approximately two weeks. The dry-out of the reservoir would start at the end of the dewatering cycle, which is anticipated to last up to three weeks, depending on the magnitude of recession flows and the weather.

Lead Agency Contact

Name Belinda Kwan
Agency Los Angeles County Department of Public Works
Phone (626) 458-6135 **Fax**
email
Address 900 S. Fremont Avenue
City Alhambra **State** CA **Zip** 91802-1460

Project Location

County Los Angeles
City Arcadia
Region
Cross Streets Santa Anita Reservoir, Santa Anita Dam
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways I-210
Airports
Railways
Waterways Santa Anita Wash, Santa Anita Dam, Santa Anita Reservoir
Schools Highland Oaks Park
Land Use Public facilities
Z: RM (Residential Mountainous)
GP: Public Facilities and Grounds

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Landuse; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 4; Department of Parks and Recreation; Native American Heritage Commission; Office of Historic Preservation; Reclamation Board; Department of Fish and Game, Region 5; Department of Water Resources; California Highway Patrol; Caltrans, District 7; State Water Resources Control Board, Division of Water Rights; State

Note: Blanks in data fields result from insufficient information provided by lead agency.

Document Details Report
State Clearinghouse Data Base

Lands Commission; San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy; Department of Conservation

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Date Received 06/21/2007 ***Start of Review*** 06/21/2007 ***End of Review*** 07/20/2007

Note: Blanks in data fields result from insufficient information provided by lead agency.

IOP Distribution List

County: LOS ANGELES SCH# [illegible]

esources Agency

- [ ] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  David Johnson
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [ ] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Dept. of Conservation**
  Sharon Howell
- [ ] **California Energy Commission**
  Paul Richins
- [ ] **Dept. of Forestry & Fire Protection**
  Allen Robertson
- [ ] **Office of Historic Preservation**
  Wayne Donaldson
- [ ] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **Reclamation Board**
  DeeDee Jones
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [ ] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- [ ] _____
  Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Game Region 1**
  Donald Koch
- [ ] **Fish & Game Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Game Region 2**
  Banky Curtis
- [ ] **Fish & Game Region 3**
  Robert Floerke
- [ ] **Fish & Game Region 4**
  Julie Vance
- [ ] **Fish & Game Region 5**
  Don Chadwick
  Habitat Conservation Program
- [ ] **Fish & Game Region 6**
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M**
  Gabrina Getchel
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Robert Sleppy
  Environmental Services Section
- [ ] **Dept. of Health Services**
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Debby Eddy
- [ ] **Office of Emergency Services**
  Dennis Castrillo
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse
- [ ] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Ken Lewis
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [ ] **California Highway Patrol**
  Shirley Kelly
  Office of Special Projects
- [ ] **Housing & Community Development**
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Jeff Pulverman
- [ ] **Caltrans, District 4**
  Tim Sable
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Marc Birnbaum
- [ ] **Caltrans, District 7**
  Cheryl J. Powell
- [ ] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Mario Orso
- [ ] **Caltrans, District 12**
  Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
- [ ] Transportation Projects
  Ravi Ramalingam
- [ ] Industrial Projects
  Mike Tollstrup

- [ ] **California Integrated Waste Management Board**
  Sue O'Leary
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Steven Herrera
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [x] **Other** San Gabriel & Lower LA. Rivers and Mtn. Conservancy

Last Updated on 05/16/07

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

June 27, 2007

Belinda Kwan
Water Resources Division
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91802

Dear Ms. Kwan:

Initial Study for Preparation of an Environmental Impact Report
Santa Anita Reservoir Sediment Removal

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft environmental impact report (EIR). Please send the SCAQMD a copy of the Draft EIR upon its completion. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality analysis and electronic versions of all air quality modeling and health risk assessment files. Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis
The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. Alternatively, the lead agency may wish to consider using the California Air Resources Board (CARB) approved URBEMIS 2002 Model. This model is available on the SCAQMD Website at: www.aqmd.gov/ceqa/models.html.

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

The SCAQMD has developed a methodology for calculating PM2.5 emissions from construction and operational activities and processes. In connection with developing PM2.5 calculation methodologies, the SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD requests that the lead agency quantify PM2.5 emissions and compare the results to the recommended PM2.5 significance thresholds. Guidance for

calculating PM2.5 emissions and PM2.5 significance thresholds can be found at the following internet address: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

In addition to analyzing regional air quality impacts the SCAQMD recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized significance analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

It is recommended that lead agencies for projects generating or attracting vehicular trips, especially heavy-duty diesel-fueled vehicles, perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis") can be found on the SCAQMD's CEQA web pages at the following internet address: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the SCAQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additional mitigation measures can be found on the SCAQMD's CEQA web pages at the following internet address: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html Additionally, SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html. In addition, guidance on sitting incompatible land uses can be found in the California Air Resources Board's Air Quality and Land Use Handbook: A Community Perspective, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's World Wide Web Homepage (http://www.aqmd.gov).

The SCAQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Charles Blankson, Ph.D., Air Quality Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:LI
LAC070621-01AK
Control Number

STATE OF CALIFORNIA — Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
www.nahc.ca.gov
ds_nahc@pacbell.net

JUL 10
900 S. FREMONT AVE.

July 6, 2007

Ms. Belinda Kwan, Project Manager
Los Angeles Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91802-1460

Re: SCH# 2007061093; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for Santa Anita Reservoir Sediment Removal Project; Los Angeles County Department of Public Works; Los Angeles, California

Dear Ms. Kwan:

Thank you for the opportunity to comment on the above-referenced document. The California Environmental Quality Act (CEQA) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR per CEQA guidelines § 15064.5(b)(c). In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE),' and if so, to mitigate that effect. To adequately assess the project-related impacts on historical resources, the Commission recommends the following action:

√ Contact the appropriate California Historic Resources Information Center (CHRIS). Contact information for the 'Information Center' nearest you is available from the State Office of Historic Preservation in Sacramento (916/653-7278). The record search will determine:

- If a part or the entire (APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded in or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

√ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.

- The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

√ Contact the Native American Heritage Commission (NAHC) for:

* A Sacred Lands File (SLF) search of the project area and information on tribal contacts in the project vicinity who may have information on cultural resources in or near the APE. Please provide us site identification as follows: USGS 7.5-minute quadrangle citation with name, township, range and section. This will assist us with the SLF.

- Also, we recommend that you contact the Native American contacts on the attached list to get their input on the effect of potential project (e.g. APE) impact.

√ Lack of surface evidence of archeological resources does not preclude their subsurface existence.

- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.

√ Lead agencies should include provisions for discovery of Native American human remains or unmarked cemeteries in their mitigation plans.

* CEQA Guidelines, Section 15064.5(d) requires the lead agency to work with the Native Americans identified by this Commission if the initial Study identifies the presence or likely presence of Native American human remains within the APE. CEQA Guidelines provide for agreements with Native American, identified by the NAHC, to assure the appropriate and dignified treatment of Native American human remains and any associated grave liens.

√ Health and Safety Code §7050.5, Public Resources Code §5097.98 and Sec. §15064.5 (d) of the CEQA Guidelines mandate procedures to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

√ Lead agencies should consider avoidance, as defined in § 15370 of the CEQA Guidelines, when significant cultural resources are discovered during the course of project planning.

Please feel free to contact me at (916) 653-6251 if you have any questions.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: List of Native American Contacts

Native American Contacts
Los Angeles County
July 6, 2007

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th Street, Rm. 403
Los Angeles , CA 90020
(213) 351-5324
(213) 386-3995 FAX

Gabrielino/Tongva Council / Gabrielino Tongva Nation
Sam Dunlap, Tribal Secretary
761 Terminal Street; Bldg 1, 2nd floor Gabrielino Tongva
Los Angeles , CA 90021
office @tongvatribe.net
(213) 489-5001 - Officer
(909) 262-9351 - cell
(213) 489-5002 Fax

Ti'At Society
Cindi Alvitre
6602 Zelzah Avenue Gabrielino
Reseda , CA 91335
calvitre@yahoo.com
(714) 504-2468 Cell

Gabrielino Band of Mission Indians of CA
Ms. Susan Frank
PO Box 3021 Gabrielino
Beaumont , CA 92223
(951) 897-2536 Phone/Fax

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Adminstrator
4712 Admiralty Way, Suite 172 Gabrielino Tongva
Marina Del Rey , CA 90292
310-570-6567

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Tribal Chair/Cultural Resources
5450 Slauson, Ave, Suite 151 PMB Gabrielino Tongva
Culver City , CA 90230
gtongva@verizon.net
562-761-6417 - voice
562-920-9449 - fax

Gabrieleno/Tongva Tribal Council
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
ChiefRBwife@aol.com
(626) 286-1632
(626) 286-1758 - Home
(626) 286-1262 Fax

Gabrielino Tongva Indians of California Tribal Council
Mercedes Dorame, Tribal Administrator
20990 Las Flores Mesa Drive Gabrielino Tongva
Malibu , CA 90265
Pluto05@hotmail.com

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

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

This list is only applicable for contacting local Native American with regard to cultural resources for the proposed SCH#2007061093; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for Santa Anita Reservoir Sediment Removal Project; Los angeles County Department of Public Works; Los Angeles County.

City of Arcadia

Office of the City Manager

William R. Kelly
City Manager

July 10, 2007

County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, CA 91802-1460

Attn: Ms. Belinda Kwan, Project Manager

SUBJECT: COMMENTS ON THE NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE SANTA ANITA RESERVOIR SEDIMENT REMOVAL PROJECT

Thank you for providing the City of Arcadia the opportunity to comment on a Notice of Preparation for an Environmental Impact Report for the Los Angeles County Santa Anita Reservoir Sediment Removal Project. This project will occur in and around the jurisdiction of the City of Arcadia so we are interested in minimizing the project's impact on City residents. The following issues should be carefully and completely analyzed in the Environmental Impact Report.

1. Impacts to visitors and programs during working hours at Wilderness Park due to closures or periods of limited access.

2. Safety concerns to visitors and special groups with regard to truck traffic and project operations in the parking lot at Wilderness Park.

3. Dust control concerns at Wilderness Park and along Highland Oaks Drive and adjacent neighborhoods for the length of the truck route and conveyor system.

4. Noise concerns at Wilderness Park and along Highland Oaks Drive and adjacent neighborhoods.

5. Impacts from Oak Tree and plant removal at middle SPS. Limiting the removal of mature Oak trees is desirable.

6. Impacts to the parking lot surface at Wilderness Park.

240 West Huntington Drive
Post Office Box 60021
Arcadia, CA 91066-6021
(626) 574-5401
(626) 446-5729 Fax

7. Impacts to water conservation for the East Raymond Groundwater Basin during the project period.

8. The NOP states activity will occur between April and December. It would appear that's to avoid the winter rain season. Is the activity only permitted during dry conditions and will it be suspended during rain? If not, the impacts of wet weather should be addressed.

9. Location and Impacts of staging areas, equipment storage and repair, and access.

10. Evaluation of traffic control measures for public access crossings.

Thank you for your attention to these concerns. We look forward to reviewing the Environmental Impact Report and the analysis of these issues. If you have any questions on these issues, please contact Tom Tait, Deputy Public Works Director, at 626-305-1386

Sincerely,

William R. Kelly
City Manager

CC: Don Penman, Assistant City Manager/Development Services Director
Pat Malloy, Public Works Services Director
Phil Wray, City Engineer
Jason Kruckeberg, Community Development Administrator
Tom Tait, Deputy Public Works Services Director

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Main Office

818 West Seventh Street

12th Floor

Los Angeles, California

90017-3435

t (213) 236-1800

f (213) 236-1825

www.scag.ca.gov

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Orange County: Chris Norby, Orange County • Christine Barnes, La Palma • John Beauman, Brea • Lou Bone, Tustin • Debbie Cook, Huntington Beach • Leslie Daigle, Newport Beach • Richard Dixon, Lake Forest • Troy Edgar, Los Alamitos • Paul Glaab, Laguna Niguel • Robert Hernandez, Anaheim • Sharon Quirk, Fullerton

Riverside County: Jeff Stone, Riverside County • Thomas Buckley, Lake Elsinore • Bonnie Flickinger, Moreno Valley • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula

San Bernardino County: Gary Ovitt, San Bernardino County • Lawrence Dale, Barstow • Paul Eaton, Montclair • Lee Ann Garcia, Grand Terrace • Tim Jasper, Town of Apple Valley • Larry McCallon, Highland • Deborah Robertson, Rialto • Alan Wapner, Ontario

Tribal Government Representative: Andrew Masiel Sr., Pechanga Band of Luiseño Indians

Ventura County: Linda Parks, Ventura County • Glen Becerra, Simi Valley • Carl Morehouse, San Buenaventura • Toni Young, Port Hueneme

Orange County Transportation Authority: Art Brown, Buena Park

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Keith Millhouse, Moorpark

6.21.07

July 12, 2007

Ms. Belinda Kwan
Los Angeles County Department of Public Works
Water Resources Division
900 S. Fremont Avenue
Alhambra, CA 91802

RE: SCAG Clearinghouse No. I 20070385 Santa Anita Reservoir Sediment Removal

Dear Ms. Kwan:

Thank you for submitting the **Santa Anita Reservoir Sediment Removal** for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Santa Anita Reservoir Sediment Removal**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's **June 16-30, 2007** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1856. Thank you.

Sincerely,

Lawrence Jones for

SHERYLL DEL ROSARIO
Associate Planner
Intergovernmental Review

Doc #137844

COUNTY OF LOS ANGELES

DEPARTMENT OF PARKS AND RECREATION

"Creating Community Through People, Parks and Programs"

Russ Guiney, Director

July 19, 2007

Belinda Kwan
Water Resources Division
Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91802

Dear Ms. Kwan:

SANTA ANITA RESERVOIR SEDIMENT REMOVAL – INITIAL STUDY

The Initial Study for the Santa Anita Reservoir Sediment Removal Project has been reviewed for potential impact on the facilities of this Department. The project may impact facilities under the jurisdiction of this Department (County Trail #7-Santa Anita Wash Extension Trail). If impacts are to occur, a temporary detour for the trail will need to be provided, with path and scheduling to be approved by the County. For trail inquiries, please contact Ms. Sylvia Simpson, Trails Coordinator, at 213 351-5137

Thank you for including our Department in the review of this environmental document. If we may be of further assistance, please contact me at (213) 351-5133.

Sincerely,

Bryan Moscardini
Departmental Facility Planner I

BM(c:response-DPW-Santa Anita Reservoir)

C: Patrick Reynolds, DPR
Sylvia Simpson, DPR

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

JUL 25 2007

Ms. Belinda Kwan
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, California 91802-1460

SCH #2007061093, Notice of Preparation (NOP) of Draft Environmental Impact Report (EIR) for Santa Anita Reservoir Sediment Removal Project, June 21, 2007
Los Angeles County

Dear Ms Kwan:

The Division of Safety of Dams has reviewed the project description of the proposed Santa Anita Reservoir Sediment Removal Project, and finds that Santa Anita Debris Basin, Dam No. 32-29, is currently under State jurisdiction for safety.

Based on the information provided, we find that the proposed project will include the draining of Santa Anita Reservoir, removal of sediment and debris from the reservoir, modification of the dam's inlet/outlet works, and construction of a new riser.

An application, together with plans and specifications, must be filed with the Division of Safety of Dams for the proposed alteration of Santa Anita Debris Basin. All dam safety issues must be resolved prior to approval of the application, and the work must be performed under the direction of a civil engineer registered in California.
John Vrymoed, Design Engineering Branch Chief, is responsible for the application approval process and can be reached at (916) 227-4660.

If you have any questions or need additional information, you may contact Office Engineer Chuck Wong at (916) 227-4601 or Regional Engineer Mutaz Mihyar at (916) 227-4600.

Sincerely,

M. Zumot

Mike Zumot, Acting Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section, DPLA
901 P Street
Sacramento, California 95814

Mr. Scott Morgan, Project Analysts
Governor's Office of Planning
and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044

WRD
605

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(323) 890-4330

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

July 30, 2007

Belinda Kwan
Department Of Public Works
900 South Fremont Avenue
Alhambra, CA 91802

Dear Ms. Kwan:

INITIAL STUDY, SANTA ANITA RESERVOIR SEDIMENT REMOVAL (CITY OF ARCADIA), FFER 200700164

The Initial Study has been reviewed by the Planning Division, Land Development Unit, and Forestry Division of the County of Los Angeles Fire Department. The following are their comments:

LAND DEVELOPMENT UNIT:

1. This project does not propose construction of structures or any other improvements at this time and will not have a significant impact to the Fire Department, Land Development Unit.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

1. The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance.

2. The areas germane to the statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division have been addressed.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

JOHN R. TODD, CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

JRT:ac

FROM: RALPH L BICKER
CHAIRMAN—HIGHLANDS HOMEOWNERS ASSN.
ARCHITECTURAL REVIEW BOARD
101White Oak Dr. Arcadia, CA 91006
Phone (626) 355-1773 -- e-mail engineeralph@verizon.net
July 12, *2007*

SUBJECT: Comments regarding the July 11, 2007 "Scoping Meeting" for the Environmental Impact Report relative to the Santa Anita Reservoir Sediment Removal Project in Arcadia, CA.

Last evening I attended the above scoping meeting for the subject project and made several comments which I understand you plan to address in the **"Draft EIR."** I am a member of the Board of Directors of the Highlands Home Owners Association (HOA), as well as Chairman of its Architectural Review Board (ARB). The HOA represents the owners of approximately 850 upper middle class homes within the area bounded in general by Foothill Blvd. on the south, Santa Anita Ave. on the west, the Arcadia/ Monrovia City boundary on the east and the Arcadia City/ National Forest boundary on the north. I have held both of the above volunteer positions for most all of the past 20 years. Because of the very short time lapse between the date anyone in our area (including myself) received your notice, and the date of the scoping meeting we were not able to meet as a Board to get word out to our members or meet as a board to consider and/or formulate a position on the proposal. At the scoping meeting your consultants and staff reported that notice of the meeting had been sent to all residents within 300 feet of the proposed project, including residents along the public streets which may be used as possible haul routes for off site disposal of the excavated materials, i.e. Elkins Ave. and Santa Anita Ave etc. In talking to a number of the residents that should have received the notices it became apparent to me that many of them either did not receive the notice or if they did they did not understand the significance of the meeting or how the project might impact them.

Therefore, my comments at the meeting as well as those contained herein are strictly my own and not an official position of our Highlands HOA. However, I believe that my professional background as a staff Engineer in the Pasadena City Engineers Office from 1949 until retirement in December 1986 (over 37 ½ yrs.) most of the time supervising design and construction of major street, flood control, storm drain and sanitary sewer projects, as well as subdivision development qualifies me to speak with adequate background and the support of most of our area homeowners.

*First I **would not** **question** the necessity or advisability of removing the sediment and any debris from upstream of the dam to restore its capacity and ensure its structural integrity. I believe that is proper and necessary.

*I would however question whether **adequate notice** was given to **all** the homeowners within the required 300 feet of all of the proposed haul routes? My contacts with several of them would indicate otherwise.

*Between 300,000 and 500,000 cubic yards of sediment is proposed to be removed from the upstream side of the dam. I am sure that some of the residents on Highland Oaks Dr. (particularly those on the east side of that street) might disagree with my conclusion that your proposal to move the excavated material to the "Sediment Placement Sites" shown on your plan, just east of the drainage channel is the best possible solution. However, after considering the negative impacts of the other alternative solutions, such as hauling the material out of the area, over the public streets, (Elkins Ave. and down Santa Anita Ave)., past the Highland Oaks Elementary School, to Irwindale or some other distant location), I would have to agree that the best, most logical and cost effective one is the one you indicated you plan to recommend.

*If the sediment material is moved to the proposed placement sites, there would have to be adequate controls on hours and days of work as well as dust and noise controls to protect the residents along that haul route. Also after the fills are completed and in place, all surfaces both the flat tops, and particularly the west facing slopes should be properly landscaped with adequate provision to maintain the landscaping. * It would seem that rather than using trucks to haul the material between the conveyor in Wilderness Park and the Placement Sites, a conveyor belt system extending all the way down to the Placement Sites might well be the least objectionable and possibly even the most cost effective way to move the material.

*No mention has been made as to the size of the trucks that will be used to haul the material to the placement sites, or the length of time (weeks, months or years) that the process will take. Will the trucks carry 5, 10, 15, 20 or more cu. yds. of material per load? How many loads per hour, day or week, full headed south and empty headed north should be expected? -- i.e. To move up to 500,000 cubic yards of material by truck, if each truck carried 10 cu. yds. per load, it would mean 50,000 empty truck trips up to the lower end of the conveyor in Wilderness Park and another 50,000 loaded truck trips down to the Placement Site or to any other disposal location. If the trucks worked 5 days a week for 6-months, that would translate into approximately 400 empty trucks each day up to the conveyor and another 400 loaded trucks down to the placement site, or out to any other disposal location. Or about 200 empty trucks in and 200 loaded trucks a day out to complete the work in 12 months. Either of these options over 6-months or a year over Public streets and past or within a couple of blocks of 2 public schools should be totally out of the question.

In conversations with several of our HOA Board of Directors over the past few days they have all said they would like to be included on your distribution list to receive mailed notices of future Public Hearings and/or progress reports on this proposed project. I am including herewith a list of names, addresses and telephone numbers of all of our Board Members and ARB members for your use. If I can be of any further assistance to you please feel free to contact me.

Ralph L Bicker 

xc: City of Arcadia, Phil Consiglio, Jeff Bowen
R-10

HIGHLANDS HOME OWNERS' ASSOCIATION

POST OFFICE BOX 660842, ARCADIA, CA 91066

2007

Officers, Directors, & Architectural Review Board Members

Board of Directors:

Phillip Consiglio, *President*	**2215 Canyon Road**	**626/ 836/ 2011**
Jack Lamp, *Vice President*	**182 White Oak Drive**	**626/ 355/ 7807**
John Bigley, *Secretary*	**56 Ontare Road**	**626/ 447/ 0744**
June Altmayer, *Treasurer*	**1830 Highland Oaks Drive**	**626/ 355/ 7622**
Ralph Bicker, *Chairman,* Architectural Review Board	**101 White Oak Drive**	**626/ 355/ 1773**
Howard "Buzz" Spellman *Director*, Wilderness Park Chrm.	**1236 Oakglen**	**626/ 357/ 7972**
James McKellar *Director*, Special Projects Chrm.	**2000 Oaks Place**	**626/ 355/ 7990**
Larry Vanni *Director*, Legal Advisor	**1828 Alta Oaks Drive**	**626/ 355/ 9785**
Jeff Bowen *Past President*	**1919 Wilson Avenue**	**626/ 446/ 1437**
Jeff Cowan, *Director*	**2030 Canyon Road**	**626/ 355/ 2854**
Gene Glasco, *Director*	**9 Yorkshire Drive**	**626/ 446/ 3924**
Don Heins, *Director*	**173 White Oak Drive**	**626/ 355/ 3262**
Kay Kinsler, *Director*	**144 White Oak Drive**	**626/ 355/ 4834**
Jim Thomas, *Director*	**1637 Elevado Avenue**	**626/ 574/ 8508**
David Tuch, *Director*	**2020 Highland Oaks Place**	**626/ 355/ 6814**

ARCHITECTURAL REVIEW BOARD (ARB):

Ralph Bicker, Chairman		
Jeff Bowen, member		
Guy Thomas, member	***115 White Oak Drive***	***626 / 355 / 5526***
Alternates:		
Kevin Zimmerman	***1648 Oakwood Ave***	***626 / 821 / 0261***
Phillip Consiglio	***2215 Canyon Road***	***626 / 836 / 2011***
Jim Thomas	***1637 Elevado Ave***	***626 / 574 / 8508***

(revised 11/ 10/ 06)

SANTA ANITA RESERVOIR SEDIMENT REMOVAL PROJECT
ENVIRONMENTAL IMPACT REPORT COMMENTS
ARCADIA, CALIFORNIA

(please hand in or mail back by July 20, 2007)

Name: David Hsu

Organization (if any):

Address: 2010 Oaks Place

City, State, Zip: Arcadia, Ca. 91006

Phone (optional):

E-mail (optional):

92

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

Comments Would like the EIR (Address) specify the followings:

(1) How often for the subject project
(2) What is the current lowest ele ? e/-1230' ?
(3) What is the current (existing) dam (specify & what will be at completion
(4) What is the existing F.S. for the dam & the future F.S. (Static/Seismic)
(5) What time of the day am ~ p.m.
(6) Will there be any activity during wkend?
(7) How to mitigate dust (Air Qu) during haulings.
(8) Safety & stability of the res. (Existing, future)
(9) Time table for EIR process
(10) How many "Hearing, public" "Flow-chart"

Comments continued

RECEIVED
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2007 JUL 19 PM 4:33
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900 S. FREMONT AVE.

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Tape it closed, affix a 41 cent stamp and mail by July 20, 2007. Thank you!

LOS ANGELES CA 910
18 JUL 2007 PM 4 T



WRD 473

Belinda Kwan
County of Los Angeles
Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91802-1460

91803+1331

SANTA ANITA DAM SEDIMENT REMOVAL PROJECT

August 28, 2007

Comments by Mike San Miguel, 2132 Highland Oaks Drive, Arcadia 91006

As its preferred alternative to dispose of nearly a half-million cubic yards of sediment accumulated behind Santa Anita Dam, the Los Angeles County Public Works Department proposes to create an enormous pile of dirt along the east side of our neighborhood. To do that it will be necessary to destroy one of the last remaining and extensive stands of alluvial oak and sycamore woodland along the north edge of the San Gabriel Valley. The project will be an extension of the very large pile of dirt that already exists to the north along the east side of the Santa Anita channel. It will expand the harsh, sterile, industrial impacts that are already in direct conflict with the aesthetics and lovely quality of the environment that is important to the residents living in the Highland Oaks.

Moreover, the impacts from the proposed project will be long term and forever damage the quality and life of our neighborhood. Negative impacts from this project will include long-term air quality issues from the ever-increasing quantities of silt and particulate matter from the sediment being placed at the proposed site. Additional impacts from the heavy volume of truck and heavy equipment traffic and the pollution and soot from these vehicles will impact the health and well being of the Highland Oaks, especially to the residents living directly adjacent to the project. We can expect the quiet and solitude of our neighborhood to be shattered by the constant noise from trucks and heavy machinery working at this facility. These impacts do not belong in this area, are in direct conflict with our community and are unacceptable. The County has a responsibility to utilize some of the many options and alternatives it has at its disposal that will leave the quality of our neighborhood and its beautiful setting intact.

Once this project is in place and even after the sediment from Santa Anita Dam is completed we can expect the County to use this site for placement of dirt and debris from other projects well into the future. There is ample evidence that the County will do just that because whenever there are mudslides or cleanup from the constant erosion along the foothills they use their current facility to transport this debris by trucks along Elkins Drive to dispose of the material. Even if the project is constructed in our neighborhood it will not solve the Counties long-term need for future sediment removal and disposal from Santa Anita dam because eventually the project will reach its capacity. We urge the County to develop alternatives to deal with their long-term needs.

I notice that on the list of Potential Environmental Effects in your Notice of Preparation that there was no mention of impacts to wildlife. Those impacts will be significant and must not be ignored in your deliberations and a final decision on this project.

Options and Alternatives

- Use conveyor system to dispose material away from the neighborhood. The conveyor system could be extended along the existing Santa Anita Channel and access road to more appropriate sites for transfer by truck or other means to locations away from the Highlands. The county needs to take make a very serious evaluation of this alternative. My intuition tells me that it would be less expensive to use conveyor systems over trucking but an economic and energy analysis should help determine the most efficient means of transport.

- The sediment could even by transported to some of the many sand and gravel operations along the 605 Freeway where it could be recycled into ongoing sand and gravel extraction operations.

- Sediment could even be conveyed as far as the coast where replenishment of the sand being constantly eroded from our beaches could be placed. This option provides a long-term solution to the sediment removal from Santa Anita Dam when it will inevitably fill again.

Potential Benefits from Alternatives

- Avoids air quality impacts from dust and emissions from truck and heavy equipment. Conveyor systems use less polluting and more efficient electricity that could be used during off peak hours when power is less expensive than during peak electrical demand.

- Leaves intact the oak/sycamore woodland that will continue to benefit carbon dioxide and greenhouse gases, provide habitat for wildlife and maintain the natural beauty of the neighborhood.

- Avoids the harsh aesthetic impacts from the ever-increasing pile of dirt adjacent to the neighborhood.

There are no positive benefits from this project to our neighborhood.

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APPENDIX B

AIR QUALITY CALCULATIONS

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Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2008 TOTALS (lbs/day unmitigated)	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
2008 TOTALS (lbs/day mitigated)	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
2009 TOTALS (lbs/day unmitigated)	19.34	160.54	85.04	0.01	448.40	7.94	456.34	93.65	7.30	100.95	14,539.68
2009 TOTALS (lbs/day mitigated)	19.34	96.51	85.04	0.01	58.94	7.94	66.88	12.32	7.30	19.62	14,539.68
2010 TOTALS (lbs/day unmitigated)	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
2010 TOTALS (lbs/day mitigated)	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14

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Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2008 TOTALS (tons/year unmitigated)	0.03	0.22	0.12	0.00	0.39	0.01	0.40	0.08	0.01	0.09	18.22
2008 TOTALS (tons/year mitigated)	0.03	0.22	0.12	0.00	0.20	0.01	0.21	0.04	0.01	0.05	18.22
Percent Reduction	0.00	0.00	0.00	0.00	48.18	0.00	46.84	48.18	0.00	42.78	0.00
2009 TOTALS (tons/year unmitigated)	1.32	10.78	6.02	0.00	35.23	0.55	35.78	7.36	0.51	7.86	948.94
2009 TOTALS (tons/year mitigated)	1.32	6.63	6.02	0.00	4.90	0.55	5.45	1.02	0.51	1.53	948.94
Percent Reduction	0.00	38.49	0.00	0.00	86.09	0.00	84.76	86.09	0.00	80.54	0.00
2010 TOTALS (tons/year unmitigated)	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19
2010 TOTALS (tons/year mitigated)	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19
Percent Reduction	0.00	39.91	0.00	0.00	86.88	0.00	85.92	86.87	0.00	82.83	0.00

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 12/1/2008-12/31/2008 Active Days: 23	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
Mass Grading 12/01/2008-02/27/2009	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.25	18.98	9.84	0.00	0.00	0.97	0.97	0.00	0.89	0.89	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.36
Time Slice 1/1/2009-2/24/2009 Active Days: 39	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/25/2009-2/25/2009 Active Days: 1	2.40	20.78	11.22	0.00	33.82	1.03	34.84	7.06	0.95	8.01	1,923.06
Mass Grading 02/25/2009-02/25/2009	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/26/2009-2/27/2009 Active Days: 2	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58

Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	**19.34**	**160.54**	**85.04**	**0.01**	**448.40**	**7.94**	**456.34**	**93.65**	**7.30**	**100.95**	**14,539.68**
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	6.38	51.94	29.61	0.00	224.14	2.61	226.75	46.81	2.40	49.21	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.31	51.83	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	8.84	70.41	40.93	0.00	224.15	3.79	227.93	46.81	3.48	50.30	6,203.28
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	8.75	70.24	38.12	0.00	0.00	3.78	3.78	0.00	3.48	3.48	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.17	2.82	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.08
Time Slice 7/13/2009-12/31/2009 Active Days: 124	15.22	122.35	70.54	0.01	448.29	6.39	454.68	93.62	5.88	99.51	10,577.48
Mass Grading 05/31/2009-01/01/2010	6.38	51.94	29.61	0.00	224.14	2.61	226.75	46.81	2.40	49.21	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.31	51.83	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	8.84	70.41	40.93	0.00	224.15	3.79	227.93	46.81	3.48	50.30	6,203.28
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	8.75	70.24	38.12	0.00	0.00	3.78	3.78	0.00	3.48	3.48	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.17	2.82	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.08
Time Slice 1/1/2010-1/1/2010 Active Days: 1	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading 05/31/2009-01/01/2010	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69

Phase Assumptions

Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

Total Acres Disturbed: 13.5

Maximum Daily Acreage Disturbed: 3.38

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25

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Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 12/1/2008-12/31/2008 Active Days: 23	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
Mass Grading 12/01/2008-02/27/2009	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.25	18.98	9.84	0.00	0.00	0.97	0.97	0.00	0.89	0.89	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.36
Time Slice 1/1/2009-2/24/2009 Active Days: 39	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/25/2009-2/25/2009 Active Days: 1	2.40	20.78	11.22	0.00	17.53	1.03	18.56	3.66	0.95	4.61	1,923.06
Mass Grading 02/25/2009-02/25/2009	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/26/2009-2/27/2009 Active Days: 2	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading 12/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58

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Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	**19.34**	96.51	**85.04**	**0.01**	58.94	**7.94**	66.88	12.32	**7.30**	19.62	**14,539.68**
Mass Grading 05/01/2009-07/10/2009	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	6.38	31.21	29.61	0.00	29.42	2.61	32.02	6.14	2.40	8.54	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.31	31.10	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	8.84	42.31	40.93	0.00	29.42	3.79	33.21	6.15	3.48	9.63	6,203.28
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	8.75	42.14	38.12	0.00	0.00	3.78	3.78	0.00	3.48	3.48	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.17	2.82	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.08
Time Slice 7/13/2009-12/31/2009 Active Days: 124	15.22	73.53	70.54	0.01	58.84	6.39	65.23	12.29	5.88	18.17	10,577.48
Mass Grading 05/31/2009-01/01/2010	6.38	31.21	29.61	0.00	29.42	2.61	32.02	6.14	2.40	8.54	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.31	31.10	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	8.84	42.31	40.93	0.00	29.42	3.79	33.21	6.15	3.48	9.63	6,203.28
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	8.75	42.14	38.12	0.00	0.00	3.78	3.78	0.00	3.48	3.48	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.17	2.82	0.00	0.01	0.01	0.02	0.01	0.01	0.01	311.08
Time Slice 1/1/2010-1/1/2010 Active Days: 1	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading 05/31/2009-01/01/2010	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

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Phase Assumptions

Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0

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Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2008	0.03	0.22	0.12	0.00	0.39	0.01	0.40	0.08	0.01	0.09	18.22
Mass Grading 12/01/2008-02/27/2009	0.03	0.22	0.12	0.00	0.39	0.01	0.40	0.08	0.01	0.09	18.22
Mass Grading Dust	0.00	0.00	0.00	0.00	0.39	0.00	0.39	0.08	0.00	0.08	0.00
Mass Grading Off Road Diesel	0.03	0.22	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	17.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
2009	1.32	10.78	6.02	0.00	35.23	0.55	35.78	7.36	0.51	7.86	948.94
Mass Grading 12/01/2008-02/27/2009	0.05	0.38	0.21	0.00	0.71	0.02	0.73	0.15	0.02	0.17	33.26
Mass Grading Dust	0.00	0.00	0.00	0.00	0.71	0.00	0.71	0.15	0.00	0.15	0.00
Mass Grading Off Road Diesel	0.05	0.38	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.30
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96
Mass Grading 02/25/2009-02/25/2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2009-07/10/2009	0.11	0.97	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.97	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.49	4.00	2.28	0.00	17.26	0.20	17.46	3.60	0.18	3.79	336.81
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.49	3.99	2.13	0.00	0.00	0.20	0.20	0.00	0.18	0.18	320.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.77
Mass Grading 06/01/2009-12/31/2009	0.68	5.42	3.15	0.00	17.26	0.29	17.55	3.60	0.27	3.87	477.65
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.67	5.41	2.93	0.00	0.00	0.29	0.29	0.00	0.27	0.27	453.70
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.95
2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19

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Mass Grading 05/31/2009-01/01/2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19
Mass Grading Dust	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.08
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11

Phase Assumptions

Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

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Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2008	0.03	0.22	0.12	0.00	0.20	0.01	0.21	0.04	0.01	0.05	18.22
Mass Grading 12/01/2008-02/27/2009	0.03	0.22	0.12	0.00	0.20	0.01	0.21	0.04	0.01	0.05	18.22
Mass Grading Dust	0.00	0.00	0.00	0.00	0.20	0.00	0.20	0.04	0.00	0.04	0.00
Mass Grading Off Road Diesel	0.03	0.22	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	17.14
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
2009	1.32	6.63	6.02	0.00	4.90	0.55	5.45	1.02	0.51	1.53	948.94
Mass Grading 12/01/2008-02/27/2009	0.05	0.38	0.21	0.00	0.37	0.02	0.39	0.08	0.02	0.09	33.26
Mass Grading Dust	0.00	0.00	0.00	0.00	0.37	0.00	0.37	0.08	0.00	0.08	0.00
Mass Grading Off Road Diesel	0.05	0.38	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.30
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96
Mass Grading 02/25/2009-02/25/2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2009-07/10/2009	0.11	0.59	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.58	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.49	2.40	2.28	0.00	2.26	0.20	2.47	0.47	0.18	0.66	336.81
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.49	2.39	2.13	0.00	0.00	0.20	0.20	0.00	0.18	0.18	320.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.77
Mass Grading 06/01/2009-12/31/2009	0.68	3.26	3.15	0.00	2.27	0.29	2.56	0.47	0.27	0.74	477.65
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.67	3.25	2.93	0.00	0.00	0.29	0.29	0.00	0.27	0.27	453.70
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.95
2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19

Mass Grading 05/31/2009-01/01/2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19
Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.08
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 12/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35

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Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	14.42	116.03	67.51	0.01	448.29	6.04	454.33	93.62	5.56	99.18	10,577.33
2010 TOTALS (lbs/day mitigated)	14.42	69.72	67.51	0.01	58.84	6.04	64.88	12.29	5.56	17.85	10,577.33

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	1.11	8.96	5.21	0.00	34.63	0.47	35.10	7.23	0.43	7.66	816.64
2010 TOTALS (tons/year mitigated)	1.11	5.38	5.21	0.00	4.55	0.47	5.01	0.95	0.43	1.38	816.64
Percent Reduction	0.00	39.91	0.00	0.00	86.88	0.00	85.72	86.87	0.00	82.01	0.00

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading 05/31/2010-01/01/2011	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**14.42**	**116.03**	**67.51**	**0.01**	**448.29**	**6.04**	**454.33**	**93.62**	**5.56**	**99.18**	**10,577.33**
Mass Grading 05/31/2010-01/01/2011	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Mass Grading 06/01/2010-12/31/2010	8.35	66.61	39.38	0.00	224.15	3.56	227.71	46.81	3.27	50.09	6,203.19
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	8.27	66.45	36.75	0.00	0.00	3.55	3.55	0.00	3.27	3.27	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.08	0.15	2.62	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.99

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading 05/31/2010-01/01/2011	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**14.42**	69.72	**67.51**	**0.01**	58.84	**6.04**	64.88	12.29	**5.56**	17.85	**10,577.33**
Mass Grading 05/31/2010-01/01/2011	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Mass Grading 06/01/2010-12/31/2010	8.35	40.03	39.38	0.00	29.42	3.56	32.98	6.15	3.27	9.42	6,203.19
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	8.27	39.87	36.75	0.00	0.00	3.55	3.55	0.00	3.27	3.27	5,892.21
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.08	0.15	2.62	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.99

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.11	8.96	5.21	0.00	34.63	0.47	35.10	7.23	0.43	7.66	816.64
Mass Grading 05/31/2010-01/01/2011	0.47	3.83	2.18	0.00	17.37	0.19	17.56	3.63	0.18	3.80	339.00
Mass Grading Dust	0.00	0.00	0.00	0.00	17.37	0.00	17.37	3.63	0.00	3.63	0.00
Mass Grading Off Road Diesel	0.47	3.82	2.04	0.00	0.00	0.19	0.19	0.00	0.18	0.18	322.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.87
Mass Grading 06/01/2010-12/31/2010	0.64	5.13	3.03	0.00	17.26	0.27	17.53	3.60	0.25	3.86	477.65
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.64	5.12	2.83	0.00	0.00	0.27	0.27	0.00	0.25	0.25	453.70
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.95

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

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On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Proposed Action 2010.urb924

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.11	5.38	5.21	0.00	4.55	0.47	5.01	0.95	0.43	1.38	816.64
Mass Grading 05/31/2010-01/01/2011	0.47	2.30	2.18	0.00	2.28	0.19	2.47	0.48	0.18	0.65	339.00
Mass Grading Dust	0.00	0.00	0.00	0.00	2.28	0.00	2.28	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.47	2.29	2.04	0.00	0.00	0.19	0.19	0.00	0.18	0.18	322.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.87
Mass Grading 06/01/2010-12/31/2010	0.64	3.08	3.03	0.00	2.27	0.27	2.54	0.47	0.25	0.73	477.65
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.64	3.07	2.83	0.00	0.00	0.27	0.27	0.00	0.25	0.25	453.70
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.95

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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APPENDIX C

BIOLOGICAL TECHNICAL REPORT AND SURVEY REPORTS

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EDAW Inc
515 South Flower Street, 9th Floor, Los Angeles, California 90071
T 213.593.7700 F 213.593.7715 www.edaw.com

February 24, 2009

Ms. Sandy Marquez
Recovery Permit Coordinator
U.S. Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92011

RE: 45-Day Summary Report of Focused Surveys for the Coastal California Gnatcatcher for the Santa Anita Dam Modification and Reservoir Sediment Removal Project, Los Angeles County, California

Dear Ms. Marquez:

This letter summarizes results of focused protocol surveys conducted by EDAW, Inc. (EDAW) in winter of 2008-2009 to determine the presence or absence of the coastal California gnatcatcher (*Polioptila californica californica*, CAGN) within the Santa Anita Dam Modification and Reservoir Sediment Removal Project (Project) sediment placement site (SPS) areas, Los Angeles County, California. Surveys were conducted on behalf of Los Angeles County Department of Public Works (LACDPW), as recommended by the California Department of Fish and Game in statements and comments on the Draft Environmental Impact Report for the Santa Anita Project (Enclosure 1). No coastal California gnatcatchers were detected in the survey areas.

Project Description

The purpose of the Project is to remove sediment that has accumulated behind the dam and to construct a new riser on the low-level outlet of the dam to ensure compliance with the California Department of Water Resources, Division of Safety of Dams seismic stability requirements. The Project consists of draining the Santa Anita Reservoir, removing approximately 300,000 to 500,000 cubic yards of sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir via conveyor belt, and placing it in the Santa Anita SPSs. A new riser would be constructed on the dam's lowest outlet gate to allow water above an elevation of 1,230 feet to freely pass through the dam.

Site Description

The Project site is located on the border of the City of Arcadia, in western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles (see Enclosure 2, Figures 1 and 2). The Project site includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, existing access roads, and the Middle and Lower Santa Anita SPS areas. The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Middle and Lower SPS areas were surveyed for this report.

Vegetation communities within the Middle SPS include approximately 0.3 acre coastal sage scrub (dead when surveys occurred), 3.8 acres Riversidean alluvial fan sage scrub, 0.1 acre disturbed

Riversidean alluvial fan sage scrub, and 6.7 acres coast live oak woodland (Enclosure 2, Figure 3). The Riversidean alluvial fan sage scrub intergrades with the coast live oak woodland, and is dominated by laurel sumac (*Malosma laurina*), chaparral yucca (*Yucca whipplei*), black sage (*Salvia mellifera*) and several herbaceous understory species.

The majority, 8.0 acres, of the Lower SPS contains little or no vegetation (Enclosure 2, Figure 4). Approximately 0.4 acres of the Lower SPS contain disturbed coastal sage scrub characterized by California sagebrush (*Artemesia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac, black sage, and invasive species such as castor bean (*Ricinus communis*) and tree tobacco (*Nicotiana glauca*). Ornamental landscaping, approximately 0.1 acre, within the Lower SPS consists mostly of wattle (*Acacia cyclops*), and is also intermixed with invasive vegetation such as castor bean and tree tobacco. In general, topography within the Lower SPS is flat. The eastern edge of the Lower SPS is bound by relatively steep westerly hillsides topped by residential housing.

Background Information

The CAGN is federally listed as threatened by the U.S. Fish and Wildlife Service (USFWS 1993) and is considered a State Species of Special Concern by the California Department of Fish and Game (CDFG). The CAGN is a local and uncommon year-round resident of southern California. This species is found in the six southern-most California counties located within the coastal plain (San Bernardino, Ventura, Los Angeles, Orange, San Diego, and Riverside counties).

The primary cause of this species' decline is the cumulative loss of coastal sage scrub vegetation to urban and agricultural development. Little of this species' habitat is formally protected or managed. Initial studies suggest that the CAGN may be highly sensitive to the effects of habitat fragmentation and development activity (Atwood 1990; ERCE 1990). The USFWS has estimated that coastal sage scrub habitat has been reduced by 70 to 90 percent of its historical extent (USFWS 1991) and little of what remains is in protected natural open space.

The CAGN generally inhabits Diegan coastal sage scrub and Riversidian coastal sage scrub dominated by California sagebrush and California buckwheat generally below 457 meters (1,500 feet) in elevation along the coastal slope. When nesting, this species typically avoids slopes greater than 25 percent with dense, tall vegetation. CAGN pairs will attempt several nests each year (average of four), each placed in a different location inside their breeding territory, but most nest attempts are unsuccessful due to depredation by a variety of species (Grishaver et al. 1998, Atwood and Bontrager 2001). Clutch size ranges from one to five eggs, with three or four eggs most common. CAGNs will remain paired through the non-breeding season and will generally expand their home range when not breeding.

The CAGN is particularly vulnerable to habitat destruction and fragmentation because of their low dispersal rate, reliance on a specific habitat type, and poor breeding success. Juvenile CAGNs tend to remain close to their natal territories. On average juveniles disperse less than 1.9 kilometers (1.2 miles) from their natal territories, making colonization of distant habitat patches difficult. The CAGN has been described as "an obligate resident of coastal sage scrub" (Atwood and Bontrager 2001), a vegetation community that is vulnerable to urban pressures. The destruction of coastal sage scrub by wildfire also has a detrimental effect on local CAGN populations. Weather conditions in 2007 may

have contributed to an unfavorable breeding season because CAGN tend to have slightly smaller clutches in years with low rainfall (Grishaver et al. 1998). CAGNs also experience a higher rate of mortality during cold winters, such as the unusually cold winter of 2006-2007 (Atwood and Bontrager 2001).

The closest known occurrences of this species to the Project site are from the vicinity of Santa Fe Dam Regional Park in the City of Irwindale in 2007 and the vicinity of Montebello Hills Oil Field in 2005. One female and one male were observed in different areas of the Santa Fe Dam Regional Park, located approximately 4.5 miles southeast of the Project site. Santa Fe Dam Regional Park is a known historical location for this species, but this 2007 documentation was the first account of CAGN in 30 years. Over 50 pairs of CAGN were detected throughout the Montebello Hills Oil Field. The expanse between the Project site and both of these locations is comprised of urban sprawl and one to two major freeway structures.

Survey Methodology

Prior to conducting focused CAGN surveys, EDAW biologists consulted historical biological information, including the California Natural Diversity Database, and conducted general wildlife and habitat surveys to determine the extent of suitable CAGN habitat within and adjacent to the project area. EDAW did not consider coastal sage scrub habitat within the Middle and Lower SPS areas to be suitable for CAGN. Similarly, in a November 2008 email, USFWS informed the County that they did not consider focused protocol surveys for CAGN to be necessary for this project (Enclosure 3). However, as recommended by CDFG, protocol surveys were conducted throughout the approximate 4.5 acres of coastal sage scrub habitat within the Middle and Lower SPS areas; these areas were considered reasonable to survey in one day.

Focused, protocol-level CAGN surveys occurred between December 4, 2008 and February 2, 2009 within the survey area. These surveys followed the current USFWS survey protocol for the species (dated February 28, 1997, and amended July 28, 1997). The protocol calls for nine surveys to be conducted during the CAGN non-breeding season. In a January 29, 2009 meeting, CDFG informed LACDPW that protocol CAGN surveys were not required; at the subsequent request of LACDPW, EDAW did not conduct any surveys following February 2, 2009.

The survey consisted of walking meandering transects through potential CAGN habitat, including all scrub associations, as well as upland and wetland habitats adjacent to areas of scrub. EDAW biologist Donna Germann conducted the surveys under the current Endangered Species Permit TE-820658-4.

Ms. Germann conducted passive surveillance (i.e., listening and looking for the species) in all habitats with potential to support the CAGN. If an observation was not made after approximately 5 to 10 minutes of passive survey activity, a taped vocalization of the CAGN was played for approximately 5 to 10 seconds (i.e., active survey activity), followed by another period of passive observation.

As allowed under the endangered species permit (TE-820658-4), the survey activity “takes” the CAGN through harassment with playback of taped CAGN vocalizations. No individual CAGN were captured.

Results

A summary of survey data is presented in Table 1, including date of survey, times, weather conditions, field biologist, and CAGN observations. Field data sheets are available in Enclosure 4. Five surveys were conducted biweekly following the survey protocol, beginning on December 4, 2008 and ending on February 2, 2009. A complete list of all wildlife species detected during CAGN surveys is included in Enclosure 5.

Table 1
Coastal California Gnatcatcher Surveys
Dates, Personnel, Weather Conditions, and Observations

Date	Survey	Time	Weather Conditions	Field Biologist	CAGN Observations
12/4/08	1	0800 – 1030	Start: 52 °F, 20% cover, 0-1 mph End: 56 °F, 0% cover, 0-1 mph	Donna Germann	None
12/19/08	2	0800 – 1030	Start: 47 °F, 0% cover, 0-1 mph End: 50°F, 0% cover, 0-1 mph	Donna Germann	None
1/5/09	3	0815 – 1030	Start: 46 °F, 10% cover, 0-1 mph End: 50°F, 60% cover, 0-1 mph	Donna Germann	None
1/19/09	4	0915 – 1130	Start: 62°F, 100% cover, 0-1 mph End: 70°F, 100% cover, 1-2 mph	Donna Germann	None
2/2/09	5	0830-1100	Start: 63°F, 0% cover, 0-1 mph End: 67°F, 0% cover, 0-1 mph	Donna Germann	None

No CAGN were observed, heard, or otherwise detected during the focused surveys. One state regulated game species, southern mule deer (*Odocoileus hemionus fuliginata*), was observed and detected throughout the SPS areas during the focused CAGN surveys conducted by EDAW in 2008 and 2009.

Discussion

No CAGN were detected within or adjacent to the SPS areas during focused CAGN surveys. Coastal sage scrub habitat within the Lower and Middle SPS areas is not suitable for CAGN. The Middle SPS scrub habitat is dominated by black sage, yerba santa, and large laurel sumac shrubs. Additionally, this community is intergraded with coast live oak woodland. California sagebrush and California buckwheat are spread throughout the scrub habitat, however these species appear to be younger, low-growing, and are dwarfed in size and number by the other scrub and oak woodland species. The scrub present within the Lower SPS is a disturbed, linear strip at the base of a steep, ornamental-dominated mountain slope.

This species is known from relatively recent occurrences approximately 4.5 miles southeast and 10 miles south of the Project site in 2007 and 2005, respectively. The 2007 observation of two CAGN was the first time in 30 years that CAGN have been detected at the Santa Fe Dam Regional Park, and though potentially threatened by continued development and oil production, over 50 pairs of CAGN are known from the Montebello Hills Oil Field in 2005. However, as this species generally disperses an average of 1.9 km (1.2 miles) from their natal site, and the furthest recorded dispersal for this species is 9 km (5.6 miles), there is low potential for dispersing individuals from these known populations to

reach the project site due to distance and the urbanized nature of the land separating the Project site from these occurrences (Atwood and Bontrager 2001).

Certification Statement

The qualified EDAW biologist who conducted coastal California gnatcatcher surveys for the Project certifies that the information in this survey report fully and accurately represents the work performed by EDAW biologists. The signature of the biologist who conducted protocol surveys is included below. Donna Germann conducted surveys under Endangered Species Permit TE-820658-4. The results of focused surveys for listed species are typically considered valid for one year by the resource agencies. If you have any questions or require additional information, please contact Donna Germann at (213) 593-8680.

Sincerely,



Donna Germann
Wildlife Biologist

Enclosures:
1. CDFG statements and comments on the Draft Environmental Impact Report for the Santa Anita Project
2. Figures
3. USFWS November 2008 email
4. Field Data Sheets
5. Wildlife Species Detected during Coastal California Gnatcatcher Surveys

Literature Cited

Atwood, J.L.
1990 Status Review of the California Gnatcatcher (*Polioptila californica*). Manomet Bird Observatory, Manomet, Massachusetts. 79 pp.

Atwood, J.L. and D.R. Bontrager
2001 California Gnatcatcher (*Polioptila californica)*, The Birds of North America, No. 574, 32 pp.

California Department of Fish and Game (CDFG). 2008. *RareFind 3. California Natural Diversity Data Base (CNDDB)*. Data Base Record Search for Information on Threatened, Endangered, Rare, or Otherwise Sensitive Species for USGS Topographic Quadrangles: Newhall, Whitaker, Warm Springs Mountain, Green Valley, Mint Canyon, San Fernando, Oat Mountain, Santa Susana, Val Verde. CDFG, State of California Resources Agency. Sacramento, CA 2008.

ERC Environmental and Energy Services Company (ERCE)
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Grishaver, M.A., P.J. Mock, and K.L. Preston
1998 Breeding Behavior of the California Gnatcatcher in Southwestern San Diego County, California. West. Birds 29. 299-322 pp.

U.S. Fish and Wildlife Service (USFWS)
1991 Summary of the Proposed Rule to List the Coastal California Gnatcatcher (*Polioptila californica*) as Endangered in California and Baja, Mexico. September. 114 pp.

1993 Endangered and Threatened Wildlife and Plants: Special Rule Concerning Take of the Threatened Coastal California Gnatcatcher. Final Rule. Federal Register 58: 65088-65096.

2003 Proposed Designation of Critical Habitat for the Coastal California Gnatcatcher. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, California. Federal Register 68 (79):20228-20312.

ENCLOSURE 1

CDFG COMMENTS ON THE DRAFT EIR FOR THE SANTA ANITA DAM MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT

State of California - The Resources Agency ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

WRD 473

June 24, 2008

Mr. Long Thang
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

Draft Environmental Impact Report for Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, SCH # 2007061093, Los Angeles County

Dear Mr. Thang:

The Department of Fish and Game (Department) reviewed the Draft Environmental Impact Report (DEIR) for the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. The project proposes to drain the Santa Anita Reservoir to allow the removal of 300,000 to 500,000 cubic yards of sediment and debris from the reservoir by dry excavation. The sediment would then be transported from the reservoir via conveyer belt, loaded onto trucks and transported to an existing disturbed five acre lower Sediment Placement Site (LSPS). Approximately 0.4 acres of Venturan coastal sage scrub would be removed in the LSPS. When the LSPS reaches capacity the remaining sediment would be trucked into a 13 acre Middle Sediment Placement Site (MSPS) on which approximately 6.7 acres of coast live oak riparian woodland, 3.8 acres of Riversidian alluvial fan sage scrub (RAFSS), 0.08 acres of disturbed RAFFS and 0.3 acres of Venturan coastal sage scrub would be removed for this purpose. Four alternative sediment placement sites, including trucking to offsite disturbed locations are proposed as project alternatives. The project also includes improvement to the Santa Anita Dam which would involve modification to the dam's inlet/outlet works including the construction of a new riser. The project is located at the Santa Anita Reservoir near Elkins and Highland Oaks Drive in the community of Arcadia on the south slope of the San Gabriel Mountains.

We prepared the following statements and comments pursuant to our authority as Trustee Agency with jurisdiction over natural resources affected by the project under the California Environmental Quality Act (CEQA Section 15386) and Responsible Agency (Section 15381) over those aspects of the proposed project that come under the purview of the California Endangered Species Act (Fish and Game Code Section 2050 et seq) and Fish and Game Code Section 1600 et seq. regarding impacts to streams and lakes.

Project Alternatives

1. Biologically Preferred Alternative - The DEIR states that project alternatives 3 and 4 will result in less impact to biological resources. These alternatives employ off-site disposal of the sediment at the Manning Sediment Placement Site which is already being used for such purposes. Alternative 3 and 4 do not necessitate the removal of 6.7 acres of coast live oak riparian woodland, 3.8 acres of Riversidian alluvial fan sage scrub (RAFSS), 0.08 acres of disturbed RAFSS and 0.3 acres of Venturan coastal sage scrub. 6-1

   a. The Department recommends that Alternative 3 or 4 be selected as the project as these alternatives greatly reduce impacts to sensitive biological resources held in public trust.

Impacts to Biological Resources

1. Impacts to Special Status Aquatic Species - The DEIR did not discuss the potential for occurrence of southwestern pond turtle (*Actinemys marmorata pallida)* or coast range newt (*Taricha torosa torosa*) both of which are species of special concern (CSSC) which may occur within the reservoir and adjacent upland habitat. Draining the reservoir and disturbing sediment could result in take or injury to these species. CSSC meet the CEQA definition of rare, threatened or endangered species (CEQA Guidelines 15065). Adverse impacts to CSSC could require a mandatory finding of significance by the Lead Agency, (CEQA Guidelines 15065). The Department recommends live trapping for southwest pond turtle and coast range newt within any appropriate habitat on site. Presence of one or both of these species would require further consultation with the Department for avoidance, salvage and/or mitigation measures to avoid take and loss of habitat. 6-2

2. Impacts to Special Status Bird Species – The DEIR states that focused protocol surveys were conducted for least Bell's Vireo (*Vireo bellii pusillus* or LBV), and southwestern willow flycatcher (*Epidonax traillii extimus* or SWWF) in 2007 and that survey results were negative for both species.

   a. The Department recommends that U.S. Fish and Wildlife protocol level surveys for state and federally endangered LBV and SWWF be repeated if project disturbances within and adjacent to appropriate habitat occur greater than one year following the last survey for these species. The site also supports habitat for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*) and therefore focused U.S. Fish and Wildlife protocol surveys should also be conducted within the RAFSS and Venturan coastal sage scrub habitat to be removed or disturbed by project activities. The Department and U.S. Fish and Wildlife should be consulted prior to project activities as further authorization under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) may be required to address incidental take of listed bird species and implement appropriate avoidance and mitigation measures. 6-3

3. General Project Impacts to Native Bird Species - The project as presently proposed will result in the permanent impact to several vegetative communities and dam structures supporting habitat for native nesting birds. To avoid take of native birds the DEIR suggests that the nesting season generally commences on February 15 for nesting bird avoidance purposes.

   a. Early nesting raptors may be adversely impacted if project activities are conducted prior to February 15 to avoid take of native birds as recommended in the DEIR. Migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). 6-4

   b. Proposed project activities (including disturbances to native and non-native vegetation, structures and substrates) should take place outside of the breeding bird season which generally runs from March 1- August 31 (as early as February 1 for raptors) to avoid take (including disturbances which would cause abandonment of active nests containing eggs and/or young). Take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86). 6-5

c. If avoidance of the breeding bird season is not feasible, the Department recommends that beginning thirty days prior to the disturbance of suitable nesting habitat the project proponent should arrange for weekly bird surveys to detect protected native birds occurring in the habitat that is to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors) as access to adjacent areas allow. The surveys should be conducted by a qualified biologist with experience in conducting breeding bird surveys. The surveys should continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of clearance/construction work. If a protected native bird is found, the project proponent should delay all clearance/construction disturbance activities within 300 feet of suitable nesting habitat (within 500 feet for suitable raptor nesting habitat) until August 31. Alternatively, the qualified biologist could continue the surveys in order to locate any nests. If an active nest is located, clearing and construction within 300 feet of the nest (within 500 feet for raptor nests) or as determined by a qualified biological monitor, must be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing marking the protected area 300 feet (or 500 feet) from the nest. Construction personnel should be instructed on the sensitivity of the area. The project proponent should record the results of the recommended protective measures described above to document compliance with applicable State and Federal laws pertaining to the protection of native birds.

6-6

4. Impacts to Bats – The project will result in the removal of trees and dam structures and therefore may result in take and/or disturbances to bats. The likelihood that bats reside on the project site is high given the roosting and feeding habitat afforded on the project site and adjacent areas.

a. Bats are considered non-game mammals and are afforded protection by state law from take and/or harassment, (Fish and Game Code Section 4150, California Code of Regulations, Section 251.1). Several bat species are also considered CSSC. The Department recommends avoiding disturbances to all bat roosting and nursery habitat including on site structures between March 1 and September 15 to avoid the breeding season for bats unless preconstruction surveys are conducted by a qualified biologist and no bat roosts or nurseries are found within the project area.

6-7

5. Special Status Botanical Species – The DEIR proposes focused surveys for special status plant species and consultation with the Department and U.S. Fish and Wildlife Service to determine appropriate mitigation measures if a state and/or federal listed plant species is detected. The DEIR further states that if a 1B listed rare plant or a plant protected under the California Endangered Species Act (CESA) is detected, any such plants will be avoided or if avoidance is not feasible, a 10 day salvage notice will be sent to the Department.

a. A 10 day salvage notice to the Department is not adequate for the mitigation of state listed plant species. The lead agency should consult with the Department under (CESA) to determine appropriate avoidance and measures to fully mitigate for incidental take of state listed plants. Surveys should be completed for sensitive plant species that may be impacted by the project foot print, and results of those surveys and any proposed mitigation should be included in the DEIR to allow for full disclosure of impacts to the public. Simply stating a preconstruction survey to detect most sensitive plant species, which may occur out of season, and proposing salvage if they are found does not provide adequate protection to these resources.

6-8

b. CEQA provides protection not only for state listed species, but for any species which can be shown to meet the criteria for State listing (CEQA Section 15380). The Department recognizes that Lists 1A, 1B and 2 of the California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California consist of plants that, in a majority of cases, would qualify for listing. 6-9

c. Occupied habitat for special status botanical species should be avoided and preserved in perpetuity from further development. Alternative 3 and 4 will avoid much of the native plant habitat on the project site. If avoidance is not feasible, off-site occupied habitat should be acquired in consultation with and approval by the Department. All mitigation lands preserved on-site or acquired off-site should be deeded to a local land conservancy and protected in perpetuity under a conservation easement to prohibit incompatible uses on the site. 6-10

6. Impacts to Native Vegetative Communities – The DEIR states that 3.88 acres of RAFFS 0.3 acres of VCSS and 6.7 acres of coast live oak woodland will be removed as the result of the project proposal. The DEIR proposes restoration of on-site or off-site areas to mitigate for RAFFS as negotiated with the Department. Impacts to coast live oak woodland include on- and/or off-site creation and acquisition of oak habitat or contributing to the oak woodlands conservation fund for the purpose of purchasing oak woodland conservation easements.

a. The Department recommends avoidance of RAFSS and VCSS as it is difficult to create these habitats and success is not assured. The majority of these vegetative communities may be avoided by project alternatives 3 and 4. If avoidance is not feasible, existing areas of RAFSS and VCSS within the watershed should be acquired and protected in perpetuity under a conservation easement. 6-11

b. The majority of impacts to coast live oak woodland may be avoided by project alternatives 3 and 4. If avoidance of coast live oak woodland is not feasible any contribution to the oak woodland conservation fund should fully explain where any conservation easements are to be acquired. The Department recommends that oak woodland conservation take place within the same watershed in which the impacts have occurred and that funding to manage the conserved land in perpetuity is considered in the cost for such mitigation parcels. 6-12

Impacts to Riparian Resources

1. Department Jurisdictional Drainages - The DMND states 0.15 acres of Department jurisdiction will be impacted within the Middle SPS. Restoration of impacted Department jurisdiction is proposed in consultation with the Department under a Streambed Alteration Agreement (SAA).

a. The Department concurs that a SAA, pursuant to Section 1600 et seq. of the Fish and Game Code, will be required with the applicant prior to impacts to riparian habitat from not only impacts from the project within the MSPS but also from any other areas of impacts to Department jurisdiction. Other impacts such as vegetation removal along the maintenance roads requiring improvements within the riparian zone, drawing down of the reservoir, removal of sediment and any other impacts from placement of the conveyers within Department Jurisdiction may need to be included under a SAA. 6-13

b. Based upon a site visit by the Department and the description of project impacts in the DEIR, it appears that the entire MSPS is within Department jurisdiction and therefore a significantly greater area of Department jurisdiction may be impacted. The Department's issuance of a SAA 6-14

is considered a project that is subject to CEQA. To facilitate our issuance of the Agreement, the Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) document for the project. To minimize additional requirements by the Department under CEQA the document should fully identify the potential impacts to any lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the Agreement. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

6-14 cont.

The Department recommends that the above comments be addressed in the final EIR prior to project approval by the lead agency.

Thank you for this opportunity to provide comment. Please contact Mr. Scott Harris, Environmental Scientist, at (626) 797-3170 for further coordination on the proposed project, or if you have any questions.

Sincerely,

For Edmund J. Pert
Regional Manager
South Coast Region

cc: Ms. Helen Birss, Los Alamitos
Ms. Terri Dickerson, Laguna Niguel
Ms. Kelly Schmoker, Glendora
Mr. Scott Harris, Pasadena
Mr. Naeem Siddiqui, Los Alamitos
HabCon-Chron, Department of Fish and Game
State Clearinghouse, Sacramento

Jennifer Wise
U.S. Fish and Wildlife Service
6010 Hidden Valley Rd
Carlsbad, CA 92011

California Native Plant Society
San Gabriel Mountains Chapter
1750 North Altadena Drive
Pasadena, CA 91107-1046

Los Angeles Audubon Society
7377 Santa Monica Blvd
West Hollywood, CA 90046-6694

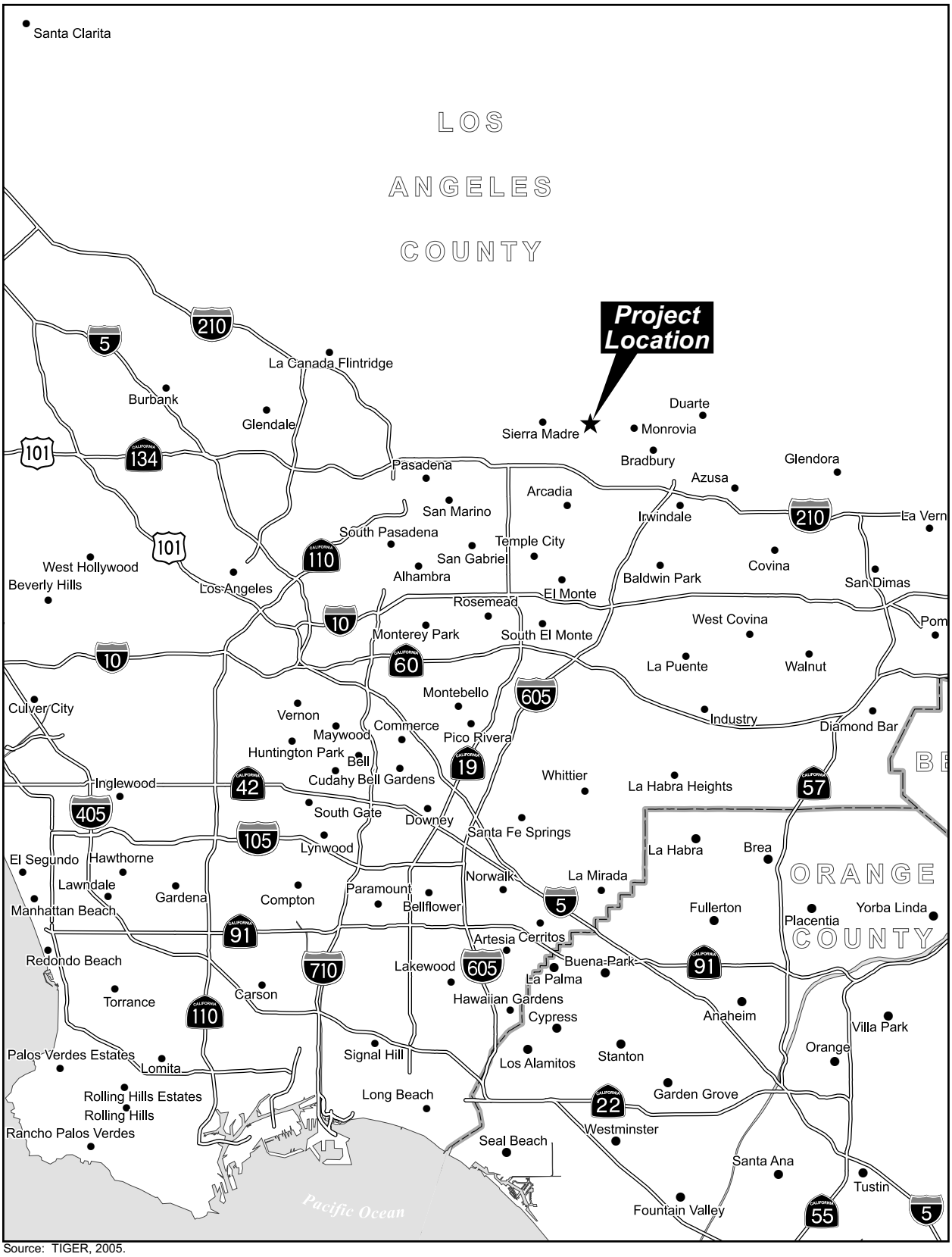
Sierra Club
San Fernando Valley Chapter
P.O. BOX 370485
Reseda, CA 91337

EP:sph

spharris/LACDPW Santa Anita Reservoir Cleanout Project/DEIR 2008

ENCLOSURE 2

FIGURES



Source: TIGER, 2005.

Figure 1
Regional Location Map

Path: P:\2004\04120165 LACDPW on Call Biology Contract\Task Order\04120165.66 Santa Anita CAGN Surveys\Documents_Refs\Technical Reports\Graphics

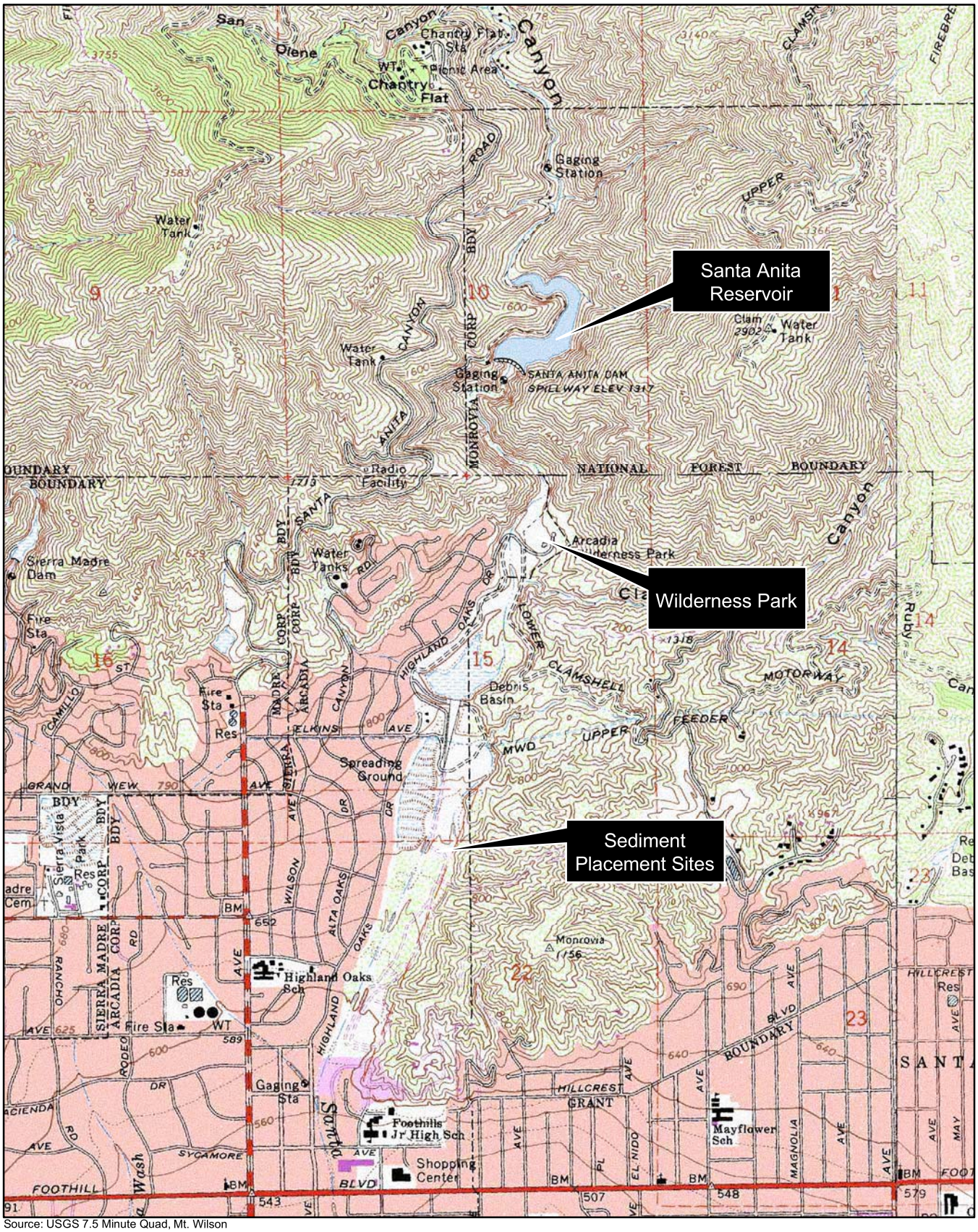


Figure 2
Vicinity Map

Path: P:\2004\04120165 LACDPW on Call Biology Contract\Task Order\04120165.66 Santa Anita CAGN Surveys\Documents_Refs\Technical Reports\Graphics



Source: Aerial - GlobeXplorer, 2005; Vegetation mapping - EDAW, 2007.

NORTH 0 50 100 200 300 400 Feet

Figure 3
Middle SPS Vegetation Map

Path: P:\2004\04120165 LACDPW on Call Biology Contract\Task Order\04120165.66 Santa Anita CAGN Surveys\Documents_Refs\Technical Reports\Graphics



Source: Aerial - GlobeXplorer, 2005; Vegetation mapping - EDAW, 2007.

NORTH

0 50 100 200 300 400 Feet

Figure 4
Lower SPS Vegetation Map

Path: P:\2004\04120165 LACDPW on Call Biology Contract\Task Order\04120165.66 Santa Anita CAGN Surveys\Documents_Refs\Technical Reports\Graphics

ENCLOSURE 3

USFWS NOVEMBER 2008 EMAIL

From: Jennifer Wise fws.gov [mailto:Jennifer Wise fws.gov]
Sent: Wednesday, November 26, 2008 8:39 AM
To: Mak, James
Subject: Re: Comments on EIR for Santa Anita Riser Modification and Reservoir Cleanout

James,
We have reviewed the information submitted and contacted a local birder/biologist to discuss the habitat. Based on this information, protocol surveys for the coastal California gnatcatcher are not necessary at this time.

We appreciate your coordination on this project.

Regards,
Jennifer Wise
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
6010 Hidden Valley Rd., Suite 101
Carlsbad, CA 92011
760.431.9440 ext. 276
jennifer_wise@fws.gov

"Mak, James" <JMAK@dpw.lacounty.gov>

11/06/2008 10:44 AM

To <jennifer_wise@fws.gov>
cc "Lilley, Keith" <KLILLEY@dpw.lacounty.gov>, "Klippel, Sterling" <SKLIPPEL@dpw.lacounty.gov>
Subject Comments on EIR for Santa Anita Riser Modification and Reservoir Cleanout

Jennifer,

As requested, attached is a letter prepared by our consultant, Ultrasystems, in response to comments on the EIR. Please let me know if you have any questions or comments.

Thanks,

James Mak

County of Los Angeles Department of Public Works

626 458 6144

<<Letter to Backup Analysis 18 September 2008 .doc>>

UltraSystems
environmental management planning

18 September 2008

Mr. James Mak
Water Resources Division
County of Los Angeles Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803

Subject: **Backup Information Concerning the Biological Field Work and Analyses Prepared by UltraSystems Environmental Inc. for the County of Los Angeles Department of Public Works**

Project: **County of Los Angeles Department of Public Works, Santa Anita Dam Riser Modification and Sediment Removal Project, City of Arcadia and Angeles National Forest, Los Angeles County, California**

Dear Mr. Mak:

The County of Los Angeles Department of Public Works (County) has requested that UltraSystems Environmental Inc. (UltraSystems) provide backup that supports the process that we utilized to identify the habitats on the project site that potentially could support special status species.

UltraSystems utilized the **industry standard scoping process** for identifying habitats on the project site and the potential for these habitats to support special status species. UltraSystems performed the following tasks to complete our portion of the scoping process.

Task 1: UltraSystems performed a comprehensive literature search of: California Natural Diversity Data Base (CNDDB) (CDFG 2006), California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2006), and the Angeles National Forest Service's Sensitive Plants and Animals List (Revised in 2004). The literature search was limited to a five mile radius of the project site. A summary of the literature search is provided in Attachment 1.

Task 2: UltraSystems conducted a general biological reconnaissance to identify the habitats on the project site and then prepared a draft vegetation map. UltraSystems, in conjunction with the literature search, used this information to identify the potential for occurrence of special status species.

Task 3: Based on the results of task 1 and 2 UltraSystems performed a probability for occurrence and a habitat suitability analysis to determine which special status species had the potential to occur on the project site. The criteria used to perform the analysis are provided in Attachment 2.

Task 4: UltraSystems conducted focused surveys for the special status species that were identified during tasks 1, 2 and 3. Four focused survey reports were produced by UltraSystems that were

submitted to the County between July 2006 and November 2007. Reports for each of these species are provided in Attachment 3.

Task 5: UltraSystems prepared a Draft Biological Technical Report (BTR) for the entire project site. The County requested that the Draft BTR be separated into two reports; one for federal lands and one for non-federal lands. UltraSystems separated out of the Draft BTR the information required for a Biological Evaluation (BE) of the federal lands on the project site. UltraSystems then submitted the Draft BA and the Draft BTR to the County for their review in November 2007. The County never requested that UltraSystems finalize the Draft BE or the Draft BTR. The Draft BE and Draft BTR are provided in Attachment 4.

UltraSystems Results

Bird and Aquatic Species

Based on the scoping process UltraSystems performed (Tasks 1 to 5 above) it was determined that the following special status species could potentially occur on the project site and protocol surveys were conducted for these special status wildlife species: Least Bells Vireo, Southwestern Willow Flycatcher, Slivery Legless Lizard, and the Coast Horned Lizard (Attachment 3).

Based on the scoping process UltraSystems performed it was determined that there were no special status plant species on the project site, and that the following special status wildlife species did not have the potential to occur on the project site: Coastal California Gnatcatcher (CCGN), Southwestern Pond Turtle, and the Coast Range Newt. These three species are California Species of Special Concern, but are not listed as Threatened or Endangered.

CCGN: It was determined that the CCGN would not occur on the project site for the following reasons:

1. No recent occurrences (within last 50 years) have been documented within the project quad; and no occurrences within 5 miles of the project site on the surrounding quads. Maps and tables for the 9 quads from the CNDDB are provided in Attachment 5.
2. There were no incidental observations of CCGN recorded during the field surveys which were performed by biologists that are highly familiar with CCGN calls, morphology, and behavior.
3. The elevation of the project site is above the records shown for the CCGN in the CNDDB.
4. At the suggestion of Leslie Welch (Angeles National Forest Biologist) UltraSystems had an informal professional consultation with Mike San Miguel, a biologist who is very familiar with the bird species within the project area. He recommended surveys for only two bird species, the Least Bells Vireo and the Southwestern Willow Flycatcher. There was no mention of the CCGN. The record of this consultation is provided in Attachment 6.
5. During the NOP 30-day review period no response was received from any responsible agencies or the public that indicated that protocol surveys should be conducted for the CCGN.
6. UltraSystems during September 2008 has verified by reexamining the literature data (see Attachment 5) that none of the conditions described above have changed.

Southwestern Pond Turtle: It was determined that the Southwestern Pond Turtle would not occur on the project site for the following reasons:

1. No recent occurrences (within last 50 years) have been documented within the project quad; and no occurrences within 5 miles of the project site on the surrounding quads. Maps and tables for the 9 quads from the CNDDB are provided in Attachment 7.

2. There were no incidental observations of Southwestern Pond Turtle recorded during the field surveys which were performed by biologists that are highly familiar with Southwestern Pond Turtle morphology and behavior.
3. The elevation of the project site is well below the records shown for the Southwestern Pond Turtle in the CNDDB.
4. During the NOP 30-day review period no response was received from any responsible agencies or the public that indicated that focused surveys should be conducted for the Southwestern Pond Turtle.
5. UltraSystems during September 2008 has verified by reexamining the literature data (see Attachment 7) that none of the conditions described above have changed.

Coast Range Newt: It was determined that the Coast Range Newt would not occur on the project site for the following reasons:

1. No recent occurrences (within last 50 years) have been documented within the project quad; and no occurrences within 5 miles of the project site on the surrounding quads. Maps and tables for the 9 quads from the CNDDB are provided in Attachment 8.
2. There were no incidental observations of Coast Range Newt recorded during the field surveys which were performed by biologists that are highly familiar with Coast Range Newt morphology and behavior.
3. During the NOP 30-day review period no response was received from any responsible agencies or the public that indicated that focused surveys should be conducted for the Coast Range Newt.
4. UltraSystems during September 2008 has verified by reexamining the literature data (see Attachment 8) that none of the conditions described above have changed.

Bat Species

UltraSystems conducted a standard literature search which included special status bat species. The results of the general literature search indicated that the project site is within the range of four special status species of bats. These include: Pallid Bat, Western Red Bat, Townsend's Big-eared Bat, and the Spotted Bat.

1. No recent occurrences (within last 50 years) have been documented within the project quad; and no occurrences within 5 miles of the project site on the surrounding quads. Maps and tables for the 9 quads from the CNDDB are provided in Attachment 9.
2. There were no incidental observations of special status species bats recorded during the field surveys that were performed by biologists who are highly familiar with bat morphology, behavior, and signs.
3. During the NOP 30-day review period no response was received from any responsible agencies or the public that indicated that focused surveys should be conducted for bats.
4. UltraSystems during September 2008 has verified by reexamining the literature data (see Attachment 9) that none of the conditions described above have changed.

Current Project Status

It is our understanding that the County requested this backup information in response to two letters received from responsible resource agencies in response to the 45-day public circulation of the Draft EIR that recommended that three additional special status wildlife species and relevant bats species be included in the analysis. The two comment letters were received from:

1. United States Fish and Wildlife Service (USFWS) dated June 17, 2008
2. California Department of Fish and Game (CDFG) letter dated June 24, 2008

Agency Comments

> The comment letter from the USFWS stated that the project site "contains **0.3 acres of CSS and 3.8 acres of RAFSS, which are suitable habitat types for the federally threatened Coastal California Gnatcatcher** (*Polioptila californica californica*)."
>
> The CDFG letter commented that the EIR did not **address the potential for occurrence of Southwestern Pond Turtle (*Actinemys marmorata pallida*) and Coast Range Newt (*Taricha torosa torosa*),** both of which are California Species of Special Concern. The CDFG also commented that "the site also supports habitat for the federally threatened Coastal California Gnatcatcher…" and therefore should have focused surveys conducted on the project site. The CDFG further recommended avoidance of "all bat roosting and nursery habitat including on site structures between March 1 and September 15 to avoid the breeding season for bats unless preconstruction surveys are conducted…and no bat roosts or nurseries are found within the project area."

General Response

The comments received from the USFWS and CDFG would have been more appropriately submitted in response to the NOP, which would have allowed time for focused surveys to have been conducted and the results included in the Draft EIR. Since these responsible agencies have submitted these comments in response to the Draft EIR, it is UltraSystems recommendation that the County conduct standard preconstruction surveys for the additional wildlife species they have identified, and make this a condition of project approval.

Thank you for allowing UltraSystems to provide this information for the County of Los Angeles Department of Public Works. If you have any additional comments or questions, please contact me at 949/788-4900.

Sincerely,

ULTRASYSTEMS ENVIRONMENTAL INC.
Richard Dean Friesen, PhD.
Manager of Biological Resources

Richard Dean Friesen

Attachements
CC: Long Thang, LACDPW
Gene Anderson, Ultrasystems

ENCLOSURE 4

FIELD DATA SHEETS

CAGN SURVEYS

Recorder: DGE Add'l Person: none GPS Unit: _____
Project: Santa Anita Survey Section: — Map #: none
Date: 12/4/08 Survey Type: CAGN Survey 1 of 9
Time Start: 0800 Time End: 1030
Start: T: 52 CC: 20 Wind Sp/Dir: calm General Weather Condition: _____
End T: 56 CC: 0 Wind Sp/Dir: calm General Weather Condition: _____

Map/ GPS #	Time	Species	Age	Sex	Point Type	Comments
		NOFL	A J U	M F U		
		WREN	A J U	M F U		
		AMCR	A J U	M F U		
		SCJA	A J U	M F U		WCSJA
		MODO	A J U	M F U		
		SPTO	A J U	M F U		
		BUSH	A J U	M F U		
		CATH	A J U	M F U		
		COSTA	A J U	M F U		
		YRWA	A J U	M F U		
		LEGO	A J U	M F U		
		DEJU	A J U	M F U		
		CALT	A J U	M F U		
		CATT	A J U	M F U		
		WCSP	A J U	M F U		
		RTHA	A J U	M F U	call & observed perched & flying over central part of MSPS	
		WEKI	A J U	M F U		
		Mule Deer	A J U	M F U	pellets, tracks, &	individual
		Mnth Lion	A J U	M F U	tracks	
		Crickets	A J U	M F U		
		coyote	A J U	M F U	tracks	
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

CAGN SURVEYS

Recorder: DGE Add'l Person: — GPS Unit: _____
Project: Santa Anita Survey Section: Santa Anita M#LSS Map #: _____
Date: 12/19/08 Survey Type: CAGN Survey 2 of 9
Time Start: 0800 Time End: 1030
Start: T: 47 CC: 0 Wind Sp/Dir: calm General Weather Condition: cool/chill
End T: 50 CC: 0 Wind Sp/Dir: calm General Weather Condition: _____

Map/ GPS #	Time	Species	Age	Sex	Point Type	Comments
		WREN	A J U	M F U		
		CALT	A J U	M F U		
		AMCR	A J U	M F U		
		LEGO	A J U	M F U		
		RTHA	(A) J U	M F U		in sycamore @ north end just outside site
		RTHA	A (J) U	M F U		in sycamore @ southerd of SPS, foraging
		YRWA	A J U	M F U		
		DEJU	A J U	M F U		
		WSJA	A J U	M F U		
		ANHU	A J U	M F U		
		bear scat	A J U	M F U		
		ROPI	A J U	M F U		
		WEKI	A J U	M F U		
		MP tracks	A J U	M F U		
		MODO	A J U	M F U		
		BLPH	A J U	M F U		
		ACWO	A J U	M F U		
		HOFI	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
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			A J U	M F U		
			A J U	M F U		

CAGN SURVEYS

Recorder: DLG Add'l Person: — GPS Unit: —
Project: Santa Anita Survey Section: — MSPS Map #: —
Date: 1/5/09 Survey Type: CAGN Survey 3 of 9
Time Start: 0815 Time End: 1030
46 Start: T: ~~0815~~ CC: 10 Wind Sp/Dir: calm General Weather Condition: cold
50 End T: ~~1030~~ CC: 60 Wind Sp/Dir: calm General Weather Condition: chilly

Map/ GPS #	Time	Species	Age	Sex	Point Type	Comments
		ANHU	A J U	M F U		
		SPTO	A J U	M F U		
		WREN	A J U	M F U		
		CALT	A J U	M F U		
		WSJA	A J U	M F U		
		BEWR	A J U	M F U		
		ACWO	A J U	M F U		
		YRWA	A J U	M F U		
		EUST	A J U	M F U		
		CORA	A J U	M F U		
		NOFL	A J U	M F U		
		BTPI	A J U	M F U		
		HOFI	A J U	M F U		
		OATI	A J U	M F U		
		LEGO	A J U	M F U		
		NUMA	A J U	M F U		
		NOMO	A J U	M F U		
		RTHA	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
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			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

CAGN SURVEYS

Recorder: DLG Add'l Person: — GPS Unit: _____
Project: Santa Anita Survey Section: SPS Map #: _____
Date: 1/19/09 Survey Type: CAGN Survey 4 of 9
Time Start: 0915-1130 Time End: 1130
Start: T: 62 CC: 100 Wind Sp/Dir: 0-1 General Weather Condition: cloudy, cool
End T: 70 CC: 100 Wind Sp/Dir: 1-2 General Weather Condition: cloudy, nice

Map/ GPS #	Time	Species	Age	Sex	Point Type	Comments
		CALT	A J U	M F U		
		MODO	A J U	M F U		
		WOSJA	A J U	M F U		
		LEGO	A J U	M F U		
		DEJU	A J U	M F U		
		YRWA	A J U	M F U		
		ACWO	A J U	M F U		
		WREN	A J U	M F U		
		NOMO	A J U	M F U		
		ANHU	A J U	M F U		
		BTPI	A J U	M F U		
		CEWA	A J U	M F U		
		OATI	A J U	M F U		
		SPTO	A J U	M F U		
		NOFL	A J U	M F U		
		AMCR	A J U	M F U		
		AMKE	A J U	M F U		
		HOFI	A J U	M F U		
		BLPH	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

CAGN SURVEYS

Recorder: DGE Add'l Person: N/A GPS Unit: _____
Project: Santa Anita Survey Section: SPS Map #: _____
Date: 2/2/09 Survey Type: CAGN Survey 5 of 9
Time Start: 0830 Time End: 1100
Start: T: 63 CC: 0 Wind Sp/Dir: calm General Weather Condition: sunny
End T: 67 CC: 0 Wind Sp/Dir: calm General Weather Condition: sunny

Map/ GPS #	Time	Species	Age	Sex	Point Type	Comments
		NOMO	A J U	M F U		
		WREN	A J U	M F U		
		YRWA	A J U	M F U		
		LEGO	A J U	M F U		
		SPTO	A J U	M F U		
		NOFL	A J U	M F U		
		ANHU	A J U	M F U		
		CALT	A J U	M F U		
		BEWR	A J U	M F U		
		DEJU	A J U	M F U		
		OATI	A J U	M F U		
		MODO	A J U	M F U		
		ACWO	A J U	M F U		
		CEWA	A J U	M F U		
		WSTA	A J U	M F U		
		RTHA	A J U	M F U		
		BUSH	A J U	M F U		
		bear	A J U	M F U	trades	
		canid	A J U	M F U	↓	
		muleDeer	A J U	M F U		
		honeybee	A J U	M F U		
		chipmunk	A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		
			A J U	M F U		

ENCLOSURE 5

WILDLIFE SPECIES DETECTED DURING COASTAL CALIFORNIA GNATCATCHER SURVEYS

Wildlife Species Observed within and adjacent to the Santa Anita Project SPS

Scientific Name	Common Name
INVERTEBRATES	
Order Hymenoptera	Ants, Bees, and Wasps
Family Apidae	
Apis mellifera	western honeybee
BIRDS	
Order Falconiformes	Diurnal Birds of Prey
Family Accipitridae	
Buteo jamaicensis	red-tailed hawk
Family Falconidae	
Falco sparverius	American kestrel
Order Columbiformes	Pigeons and Doves
Family Columbidae	
Patagioenas fasciata	band-tailed pigeon
Zenaida macroura	mourning dove
Columba livia	rock dove
Order Apodiformes	Swifts and Hummingbirds
Family Trochilidae	
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Order Piciformes	Woodpeckers
Family Picidae	
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Order Passeriformes	Song birds
Family Tyrannidae	
Sayornis nigricans	black phoebe
Tyrannus verticalis	western kingbird
Family Corvidae	
Aphelocoma californica	western scrub jay
Corvus corax	common raven
Corvus brachyrhynchos	American crow
Family Aegithalidae	
Psaltriparus minimus	bushtit
Family Troglodytidae	
Thryomanes bewickii	Bewick's wren
Family Paridae	
Baeolophus inornatus	oak titmouse
Family Timaliidae	
Chamaea fasciata	wrentit
Family Mimidae	
Toxostoma redivivum	California thrasher
Family Sturnidae	
Sturnus vularis	European starling
Family Parulidae	
Dendroica coronata	yellow-rumped warbler
Family Emberizidae	
Pipilo crissalis	California towhee
Pipilo maculates	spotted towhee
Junco hyemalis	dark-eyed junco
Zonotrichia leucophrys	white-crowned sparrow
Family Fringillidae	
Carduelis psaltria	lesser goldfinch
Carpodacus mexicanus	house finch

Scientific Name	Common Name
MAMMALS	
Order Rodentia	Rodents
Family Sciuridae	
Tamias sp.	chipmunk species
Order Carnivora	Carnivores
Family Canidae	
Canis latrans	coyote
Family Felidae	
Puma concolor	mountain lions
Order Artiodactyla	Even-toed Ungulates
Family Cervidae	
Odocoileus hemionus	mule deer

EDAW Inc
515 South Flower Street, 9th Floor, Los Angeles, California 90071
T 213.593.8042 F 213.593.7715 www.edaw.com

July 2, 2008

Mr. Long Thang
Water Resources Division
Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803

Subject: 2008 Rare Plant Surveys for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project in Arcadia, California

Dear Mr. Thang,

This letter report summarizes the results of a series of rare plant surveys conducted by EDAW, Inc. (EDAW) during 2008 in support of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project. A series of rare plant surveys was conducted by UltraSystems Environmental, Inc. (UltraSystems) in 2007 and no rare plant species were observed. Due to unfavorably dry weather conditions, however, it was determined that many plants may not have been detectable during the 2007 surveys. Los Angeles County Department of Public Works (LACDPW) contracted EDAW to complete additional surveys in 2008 as recommended by UltraSystems in order to further assure that any rare plants within the project site would be detected. EDAW surveyed the Middle Sediment Placement Site in April and again in May of 2008. No rare plants were detected during 2008 surveys.

Survey conditions in 2008 were better than in 2007; however, conditions were still not particularly favorable, due to lower than average rainfall in the spring months. Average precipitation in the city of Arcadia from January to May is 13.91 inches. [1] In 2008, the city of Arcadia averaged 18.59 inches of rain from January through May, compared to only 4.67 inches during the same months in 2007. Most of the rain (13.49 inches) in 2008 occurred during uncharacteristically heavy storm events January, however, and rainfall from February to May 2008 is comparable to the same months in 2007.[2]

Project Location and Description

The Santa Anita Reservoir Dam Riser Modification and Sediment Removal Project (proposed project) is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles. The project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway.

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Santa Anita debris basin, and the Santa Anita Sediment Placement Site (SPS). These facilities are owned and operated by the Los Angeles County

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[1] Weather.com. *Monthly Averages for Arcadia, CA*. Available at: http://www.weather.com/weather/wxclimatology/monthly/graph/USCA0040?from=search

[2] WeatherUnderground. *History for KCAARCAD1*. Available at: http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAARCAD1&graphspan=month&month=1&day=1&year=2008

Department of Public Works (LACDPW). The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia.

The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area, but does not have sufficient capacity for the anticipated sediment to be removed from the reservoir. The Middle SPS area has always been planned for sediment storage use; apart from existing access roads it is relatively undisturbed and characterized by native vegetation because it has not been used for previous sediment storage activities. The Lower SPS area, located in the southerly end of the SPS areas, is a previously disturbed area that contains sediment from prior cleanouts of the reservoir, debris basin and other local flood protection facilities; it also does not have sufficient capacity to accommodate the expected volume of sediment from the reservoir, over 300,000 cubic yards. The proposed project would place approximately 250,000 cubic yards of excavated sediment in the Lower SPS and the remainder of sediment, up to 250,000 cubic yards, would be placed in the Middle SPS.

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir via conveyor belt, and placing it in the Santa Anita SPS. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south.

Methods

Rare plant surveys focused on those rare plant species identified by UltraSystems[3] as having a moderate potential to occur within the Middle SPS due to the presence of suitable habitat:

- Plummer's mariposa lily (*Calochortus plummerae*) – CNPS List 1B.2;
- Slender-horned spineflower (*Dodecahema leptoceras*) – State and Federally Endangered, CNPS List 1B.1;
- Mesa horkelia (*Horkelia cuneata* ssp. *puberula*) – CNPS List 1B.1;
- Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*) – CNPS List 1B.2.

Each plant species in the survey area was examined, however, in order to determine that no species present was sensitive. Characteristics and habitat requirements of the target species are further described in the 2007 *Rare Plant Survey Report.*[1]

The survey area encompassed the entirety of the Middle SPS, as shown in Figure 2-3 of the Santa Anita Reservoir Sediment Removal Project Environmental Impact Report. The surveys were conducted according to the California Native Plant Society Botanical Survey Guidelines (December 9, 1983, revised June 2, 2001), approved by the California Department of Fish and Game. Personnel were familiar with the phenology and habitat requirements of the target species. The surveys coincided with the known blooming periods of each of the target species (Plummer's mariposa lily, May to July; slender-horned spineflower, April to June; mesa horkelia, February to July; Robinson's pepper grass, January to July). The site was thoroughly examined by walking meandering transects through all vegetation and throughout the survey area. All plant species were identified at least to an extent to determine they were not the target or other sensitive species. Plants were either identified in

[3] UltraSystems Environmental, Inc. November 2007. *Rare Plant Survey Report: Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, Los Angeles County, CA*. Prepared for County of Los Angeles Department of Public Works, Water Resources Division.

the field or specimen collected for later identification. *The Jepson Manual*[4] and the *Jepson Online Interchange*[5] were referenced for scientific nomenclature.

Results

EDAW (Ms. Jeanette Duffels and Ms. Kathalyn Tung) performed surveys on April 16, 2008 and May 14, 2008 and required a total of 28 person-hours. On April 16, air temperature ranged from approximately 58º F to 75º F and skies were partly cloudy. On May 14, air temperature ranged from approximately 61º F to 86º F and skies were mostly clear. In both surveys, meandering transects were walked throughout the Middle SPS, achieving a complete visual coverage of the area. Cover types in the survey area included coastal sage scrub, Riversidian alluvial fan sage scrub, disturbed Riversidian alluvial fan sage scrub, coast live oak woodland, and bare dirt roads. A total of 100 (62 native, 38 non-native) plant species were detected in the Middle SPS during the 2008 rare plant surveys. No rare plants were detected during either survey. A list of plant species detected and during the 2008 surveys is enclosed.

Yours sincerely,



Jeanette Duffels
Biologist
Jeanette.Duffels@edaw.com

Enclosure: Plant Species Identified in the Survey Area of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project during 2008 Surveys

[4] Hickman, J.C., (ed.) 1993. *The Jepson Manual; Higher Plants of California*. University of California Press, Berkeley.

[5] Jepson Flora Project. *Jepson Online Interchange for California Floristics.* Available at: http://ucjeps.berkeley.edu/interchange.html

Plant Species Identified in the Survey Area of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project during 2008 Surveys

SCIENTIFIC NAME	COMMON NAME
Polypodiaceae	**polypody family**
Polypodium californicum	California polypody
Pteridaceae	**brake family**
Pellaea mucronata	bird's-foot fern
Selaginellaceae	**spike-moss family**
Selaginella bigelovii	Bigelow's spike moss
Anacardiaceae	**sumac or cashew family**
Malosma laurina	laurel sumac
Rhus integrifolia	lemonadeberry
Rhus ovata	sugar bush
Toxicodendron diversilobum	poison oak
Apiaceae	**carrot family**
Anthriscus caucalis	bur-chervil
Conium maculatum	poison hemlock
Asteraceae	**sunflower family**
Achillea millefolium	common yarrow
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Baccharis salicifolia	mule fat
Bidens pilosa var. *pilosa*	common beggar-ticks
Carduus pycnocephalus	Italian thistle
Centaurea melitensis	tocalote
Chaenactis glabriuscula	yellow pincushion
Cirsium vulgare	bull thistle
Conyza canadensis	horseweed
Delairea odorata	cape ivy
Encelia farinosa	brittlebush
Eriophyllum confertifolium	golden yarrow
Filago gallica	narrow-leaved filago
Gnaphalium californicum	California cudweed
Gnaphalium luteo-album	everlasting cudweed
Helianthus annuus	common sunflower
Lactuca serriola	prickly lettuce
Lepidospartum squamatum	scale-broom
Senecio vulgaris	common groundsel
Silybum marianum	milk thistle
Sonchus oleraceus	common sow thistle
Boraginaceae	**borage family**
Cryptantha intermedia	common cryptantha
Brassicaceae	**mustard family**
Brassica geniculata	mustard
Lepidium nitidum	shining peppergrass
Raphanus sativus	wild radish

Plant Species Identified in the Survey Area of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project during 2008 Surveys

Sisymbrium orientale□	oriental hedge mustard
Cactaceae	**cactus family**
Opuntia littoralis	coast prickly pear
Caprifoliaceae	**honeysuckle family**
Lonicera subspicata	southern honeysuckle
Sambucus mexicana	blue elderberry
Caryophyllaceae	**pink family**
Silene gallica□	windmill pink
Stellaria media□	common chickweed
Convolvulaceae	**morning-glory family**
Calystegia macrostegia	island morning glory
Convolvulus arvensis□	bindweed
Crassulaceae	**stonecrop family**
Dudleya lanceolata	lanceleaf dudleya
Cucurbitaceae	**gourd family**
Marah macrocarpus	wild cucumber
Cuscutaceae	**dodder family**
Cuscuta californica	dodder
Euphorbiaceae	**spurge family**
Euphorbia peplus□	petty spurge
Ricinus communis□	castor bean
Fabaceae	**legume family**
Lotus purshianus	Spanish clover
Lotus scoparius var. *brevialatus*	short-winged deerweed
Lotus strigosus	strigose lotus
Lupinus bicolor	miniature lupine
Lupinus sparsiflorus	Coulter's lupine
Lupinus truncatus	blunt-leaved lupine
Lupinus sp.	annual lupine
Melilotus indicus□	sourclover
Trifolium hirtum□	rose clover
Fagaceae	**oak family**
Quercus agrifolia var. *agrifolia*	coast live oak
Quercus dumosa	scrub oak
Quercus engelmannii	Engelmann oak
Geraniaceae	**geranium family**
Erodium cicutarium□	filaree
Grossulariaceae	**gooseberry family**
Ribes aureum	golden currant

Plant Species Identified in the Survey Area of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project during 2008 Surveys

Hydrophyllaceae	**waterleaf family**
Eucrypta chrysanthemifolia	spotted hideseed
Phacelia cicutaria var. *hispida*	caterpillar phacelia
Phacelia ramosissima	branching phacelia
Lamiaceae	**mint family**
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Malvaceae	**mallow family**
Malva parviflora	cheeseweed
Onagraceae	**evening primrose family**
Camissonia bistorta	California sun cup
Camissonia californica	California primrose
Clarkia purpurea	purple clarkia
Epilobium ciliatum	slender willow-herb
Platanaceae	**plane tree, sycamore family**
Platanus racemosa	western sycamore
Polygonaceae	**buckwheat family**
Eriogonum fasciculatum var. *foliolosum*	California buckwheat
Portulacaceae	**purslane family**
Claytonia parviflora	streambank springbeauty
Claytonia perfoliata	miner's lettuce
Rhamnaceae	**buckthorn family**
Rhamnus californica	coffeeberry
Rhamnus ilicifolia	holly-leaf redberry
Rosaceae	**rose family**
Cercocarpus betuloides	mountain mahogany
Heteromeles arbutifolia	toyon
Rubiaceae	**madder family**
Galium aparine	goose grass
Salicaceae	**willow family**
Salix lasiolepis	arroyo willow
Scrophulariaceae	**figwort family**
Keckiella cordifolia	heart-leaved penstemon
Mimulus aurantiacus var. *aurantiacus*	sticky monkeyflower
Solanaceae	**nightshade family**
Nicotiana glauca	tree tobacco
Solanum douglasii	Douglas' nightshade
Arecaceae	**palm family**

Plant Species Identified in the Survey Area of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project during 2008 Surveys

Washingtonia sp.	fan palm
Liliaceae	**lily family**
Chlorogalum sp.	soap plant
Yucca whipplei	our Lord's candle
Poaceae	**grass family**
Avena barbata□	slender wild oat
Bromus diandrus□	ripgut grass
Bromus hordeaceus□	soft chess
Bromus madritensis ssp. *rubens*□	foxtail chess
Bromus sterilis□	sterile brome
Cynodon dactylon□	bermuda grass
Leymus condensatus	giant ryegrass
Vulpia myuros□	rattail fescue
Pennisetum setaceum□	fountaingrass
Piptatherum miliaceum□	smilo grass

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BIOLOGICAL TECHNICAL REPORT

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Los Angeles County, CA

Prepared For:

Los Angeles County Department of Public Works
Water Resources Division
900 S. Fremont Avenue
Alhambra CA 91803
Contact: Belinda Kwan
(626) 458-6135

Prepared by:

UltraSystems Environmental, Inc.
100 Pacifica, Suite 250
Irvine, California 92618
Sandra Murcia, Biologist
Sarah Flack, Biologist
(949) 788-4900

November 2007

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INTRODUCTION

The purpose of this biological technical report is to assess the important biological resources in the areas associated with the Los Angeles County Department of Public Works' (LACDPW) Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project (Project). This report analyzes the potential impacts to those resources from project implementation, determines the level of significance of those impacts, and recommends mitigation measures to reduce the level of significance of potential impacts for the portion of the site located in the City of Arcadia. Potential impacts to biological resources within the Angeles National Forest portion of the project site are discussed in the *Biological Evaluation for Sensitive Species Report* (UltraSystems 2007a).

PROJECT LOCATION

The proposed project site is located within the San Gabriel Valley, in the U.S. Geological Survey Mount Wilson, CA 7.5' series topographic quadrangle (Township 1N, Section 10, Range 11W). The northern portion of the project area is located within the Los Angeles River Ranger District of the Angeles National Forest and the southern portion is located within the City of Arcadia (*Figure 1. Regional Vicinity Map*). The site is approximately 1.25 miles north of Foothill Boulevard and meets the Santa Anita Reservoir at its northern limits. It is bounded by Highland Oaks Drive to the west and Cloverleaf Drive to the east.

Land uses adjacent to the project area include the Angeles National Forest and the City of Arcadia Wilderness Park to the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

PROJECT ACTION AREA

The project action area, or project site, includes the Santa Anita Dam, the Santa Anita Reservoir, the tunnel from the reservoir to the streamside access road, the access road (AR) and the Santa Anita Proposed Sediment Placement Site (SPS) (*Figure 2. Project Action Area*). The Santa Anita Reservoir, the tunnel and a portion of the access road are located in the Angeles National Forest. The rest of the access road and the Proposed SPS are located in the City of Arcadia. The Santa Anita Debris Basin (DB) is also included in surveys conducted for this report. While the DB will not be impacted by project activities, portions of it are adjacent to the AR. Project activities along the access road may have indirect impacts on plants and wildlife occurring in adjacent portions of the DB therefore the DB is discussed within this report only for the purpose of analyzing these indirect impacts. The total project area, including the reservoir, tunnel with conveyor belt, AR, and Proposed SPS is approximately 125 acres. This report covers the portion of the project site within the City of Arcadia, including the AR and Proposed SPS.

PROJECT DESCRIPTION

The proposed project consists of modifying dam inlet/outlet works, draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in the Proposed SPS. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the SPS on the south.

The cleanout of the Santa Anita Reservoir is scheduled to begin during the summer of 2009, with the preparation of the NEPA/CEQA documents to begin this year (2007). The reservoir area (RES) is

approximately 13 acres and includes the Santa Anita reservoir, Santa Anita Dam and surrounding access road and canyon walls.

The project consists of the following components:

- *Dam Outlet Modification* - The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 to freely pass through the dam, thus meeting The California Department of Water Resources, Division of Safety of Dams (DSOD) seismic safety requirements.

- *Dry Excavation* - The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal project.

- *Sediment Conveyance* - The proposed project would transport sediment from the reservoir to the Proposed SPS using an electrical conveyor belt system and haul trucks. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the AR, and terminating at a staging area south of the Headworks, including part of the Arcadia Wilderness Park's north west parking lot. From here sediment would then be loaded onto the haul trucks and transported across the Wilderness Park parking lot, past the upper portion of the Debris Basin (DB), to the Proposed SPS area via an existing County maintenance road. It is estimated that about eight trucks at a time would be used to transport the sediment to the Proposed SPS.

  The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road above the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and Department of Public Works (DPW) AR to the Proposed SPS.

  Because modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

- *Sediment Placement* - Sediment placement would occur mainly in an approximately 13-acre area in the upper portion of the Middle SPS, located between the access road on the west, a stream on the east, and below the existing Upper SPS. Some sediment will be placed at the already disturbed Lower SPS, which will then be contour graded, landscaped, and closed out for future sediment placement. The amount of sediment that can be placed in the Lower SPS is being determined and it is anticipated that the majority of sediment from the reservoir will be placed in the 13-acre portion of the Middle SPS.

  The base of the 13-acre area can be tiered in order to accommodate up to 750,000 cubic yards of material; however, contour grading is planned for the Middle SPS so the actual sediment capacity is expected to be lower. The proposed ultimate height of the upper Middle SPS would be 60 feet. The western edge of the Proposed SPS will be contour graded and landscaped to serve as a visual buffer for the residences to the west.

The proposed project would require the removal of approximately 12 acres of native vegetation in the upper portion of the undeveloped Proposed SPS. The remaining one acre of the sediment placement footprint comprises of existing access roads. Approximately 500,000 cubic yards of sediment would be transported to the new SPS as part of the proposed project and then some of this sediment will be trucked to the Lower SPS along existing maintenance roads. The remaining sediment capacity in the 13-acre footprint, up to 250,000 cubic yards depending on contour grading, will be used for future routine and emergency sediment removal activities of other facilities served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, will be closed out for future sediment placement.

METHODS

Literature Review

UltraSystems reviewed available literature to identify any special status plants, wildlife, or sensitive habitats known from the vicinity of the project site. The review included the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2006) and the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) for the Mount Wilson, Azusa, and El Monte 7.5-minute series topographic quadrangles (CDFG 2007). Information on the location, status, and condition of California's endangered, threatened, rare, and sensitive plants, animals, and natural communities is maintained by CDFG in the CNDDB. UltraSystems also reviewed the Angeles National Forest sensitive species list and any designated critical habitats for endangered or threatened species in or near the project site. Angeles National Forest Sensitive Species are discussed in detail in the *Biological Evaluation for Sensitive Species Report* prepared for this project. Aerial photos of the site and surrounding land were also examined.

Field Surveys

General Biological Assessment

On June 5 and 6, 2006, biologists Sarah Flack and Sandra Murcia, botanist Teresa Salvato, and field technician Edith Kunihiro performed field surveys of the project site. The surveys assessed existing on-site conditions and the potential for sensitive biological resources to be present within the RES, AR, and Proposed SPS. The assessment included a 100% pedestrian survey of the project action area (*Figure 2. Project Action Area*). The entire DB was also surveyed to provide information necessary to analyze project alternatives that my affect this area. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive plant and wildlife species, sensitive habitats, or potential jurisdictional waters present on site.

The purpose of the surveys was to determine biological resources present within the study site and adjacent areas and assess potential impacts to those resources. During the surveys, particular focus was placed on locating sensitive biological resources including special status species and their habitats. Potential impacts to biological resources were recorded. Focused surveys for special status species were not conducted at that time.

Rare Plant Survey

On March 2, June 14, and July 5, 2007, UltraSystems' biologists Sandra Murcia and Katie Kurtz and botanist Teresa Salvato conducted rare plant surveys within the RES, AR and Proposed SPS. Methods used for the rare plant surveys comply with the CDFG's Guidelines for Assessing the Affects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities (CDFG 2000). A floristic

survey was conducted, so that all species observed were identified to the point where their status could be determined. The assessment included a 100% pedestrian survey of the project study area. The search pattern used was a random meander within the project site. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological resources including habitats that may support special status plant species (*Appendix C. Site Photographs*). Details regarding the Rare Plant Survey are included in the *Rare Plant Survey Report* (UltraSystems 2007b).

Least Bell's Vireo Survey

On April 10, April 23, May 13, May 28, June 14, June 29, July 10, and July 20, 2007, biologist Andrew Forde conducted presence-absence surveys for Least Bell's vireo (*Vireo bellii pusillus*) (LBV) at suitable habitat areas within the project area including the RES and AR. Surveys were conducted according to the USFWS Least Bell's Vireo Survey Guidelines (U.S. F.W.S, 2000).

Eight individual surveys were conducted at least 10 days apart between sunrise and 11:00 am. Surveys were not conducted during inclement weather. Weather conditions during the surveys were ideal. A Garmin Etrex Global Positioning Unit and Bausch and Lomb Elite 8x42 Waterproof Binoculars with a focal range of less than 5 feet were used. At each survey point, Mr. Forde listened for LBV calls and watched for visual cues. Details regarding the LBV Survey are included in the *Least Bell's Vireo Presence-Absence Survey Report* (Forde 2007a).

Southwestern willow flycatcher Survey

On May 25, June 4, June 30, July 5, and July 15, 2007, Andrew Forde conducted presence-absence surveys for southwestern willow flycatcher (*Empidonax traillii extimus*) (SWWF) at suitable habitat areas within the project area including the RES and AR. Surveys followed the USFWS Southwestern Willow Flycatcher Survey Protocol (USFWS, 2000). Five surveys were conducted during three survey periods; one during Survey Period 1 (May 15 – May 31), one during Survey Period 2 (June 1 – June 21) and three during Survey Period 3 (June 22 – July 17). Surveys were conducted between one hour before sunrise and 10:00 am at least five days apart. Weather conditions during the surveys were ideal.

To elicit responses from potentially occurring SWWF, Mr. Forde broadcast recorded conspecific vocalizations using a second-generation Apple iPod shuffle and a Sony SRS-T33 Digital Active Speaker System. A Garmin Etrex Global Positioning Unit and Bausch and Lomb Elite 8x42 Waterproof Binoculars with a focal range of less than 5 feet were also used. At each survey point, Mr. Forde listened, broadcast vocalizations, and then listened and watched for responses. The initial survey during the migration period, survey period 1 and 2, included the DB and boulder filled streambed adjacent to the AR; however, surveys in survey period 3 mostly concentrated on the DB due to the lack of suitable nesting habitat in the streambed. This methodology is in accordance with the *Southwestern Willow Flycatcher Survey Protocol*. Details regarding the SWWF Survey are included in the *Southwestern Willow Flycatcher Presence-Absence Survey Report* (Forde 2007b).

Coast Horned Lizard and Silvery Legless Lizard Survey

On May 25, June 4, June 30, July 5 and July 15, 2007, UltraSystems' biologist Katie Kurtz and biologist Andrew Forde conducted concurrent surveys for the coast (San Diego) horned lizard (*Phrynosoma coronatum blainvillii*) and the silvery legless lizard (*Anniella pulchra pulcrha*) within potential habitat on the project site in the portion of the AR adjacent to the DB and the Proposed SPS. Surveys to determine presence/absence for each lizard species were conducted during their active seasons (March to July). The assessment included a 100% pedestrian survey for both lizard species within the DB and the Proposed SPS. The search pattern used was a random meander within the survey area. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological

resources including habitats that may support either of these species. The following is a description of the methods used to survey for each species:

- **Coast (San Diego) Horned Lizard**
  Coast (San Diego) horned lizards (CHL) bask on low boulders and rocks, with the highest level of activity occurring during the middle of the day in the spring and fall. Surveys for this species were conducted within the portion of the DB adjacent to the AR and within the Proposed SPS during the appropriate time of day. The surveys consisted of visually searching appropriate areas from a safe distance as to not disturb any potentially basking lizards.

- **Silvery Legless Lizard**
  Silvery legless lizards (SLL) rely on camouflage for protection. Surveys consisted of raking the leaf litter surrounding the base of large oak trees located on the Proposed SPS. To determine their presence/absence within these areas, the soil beneath the leaf litter was visibly searched for any movement by these elusive lizards.

Details regarding the CHL and SLL Surveys are included in the *Coast (San Diego) Horned Lizard and Silvery Legless Lizard Surveys Letter Report* (UltraSystems 2007c).

RESULTS

Literature review

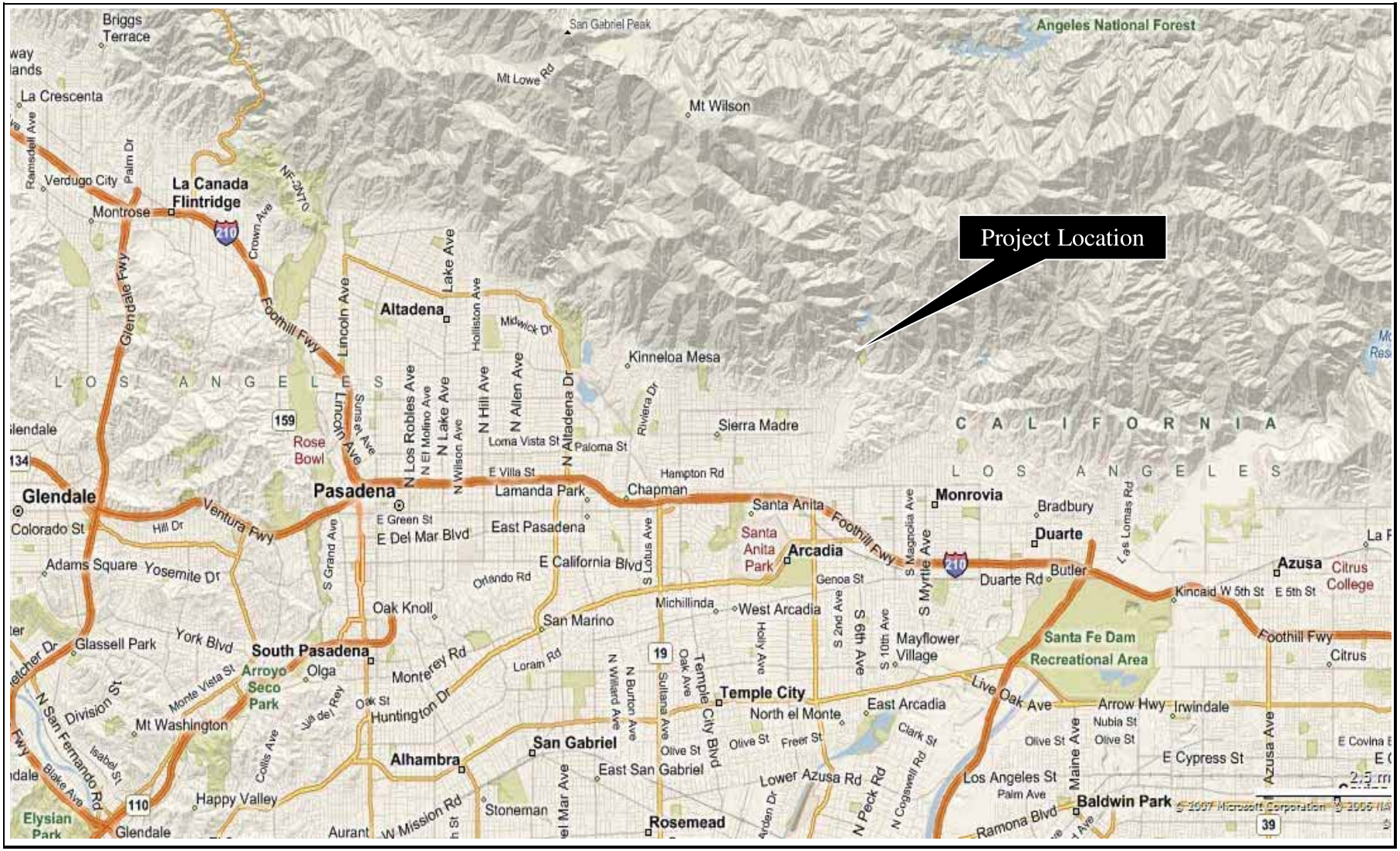
The results of the literature review indicate the potential occurrence of fifteen (15) special status plant species, four (4) sensitive plant communities and six (6) special status wildlife species. *Appendix A: Sensitive Species with Potential to Occur within the Project Site* presents the special status species known from the region, their agency status designations, habitat requirements, and potential for occurrence based on the presence of suitable habitat in the project area. Most of these sensitive species are not likely to occur in the project area due to the lack of suitable physical and biological characteristics, hence, a low potential for occurrence is assigned to them. Sensitive plant and wildlife species with the potential to occur in areas of the project site that will be affected by project activities have been given a moderate potential for occurrence.

Critical Habitat

The project site is outside of any federally designated or proposed critical habitat for sensitive species (USFWS 2007). Critical habitat within a 5-mile radius of the project area includes only an area directly to the south for Braunton's milk-vetch (*Astragalus brauntonii*), a federally Endangered member of the *Fabaceae* family.

Plants

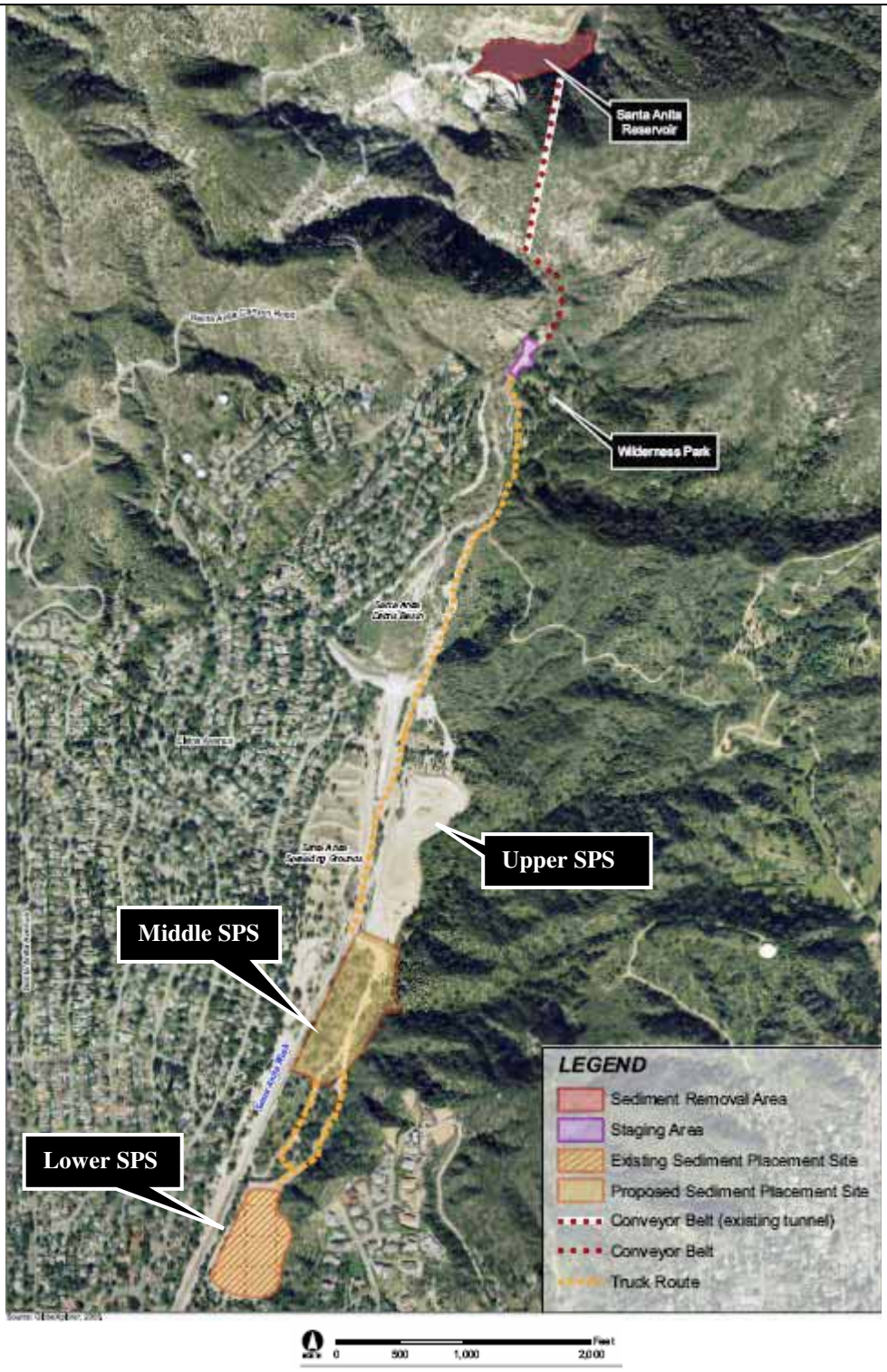
There are fifteen (15) special status plant species known to occur in the region of the study site. Slender-horned spineflower (*Dodecahema leptoceras)* is listed by both State and federal governments as Endangered. Braunton's milk-vetch (*Astragalus brauntonii*) and San Diego ragweed (*Ambrosia pumila*) are listed by the federal government as Endangered.



UltraSystems

Source: Microsoft Corporation, 2007

Figure 1. Regional Vicinity Map



UltraSystems

Source: EDAW, 2007
Santa Anita Reservoir EIR/EA

Figure 2. Project Action Area

Many portions of the project area (including the AR and RES) contain ruderal vegetation communities or such high amounts of non-native vegetation that no special status plant species are expected to occur within those areas. However some areas, such as the Proposed SPS, contain coast live oak woodland and coastal scrub with the potential as suitable habitat for several sensitive plant species. The potential for occurrence of sensitive plant species is evaluated below.

The following descriptions for sensitive plants potentially occurring in the project area are taken from the CNPS Inventory of Rare, Threatened and Endangered Plants of California (CNPS 2006).

1. **San Diego ragweed** (*Ambrosia pumila*) is an herbaceous perennial herb federally listed as Endangered and listed as a CNPS 1B species. This species is found in disturbed, dry, sunny places along roadsides below 490 feet in valley grassland habitats of Coastal San Diego County, western Riverside County and Baja California. It is found in chaparral, coastal scrub and foothill grassland. It occurs at elevations from 65-1,360 feet. Its blooming period is from April to October.

   San Diego ragweed has a low potential for occurrence throughout the project action area due to lack of suitable habitat.

2. **Greata's aster** (*Aster greatae*) is an endemic perennial herb designated as a CNPS List 1B species. It is known from Los Angeles, San Bernardino and Ventura counties. It is found in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest and riparian woodland habitats on mesic substrates. It occurs at elevations from 680-6,600 feet. Its blooming period is from June to October.

   Greata's aster has a moderate potential to occur in riparian areas of the project site, including the area surrounding the creek adjacent to the AR. It has a low potential for occurrence in all other areas. Direct impacts to the vegetation adjacent to the AR are not expected, as equipment use will remain along the existing access road. Measures to avoid indirect impacts to these areas should be implemented.

3. **Braunton's milk-vetch** (*Astragalus brauntonii*) is a perennial herb endemic to California. It is designated as a federally Endangered and CNPS List 1B species. It is known from Ventura, Los Angeles and Orange counties in southern California. The species occurs in coastal scrub, chaparral and valley and foothill grassland habitats in recently burned or disturbed areas. It is associated with stiff gravelly clay soils or over limestone at elevations of 13-2,100 feet. Its blooming period is from February to July.

   Braunton's milk vetch has a low potential for occurrence throughout the project action area. Suitable habitat may exist in the Proposed SPS. According to Andrew Sanders at the University of California, Riverside Herbarium this species, unlike most, would be detectable even in a low-water year due to its large size and spreading growth habit.

4. **Plummer's mariposa lily** (*Calochortus plummerae*) is a bulbiferous perennial herb listed as a CNPS List 1B species. It occurs in rocky and sandy soils in low elevation coastal sage scrub and chaparral communities as well as cismontane woodlands, lower montane coniferous forests, and valley and foothill grasslands. It has been estimated that only one-third to one-tenth of the lily bulbs on a site may flower in a given year. Its blooming period is from May to July.

   Plummer's mariposa lily has a moderate potential for occurrence in the Proposed SPS. It has a low potential for occurrence elsewhere in the project action area.

5. **Southern tarplant** (*Centromadia pungens* ssp. *australis*) is an annual herb designated as a CNPS List 1B species. It is found in marshes and swamps, valley and foothill grassland and vernal pool habitats. It is known from Los Angeles, Orange, Santa Barbara, San Diego and Ventura counties as well as Baja California, Mexico. Its blooming period is from May to November and occurs from 0 to 1,475 feet in elevation.

   Southern tarplant has a low potential for occurrence throughout the project action area due to lack of suitable habitat.

6. **Parry's spineflower** (*Chorizanthe parryi* var. *parryi*) is an annual herb designated as a CNPS List 3 species. It is known from Los Angeles, Riverside and San Bernardino counties. It is found in coastal scrub and chaparral habitats on dry slopes and flats. It is associated with dry sandy soils and found at elevations of 130-5,600 feet. Its blooming period is from April to June.

   Parry's spineflower has a low potential for occurrence in the project action area. Although there is suitable habitat within the Proposed SPS, Parry's spineflower is possibly extirpated from Los Angeles County.

7. **Slender-horned spineflower** (*Dodecahema leptoceras*) is an annual herb designated as State and federally Endangered and a CNPS List 1B species. It is found in chaparral, cismontane woodland and coastal sage scrub habitats on sandy soils. This plant is known from occurrences in Los Angeles, Riverside and San Bernardino counties.

   Slender-horned spineflower has a moderate potential for occurrence in the coastal sage scrub community in the Proposed SPS. It has a low potential for occurrence elsewhere in the project action area.

8. **San Gabriel bedstraw** (*Galium grande*) is an endemic deciduous shrub designated as a CNPS List 1B species. This species is known only from Los Angeles County. It occurs in broad-leafed upland forest, chaparral, cismontane woodland and lower montane coniferous forest habitats. It is found at elevations from 1,400-4,920 feet and blooms from January to July.

   This species has a low potential for occurrence as no suitable habitat occurs within the project action area.

9. **Mesa horkelia** (*Horkelia cuneata* ssp. *puberula*) is a perennial herb designated as a CNPS List 1B species. It is known from Los Angeles, Orange, Santa Barbara and San Luis Obispo counties and possibly occurs in Riverside, San Bernardino and Ventura counties. It is found in chaparral, cismontane woodland and coastal scrub habitats on sandy or gravelly soils. It grows at elevations from 230 to 2,700 feet and blooms from February to July.

   Mesa horkelia has a moderate potential for occurrence in the coastal sage scrub community in the Proposed SPS. It has a low potential for occurrence elsewhere in the project action area.

10. **Coulter's goldfields** (*Lasthenia glabrata* ssp. *coulteri)* is an annual herb designated as a CNPS List 1B species. It inhabits marshes and swamps, playas, and vernal pool communities. It is known from Colusa, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo and Ventura counties as well as Baja California. Its occurrence in Los Angeles County has not been confirmed. It grows from 0-4,000 feet and blooms from February to June.

Coulter's goldfields has a low potential for occurrence as no suitable habitat occurs within the project action area.

11. **Robinson's pepper-grass** (*Lepidium virginicum* var. *robinsonii*) is an annual herb designated as a CNPS List 1B species. It is known from Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties and Baja California. It occurs in chaparral and coastal scrub communities from 0-2,900 feet and blooms from January to July.

    Robinson's pepper-grass has a moderate potential for occurrence in the coastal scrub habitat in the Proposed SPS. It has a low potential for occurrence elsewhere in the project area.

12. **San Gabriel linanthus** (*Linanthus concinnus*) is an endemic annual herb designated as a CNPS List 1B species. It is known from Los Angeles and San Bernardino counties. This plant grows in chaparral, lower montane coniferous forest and upper montane coniferous forest habitats in rocky openings. Its blooming period is from April to July and occurs at elevations from 4,900 to 9,000 feet.

    San Gabriel linanthus has a low potential for occurrence throughout the project action area as the site is outside of the species' elevational range.

13. **Orcutt's linanthus** (*Linanthus orcuttii*) is an annual herb designated as a CNPS List 1B species. It grows in chaparral, lower montane coniferous forest and pinyon and juniper woodlands in openings. It is known from Los Angeles, Riverside, San Bernardino and San Diego counties and Baja California. It grows at elevations from 3,000 to 7,035 feet and blooms from May to June.

    Orcutt's linanthus has a low potential for occurrence throughout the project action area as the site is outside of the species' elevational range.

14. **Parish's gooseberry** (*Ribes divaricatum* var. *parishii*) is an endemic deciduous shrub designated as a CNPS List 1B species. It grows in riparian woodland habitats and is known only from Los Angeles County. Its historical record consists of fewer than five occurrences, only 2 of which are known to exist today. It grows at elevations from 656 to 1,082 feet and blooms from February to April.

    Parish's gooseberry has a low potential to occur within the project action area. Although it occurs within riparian woodland, the AR only contains fragmented riparian vegetation.

15. **Sonoran maiden fern** *(Thelypteris puberula* var. *sonorensis)* is a rhizomatous herb that is designated as a CNPS List 2 species. The species is known from Los Angeles, Riverside, San Bernardino and Santa Barbara counties. It is found in meadows and seeps near streams from 160-1,800 feet. Its blooming period is from January to September.

    Sonoran maiden fern has a low potential for occurrence throughout the project action area due to a lack of suitable habitat.

Sensitive Plant Communities

Sensitive plant communities are natural communities that support concentrations of sensitive plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife. These communities are considered rare and important by CDFG and are therefore of high priority for inventory in the CNDDB. Sensitive plant communities are not afforded legal protection unless they support

protected species, except for wetland and riparian habitats, which cannot be filled without authorization from the U.S. Army Corps of Engineers (USACE) and CDFG.

The following sensitive plant communities are known from the CNDDB to occur in the vicinity of the project action area. Plant community descriptions and corresponding element codes used in this report are from Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

1. **Riversidean Alluvial Fan Sage Scrub (32700)** (RAFSS) is the most xeric expression of coastal sage scrub south of Point Conception. Typical stands are fairly open and dominated by California sagebrush (*Artemisia californica*), Eastern Mojave buckwheat (*Eriogonum fasciculatum*), and red brome (*Bromus rubens*), each attaining at least 20% cover.

   RAFSS is typically found on xeric sites such as steep slopes, severely drained soils, or clays that release stored soil moisture only slowly. At slightly higher elevations, it mixes with several southern Californian chaparrals (37000). This community occurs along the coastal base of the Transverse and Peninsular range from central Los Angeles County to the Mexican frontier.

   Within the project action area RAFSS was observed mainly within the Proposed SPS. It also occupies a large portion within the riparian area along upper portion of the AR (*Figure 2. Local Vicinity Map*). Minor trimming may occur along this portion of the AR within the RAFSS community.

2. **Southern Coast Live Oak Riparian Forest (61310)** is described by Holland as open to locally dense evergreen riparian woodlands dominated by coast live oak (*Quercus agrifolia*). This type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. This vegetation is typically found on bottomlands and outer floodplains along larger streams, on fine-grained, rich alluvium within Canyons and valleys of coastal southern California, mostly south of Pt. Conception. The project action area does not contain Southern Coast Live Oak Riparian Forest.

3. **Southern Sycamore-Alder Riparian Woodland (62400)** is a tall, open, broad-leafed, winter-deciduous streamside woodland dominated by western sycamore (*Platanus racemosa)* (and often also white alder). These stands seldom form closed canopy forests, and even may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species. Lianas that are common in riparian woodlands of Southern California include California blackberry (*Rubus ursinus)* and poison oak (*Toxicodendron diversilobum*). Lianas are perennial, woody climbers that have roots in the shaded, moist forest floor and leaves in the sun.

   This community can be found along very rocky streambeds subject to seasonally high-intensity flooding. White alders increase in abundance on more perennial streams, while sycamores favor more intermittent bodies of water. Sycamore-alder riparian woodlands occur along the Transverse and Peninsular ranges from Point Conception south into Baja California Norte. The project action area does not contain Southern Sycamore Alder Riparian Woodland.

4. **Open Engelmann Oak Woodland (71181)** is an evergreen woodland quite reminiscent of Blue Oak Woodland (71140) but is dominated by *Quercus engelmannii* with an understory of typical "grassland" species. Open Engelmann Oak Woodland (OEOW) prefers relatively moist sites on fine-textured soils of gentle slopes and valley bottoms and intergrades with Venturan (32300) or Riversidean (32700) Sage Scrubs on drier, rockier sites, and with Dense Engelmann Oak Woodland (71182) on more mesic sites. This community Often surrounds grassland potreros,

occupying the ecotone between the grassland (on fine-textured, deep soils) and surrounding shrub fields (on rockier, drier sites). This woodland is mainly found in the Santa Ana Mountains of San Diego and adjacent Riverside counties, usually below about 4,000 feet.

The project action area does not contain Open Engelmann Oak Woodland.

Wildlife

There are six (6) special status animal species known to occur in the region of the study site. Several of these species are listed as Threatened or Endangered at either the State or federal level and are described below. The following descriptions for sensitive wildlife potentially occurring in the project area are taken from the California Department of Fish and Game Species Accounts (CDFG 2005).

Amphibians

1. **Mountain yellow-legged frog** (*Rana muscosa*) is a federally Endangered species and CDFG Species of Special Concern. It is a highly aquatic frog that occupies rocky streams with cool waters. It feeds on small, streamside arthropods. In southern California it is found in the San Gabriel, San Bernardino and San Gabriel mountains. There are probably fewer than 100 adults remaining in southern California as a result of human-mediated habitat modifications.

   This species has a low potential for occurrence in the project action area as it is found only in the upper reaches of Prairie Creek/Vincent Gulch, Devil's Canyon and Alder Creek/East Fork in the San Gabriel Mountains.

Reptiles

2. **San Diego horned lizard** (*Phrynosoma coronatum blainvillii*) is a CDFG Species of Special Concern. It is a small, spiny, somewhat rounded lizard with distinct backward pointing spines on the head that inhabits coastal sage scrub and chaparral habitats associated with sandy, rocky, or shallow soils that support native harvester ants (*Pogonomyrmex* spp.). Key habitat components include open spaces for basking and loose friable soil for burrowing. Three factors have contributed to its decline: loss of habitat, overcollecting, and the introduction of exotic ants. In some places, especially adjacent to urban areas, the introduced ants have displaced the native species upon which the lizard feeds.

   The San Diego horned lizard has a moderate potential to occur in the Proposed SPS and within the DB adjacent to the AR. Native harvester ants were not observed during field studies, but are potentially available as a food source.

3. **Two-striped garter snake** (*Thamnophis hammondii*) is a CDFG Species of Special Concern. It is found in coastal California from Salinas to Baja California, Mexico. It is associated with permanent to semi-permanent bodies of water in a variety of habitats from sea-level to 8,000 feet. It forages primarily in and along streams taking fish and amphibians and their larvae.

   This species has a moderate potential for occurrence in the creek adjacent to the AR. However, the creek will not be impacted by project activities. It has a low potential for occurrence within the project action area.

Birds

4. **Black swift** (*Cypseloides niger*) is a CDFG Species of Special Concern. The black swift ranges from western North America to Central America and inhabits canyon areas with perennial water sources. Nests are built on canyon ledges, always near running water, often behind waterfalls. In southern California, the black swift is known from only a few breeding locations, including Sturtevant Falls in the Santa Anita Canyon.

   The black swift has is not expected within the project action area due to the lack of suitable nesting habitat.

5. **Southwestern willow flycatcher** *(Empidonax traillii extimus)* is a federally and State Endangered subspecies. Its breeding range includes southern California, Arizona, New Mexico, extreme southern Nevada, Utah and Colorado and western Texas. It breeds in dense riparian habitats along rivers, streams, or other wetlands. Vegetation in breeding areas is dominated by willows, *Baccharis* sp., and sometimes with an overstory of cottonwood or tamarisk. Almost all known breeding sites are in areas with very moist soil in the form of large rivers, springs, small streams or marshes.

   The southwestern willow flycatcher (SWWF) has a moderate potential for occurrence in riparian areas of the project site adjacent to the AR. It has a low potential for occurrence within the project action area.

6. **Least Bell's vireo (*Vireo bellii pusilus*)** is a federally and State listed Endangered species. It is an obligate riparian species and is typically found in cottonwood-willow forest, oak woodland, mulefat scrub and dry washes with willow thickets. It typically inhabits structurally diverse riparian habitats and requires dense low shrub cover for nesting and a dense canopy cover for foraging (U.S. Fish and Wildlife Service 1998).

   Least Bell's vireo (LBV) nesting habitat typically consists of well-developed overstories, understories, and low densities of aquatic and herbaceous cover. The understory frequently contains dense subshrub or shrub thickets. These thickets are often dominated by sandbar willow (*Salix hindsiana*), mulefat (*Baccharis salicifolia*), young individuals of other willow species, such as arroyo willow (*S. lasiolepis*) or black willow (*S. goodingii*), and one or more herbaceous species. Coast live oaks (*Quercus agrifolia*) may also make locally important contributions to the overstory (USFWS 2001).

   The LBV has a moderate potential for occurrence in the riparian areas adjacent to the AR, where suitable nesting and foraging habitat is available. It has a low potential for occurrence within the project action area.

Field Surveys

General Biological Assessment

Plants

The plant species observed on the project site during the general biological assessment and vegetation mapping surveys are listed in *Appendix B. Observed Plants and Wildlife.* A total of 170 species were observed in the six sections described in the *Sensitive Plant Communities* section of this report. One special status plant species, San Diego ragweed (*Ambrosia pumila*), was observed in the DB more than

250 feet west of the AR. This is a federally Endangered and CNPS List 1B.1 species, meaning that it is rare, threatened or endangered in California and elsewhere and seriously endangered in California. Impacts to this species are not expected as project activities will not occur in the DB and the plant was observed too far away from the AR to experience indirect effects.

The Proposed SPS contains suitable habitat for five sensitive plants: Plummer's mariposa lily, slender-horned spineflower, mesa horkelia, and Robinson's pepper-grass. These species were not observed during field surveys and are discussed in more detail in the *Rare Plant Survey Report* (UltraSystems 2007b).

Sensitive Plant Communities

Sensitive plant communities found on-site include: Coast Live Oak Woodland, Venturan Coastal Sage Scrub, Riversidean Alluvial Fan Sage Scrub, and Southern Sycamore-Alder Riparian Woodland. *Figure 3: Vegetation Map* depicts three of these sensitive plant communities, which will be impacted by the project.

Coastal Live Oak Woodland (71160)
Coast Live Oak Woodland was observed mainly within the Proposed SPS, along the AR, and on the outskirts of the reservoir sediment removal area (*Figure 2: Project Action Area*). This community is very similar to Oregon Oak Woodland (71110) with only one dominant tree, coast live oak (*Quercus agrifolia).* The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia),* gooseberries and currants (*Ribes spp.),* laurel sumac (*Malosma laurina),* or elderberry (*Sambucus mexicana).* The herb component is continuous and dominated by red brome (*Bromus diandrus)* and several other introduced taxa.

This community is typically on north-facing slopes and shaded ravines in the south and more exposed sites in the north. Coastal Live Oak Woodland intergrades with Coastal Scrub (32000) and Upper Sonoran Mixed Chaparral (37100) on drier sites and with Coast Live Oak Forest (81310) or Mixed Evergreen Forest (81100) on moister sites.

Coast Live Oak Woodland can be found on outer South Coast Ranges, and coastal slopes of Transverse and Peninsular ranges, usually below 4,000 feet. The oaks extend beyond southern California into coastal Baja California, where they reach their southern limit. They occur at elevations from just above sea level near the immediate coast to about 5,000 feet in the interior regions, especially in southern California.

Within the project action area, Coast Live Oak Woodland occurs in the Proposed SPS.

Venturan Coastal Sage Scrub (32300)
Venturan Coastal Sage Scrub (CSS) contains mostly low, soft-woody shrubs, 1.6-6.5 feet in height, with crowns usually touching, but less dense than Central (Lucian) Coastal Scrub (32200) or Chaparral (37000), and typically with bare ground underneath and between shrubs. Growth occurs in late winter and spring, following the onset of winter rains. Most flowering occurs in spring, but some species continue into summer. It is dormant and more or less deciduous in summer and fall.

Venturan CSS occurs on dry, more or less rocky slopes, often at lower elevations and on drier but less rocky sites than associated Upper Sonoran (37100) and Chamise chaparrals (37200). This community can be found from the South Coast Ranges in southern California to northern Baja California, usually below 3,000 feet. It is most abundant in the coastal region south of Pt. Conception, but extends inland to the vicinity of Cajon and San Gorgonio passes in San Bernardino and Riverside counties. Venturan CSS occurs along the RES, within the Proposed SPS, and along the AR.



UltraSystems

Source: EDAW, 2007
Santa Anita Reservoir EIR/EA

Figure 3. Vegetation Map

Riversidean Alluvial Fan Sage Scrub (32700)
For details on RAFSS, please refer to the sensitive species account under the Literature Review section.

RAFSS was observed mainly within the Proposed SPS. It also occupies a large portion within the riparian area along upper portion of the AR. Minor trimming may occur along this portion of the AR within the RAFSS community.

Southern Sycamore-Alder Riparian Woodland (62400)
Please refer to the sensitive species account under the Literature Review section.

This riparian community was observed mainly along the western edge of the AR and near the staging area. It was also observed to a lesser degree within the Proposed SPS.

Reservoir

The reservoir area consists of a very small amount of riparian vegetation within the reservoir and a mix of Venturan CSS and riparian species immediately adjacent to the reservoir. West of the reservoir access road is a mix of non-native plants and CSS species. The upland habitat surrounding the reservoir is mostly native and contains elements of mixed chaparral and Venturan CSS. South of the Santa Anita Dam and adjacent to the AR is a rocky streambed with Southern Sycamore Alder Riparian Woodland dominated by shrubs such as mulefat (*Baccharis salicifolia)* and several willow species.

Access Road

The AR itself is a maintained dirt road that has been cleared of all vegetation. Some ruderal species occur on the AR, but no sensitive species would be expected to occur here due to disturbance. Direct impacts to sensitive plants and wildlife on the AR are not expected. However, indirect impacts may occur to areas of native vegetation adjacent to the AR. Along the approximately 1.5 miles from the RES to the Proposed SPS, the AR borders a boulder-filled creek, steep canyon walls, the DB and the spreading grounds.

The sensitive plant communities associated with the creek west of the AR are relatively undisturbed and include Southern Sycamore Alder Riparian Woodland and Venturan CSS. Cottonwoods and willows line the creek and border the AR. The steep canyon walls east of the AR are densely covered with mixed chaparral. Due to the difficulty of access to this area these walls are relatively undisturbed.

The DB adjacent to the AR consists of several willow species, Fremont's cottonwood, western sycamore, white alder, stinging nettle, sedges and several herbaceous species. The soils are continuously moist. Debris from large flood events has collected among the thick understory. Many birds were observed here and the potential for nesting birds along this portion of the AR is high, although no sensitive bird species are expected.

The spreading grounds along the AR south of the DB are managed for stormwater control and water conservation. During periods of heavy rain and storm events excess water from the creek is released into these basins. These spreading grounds have previously been cleared of vegetation and non-native ruderal species have established following the disturbance. Vegetation communities here are highly disturbed and no sensitive plant species are expected. The berms and elevated areas of the spreading grounds contain scattered native, mature oak and western sycamore trees, as well as various non-native landscaped trees. The DB and spreading grounds are adjacent to the AR but are not part of the project action area and will not be directly impacted by the project.

The portion of the AR that connects the Proposed SPS and the Lower SPS contains relatively undisturbed habitat to the east and west. The sensitive plant communities associated with this general area include Venturan CSS, Coast Live Oak Woodland and RAFSS. However, the areas immediately adjacent to this portion of the AR are not included in the project action area. Therefore impacts are not expected as a result of activities taking place on this portion of the AR or within the Lower SPS.

Sediment Placement Site

Dominant plant species in the Proposed SPS include coast live oak, western sycamore, poison oak, laurel sumac, chaparral yucca, black sage and several herbaceous understory species. The soils are sandy, especially near the southern end of the section. The Proposed SPS is dominated by Coast Live Oak Woodland. This community intergrades with RAFSS. The steep hillside at the eastern edge of the Proposed SPS is dominated by Coast Live Oak Woodland.

The proposed project would result in clearing this entire area, approximately 12 acres of native vegetation. These communities provide habitat for many native plant and wildlife species.

Wildlife

The project area hosts a variety of wildlife habitat types as previously described. A total of fifty (50) wildlife species or their signs (including tracks, scat, burrows, nests, excavations, and vocalizations) were observed within the project site (*Appendix B. Observed Plants and Wildlife*). The Proposed SPS contains suitable habitat for two special status species, the coast (San Diego) horned lizard and the silvery legless lizard. No coast horned lizards or silvery legless lizards were observed during the general biological survey or focused lizard surveys.

The riparian habitat adjacent to the AR contains suitable habitat for two special status bird species: LBV and SWWF. An unknown *Empidonax* flycatcher was potentially observed adjacent to the proposed conveyor belt route during the 2006 general biological surveys. This individual may have been a SWWF, but this was not confirmed. Neither LBV nor SWWF were detected during focused surveys conducted in spring 2007.

Focused Surveys

Rare Plant Survey

No sensitive plant species were observed during the rare plant survey, although it is highly likely that any potentially occurring sensitive plant species were not detected during our series of spring surveys this year due to the extremely dry conditions.

The results of the Rare Plant Survey are discussed in more detail in the *Rare Plant Survey Report* (UltraSystems 2007b).

Sensitive Plant Communities

EDAW conducted vegetation mapping of the Upper SPS, Proposed SPS and Lower SPS in fall of 2007 (EDAW 2007). Based on the vegetation mapping results, the proposed project will impact Coast Live Oak Woodland, Venturan CSS and RAFSS.

Approximately 6.7 acres of Coast Live Oak Woodland in the Proposed SPS will be impacted. Coast Live Oak Woodland has high habitat value. The State of California Legislature has declared that the conservation of oak woodlands enhances the natural scenic beauty for residents and visitors, increases real property values, promotes ecological balance, provides habitat for over 300 wildlife species, moderates temperature extremes, reduces soil erosion, sustains water quality, and aids with nutrient cycling, all of which affect and improve the health, safety, and general welfare of the residents of the state (EDAW 2007).

The proposed project will impact approximately 0.3 acre of Venturan CSS along the southern slope of the Upper SPS. This area consists of sparse cover of California buckwheat and California sagebrush, and appears to have been established through hydroseed for stabilization of the slope. This area has low habitat value, and no mitigation is recommended for this area.

The proposed project will impact approximately 3.8 acres of RAFSS in the Proposed SPS. RAFSS is considered to be of high priority for inventory by the CNDDB because of its significance and rarity.

Oak Tree Survey

EDAW conducted an Oak Tree Survey of the Proposed SPS in fall 2007. Of the approximate 13-acre survey site, approximately 3.02 acres are covered by oak canopy (area was attained by utilizing ESRI GIS software). The survey identified 179 oak trees within the survey site; 177 are coast live oak (*Quercus agrifolia*), one is a scrub oak (*Quercus dumosa*), and one is an Engelmann oak (*Quercus engelmannii*). Of the 179 oak trees, two trees exist outside the survey boundaries but have a significant portion of their crown within the survey area boundary and have been included in the collective number of trees surveyed. A tree survey identifying locations and the diameter at breast height (DBH) of the largest trunk of the oak trees within the project area is shown on *Figure 4. Oak Tree Map*.

Least Bell's Vireo Survey

LBV were not detected during focused surveys conducted in spring 2007, although the DB appears to have vegetation characteristics similar to that in which LBV use and nest in. LBV are not expected to occur on-site and therefore will not be impacted by project activities.

The results of the LBV survey are discussed in more detail in the *LBV Survey Report* (Forde 2007b).

Southwestern Willow Flycatcher Survey

SWWF were not detected during focused surveys conducted in spring 2007, although the debris basin appears to have vegetation characteristics similar to that in which SWWF use and nest. SWWF are not expected to occur on-site and therefore will not be impacted by project activities.

The results of the SWWF survey are discussed in more detail in the *SWWF Survey Report* (Forde 2007b).

Coast Horned Lizard and Silvery Legless Lizard Survey

Neither CHL nor SLL were observed during focused surveys conducted in spring 2007. However, suitable habitat for both species was found within the Proposed SPS. The absence of lizards during the survey does not confirm their absence from the site or surrounding area.

Although no CHL or SLL were observed during the focused species surveys, proposed project activities could result in the direct loss of suitable habitat within the Proposed SPS. Efforts should be made to

avoid impacts due to the uncertainty of the overall population status of sensitive species within the general vicinity of the project site. Implementation of Mitigation Measure 3 (MM 3) will ensure no significant impacts will occur from the proposed project to either of these species.

The results of the CHL and SLL surveys are discussed in more detail in the *CHL and SLL Survey Letter Report* (UltraSystems 2007c).

Jurisdictional Delineation

EDAW conducted a Jurisdictional Delineation of the Proposed SPS in fall 2007. Based on the delineation results, the extent and distribution of the collective area of jurisdictional waters occurring within the survey area, which is considered jurisdictional by USACE, is 0.12 acres (*Figure 5. Jurisdictional Delineation Map*). The extent and distribution of the collective area of jurisdictional waters occurring within the survey area, which is considered jurisdictional by CDFG, is 0.15 acres (jurisdictional waters of the State include jurisdictional waters of the U.S.).



UltraSystems

Source: EDAW, 2007
Santa Anita Reservoir EIR/EA

Figure 4. Oak Tree Map



UltraSystems

Source: EDAW, 2007
Santa Anita Reservoir EIR/EA

Figure 5. Jurisdictional Delineation Map

POTENTIAL IMPACTS

California Environmental Quality Act (CEQA) guidelines state that a project may have a significant effect on the environment when "the project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare or threatened species."

Endangered and rare species are defined in Section 15380 of the CEQA guidelines. According to this section:

(b) A species of animal or plant is:

(1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or

(2) "Rare" when either:

(A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or

(B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.

Resources found on-site during biological surveys that may be impacted by project activities, and therefore considered significant under CEQA, are discussed below.

Sensitive Plants

Based on personal communication with Andrew Sanders, curator of the Herbarium at the University of California, Riverside, although no sensitive plant species were observed during the rare plant survey, project related activities proposed within the Proposed SPS could result in the direct loss of suitable habitat for these species. Many plant species rely on annual rainfall events to trigger germination and growth.

It is also possible that certain perennials were not observed during the surveys. Only large shrubs can be reliably found if present, no matter what the conditions. The appropriate time to look for and identify rare plants varies from year to year in California, based largely on weather. Many species, particularly annuals, can be absent from an area for many years and then explode to thousands of plants within a single favorable season. Herbaceous perennials (such as Mesa horkelia, and Plummer's mariposa lily) may also not be active in a dry year like 2007. A perennial plant will not necessarily be present above the ground at all times or in all years, when it may be present only as subterranean tissues. A survey conducted during poor climate conditions (such as 2007) is particularly likely to miss herbaceous species, whether annual or perennial.

The following is a list of sensitive plant species that have a moderate potential to occur within the Proposed SPS and may be directly impacted by project related activities:

- **Plummer's mariposa lily (*Calochortus plummerae*)** – CNPS List 1B.2
- **Slender-horned spineflower (*Dodecahema leptoceras*)** – State and Federally Endangered, CNPS List 1B.1.
- **Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)** - CNPS List 1B.1
- **Robinson's pepper grass (*Lepidium virginicum var. robinsonii)*** - CNPS List 1B.2

Since survey conditions were unfavorable for detecting these sensitive plant species, it is recommended that another rare plant survey be conducted in 2008, prior to project implementation. If a significant rain event does not occur prior to the anticipated construction start date, mitigation measures should be followed in order to reduce impacts to sensitive plant species.

In order to avoid impacts to rare plants potentially occurring in the project area, Mitigation Measure 1 (MM 1) and Mitigation Measure 2 (MM 2) should be implemented.

Sensitive Plant Communities

Coast Live Oak Woodland and RAFSS communities will be impacted from project related activities. In order to prevent impacts to sensitive plant communities, Mitigation Measure 3 (MM 3) should be implemented.

Oak Trees

Article IX, Chapter 7 of the Arcadia Municipal Code provides that Engelmann oaks and coast live oaks (with a trunk diameter larger than four (4) inches measured at a point four and one half (4 ½) feet above the crown root, or, two (2) or more trunks measuring three (3) inches each or greater in diameter, measured at a point four and one half (4 ½) feet above the crown root) and any other living oak (with a trunk diameter larger than twelve (12) inches measured at a point four and one half (4 ½) feet above the crown root, or, two (2) or more trunks measuring ten (10) inches each or greater in diameter measured at a point four and one half (4 ½) feet above the crown root) shall not be removed, relocated, damaged, or have their protected zones encroached upon unless an Oak Tree Permit is granted.

Separate permits are available for the removal of diseased and/or hazardous oak tree and the removal of healthy oaks and/or encroachment into a protected zone:

Oak Tree Permit for Removal of Diseased and/or Hazardous Oak Trees

- Application is filed with Planning Services and must include an evaluation from a certified arborist as to the condition of the tree(s) that is to be removed. The Community Development Administrator has five (5) working days to approve or deny the application.
- There is no fee for this application.
- If the permit if not utilized within one (1) year from the date of approval or conditional approval, the application shall become null and void.
- If the application is denied, the decision may be appealed to the Modification Committee. The fee for an appeal shall be the same as for a Modification Application.

Oak Tree Permit for the Removal of Healthy Oak and/or Encroachment into a Protected Zone

- Application is filed with Planning Services and is considered at a public hearing before the Modification Committee. The application shall include all of the following:
    - An explanation of why the oak tree(s) should be allowed to be removed or encroached upon,
    - An explanation of why removal or encroachment is more desirable than alternative project designs, and
    - An explanation of any mitigation measures.
        - The fee shall be the same as for a Modification Application.
        - If the applicant lives within a Homeowners Association area established per the Arcadia Municipal Code, the applicant shall submit their tree removal or encroachment plans to the Association's Architectural Review Board for review

and approval, conditional approval or denial, prior to filing an application with the City.
- If this permit is not utilized within one (1) year from the date of approval or conditional approval, the application shall become null and void.
- The appeal procedure shall be the same as for a Modification Application.

In addition, the following situations are exempt from the Oak Tree Permit requirements:

- Tree removal has been specifically approved as part of a development permit, i.e., tentative parcel map, conditional use permit, modification, etc. This is called a "Combined Permit."
- Removal or relocation of oak trees is necessary to obtain adequate line-of-sight distances, as required by the Director of Public Works
- Actions taken for the protection of existing electrical power or communication lines or other property of a public utility

179 oak trees were observed within the Proposed SPS. Removal or damage of any oak trees by project activities will require an Oak Tree Removal Permit. In addition, Mitigation Measure 4 (MM 4) should be implemented to avoid impacts to oaks not covered under the Oak Tree Removal Permit.

The City of Arcadia recognizes oak trees as significant aesthetic and ecological resources and establishes criteria for the preservation of oak trees within the City.

Nesting Birds and the Migratory Bird Treaty Act (MBTA)

Native avian species that may use trees on site, or areas directly adjacent to the site, during breeding season are protected under the Migratory Bird Treaty Act (MBTA) while nesting (MBTA). The MBTA protects all native breeding birds, their nests and eggs, whether or not they are considered sensitive by resource agencies. It prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit.

Nesting birds may occupy trees in and around the project action area during the breeding season (February 15th to August 31st). Removal of these trees during the breeding season may impact active bird nests. Project implementation and construction-related activities including, but not limited to, grading, materials laid down, facilities construction, and noise may result in the disturbance of nesting MBTA-protected sensitive species that could occur within the project area. Potential impacts to breeding birds are considered significant under CEQA.

In order to prevent impacts to nesting birds protected under the MBTA, Mitigation Measure 5 (MM 5) should be implemented.

Coast Horned Lizard and Silvery Legless Lizard

Although no CHS or SLL were observed during focused lizard surveys, potential habitat for both species occurs in the Proposed SPS. Habitat in this section will be removed as a result of project activities. Potential for CHS also occurs in the DB adjacent to the AR. While the DB will not be impacted by project activities, indirect impacts due to noise or increased traffic along the access road that CHS may occasionally use, may occur. In order to avoid impacts to CHS or SLL, Mitigation Measure 6 (MM 6) should be implemented.

Jurisdictional Areas

Riparian and wetland resources fall under the jurisdiction of the USACE, Regional Water Quality Control Board (RWQCB), and CDFG. Impacts to the reservoir that may have an adverse effect as identified by CDFG or the USFWS may require a Streambed Alteration Agreement from CDFG (California Fish and Game Code 1600-1616) (CDFG Code 2004). Impacts that may have an adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act may require a Section 401 water quality certification from the USACE (EPA 1972).

Jurisdictional areas will be removed as a result of project activities. Jurisdictional areas occur in the Proposed SPS. In order to mitigate for impacts to jurisdictional areas, Mitigation Measure 7 (MM 7) should be implemented.

REGULATORY FRAMEWORK

The following regulations would apply to the project if impacts to federally or State listed species (slender-horned spineflower) are expected.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) was passed in 1973 and aims to conserve "the ecosystems upon which endangered and threatened species depend" and to conserve and recover listed species. The ESA provides a process for listing species as either threatened or endangered, and methods of protecting listed species. The ESA is administered by the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Section 7 – Interagency Cooperation

The ESA requires that all federal departments and agencies shall use their authority to conserve threatened and endangered species (including plants). Federal agencies must not undertake actions that are likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat. Whenever a federal agency proposes to authorize, fund or otherwise carry out a discretionary action that may affect a listed species or critical habitat, that agency must consult with either the USFWS or NOAA Fisheries.

The analysis of whether or not the proposed action would be likely to jeopardize the continued existence of the species or adversely modify designated critical habitat is contained in the "biological opinion". If a jeopardy or adverse modification determination is made, the biological opinion must identify any reasonable and prudent alternatives that could allow the project to move forward.

It is expected that the project will have to obtain a regulatory permit from federal agencies (such as the US Army Corps of Engineers), which would constitute federal involvement and thus trigger a Section 7 Consultation, should any federally listed species (slender-horned spineflower) be impacted by the project.

California Endangered Species Act

In 1984 the state Legislature enacted the California Endangered Species Act (CESA) in recognition of the tremendous threats facing California's native plant and animal populations and their habitats. This legislation declares that deserving plants and animals will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. CESA established that it is state policy to conserve, protect, restore, and enhance endangered and threatened species and their habitats.

CESA allows the CDFG to issue permits for scientific collecting and research activities and for the take of candidate and State-listed species (including plants) that is incidental to otherwise lawful activities.

Section 2080 – Incidental Take Permit

Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered or threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects through issuance of an incidental take permit. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats.

Sections 2081(b) and (c) of the California Endangered Species Act allow the CDFG to issue an incidental take permit for a State listed threatened and endangered species only if specific criteria are met. These criteria are reiterated in Title 14 CCR, Sections 783.4(a) and (b), and are as follows:

1. The authorized take is incidental to an otherwise lawful activity;
2. The impacts of the authorized take are minimized and fully mitigated;
3. The measures required to minimize and fully mitigate the impacts of the authorized take:
    - are roughly proportional in extent to the impact of the take on the species,
    - maintain the applicant's objectives to the greatest extent possible, and
    - are capable of successful implementation;
4. Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and
5. Issuance of the permit will not jeopardize the continued existence of a State-listed species.

MITIGATION MEASURES

MM 1 Focused Rare Plant Survey

Since survey conditions were unfavorable for locating sensitive plant species, it is recommended that another rare plant survey be conducted next year within the Proposed SPS prior to project implementation. If a significant rain event does not occur prior to the anticipated construction start date, mitigation measures should be followed in order to reduce impacts to potentially occurring sensitive plant species.

Prior to commencement of project construction, a rare plant survey shall be completed within the SPS to determine the presence/absence of sensitive species with potential to occur within this project site. Surveys shall be conducted in accordance with the following CNPS guidelines:

- A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas.

- Rare plants listed as CNPS List 1B, protected by the California Endangered Species Act, shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project activities to allow for salvage of the plants.

MM 2 Consultation, Restoration, and/or Off-site Compensation

In general, plants appearing on CNPS List 1 or 2 are considered to meet CEQA's Section 15380 criteria and effects to these species are considered "significant." Therefore, the following measures are recommended for these plant species (CNPS February 1991) if they are determined to occur in the project action area as a result of focused rare plant surveys:

Consultation:

- Consultation with the CDFG regarding specific mitigation measures on site is recommended. Since rare plants are not covered by the California Endangered Species Act, mitigation measures for impacts to rare plants can be specified in a formal agreement between the CDFG and the project proponent.

Restoration:

- Restoration can be used to mitigate impacts from projects approved prior to environmental regulations, or impacts allowed through a "statement of overriding considerations." Depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access.
- Restoration must be tailored to the specific project site based on the habitat and species involved.

Off-site Compensation:

- Compensating for the impact by protecting substitute resources or environments has been used in some instances to mitigate unavoidable impacts. Off-site compensation is a useful tool where other mitigation alternatives cannot be applied or do not fully mitigate significant impacts.
- Off-site compensation has been approached in several different ways, including:
    - 1) permanent protection of an existing off-site native population;
    - 2) permanent protection of an off-site introduced population;
    - 3) a combination of 1) and 2); or
    - 4) mitigation banking. The size of the acquisition will vary depending upon the type, condition, extent and rarity of the habitat and species. To further reduce the endangerment potential for the species and habitat, the ratio of acquisition to loss must in most cases exceed 1:1 for any species. The ratio should be higher for rarer species, particularly for those that occupy irreplaceable habitats.

MM 3 Sensitive Plant Communities

Coast Live Oak Woodland

Because of the high value of the habitat impacted, the preferred mitigation is to avoid all impacts to coast live oak woodland through re-design of the proposed project. If impacts to Coast Live Oak Woodland cannot be avoided, impacts should be minimized, if possible. Mitigation for impacts to coast live oak woodlands shall be accomplished through a combination of measures:

- Establishment of a conservation easement that would permanently protect equivalent oak woodlands;
    - Contribution of funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and
    - Planting of an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees for a period of up to seven years.

- Mitigation may include salvage of seed or specimen from the impacted area for use in planting. One potential mitigation site is the Lower SPS, which includes approximately 8 acres of space available for restoration. The size of a conservation easement, amount of funding for contribution to the Oak Woodlands Conservation Fund and/or the number of trees planted for mitigation shall be determined through consultation with CDFG. Mitigation for impacts to coast live oak woodland shall be negotiated in conjunction with the City of Arcadia for mitigation for impacts to coast live oak individuals. Details of planting for mitigation would be described in a mitigation and monitoring plan approved by CDFG.

Riversidean Alluvial Fan Sage Scrub

The proposed project will impact approximately 0.08 acre of disturbed RAFSS. Mitigation for impacts to disturbed RAFSS shall be the same as described above except that a mitigation ratio of 1:1 shall be used.

MM 4 Oak Protection

An Oak Tree Permit will be acquired from the City of Arcadia for any oaks to be removed as a part of the project. In addition, in order to prevent any damage to the coast live oak trees in close proximity to work areas, the drip-line of the oak trees that fall within work areas shall be flagged prior to construction. Construction vehicles shall remain outside of these flagged areas. If any work is required within the flagged drip line of a tree, it should be performed manually if possible.

MM 5 Pre-Construction Survey for Nesting Birds

In order to avoid impacts to nesting birds, it is recommended that construction activities take place between September 1st and February 14th, to avoid the nesting season of federally and State protected migratory birds. However, if construction occurs between February 15th and August 31st, the following should be implemented:

- A pre-construction survey (within three days prior to work in the areas) shall be conducted to determine the presence or absence of active breeding migratory bird nests within or adjacent to the project site.

- If no breeding or nesting activities are detected within 200 feet of the proposed work area, construction activities may proceed.

- If breeding or nesting activities are detected no work activities shall occur within 200 feet of the nest site. A 200-foot radius around the nest site shall be fenced off with construction fencing to prevent project activities in this area. Project activities may resume in this area once a qualified biologist has determined the nest(s) is no longer active.

MM 6 Coast Horned Lizard & Silvery Legless Lizard Protection

In order to reduce impacts to CHL and SSL potentially occurring in the Proposed SPS and along the AR adjacent to the DB:

- The footprint of grading and other habitat disturbing activities shall be limited to the smallest area practicable.

- To prevent injury or damage to both lizard species, an animal exclusion fence shall be placed along the boundary of the Proposed SPS area and along the portion of the access road adjacent to the DB. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded "T" steel posts. Fence material should also be buried a minimum of 12 inches below the ground surface.

- Prior to construction, a qualified biologist shall conduct a pre-construction survey for the CHL, SSL and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion fenced area, the biologist shall safely relocate these species to a suitable area outside of the fenced area.

MM 7 Jurisdictional Areas

Clean Water Act Section 404 (b)(1) guidelines will be followed as a framework for compensatory mitigation. Through 404(b)(1) negotiations with the USACE a determination of the functions and values of impacted jurisdictional waters will result in the coordination of appropriate mitigation measures for sediment removal and the impacted ephemeral wash.

- Once appropriate compensatory mitigation measures have been determined compensatory mitigation will take place through on-site and/or off-site mitigation options and/or purchasing mitigation bank credits (provided a mitigation bank is available within the watershed). Preparation of a conceptual mitigation plan would be prepared for the on/off-site mitigation following the Los Angeles District of the USACE Mitigation Guidelines and Monitoring Requirements and regional conditions (LA District 2004).

CONCLUSION

Permanent, direct impacts to sensitive biological resources will occur due to the placement of sediment in the Proposed SPS. Oak trees and RAFSS habitat occur within the project action area, specifically the Proposed SPS. Suitable habitat for CHL, SSL, and four rare plant species occurs in the Proposed SPS area. Impacts to CHL, SSL, nesting birds and rare plants within the Proposed SPS can be reduced to less than significant levels through implementation of mitigation measures listed above.

Temporary, indirect impacts to sensitive biological resources may occur in areas adjacent to the AR, especially in the portions of the DB adjacent to the AR. Impacts to CHL and nesting birds along the AR can be reduced to less than significant levels through implementation of mitigation measures listed above.

Direct impacts to jurisdictional areas will occur as a result of sediment removal in the RES and sediment placement in the Proposed SPS. Impacts to jurisdictional areas will require permits from the USACE, RWQCB and a Streambed Alteration Agreement from CDFG. Mitigation to reduce impacts to jurisdictional areas will be discussed in detail in permit applications.

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APPENDIX A: SENSITIVE SPECIES WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

SENSITIVE AND SPECIAL STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
PLANTS			
Ambrosia pumila San Diego ragweed	USFWS: - Endangered CDFG: - CNPS: List 1B	Rhizomatous herb. Chaparral, coastal scrub, valley and foothill grassland. Sandy loam or clay soil. In valleys; persists where disturbance has been superficial. Sometimes on margins. Elevation 65-1,360 ft. Blooms Apr-Oct.	RES - Low AR - Low Lower SPS - Low Proposed SPS – Low
Aster greatae Greata's aster	USFWS: - CDFG: - CNPS: List 1B	Endemic rhizomatous herb; broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland. Elevation 980-6,600 ft. Blooms Jun-Oct.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Astragalus brauntonii Braunton's milk-vetch	USFWS: Endangered CDFG: - CNPS: List 1B	Perennial herb, endemic; chaparral. CSS, valley and foothill grassland. Found in recently burned or disturbed areas. Elevation 10-2,100 ft. Blooms Feb-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Absent
Calochortus plummerae Plummer's mariposa lily	USFWS: - CDFG: - CNPS: List 1B	Bulbiferous herb; Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland on granitic or rocky substrates. Elevation 330-5,600 ft. Blooms May-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate
Centromadia pungens ssp. *australis* southern tarplant	USFWS: - CDFG: - CNPS: List 1B	Annual herb; marshes and swamps, valley and foothill grassland, vernal pools. Elevation 0-1,400 ft. Blooms Feb-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Chorizanthe parryi var. *parryi* Parry's spineflower	USFWS: - CDFG: -	Annual herb, endemic to California; Chaparral and coastal scrub on sandy or rocky substrates. Elevation 130-5,600 ft. Blooms April-June.	RES - Low AR - Low Lower SPS – Low

SENSITIVE AND SPECIAL STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
	CNPS: List 3		Proposed SPS – Low
Dodecahema leptoceras slender-horned spineflower	USFWS: Endangered CDFG: Endangered CNPS: List 1B	Annual herb, endemic to California; Chaparral, cismontane woodland, and coastal scrub on sandy soils and alluvial fan substrates. Elevation 650-2,500 ft. Blooms Apr-June.	RES – Low AR – Low Lower SPS – Low Proposed SPS - Moderate
Galium grande San Gabriel bedstraw	USFWS: - CDFG: - CNPS: List 1B	Endemic deciduous herb; broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Elevation 1,400-4,920 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Horkelia cuneata ssp. *puberula* mesa horkelia	USFWS: - CDFG: - CNPS: List 1B	Perennial herb, endemic to California; Chaparral, cismontane woodland, and coastal scrub on sandy or gravelly soils. Elevation 230-2,650 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate
Lasthenia glabrata ssp. coulteri Coulter's goldfields	USFWS: - CDFG: - CNPS: List 1B	Annual herb; marshes and swamps, playas and vernal pools. Elevation 0-4,000 ft. Blooms Feb-Jun.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Lepidium virginicum var. *robinsonii* Robinson's pepper grass	USFWS: - CDFG: - CNPS: List 1B	Annual herb; Chaparral and coastal scrub. Elevation 0-2,900 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate
Linanthus concinnus San Gabriel linanthus	USFWS: - CDFG: -	Annual herb, endemic to California; Chaparral, lower montane coniferous forest, upper montane coniferous forest in openings on rocky soils. Elevation 4,985-9,200 ft. Blooms Apr-Jul.	RES - Low AR - Low Lower SPS - Low

SENSITIVE AND SPECIAL STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
	CNPS: List 1B		Proposed SPS - Low
Linanthus orcuttii Orcutt's linanthus	USFWS: - CDFG: - CNPS: 1B	Annual herb; chaparral, lower montane coniferous forest, pinyon and juniper woodlands in openings. Elevation 3,000-7,035 ft. Blooms May-Jun.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Ribes divaricatum var. *parishii* Parish's gooseberry	USFWS: CDFG: CNPS: List 1B	Deciduous shrub, endemic to California; Riparian woodland. Elevation 210-330 ft. Blooms Feb-Apr.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	USFWS: - CDFG: - CNPS: 2	Rhizomatous herb. Found in meadows and seeps along streams and seepage areas. Elevation 160-1,800 ft. Blooms Jan-Sep.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
VEGETATION COMMUNITIES			
Open Engelmann Oak Woodland	USFWS: N/A CDFG: N/A CNPS: N/A	Evergreen oak woodland dominated by *Quercus engelmannii* with understory of 'typical' grassland species. Occurs on relatively moist sites with fine-textured soils mainly in Santa Ana mountains in San Diego county and Riverside county	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Southern Coast Live Oak Riparian Forest	USFWS: N/A CDFG: N/A CNPS: N/A	Open to locally dense evergreen sclerophyllus woodlands dominated by *Quercus agrifolia*. Herbaceous rather than shrubby understory. Occurs on bottomlands and outer floodplains along larger streams, on fine-grained rich alluvium. Found in canyons and valleys of coastal southern California, mostly south of Pt. Conception.	RES - Low AR - Low Lower SPS - Low Proposed SPS – Low

SENSITIVE AND SPECIAL STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
Riversidean Alluvial Fan Sage Scrub	USFWS: N/A CDFG: N/A CNPS: N/A	Most xeric expression of sage scrub. Fairly open stands dominated by *Artemisia californica, Eriogonum fasciculatum and Bromus rubens.* On xeric sites with steep slopes, drained soils or clays. Intergrades at higher elevations with chaparral. Distributed along coastal base of Transverse and Peninsular ranges from LA County south	RES - Low AR - Low Lower SPS - Low Proposed SPS - Occurs
Southern Sycamore Alder Riparian Woodland	USFWS: N/A CDFG: N/A CNPS: N/A	Tall, open, broad-leafed, winter-deciduous streamside woodland dominated by *Platanus racemosa* and *Alnus rhombifolia*. Lianas include *Rubus ursinus* and *Toxicodendron diversilobum.* Found near very rocky streambeds subject to seasonally high-intensity flooding in Transverse and Peninsular regions.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
ANIMALS			
Anniella pulchra pulchra silvery legless lizard	USFWS: - CDFG: SC	Found in a variety of habitats including sandy washes, coastal scrub and woodlands. Lives and forages in leaf litter, under debris or within sandy soil.	RES - Low AR - Low Lower - Low Proposed SPS - Moderate
Cypseloides niger black swift	USFWS: - CDFG: SC	Require some slack- or slow-water aquatic habitat. Nests on canyon walls near water, preferable near waterfalls.. Uncommon in high gradient streams probably because water temperatures, current velocity, or food resources may limit their local distribution.	RES – Low AR – Low Lower SPS - Low Proposed SPS - Low
Empidonax traillii extimus Southwestern willow flycatcher	USFWS: Endangered CDFG: Endangered	Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods or smaller spring fed or boggy areas with willows or alders.	RES - Low AR – Absent Lower SPS - Low Proposed SPS - Low
Phyrnosoma coronatum (blainvillii) population) Coast (San Diego) horned lizard	USFWS: - CDFG: SC	Inhabits coastal sage scrub and chaparral in arid and semiarid areas. Prefers friable, rocky or shallow sandy areas. Requires native harvester ants as food source.	RES - Low AR - Moderate Lower SPS - Low Proposed SPS – Moderate

SENSITIVE AND SPECIAL STATUS SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
Rana muscosa	USFWS: Endangered	In southern California, populations seem to be restricted to streams and small pools in ponderosa pine, montane hardwood-conifer, and montane riparian habitat types.	RES - Low AR - Low
mountain yellow-legged frog	CDFG: SC		Lower SPS - Low Proposed SPS - Low
Thamnophis hammondii	USFWS: -	Found in coastal California from Salinas to Baja California, Mexico. Occur from 0-7,000 ft. near permanent freshwater. Often found along streams with rocky beds and riparian growth.	RES - Low AR - Low
two-striped garter snake	CDFG: SC		Lower SPS - Low Proposed SPS - Low
Vireo bellii pusillus	USFWS: Endangered	Typically found in cottonwood-willow forest, oak woodland, mulefat scrub and dry washes with willow thickets. It inhabits structurally diverse riparian habitats and requires dense low shrub cover for nesting and a dense canopy cover for foraging.	RES -Low AR – Absent
least Bell's vireo	CDFG: Endangered		Lower SPS - Low Proposed SPS - Low
SC: California State Species of Special Concern			
List 1B: Rare, threatened, or endangered in California and elsewhere.		**List 3:** Need more information	
List 2: Rare, threatened, endangered in California,more common elsewhere.		**List 4:** Plants of Limited Distribution	
RES: Reservoir, **AR:** Access Road, **SPS:** Sediment Placement Site			
Potential for Occurrence:			
Absent: Focused surveys for this species have been conducted and the species was determined not to occur on-site even though suitable habitat exists.			
Low: Low potential for occurrence - No recent or historical records exist of the species occurring in the project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity.			
Moderate: Moderate potential for occurrence - Either a historical record exists of the species in the project area or its immediate vicinity or the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity.			
High: High potential for occurrence - Both a historical record exists of the species in the project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the project area or its immediate vicinity.			
Occurs: This species was observed on-site and potential impacts are discussed in the report.			

APPENDIX B: OBSERVED PLANTS & WILDLIFE

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Amaranthaceae						
Amaranthus albus	tumbleweed			X		I
Anacardiaceae						
Rhus laurina	laurel sumac	X		X		N
Rhus ovata	sugarbush			X	X	N
Rhus trilobata	squawbush	X		X		N
Toxicodendron diversilobum	poison oak	X	X	X	X	N
Annonaceae						
Annona cherimola	cherimoya		X			I
Apiaceae						
Conium maculatum	poison hemlock		X			I
Daucus pusillus	rattlesnake weed	X				N
Apocynaceae						
Nerium oleander	oleander			X		I
Vinca major	periwinkle				X	I
Araliaceae						
Hedera helix	English ivy			X		I
Arecaceae						
Phoenix canariensis	Canary Island date palm		X			I
Washingtonia filifera	California fan palm		X			N
Asteraceae						
Ambrosia acanthicarpa	annual bursage			X		N
Ambrosia psilostachya	western ragweed			X		N
Ambrosia pumila	San Diego ragweed			X		N
Anthemis cotula	mayweed			X		I
Artemisia californica	California sagebrush		X	X	X	N
Artemisia douglasiana	mugwort			X		N
Artemisia dracunculus	tarragon			X		N
Baccharis salicifolia	mulefat		X	X	X	N
Bidens pilosa	common beggar-ticks			X		I
Brickellia californica	California brickellbush			X		N
Carduus pycnocephalus	Italian thistle			X		I
Centaurea melitensis	Maltese star-thistle		X	X	X	I
Chaenactis glabriuscola	common yellow chaenactis			X	X	N
Cirsium vulgare	bullthistle	X		X	X	I
Conyza canadensis	Canadian horseweed			X		N
Filago gallica	narrow-leaved filago			X		I
Gnaphalium californicum	California cudweed		X	X		N
Gnaphalium canescens	everlasting cudweed			X		N
Gnaphalium canescens microcephalum	white everlasting				X	N
Gnaphalium luteo-album	common cudweed			X		I
Gnaphalium stramineum	everlasting cudweed			X	X	N
Helianthus annuus	common sunflower			X		N
Helianthus gracilentus	slender sunflower				X	N

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Heterotheca grandiflora	telegraph weed				X	N
Hypochaeris glabra	smooth cat's ear			X		I
Lactuca serriola	prickly lettuce			X	X	I
Lepidospartum squamatum	scalebroom			X		N
Lessingia sp.				X		
Malacothrix saxatilis	cliff aster				X	N
Senecio vulgaris	common groundsel	X		X		I
Silybum marianum	milk thistle			X		I
Sonchus oleraceus	sow thistle			X	X	I
Xanthium strumarium	cocklebur			X	X	N
Betulaceae						
Alnus rhombifolia	white alder			X	X	N
Boraginaceae						
Cryptantha intermedia	common cryptantha				X	N
Brassicaceae						
Brassica geniculata	shortpod mustard		X	X	X	I
Raphanus sativus	wild radish			X	X	I
Roripa nasturtium aquaticum	watercress				X	N
Sisymbrium officinale	hedge mustard				X	I
Sisymbrium orientale	Oriental hedge mustard	X				I
Cactaceae						
Opuntia ficus-indica	Barbary fig	X		X		I
Opuntia littoralis	coast prickly pear			X		N
Caprifoliaceae						
Lonicera subspicata	southern honeysuckle			X		N
Sambucus mexicana	blue elderberry	X		X		N
Schinus molle	Peruvian pepper tree	X	X			I
Schinus terebinthifolius	Brazilian pepper tree			X		I
Caryophyllaceae						
Cerastium glomeratum	mouse-ear chickweed			X		I
Polycarpon tetraphyllum	four-leaved polycarp	X				I
Stellaria media	common chickweed	X			X	I
Chenopodiaceae						
Chenopodium album	lamb's quarters				X	I
Chenopodium ambrosioides	Mexican tea			X		I
Kochia scoparia	Mexican fireweed				X	I
Commelinaceae						
Commelina benghalensis	dayflower			X		I
Convolvulaceae						
Calystegia macrostegia	island morning-glory			X		N
Ipomoea mutabilis	ocean-blue morning glory			X		I
Crassulaceae						
Dudleya cymosa	canyon live-forever				X	N
Dudleya lanceolata	southern California dudleya			X		N

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Cucurbitaceae						
Marah macrocarpus	wild cucumber			X		N
Cuscuta californica	dodder				X	N
Cyperaceae						
Carex alma	sedge			X	X	N
Cyperus eragrostis	tall flatsedge			X		N
Cyperus esculentus	chufa flatsedge			X		N
Scirpus maritimus	prairie bulrush			X		N
Euphorbiaceae						
Euphorbia maculata	spotted spurge			X		I
Ricinis communis	castor bean			X	X	I
Fabaceae						
Acacia sp.				X		
Albizia julibrissin	mimosa			X		I
Lotus purshianus	Spanish lotus			X		N
Lotus scoparius	deerweed			X		N
Lotus scoparius var. brevialatus	short-winged deerweed			X	X	N
Lotus strigosus	hairy lotus	X				N
Lupinus truncatus	blunt-leaved lupine			X	X	N
Medicago polymorpha	burclover			X		I
Melilotus alba	white sweet-clover			X		I
Melilotus indica	yellow sweet-clover				X	I
Trifolium willdenovii	tomcat clover				X	N
Quercus agrifolia	coast live oak	X		X	X	N
Quercus berberidifolia	scrub oak			X	X	N
Geraniaceae						
Erodium botrys	broad-leaf filaree			X		I
Erodium cicutarium	redstem filaree	X	X	X	X	I
Geranium sp.				X		
Grossulariaceae						
Ribes sp.				X		N
Hydrophyllaceae						
Phacelia cicutaria var. hispida	caterpillar phacelia			X	X	N
Phacelia distans	wild heliotrope			X		N
Phacelia minor	California bluebell				X	N
Phacelia minor	California bluebell				X	N
Phacelia ramosissima	branching phacelia			X		N
Lamiaceae						
Marrubium vulgare	horehound			X		I
Salvia apiana	white sage				X	N
Salvia columbariae	chia sage	X				N
Salvia mellifera	black sage	X		X	X	N
Liliaceae						
Yucca whipplei	chapparal yucca			X	X	N

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Malvaceae						
Malva parviflora	cheeseweed mallow			X		I
Moraceae						
Ficus carica	edible fig			X		I
Ficus nitida	Indian laurel fig			X		I
Morus alba	white mulberry			X		I
Oleaceae						
Fraxinus uhdei	shamel ash			X		I
Fraxinus velutina	velvet ash	X	X	X		N
Onagraceae						
Camissonia bistorta	California sun cup	X	X			N
Camissonia californica	California primrose				X	N
Camissonia hirtella	hairy sun-cups			X		N
Camissonia hirtella x C. bistorta	sun-cups	X		X		N
Clarkia purpurea	purple clarkia	X		X		N
Epilobium canum	California fuschia	7			X	N
Epilobium ciliatum	slender willow-herb			X	X	N
Oenothera californica	California evening primrose				X	N
Oxalidaceae						
Oxalis corniculata	yellow sorrel				X	I
Pinaceae						
Pinus halepensis	aleppo pine			X		I
Platanaceae						
Platanus racemosa	western sycamore			X		N
Poaceae						
Agrostis viridis	bentgrass				X	I
Avena barbata	slender wild oats			X	X	I
Avena fatua	wild oats			X		I
Bromus diandrus	ripgut brome	X	X	X	X	I
Bromus hordeaceus	soft brome			X		I
Bromus madritensis ssp. rubens	red brome		X	X		I
Bromus sterilis	sterile brome				X	I
Cynodon dactylon	bermuda grass			X		I
Echinocloa colona	jungle rice	X				I
Elymus condensatus	giant wildrye	X		X		N
Festuca myouros	rattail fescue			X		I
Hordeum murinum	foxtail barley			X		I
Lamarckia aurea	goldentop grass				X	I
Lolium perenne	perennial ryegrass			X		I
Melica imperfecta	small-flowered melica			X	X	N
Paspalum dilatatum	dallis grass			X		I
Pennisetum setaceum	fountaingrass			X		I
Piptatherum miliaceum	rice grass				X	I
Poa annua	annual bluegrass			X		I

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Polypogon interruptus	beard grass			X		I
Polypogon monspeliensis	rabbit's foot grass			X		I
Stipa lepida	small-flowered needlegrass			X		N
Polemoniaceae						
Alophyllum sp.				X		
Eriastrum sapphirinum	sapphire woolystar	X				N
Gilia capitata	blue-head gilia				X	N
Polygonaceae						
Eriogonum elongatum	long-stemmed buckwheat				X	N
Eriogonum fasciculatum	California buckwheat			X	X	N
Eriogonum fasciculatum var. foliolosum	eastern Mojave buckwheat			X		N
Eriogonum fasciculatum var. polifolium	California buckwheat			X		N
Polygonum arenastrum	oval-leaf knotweed			X		I
Polygonum lapathifolium	common knotweed			X		N
Pterostegia drymerioides	woodland pterostigia	X				N
Rumex crispus	curly dock			X		I
Portulacaceae						
Portulaca olearacea	little hogweed			X		I
Primulaceae						
Anagallis arvensis	scarlet pimpernel	X	X	X		I
Pteridaceae						
Pityrogramma triangularis	goldenback fern	6		X		N
Rhamnaceae						
Ceanothus leucodermis	chaparral whitethorn	X		X		N
Rhamnus californica	California coffeeberry	X		X		N
Rhamnus crocea	redberry buckthorn	X		X		N
Rosaceae						
Adenostoma fasciculatum	chamise		X			N
Cercocarpus betuloides	mountain mahogany				X	N
Heteromeles arbutifolia	toyon			X		N
Potentilla sp.				X		
Prunus ilicifolia	holly-leaved cherry	X		X		N
Rosa californica	wildrose			X		N
Rubus ursinus	California blackberry	X				N
Galium angustifolium	narrow-leaved bedstraw			X	X	N
Salicaceae						
Populus fremontii	Fremont cottonwood	X	X	X		N
Salix goodingii	Gooding's willow			X	X	N
Salix lasiolepis	arroyo willow				X	N
Sapindaceae						
Koelreuteria bipinnata	Chinese flame-tree	4		X		I
Koelreuteria paniculata	Golden raintree	4		X		I
Scrophulariaceae						
Mimulus auranticus	sticky monkeyflower	X	X	X	X	N

Plants Observed in Project Area						
Scientific Name	**Common Name**	**Locations**				**Native/ Introduced**
		Proposed SPS	**Lower SPS**	**AR**	**RES**	
Mimulus cardinalis	scarlet monkeyflower				X	N
Mimulus guttatus	yellow monkeyflower			X	X	N
Penstemon speciosus	showy penstemon			X		N
Veronica anagallis aquatica	water speedwell			X	X	I
Selaginellaceae						
Selaginella bigelowii	Bigelow's spike moss			X	X	N
Solanaceae						
Datura wrightii	toluaca		X			N
Nicotiana glauca	tree tobacco	X	X	X	X	I
Solanum americanum	white nightshade			X		N
Solanum douglasii	Douglas' nightshade			X		N
Tamaricaceae						
Tamarix sp.				X		
Typhaceae						
Typha sp.				X		
Ulmaceae						
Ulmus pumila	Siberian elm			X		I
Urticaceae						
Urtica dioica	stinging nettle			X	X	N
Vitaceae						
Cissus antarctica	kangaroo vine			X		I
Zygophyllaceae						
Tribulus terrestris	puncturevine			X		I

Wildlife Observed in Project Area		
Scientific Name	**Common Name**	**Locations**
Mammals		
Canis latrans	coyote	Proposed SPS
Odocoileus hemionus	mule deer	Proposed SPS, AR
Sciurus carolinensis	gray squirrel	AR
Spermophilus beecheyi	California ground squirrel	AR
Ursus americanus	black bear	DB
Birds		
Aimophila ruficeps	rufous-crowned sparrow	AR
Amazona virisdigenalis	red-crowned parrot	AR
Aphelocoma californica	western scrub-jay	AR
Buteo jamaicensis	red-tailed hawk	Proposed SPS, AR
Calypte anna	Anna's hummingbird	Proposed SPS, AR
Carduelis psaltria	lesser goldfinch	Proposed SPS, AR
Carpodacus mexicanus	house finch	All
Chamaea fasciata	wrentit	Proposed SPS, AR
Charadrius vocferus	killdeer	AR
Cistothorus palustris	marsh wren	AR
Corvus brachyrhynchos	American crow	AR, Lower SPS
Dendroica coronata	yellow-rumped warbler	Proposed SPS, AR
Empidonax oberholseri	dusky flycatcher	AR
Empidonax sp.	unk. Empidonax flycatcher	AR
Falco spaverius	American kestrel	AR
Geothylypis trichas	common yellowthroat	AR
Icetrus bullockii	Bullock's oriole	AR
Melanerpes formicivorus	acorn woodpecker	Proposed SPS
Melospiza melodia	song sparrow	AR
Mimus polyglottos	northern mockingbird	AR, Lower SPS
Molthrus ater	brown-headed cowbird	AR
Petrochelidon pyrrhonota	cliff swallow	AR
Phainopepla nitens	phainopepla	All
Pheucticus melanocephalus	black-headed grosbeak	AR
Picoides pubescens	downey woodpecker	Proposed SPS
Pipilo crissalis	California towhee	Proposed SPS, AR
Pipilo macuklatus	spotted towhee	All
Psaltriparus minimus	bushtit	AR
Quiscalus mexicanus	great-tailed grackle	AR
Sayornis nigricans	black phoebe	All
Selasphorus sasin	Allen's hummingbird	Proposed SPS
Stanus vulgaris	Euporean starling	AR
Stelgidopteryx serripennis	northern rough-winged swallow	AR
Troglodytes aedon	house wren	AR
Turdus migratorius	American robin	Lower SPS
Vermivora ruficapilla	Nashville warbler	AR

Wildlife Observed in Project Area		
Scientific Name	**Common Name**	**Locations**
Zenaida macroura	mourning dove	Proposed SPS
Amphibians		
Pseudacris regilla	pacific treefrog	AR
Reptiles		
Cnemidophorus tigris stejnegeri	coastal western whiptail	Proposed SPS, AR
Sceloporus occidentalis	western fence lizard	Proposed SPS, Lower SPS, AR
Uta stansburiana	common side-blotched lizard	AR, Lower SPS
Insects		
Enallagama cyathigerum	blue damselfly	AR
Nelumbo nucifera	red dragonfly	AR
Papilio glaucas	tiger swallow-tail	All
Pieris rapae linnaeus	cabbage butterfly	AR

APPENDIX C: SITE PHOTOGRAPHS



Photo 1. Southern end of SPS –Mixed coastal scrub and escaped landscape plants cover the hillside adjacent to the Santa Anita Spreading Grounds.



Photo 2. SPS – Dominant vegetation in this area includes coast live oak (center of photo) and coastal scrub species.



Photo 3. Spreading grounds adjacent to AR –The northernmost basins filled with water on a regular basis. Vegetation in all basins is ruderal with trees including coast live oak lining the access road around them.



Photo 4. DB adjacent to AR - A mule deer is shown under the cover of sycamore trees. Riparian vegetation and sandy soils are in the foreground.



Photo 5. Rocky streambed adjacent to AR. This area contains riparian vegetation as it narrows into the canyon north of the debris basin. The hillsides surrounding it contain riparian, chaparral and coastal scrub vegetation.

RARE PLANT SURVEY REPORT

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Los Angeles County, CA

Prepared for:

Los Angeles County Department of Public Works
Water Resources Division
900 S. Fremont Avenue
Alhambra CA 91803
Contact: Belinda Kwan
(626) 458-6135

Prepared by:

UltraSystems Environmental, Inc.
100 Pacifica Ave. Suite 250
Irvine, CA 92618
Katie A. Kurtz, Biologist
Sandra Murcia, Biologist
(949) 788-4900

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EXECUTIVE SUMMARY

This report provides the results of a series of rare plant surveys conducted by UltraSystems Environmental, in support of the Los Angeles County Department of Public Works' (LACDPW) Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project (Project). The project site is within the Reservoir and Santa Anita Canyon in the County of Los Angeles, California. The major vegetation communities within the project site include Coastal Live Oak Woodland, Venturan Coastal Sage Scrub, Riversidean Alluvial Fan Sage Scrub, and Southern Sycamore-Alder Riparian Woodland habitats. No special status plant species were found within the project site.

PROJECT LOCATION

The proposed project site is located within the San Gabriel Valley, in the U.S. Geological Survey Mount Wilson, CA 7.5' series topographic quadrangle (Township 1N, Section 10, Range 11W). The northern portion of the project area is located within the Los Angeles River Ranger District of the Angeles National Forest and the southern portion is located within the City of Arcadia *(Figure 1. Regional Vicinity Map).* The site is approximately 1.25 miles north of Foothill Boulevard and meets the Santa Anita Reservoir at its northern limits. It is bounded by Highland Oaks Drive to the west and Cloverleaf Drive to the east.

Land uses adjacent to the project area include the Angeles National Forest and the City of Arcadia Wilderness Park to the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

PROJECT ACTION AREA

The project action area, or project site, includes the Santa Anita Dam, the Santa Anita Reservoir, the tunnel from the reservoir to the streamside access road, the access road (AR) and the Santa Anita Proposed Sediment Placement Site (SPS) (*Figure 2. Project Action Area*). The Santa Anita Reservoir, the tunnel and a portion of the access road are located in the Angeles National Forest. The rest of the access road and the Proposed SPS are located in the City of Arcadia. The Santa Anita Debris Basin (DB) is not included in surveys conducted for this report, as it will not be impacted by project activities. Project activities along the access road may have indirect impacts on plants and wildlife occurring in adjacent portions of the DB therefore the DB is discussed within this report only for the purpose of analyzing these indirect impacts. The total project area, including the reservoir, tunnel with conveyor belt, AR, and Proposed SPS is approximately 125 acres. This report covers the portion of the project site within the City of Arcadia, including the AR and Proposed SPS.

PROJECT DESCRIPTION

The proposed project consists of modifying dam inlet/outlet works, draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt and truck), and placing it in the Proposed SPS. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the SPS on the south.

The cleanout of the Santa Anita Reservoir is scheduled to begin during the summer of 2009, with the preparation of the NEPA/CEQA documents to begin this year (2007). The reservoir area (RES) is approximately 13 acres and includes the Santa Anita reservoir, Santa Anita Dam and surrounding access road and canyon walls.

The project consists of the following components:

- *Dam Outlet Modification* - The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal project.

  The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 to freely pass through the dam, thus meeting The California Department of Water Resources, Division of Safety of Dams (DSOD) seismic safety requirements.

- *Dry Excavation* - The proposed project would remove approximately 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal activities, the reservoir would be drained. A dry-out period, which could last several weeks, would be required before sediment removal would occur. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the elevation of 1,300 feet within the footprint.

- *Sediment Conveyance* - The proposed project would transport sediment from the reservoir to the Proposed SPS using an electrical conveyor belt system and haul trucks. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the AR, and terminating at a staging area south of the Headworks, including part of the Arcadia Wilderness Park's north west parking lot. From here sediment would then be loaded onto the haul trucks and transported across the Wilderness Park parking lot, past the upper portion of the Debris Basin (DB), to the Proposed SPS area via an existing County maintenance road. It is estimated that about eight trucks at a time would be used to transport the sediment to the Proposed SPS.

  The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road above the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and Department of Public Works (DPW) AR to the Proposed SPS.

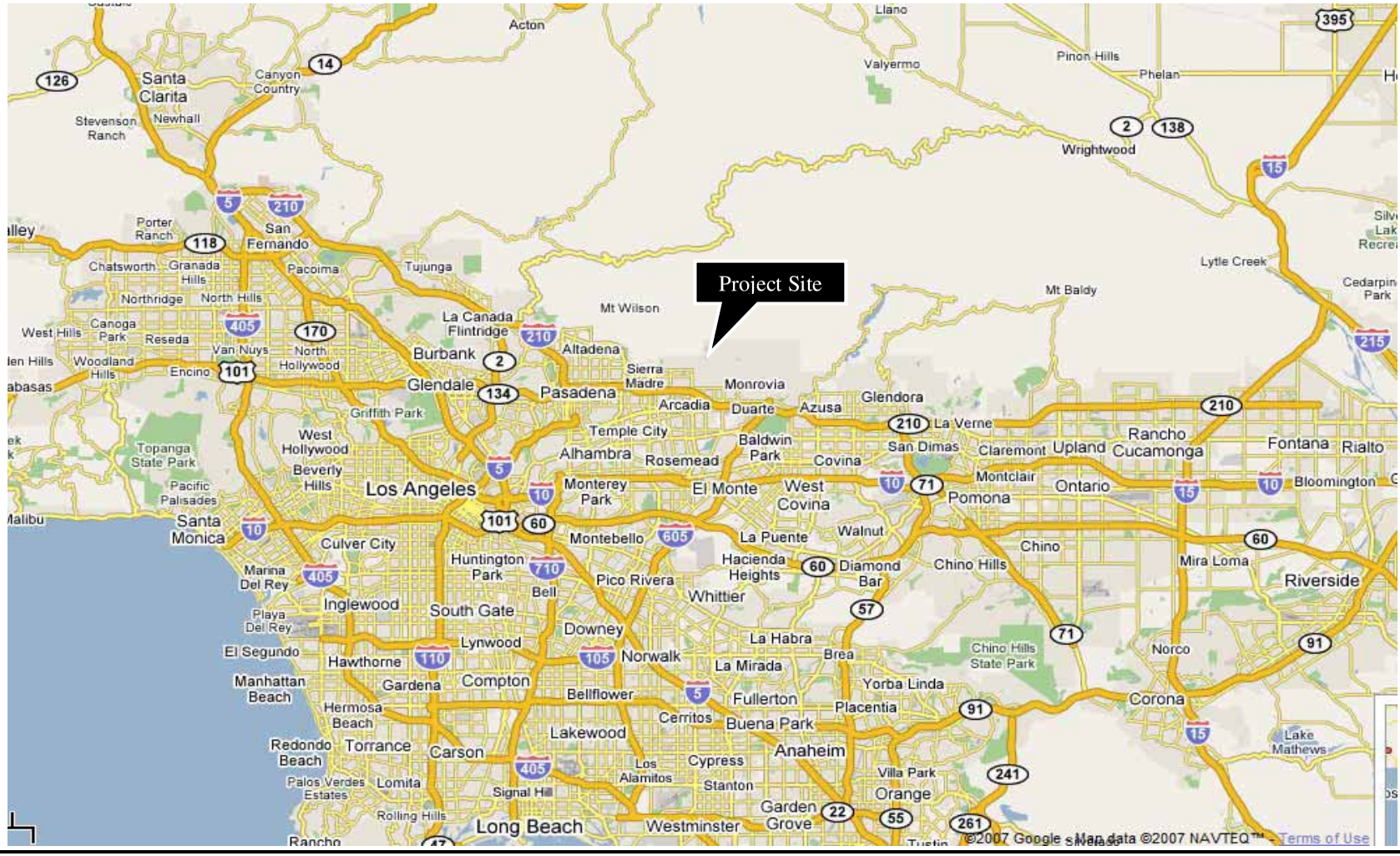
  Because modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

- *Sediment Placement* - Sediment placement would occur mainly in an approximately 13-acre area in the upper portion of the Middle SPS, located between the access road on the west, a stream on the east, and below the existing Upper SPS. Some sediment will be placed at the already disturbed Lower SPS, which will then be contour graded, landscaped, and closed out for future sediment placement. The amount of sediment that can be placed in the Lower SPS is being

determined and it is anticipated that the majority of sediment from the reservoir will be placed in the 13-acre portion of the Middle SPS.

The base of the 13-acre area can be tiered in order to accommodate up to 750,000 cubic yards of material; however, contour grading is planned for the Middle SPS so the actual sediment capacity is expected to be lower. The proposed ultimate height of the upper Middle SPS would be 60 feet. The western edge of the Proposed SPS will be contour graded and landscaped to serve as a visual buffer for the residences to the west.

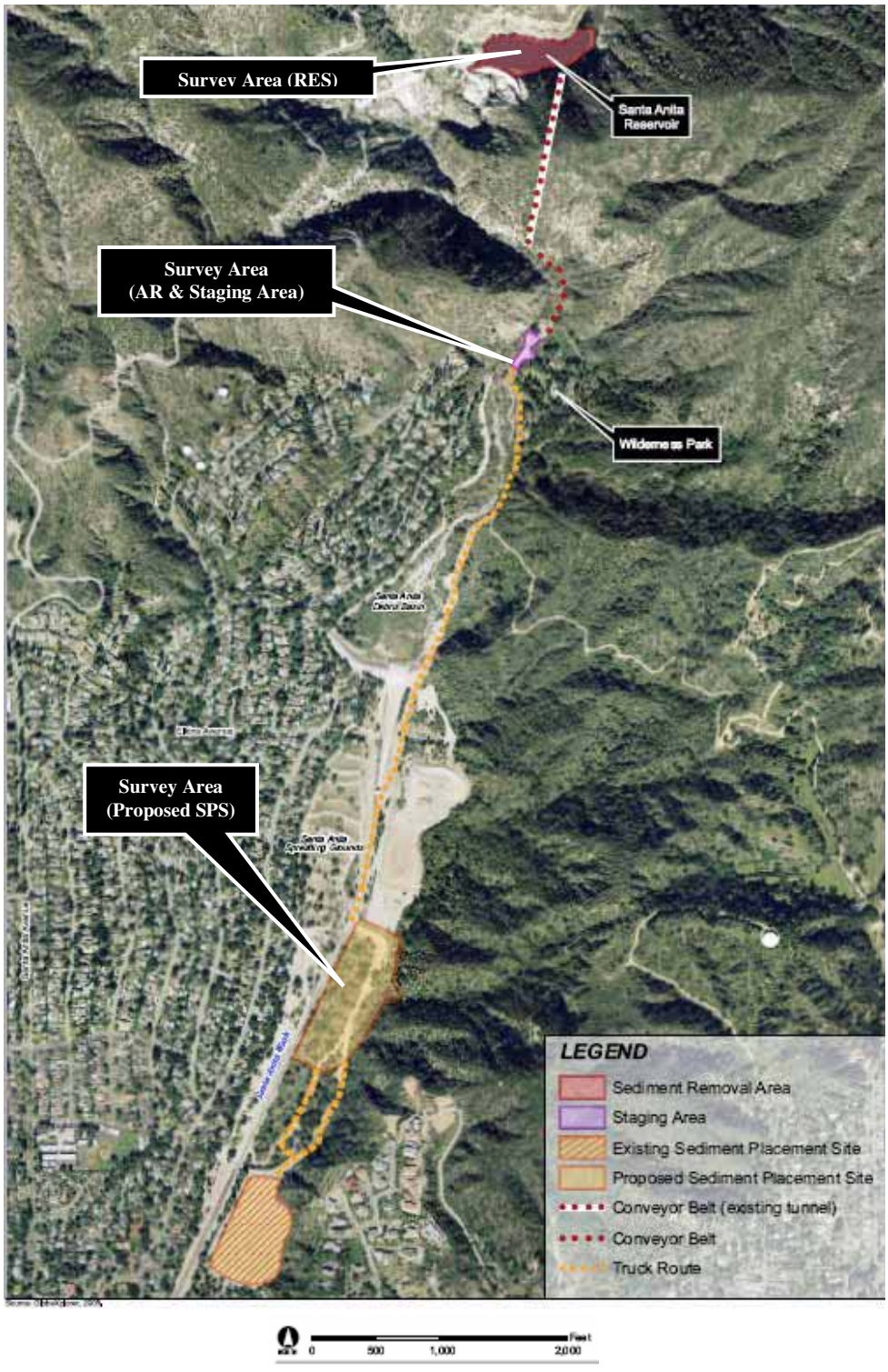
The proposed project would require the removal of approximately 12 acres of native vegetation in the upper portion of the undeveloped Proposed SPS. The remaining acre of the sediment placement footprint comprises of existing access roads. Approximately 500,000 cubic yards of sediment would be transported to the new SPS as part of the proposed project and then some of this sediment will be trucked to the Lower SPS along existing maintenance roads. The remaining sediment capacity in the 13-acre footprint, up to 250,000 cubic yards depending on contour grading, will be used for future routine and emergency sediment removal activities of other facilities served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, will be closed out for future sediment placement.



UltraSystems

Source: Google Earth 2007

Figure 1. Regional Vicinity Map



UltraSystems

Source: EDAW
Santa Anita Reservoir
EIR/EA

Figure 2. Project Action Area

METHODS

Literature Review

UltraSystems reviewed available literature to identify any special status plants or sensitive habitats known within the vicinity of the project site. The review included the CNPS Online Inventory of Rare and Endangered Plants (CNPS 2006) and the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) for the Mount Wilson, Azusa, and El Monte 7.5-minute series topographic quadrangles (CDFG 2007). Additionally, any designated critical habitats for endangered or threatened species were noted. The results of the literature review indicate the potential occurrence of fifteen (15) special status plant species.

Field Surveys

On March 2, June 14, and July 5 2007, UltraSystems biologists Sandra Murcia, Katie Kurtz and botanist Teresa Salvato conducted rare plant surveys in the following areas: **a)** along the northern boundary of the reservoir **b)** along the AR, and **c)** within the Proposed SPS (See *Figure 2: Project Action Area*).

Methods used for the rare plant surveys comply with the CDFG's Guidelines for Assessing the Affects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities (CDFG 2000). A floristic survey was conducted, so that all species observed were identified to the point where their status could be determined. The assessment included a 100% pedestrian survey of the project study area. The search pattern used was a random meander within the project site. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological resources including habitats that may support special status plant species (see *Appendix A: Site Photographs*).

RESULTS

Literature Review

The results of the literature review indicate the potential occurrence of fifteen (15) special status plant species. Descriptions for these species are listed below. Many portions of the project area contain ruderal vegetation communities or such high amounts of non-native vegetation that no special status plant species are expected to occur within those areas. However some areas contain coastal sage scrub (CSS) and riparian vegetation with the potential as suitable habitat for several sensitive plant species. The potential for occurrence of sensitive plant species is evaluated below and is presented in *Appendix C: Sensitive Species with Potential to Occur.*

Information regarding plant characteristics and habitat requirements was accessed from the CNPS Society's Online Inventory of Rare and Endangered Plants (CNPS 2006):

1. **San Diego ragweed**
   San Diego ragweed (*Ambrosia pumila*) is an herbaceous perennial herb federally listed as Endangered and listed as a CNPS 1B species. This species is found in disturbed, dry sunny places along roadsides below 490 feet in valley grassland of Coastal San Diego County, western Riverside County and Baja California. It is found in chaparral, coastal scrub and foothill grassland. It occurs at elevations from 65-1,360 feet. Its blooming period is from April to October.

San Diego ragweed has a low potential for occurrence throughout the project action area due to lack of suitable habitat.

2. Greata's aster

Greata's aster (*Aster greatae*) is an endemic perennial herb listed as a CNPS List 1B species. It is known from Los Angeles, San Bernardino and Ventura counties. It is found in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest and riparian woodland habitats on mesic substrates. It occurs at elevations from 680-6,600 feet. Its blooming period is from June to October.

Greata's aster has a moderate potential to occur in riparian areas of the project site, including the area surrounding the creek adjacent to the AR. It has a low potential for occurrence in all other areas. Direct impacts to the vegetation adjacent to the AR are not expected, as equipment use will remain along the existing access road. Measures to avoid indirect impacts to these areas should be implemented.

3. Braunton's milk vetch

Braunton's milk-vetch (*Astragalus brauntonii)* is a perennial herb endemic to California. It is designated as a federally endangered and CNPS List 1B species. It is known in Ventura, Los Angeles and Orange counties in southern California. The species occurs in coastal scrub, chaparral and valley and foothill grassland habitats in recently burned or disturbed areas. It is associated with stiff gravelly clay soils or over limestone at elevations of 13 -2,100 feet. Its blooming period is from February to July.

Braunton's milk vetch has a low potential for occurrence throughout the project action area. Suitable habitat may exist in the SPS, but according to Andrew Sanders at the University of California, Riverside Herbarium this species would be detectable even in a low-water year.

4. Plummer's mariposa lily

Plummer's mariposa lily (*Calochortus plummerae*) is a bulbiferous perennial herb listed as a CNPS List 1B species. It occurs in rocky and sandy soils in low elevation coastal sage scrub and chaparral communities as well as cismontane woodlands, lower montane coniferous forests, and valley and foothill grasslands. There are recorded occurrences of this species approximately 12 miles to the northwest and approximately 22 miles east of the project site (Regents of the University of California February 2, 2007). It has been estimated that only one-third to one-tenth of the lily bulbs on a site may flower in a given year. The lily's flowering period is May through July.

Plummer's mariposa lily has a moderate potential for occurrence in the SPS. It has a low potential for occurrence elsewhere in the project action area.

5. Southern tarplant

Southern tarplant (*Centromadia pungens* ssp. *australis*) is an annual herb listed as a CNPS List 1B species. It is found in marshes and swamps, valley and foothill grassland and vernal pool habitats. It is known from Los Angeles, Orange, Santa Barbara, San Diego and Ventura counties as well as Baja California, Mexico. Its blooming period is from May to November and occurs from 0 to 1,475 feet in elevation.

Southern tarplant has a low potential for occurrence throughout the project action area due to lack of suitable habitat.

6. Parry's spineflower

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is an annual herb designated as a CNPS List 3 species. It is known mainly Riverside and San Bernardino counties. It is found in coastal sage scrub and chaparral habitats on dry slopes and flats. It is associated with dry sandy soils and found at elevations of 130-5,600 feet. Its blooming period is April to June.

Parry's spineflower has a low potential for occurrence in the project action area. Although there is suitable habitat within the SPS, Parry's spineflower is possibly extirpated from Los Angeles County.

7. Slender-horned spineflower

Slender-horned spineflower (*Dodecahema leptoceras*) is an annual herb designated as federally and State Endangered and CNPS List 1B. It is found in chaparral, cismontane woodland and coastal scrub habitats on sandy soils. This plant is known from occurrences in Los Angeles, Riverside and San Bernardino counties. There are records of this species occurring approximately 8 miles to the northeast of the project site (Regents of the University of California Updated February 2, 2007).

Slender-horned spineflower has a moderate potential for occurrence in the coastal sage scrub community in the SPS. It has a low potential for occurrence elsewhere in the project action area.

8. San Gabriel bedstraw

San Gabriel bedstraw (*Galium grande*) is an endemic deciduous shrub designated as a CNPS List 1B species. This species is known only from Los Angeles County. It occurs in broad-leafed upland forest, chaparral, cismontane woodland and lower montane coniferous forest habitats. It is found at elevations from 1,400-4,920 feet and blooms from January to July.

This species has a low potential for occurrence as no suitable habitat occurs within the project action area.

9. Mesa horkelia

Mesa horkelia (*Horkelia cuneata* ssp. *puberula*) is a perennial herb designated as a CNPS List 1B species. It is known from Los Angeles, Orange, Santa Barbara and San Luis Obispo counties and possibly occurs in Riverside, San Bernardino and Ventura counties. There are records of this species occurring approximately 12 miles to the southwest of the project site (Regents of the University of California Updated February 2, 2007). It is found in chaparral, cismontane woodland and coastal scrub habitats on sandy or gravelly soils. It blooms from February to July and grows at elevations from 230 to 2,700 feet.

Mesa horkelia has a moderate potential for occurrence in the coastal sage scrub community in the SPS. It has a low potential for occurrence elsewhere in the project action area.

10. Coulter's goldfields

Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri)* is an annual herb designated as a CNPS List 1B species. It inhabits marshes and swamps, playas, and vernal pool communities. It is known from Colusa, Orange, Riverside, Santa Barbara, San Diego, San Luis Obispo and Ventura counties as well as Baja California. Its occurrence in Los Angeles County has not been confirmed. It grows from 0-4,000 feet and blooms from February to June.

Coulter's goldfields has a low potential for occurrence as no suitable habitat occurs within the project action area.

11. Robinson's pepper grass

Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*) is an annual herb designated as a CNPS List 1B species. It is known from Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties and Baja California. There are records of this species occurring approximately 9 miles to the northeast of the project site (Regents of the University of California Updated February 2, 2007). The majority of the other occurrences are located in Riverside County. It occurs in chaparral and coastal scrub communities from 0-2,900 feet and blooms from January to July.

Robinson's pepper-grass has a moderate potential for occurrence in the CSS community in the SPS. It has a low potential for occurrence elsewhere in the project action area.

12. San Gabriel linanthus

San Gabriel linanthus *Linanthus concinnus*) is an endemic annual herb designated as a CNPS List 1B species. It is known from Los Angeles and San Bernardino counties. This plant grows in chaparral, lower montane coniferous forest and upper montane coniferous forest habitats in rocky openings. Its blooming period is from April to July and occurs at elevations from 4,900 to 9,000 feet.

San Gabriel linanthus has a low potential for occurrence throughout the project action area as the site is outside of the species' elevational range.

13. Orcutt's linanthus

Orcutt's linanthus (*Linanthus orcuttii*) is an annual herb designated as a CNPS List 1B species. It grows in chaparral, lower montane coniferous forest and pinyon and juniper woodlands in openings. It is known from Los Angeles, Riverside, San Bernardino and San Diego counties and Baja California. It grows at elevations from 3,000 to 7,035 feet and blooms from May to June.

Orcutt's linanthus has a low potential for occurrence throughout the project action area as the site is outside of the species elevational range.

14. Parish's gooseberry

Parish's gooseberry (*Ribes divaricatum* var. *parishii***)** is an endemic deciduous shrub designated as a CNPS List 1B species. It grows in riparian woodland habitats and is known only from Los Angeles. Its historical record consists of fewer than five occurrences, only 2 of which are known to exist today. It grows at elevations from 197-1,000 feet and blooms from February to April.

Parish's gooseberry has a low potential to occur within the project action area. Although it occurs within riparian woodland, the AR only contains fragmented riparian vegetation.

15. Sonoran maiden fern

Sonoran maiden fern *(Thelypteris puberula* var. *sonorensis)* is a rhizomatous herb that is designated as a CNPS List 2 species. The species is known from Los Angeles, Riverside, San Bernardino and Santa Barbara counties. It is found in meadows and seeps near streams from 160-1,800 feet. Its blooming period is from January to September.

Sonoran maiden fern has a low potential for occurrence throughout the project action area due to a lack of suitable habitat.

Field Surveys

Sensitive Plants

No sensitive plant species were observed during the rare plant surveys. A complete list of species observed during the series of rare plant surveys can be found in *Appendix B: Floral Compendium.*

Sensitive Plant Communities

Sensitive plant communities found on-site include: Coast Live Oak Woodland, Venturan Coastal Sage Scrub, Riversidean Alluvial Fan Sage Scrub, and Southern Sycamore-Alder Riparian Woodland. Plant community descriptions and corresponding element codes used in this report are from Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

Coastal Live Oak Woodland (71160)
Coast Live Oak Woodland was observed mainly within the Proposed SPS, along the AR, and on the outskirts of the reservoir sediment removal area (*Figure 2: Project Action Area*). This community is very similar to Oregon Oak Woodland (71110) with only one dominant tree, coast live oak (*Quercus agrifolia*). The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia*), gooseberries and currants (*Ribes* spp.), laurel sumac (*Malosma laurina*), or elderberry (*Sambucus mexicana*). The herb component is continuous and dominated by red brome (*Bromus diandrus*) and several other introduced taxa.

This community is typically on north-facing slopes and shaded ravines in the south and more exposed sites in the north. Coastal Live Oak Woodland intergrades with Coastal Scrub (32000) and Upper Sonoran Mixed Chaparral (37100) on drier sites and with Coast Live Oak Forest (81310) or Mixed Evergreen Forest (81100) on moister sites.

Coast Live Oak Woodland can be found on outer South Coast Ranges, and coastal slopes of Transverse and Peninsular ranges, usually below 4,000 feet. The oaks extend beyond southern California into coastal Baja California, where they reach their southern limit. They occur at elevations from just above sea level near the immediate coast to about 5,000 feet in the interior regions, especially in southern California.

Within the project action area, Coast Live Oak Woodland occurs in the Proposed SPS.

Venturan Coastal Sage Scrub (32300)
Venturan Coastal Sage Scrub (CSS) contains mostly low, soft-woody shrubs, 1.6-6.5 feet in height, with crowns usually touching, but less dense than Central (Lucian) Coastal Scrub (32200) or Chaparral (37000), and typically with bare ground underneath and between shrubs. Growth occurs in late winter and spring, following the onset of winter rains. Most flowering occurs in spring, but some species continue into summer. It is dormant and more or less deciduous in summer and fall.

Venturan CSS occurs on dry, more or less rocky slopes, often at lower elevations and on drier but less rocky sites than associated Upper Sonoran (37100) and Chamise chaparrals (37200). This community can be found from the South Coast Ranges in southern California to northern Baja California, usually below 3,000 feet. It is most abundant in the coastal region south of Pt. Conception, but extends inland to the vicinity of Cajon and San Gorgonio passes in San Bernardino and Riverside counties.

Venturan CSS occurs along the RES, within the Proposed SPS, and along the AR.

Riversidean Alluvial Fan Sage Scrub (32700)
Riversidean Alluvial Fan Sage Scrub is the most xeric expression of coastal sage scrub south of Point Conception. Typical stands are fairly open and dominated by California sagebrush (*Artemisia californica),* Eastern Mojave buckwheat (*Eriogonum fasciculatum*), and red brome (*Bromus rubens*), each attaining at least 20% cover.

RAFSS is typically found on xeric sites such as steep slopes, severely drained soils, or clays that release stored soil moisture only slowly. At slightly higher elevations, it mixes with several southern Californian chaparrals (37000). This community occurs along the coastal base of the Transverse and Peninsular range from central Los Angeles County to the Mexican frontier.

Within the project action area RAFSS was observed mainly within the Proposed SPS. It also occupies a large portion within the riparian area along upper portion of the AR (*Figure 2: Project Action Area*). Minor trimming may occur along this portion of the AR within the RAFSS community.

Southern Sycamore-Alder Riparian Woodland (62400)
Southern Sycamore Alder Riparian Woodland is a tall, open, broad-leafed, winter-deciduous streamside woodland dominated by western sycamore (*Platanus racemosa)* (and often also white alder). These stands seldom form closed canopy forests, and even may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species. Lianas that are common in riparian woodlands of Southern California include California blackberry (*Rubus ursinus)* and poison oak (*Toxicodendron diversilobum*). Lianas are perennial, woody climbers that have roots in the shaded, moist forest floor and leaves in the sun.

This community can be found along very rocky streambeds subject to seasonally high-intensity flooding. White alders increase in abundance on more perennial streams, while sycamores favor more intermittent bodies of water. Sycamore-alder riparian woodlands occur along the Transverse and Peninsular ranges from Point Conception south into Baja California Norte. This riparian community was observed mainly along the western edge of the AR and near the staging area. The project action area does not contain Southern Sycamore Alder Riparian Woodland.

POTENTIAL IMPACTS

Based on personal communication with Andrew Sanders, curator of the University of California at Riverside Herbarium, although no sensitive plant species were observed during the rare plant survey, project related activities proposed within the SPS could result in the direct loss of suitable habitat for these species. Many plant species rely on annual rainfall events to trigger germination and growth.

It is also possible that certain perennials were not observed during the surveys. Only large shrubs can be reliably found if present, no matter what the conditions. However, herbaceous perennials (such as Mesa horkelia, and Plummer's mariposa lily) may not be active in a dry year like 2007 (they may be present as subterranean tissues). A perennial plant will not necessarily be present above the ground at all times or in all years. A survey conducted under poor conditions (such as 2007) is particularly likely to miss herbaceous species, whether annual or perennial.

The appropriate time to look for and identify rare plants varies from year to year in California, based largely on weather. Many species, particularly annuals, can be absent from an area for many years and then explode to thousands of plants within a single favorable season.

The following is a list of sensitive plant species that have a moderate potential to occur within the SPS and may be directly impacted by project related activities:

- **Plummer's mariposa lily (*Calochortus plummerae*)** – CNPS List 1B.2
- **Slender-horned spineflower (*Dodecahema leptoceras*)** – State and Federally Endangered, CNPS List 1B.1
- **Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)** - CNPS List 1B.1
- **Robinson's pepper grass (*Lepidium virginicum var. robinsonii)*** - CNPS List 1B.2

Since survey conditions were unfavorable for detecting these sensitive plant species, it is recommended that another rare plant survey be conducted next year prior to project implementation. If a significant rain event does not occur prior to the anticipated construction start date, mitigation measures should be followed in order to reduce impacts to sensitive plant species.

REGULATORY FRAMEWORK

The following regulations would apply to the project if impacts to federally or State listed species (slender-horned spineflower) are expected.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) was passed in 1973 and aims to conserve "the ecosystems upon which endangered and threatened species depend" and to conserve and recover listed species. The ESA provides a process for listing species as either threatened or endangered, and methods of protecting listed species. The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Section 7 – Interagency Cooperation

The ESA requires that all federal departments and agencies shall use their authority to conserve threatened and endangered species (including plants). Federal agencies must not undertake actions that are likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat. Whenever a federal agency proposes to authorize, fund or otherwise carry out a discretionary action that may affect a listed species or critical habitat, that agency must consult with either the USFWS or NOAA Fisheries.

The analysis of whether or not the proposed action would be likely to jeopardize the continued existence of the species or adversely modify designated critical habitat is contained in the "biological opinion". If a jeopardy or adverse modification determination is made, the biological opinion must identify any reasonable and prudent alternatives that could allow the project to move forward.

It is expected that the project will require a regulatory permit from federal agencies (such as the US Army Corps of Engineers), which would constitute federal involvement and thus trigger a Section 7 Consultation, should any federally listed species be impacted by the project.

California Endangered Species Act

In 1984 the state Legislature enacted the California Endangered Species Act (CESA) in recognition of the tremendous threats facing California's native plant and animal populations and their habitats. This legislation declares that deserving plants and animals will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. CESA established that it is state policy to conserve, protect, restore, and enhance endangered and threatened species and their habitats.

CESA allows the CDFG to issue permits for scientific collecting and research activities and for the take of candidate and State-listed species (including plants) that is incidental to otherwise lawful activities.

Section 2080 – Incidental Take Permit

Section 2080 of the Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats.

Sections 2081(b) and (c) of the California Endangered Species Act allow the CDFG to issue an incidental take permit for a State listed threatened and endangered species only if specific criteria are met. These criteria are reiterated in Title 14 CCR, Sections 783.4(a) and (b), and are as follows:

1. The authorized take is incidental to an otherwise lawful activity;
2. The impacts of the authorized take are minimized and fully mitigated;
3. The measures required to minimize and fully mitigate the impacts of the authorized take:
   - are roughly proportional in extent to the impact of the taking on the species,
   - maintain the applicant's objectives to the greatest extent possible, and
   - are capable of successful implementation;
4. Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and
5. Issuance of the permit will not jeopardize the continued existence of a State-listed species.

PROPOSED MITIGATION MEASURES

Since survey conditions were unfavorable for locating sensitive plant species, it is recommended that another rare plant survey be conducted in 2008 within the SPS prior to project implementation. If a significant rain event does not occur prior to the anticipated construction start date, mitigation measures should be followed in order to reduce impacts to potentially occurring sensitive plant species.

MM 1 Focused Rare Plant Survey

Prior to commencement of project construction, a rare plant survey shall be completed within the SPS to determine the presence/absence of sensitive species with potential to occur within this project site. Surveys shall be conducted in accordance with the following CNPS guidelines:

- A qualified biologist shall conduct field surveys in a manner that will locate any rare, threatened or endangered species that may be present. The Rare Plant survey shall be

conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential impact areas.

- Rare plants listed as CNPS List 1B are protected by the California Endangered Species Act shall be flagged and avoided. If avoidance is not possible, the project proponents shall notify the CDFG 10 days prior to commencement of project activities to allow for salvage of the plants.

MM 2 Consultation, Restoration, and/or Off-site Compensation

In general, plants appearing on CNPS List 1 or 2 are considered to meet CEQA's Section 15380 criteria and effects to these species are considered "significant." Therefore, the following measures are recommended for these plant species (CNPS February 1991) if they are determined to occur in the project action area as a result of the focused rare plant survey:

Consultation:

- Consultation with the CDFG regarding specific mitigation measures on site is recommended. Since rare plants are not covered by the California Endangered Species Act, mitigation measures for impacts to rare plants can be specified in a formal agreement between the CDFG and the project proponent.

Restoration:

- Restoration can be used to mitigate impacts from projects approved prior to environmental regulations, or impacts allowed through a "statement of overriding considerations." Depending upon the degree of impact, habitat restoration may be as simple as removing debris and controlling public access.

- Restoration must be tailored to the specific project site based on the habitat and species involved.

Off-site Compensation:

- Compensating for the impact by protecting substitute resources or environments has been used in some instances to mitigate unavoidable impacts. Off-site compensation is a useful tool where other mitigation alternatives cannot be applied or do not fully mitigate significant impacts.

- Off-site compensation has been approached in several different ways, including:
    - 1) permanent protection of an existing off-site native population;
    - 2) permanent protection of an off-site introduced population;
    - 3) a combination of 1) and 2); or
    - 4) mitigation banking. The size of the acquisition will vary depending upon the type, condition, extent and rarity of the habitat and species. To further reduce the endangerment potential for the species and habitat, the ratio of acquisition to loss must in most cases exceed 1:1 for any species. The ratio should be higher for rarer species, particularly for those that occupy irreplaceable habitats.

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APPENDIX A: SITE PHOTOGRAPHS



Photo 1. Sediment placement site. Facing north.



Photo 2. Sediment placement site. Facing south.



Photo 3. Portion of access road. Facing north.



Photo 4. Riparian vegetation near staging area. Facing west.



Photo 5. Existing Sediment Placement Site. Facing north.



Photo 6. Sediment Removal Area. Facing southwest.

APPENDIX B: FLORAL COMPENDIUM

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
Adenostoma fasciculatum	chamise			X
*Ageratina adenophora**	sticky snakeroot	X	X	
*Agrostis viridis**	bentgrass	X	X	
Alnus rhombifolia	white alder		X	
Ambrosia acanthicarpa	annual bursage	X		X
Ambrosia psilostachya	western ragweed		X	
*Anthriscus caucalis**	bur chervil			X
Artemisia californica	California sagebrush	X	X	X
Artemisia douglasiana	mugwort	X		X
Asclepias fascicularis	narrow leaf milkweed			X
*Avena barbata**	slender wild oat	X	X	X
Baccharis salicifolia	mulefat	X	X	X
*Bidens pilosa**	common beggar-ticks		X	X
*Bromus tectorum**	cheatgrass			X
*Brachypodium distachyon**	purple false brome			X
*Brassica geniculata**	shortpod mustard	X	X	X
Brickellia californica	brickell bush	X	X	X
*Bromus diandrus**	ripgut brome	X		
*Bromus hordeaceus**	soft chess			X
Bromus madritensis ssp. *rubens**	red brome	X		X
*Bromus sterilis**	sterile brome			X
Calystegia macrostegia	island morning glory			X
Camissonia bistorta	California sun cup			X
Camissonia californica	California primrose			X
*Carduus pycnocephalus**	Italian thistle		X	X
*Centaurea melitensis**	Maltese star-thistle		X	X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
Cercocarpus betuloides	mountain mahogany		X	X
Chaenactis glabriuscula	yellow pincushion			X
*Chenopodium ambrosioides**	mexican tea			
Chenopodium berlandieri	Berlandier's goosefoot		X	X
*Chenopodium botrys**	Jerusalem oak goosefoot	X		
*Cirsium vulgare**	bullthistle		X	X
Clarkia purpurea	purple clarkia			X
Claytonia parviflora	streambank springbeauty	X		X
Claytonia perfoliata	miner's lettuce			X
*Convolvulus arvensis**	bindweed	X		
Conyza canadensis	Canadian horseweed		X	X
*Cotula australis**	Australian waterbuttons			X
Cryptantha intermedia	common cryptantha	X		X
Cuscuta californica	dodder		X	X
*Cynodon dactylon**	bermuda grass	X		X
Cyperus eragrostis	tall flatsedge		X	
Datura wrightii	toluaca		X	
*Digitaria sanguinalis**	crabgrass	X	X	X
Dudleya lanceolata	southern California dudleya			X
*Echinochloa crus-galli**	watergrass		X	
Elymus condensatus	giant ryegrass			X
Epilobium cilliatum	slender willow-herb		X	
Eriogonum fasciculatum var. foliolosum	California buckwheat	X	X	X
Eriophyllum confertiflorum	golden yarrow	X		X
*Erodium cicutarium**	redstem filaree	X		X
Eucrypta chrysanthemifolia	spotted hideseed			X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
*Euphorbia maculata**	spotted spurge		X	
*Euphorbia peplus**	petty spurge			X
*Festuca myuros**	rattail fescue		X	X
*Filago gallica**	narrow-leaved filago			X
Galium angustifolium	narrow-leaved bedstraw			X
*Galium aparine**	common bedstraw	X		X
*Geranium**	geranium			X
Gnaphalium californicum	California cudweed	X		X
Gnaphalium canescens ssp. beneolens	fragrant everlasting			X
Gnaphalium canescens ssp. microcephalum	white everalsting	X		X
*Gnaphalium luteo-album**	everlasting cudweed	X	X	X
*Helianthus annuus**	common sunflower	X		X
Heteromeles arbutifolia	toyon			X
Keckiella ternata	blue stemmed keckiella			X
*Lactuca serriola**	prickly lettuce	X		X
*Lamarckia aurea**	goldentop grass	X		
Lepidospartum squamatum	scalebroom			X
Lonicera subspicata	southern honeysuckle			X
Lotus scoparius var. brevialatus	short-winged deerweed	X		X
Lotus strigosus	hairy lotus			X
Lupinus bicolor	miniature lupine			X
Lupinus hirsutissimus	stingling lupine	X		
Lupinus sparsiflorus	Mohave lupine	X		X
Lupinus truncatus	blunt-leaved lupine			X
Malacothrix saxatile	cliff aster	X		X
Marah macrocarpus	wild cucumber		X	X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
*Marrubium vulgare**	horehound			X
*Medicago polymorpha**	burclover	X		X
*Melilotus indicus**	yellow sweet-clover		X	
Mimulus aurantiacus var. aurantiacus	sticky monkeyflower			X
Mimulus floribundus	manyflowered monkeyflower	X		
Mimulus guttatus	yellow monkeyflower	X	X	
*Nicotiana glauca**	tree tobacco		X	X
Oenothera elata	evening primrose			
Opuntia littoralis	coast prickly pear			X
Pellaea mucronata	birdfoot cliffbrake			X
*Pennisetum setaceum**	fountaingrass	X	X	
Penstemon spectabilis	showy penstemon			X
Phacelia cicutaria var. cicutaria	caterpillar phacelia			X
Phacelia cicutaria var. hispida	caterpillar phacelia		X	
Phacelia minor	California bluebell	X	X	X
Phacelia ramosissima	branching phacelia			X
*Piptatherum miliaceum**	rice grass		X	X
Platanus racemosa	western sycamore		X	X
Poa secunda	one sided blue grass	X		
*Polygonum aviculare**	common knotweed	X		X
Polypodium californicum	California polypody			X
Quercus agrifolia var. agrifolia	coast live oak		X	X
*Raphanus sativus**	wild radish			X
Rhamnus ilicifolia	hollyleaf redberry	X		X
Rhus integrifolia	lemonade berry			X
Rhus laurina	laurel sumac	X	X	X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
Rhus ovata	sugarbush	X	X	X
Ribes aureum	golden currant			X
*Ricinus communis**	castor bean	X	X	X
Rorippa nasturtium-aquaticum	watercress	X	X	
Rubus ursinus	Pacific blackberry	X		X
Salix gooddingii	Gooding's willow		X	
Salix laevigata	red willow		X	
*Salsola tragus**	prickly Russian thistle	X		X
Salvia apiana	white sage	X	X	X
Salvia mellifera	black sage	X	X	X
Sambucus mexicana	blue elderberry	X	X	X
*Schinus molle**	Peruvian pepper tree	X		
*Schismus barbatus**	common Mediterranean grass	X		X
Selaginella bigelovii	Bigelow's spike moss	X		X
*Senecio vulgaris**	common groundsel			X
*Silene gallica**	windmill pink	X		
*Silybum marianum**	milk thistle			X
*Sisymbrium irio**	London rocket	X		X
*Sisymbrium orientale**	oriental hedge mustard	X		X
Solanum douglasii	Douglas' nightshade	X	X	X
*Sonchus oleraceus**	sow thistle	X		X
*Stellaria media**	common chickweed	X		X
Stephanomeria virgata	twiggy wreath plant	X		X
Toxicodendron diversilobum	poison oak	X		X
Urtica dioica	stinging nettle		X	
*Urtica urens**	dwarf nettle	X		

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Proposed Sediment Placement Site (SPS)
Non-native species *				
*Verbascum virgatum**	wand mullein		X	
Xanthium strumarium	cocklebur	X	X	
Yucca whipplei	chapparal yucca	X	X	X

APPENDIX C: SENSITIVE SPECIES WITH THE POTENTIAL TO OCCUR

SENSITIVE SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
PLANTS			
Ambrosia pumila San Diego ragweed	USFWS: - Endangered CDFG: - CNPS: List 1B	Rhizomatous herb. Chaparral, coastal scrub, valley and foothill grassland. Sandy loam or clay soil. In valleys; persists where disturbance has been superficial. Sometimes on margins. Elevation 65-1,360 ft. Blooms Apr-Oct.	RES - Low AR - Low Lower SPS - Low Proposed SPS – Low
Aster greatae Greata's aster	USFWS: - CDFG: - CNPS: List 1B	Endemic rhizomatous herb; broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland. Elevation 980-6,600 ft. Blooms Jun-Oct.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Astragalus brauntonii Braunton's milk-vetch	USFWS: Endangered CDFG: - CNPS: List 1B	Perennial herb, endemic; chaparral. CSS, valley and foothill grassland. Found in recently burned or disturbed areas. Elevation 10-2,100 ft. Blooms Feb-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Absent
Calochortus plummerae Plummer's mariposa lily	USFWS: - CDFG: - CNPS: List 1B	Bulbiferous herb; Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland on granitic or rocky substrates. Elevation 330-5,600 ft. Blooms May-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate
Centromadia pungens ssp. *australis* Southern tarplant	USFWS: - CDFG: - CNPS: List 1B	Annual herb; marshes and swamps, valley and foothill grassland, vernal pools. Elevation 0-1,400 ft. Blooms Feb-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS – Low

SENSITIVE SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
Chorizanthe parryi var. *parryi* Parry's spineflower	USFWS: - CDFG: - CNPS: List 3	Annual herb, endemic to California; Chaparral and coastal scrub on sandy or rocky substrates. Elevation 130-5,600 ft. Blooms April-June.	RES - Low AR - Low Lower SPS – Low Proposed SPS – Low
Dodecahema leptoceras slender-horned spineflower	USFWS: Endangered CDFG: Endangered CNPS: List 1B	Annual herb, endemic to California; Chaparral, cismontane woodland, and coastal scrub on sandy soils and alluvial fan substrates. Elevation 650-2,500 ft. Blooms Apr-June.	RES – Low AR – Low Lower SPS – Low Proposed SPS - Moderate
Galium grande San Gabriel bedstraw	USFWS: - CDFG: - CNPS: List 1B	Endemic deciduous herb; broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Elevation 1,400-4,920 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Horkelia cuneata ssp. *puberula* mesa horkelia	USFWS: - CDFG: - CNPS: List 1B	Perennial herb, endemic to California; Chaparral, cismontane woodland, and coastal scrub on sandy or gravelly soils. Elevation 230-2,650 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate
Lasthenia glabrata ssp. coulteri Coulter's goldfields	USFWS: - CDFG: - CNPS: List 1B	Annual herb; marshes and swamps, playas and vernal pools. Elevation 0-4,000 ft. Blooms Feb-Jun.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Lepidium virginicum var. *robinsonii* Robinson's pepper grass	USFWS: - CDFG: - CNPS: List 1B	Annual herb; Chaparral and coastal scrub. Elevation 0-2,900 ft. Blooms Jan-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Moderate

SENSITIVE SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
Linanthus concinnus San Gabriel linanthus	USFWS: - CDFG: - CNPS: List 1B	Annual herb, endemic to California; Chaparral, lower montane coniferous forest, upper montane coniferous forest in openings on rocky soils. Elevation 4,985-9,200 ft. Blooms Apr-Jul.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Linanthus orcuttii Orcutt's linanthus	USFWS: - CDFG: - CNPS: 1B	Annual herb; chaparral, lower montane coniferous forest, pinyon and juniper woodlands in openings. Elevation 3,000-7,035 ft. Blooms May-Jun.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Ribes divaricatum var. *parishii* Parish's gooseberry	USFWS: CDFG: CNPS: List 1B	Deciduous shrub, endemic to California; Riparian woodland. Elevation 210-330 ft. Blooms Feb-Apr.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	USFWS: - CDFG: - CNPS: 2	Rhizomatous herb. Found in meadows and seeps along streams and seepage areas. Elevation 160-1,800 ft. Blooms Jan-Sep.	RES - Low AR - Low Lower SPS - Low Proposed SPS - Low
SC: California State Species of Special Concern			
List 1B: Rare, threatened, or endangered in California and elsewhere.		**List 3:** Need more information	
List 2: Rare, threatened, endangered in California,more common elsewhere.		**List 4:** Plants of Limited Distribution	
RES: Reservoir, **AR:** Access Road, **SPS:** Sediment Placement Site			
Potential for Occurrence:			
Absent: Focused surveys for this species have been conducted and the species was determined not to occur on-site even though suitable habitat exists.			
Low: Low potential for occurrence - No recent or historical records exist of the species occurring in the project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity.			

SENSITIVE SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA			
SPECIES	**STATUS**	**GENERAL HABITAT REQUIREMENTS**	**POTENTIAL FOR OCCURRENCE**
Moderate: Moderate potential for occurrence - Either a historical record exists of the species in the project area or its immediate vicinity or the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity.			
High: High potential for occurrence - Both a historical record exists of the species in the project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the project area or its immediate vicinity.			
Occurs: This species was observed on-site and potential impacts are discussed in the report.			

BIOLOGICAL ASSESSMENT AND BIOLOGICAL EVALUATION

for the

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

ANGELES NATIONAL FOREST
Los Angeles River Ranger District

Prepared For:

County of Los Angeles
Department of Public Works

Los Angeles County Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, CA 91803
Contact: James Mak
(626) 458-6144

Prepared by:

UltraSystems
environmental | management | planning

UltraSystems Environmental, Inc.
100 Pacifica, Suite 250
Irvine, California 92618
Richard Friesen, Biologist
(949) 788-4900

March 2009

BIOLOGICAL ASSESSMENT AND
BIOLOGICAL EVALUATION

for the

Santa Anita Dam Riser Modification and
Reservoir Sediment Removal Project

PREPARED BY: _____ **DATE:** 26 March 2009
Richard D. Friesen, Ph.D.
Manager of Biological Resources, UltraSystems Environmental Inc.

REVIEWED BY: _____ **DATE:** 4/1/09
Leslie Welch
Wildlife Biologist, Los Angeles River Ranger District

REVIEWED BY: _____ **DATE:** 4-1-09
Janet Nickerman
Forest Botanist, Angeles National Forest

MANAGEMENT RECOMMENDATIONS REVIEWED AND APPROVED BY:

_____ **DATE:** 4/1/09
Mike McIntyre
District Ranger, Los Angeles River Ranger District

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I INTRODUCTION

The purpose of this Biological Assessment/Biological Evaluation (BABE) is to analyze the potential effects of the proposed Santa Anita Dam Riser Modification and Sediment Removal Project (Project) on species listed as threatened, endangered, or proposed by the U.S. Fish and Wildlife Service (USFWS) and on species designated as sensitive by the Regional Forester. This BABE covers the portions of the Project area on Angeles National Forest (ANF) land, including the Santa Anita Reservoir, Santa Anita Dam and a tunnel and access road south of the dam. This document is consistent with the requirements for interagency cooperation identified under Section 7 of the Endangered Species Act (ESA) (16 U.S. Government Code [USC] 1536[a]), which requires a biological assessment of listed species or Critical Habitat that may be affected by a Project. It is also consistent with Forest Service Manual (FSM) 2672.42 that requires the document to evaluate the effects of projects on sensitive species and their habitats to determine whether the proposed action would result in a trend towards federal listing as Threatened or Endangered under the ESA, or in a loss of viability as defined under the regulations of the National Forest Management Act of 1976. Forest Service policy (FSM 23670.32) states that programs and activities on National Forest land will be reviewed in a BE as part of the NEPA process to determine the potential effect of such proposed activities on sensitive species. This report was prepared prior to the preparation of a dewatering plan and aquatic surveys in the reservoir. The County will require the construction contractor to produce the dewatering plan.

II. CURRENT MANAGEMENT DIRECTION

Management direction for sensitive species on the National Forest comes from the Angeles National Forest Land Management Plan (LMP) adopted by the Record of Decision signed on September 20, 2005 (USDA, 2005). Strategic Goals, Program Strategies, Tactics and Standards provide guidance on management of wildlife and botanical resources.

Threatened, Endangered, Proposed and Forest Service Sensitive Species

The desired condition is that habitats for federally listed species are conserved, and listed species are recovered or are moving toward recovery. Habitats for sensitive species and other species of concern are managed to prevent downward trends in populations or habitat capability, and to prevent federal listing. Flow regimes in streams that provide habitat for Threatened, Endangered, Proposed for Listing, Candidate, and Sensitive aquatic and riparian-dependent species are managed to remain sufficient to allow the species to persist and complete all phases of their life cycles (USDA, 2005). Direction for management of wildlife and botanical resources included in the FSM includes the following:

1. Place top priority on conservation and recovery of listed Endangered, Threatened, and Proposed Species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.[1]

[1] For the purpose of this analysis, "special status species" include any species that has been given special recognition by federal, state, or local resources agencies (e.g. U.S. Fish and Wildlife Service [USFWS], California Department of Fish and Game (CDFG, Angeles National Forest) and resource conservation organizations (e.g. California Native Plant Society [CNPS]). The term "special status species" excludes those bird species solely identified under Section 10 of the Migratory Bird Treaty Act (MBTA) for federal protection and CDFG Code (Section 3503) for state protection. The analysis of special status species in this document is restricted only to federally designated species.

2. Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the USFWS, and other federal agencies.
3. Through the BABE process, review actions and programs authorized, funded or carried out by the Forest Service to determine their potential for effects on Threatened and Endangered Species and Species Proposed for Listing. Initiate consultation with the USFWS or National Marine Fisheries Service (NMFS) when the Forest Service determines that proposed activities may have an adverse affect on Threatened, Endangered, or Proposed Species, or when Forest Service projects are for the specific benefit of a Threatened or Endangered Species (USDA, 2005a).

C. Riparian Habitat

In the ANF, the desired condition is that watercourses are functioning properly and support healthy populations of native and desired nonnative riparian-dependent species. Riparian vegetation consists mainly of native species, with minimal or no presence of invasive nonnative plants. Nuisance nonnative aquatic animals are absent or rare in streams and lakes. Riparian and aquatic ecosystems (including vegetation, channel stability, water quality, and habitat for aquatic and riparian dependent species) are resilient and able to recover after natural events, such as floods and wildland fires. Some of the greatest threats to riparian and aquatic habitats are from diversion of surface water, removal of shallow groundwater, the effects of prolonged drought conditions, and from the invasion of nonnative plant species, particularly Tamarisk, Arundo, and Cape Ivy within the stream channels (USDA, 2005a).

III. PROJECT LOCATION

The proposed Project site is located within the San Gabriel Valley, in the U.S. Geological Survey Mount Wilson, CA 7.5' series Topographic Quadrangle (Township 1N, Section 10, Range 11W). The northern portion of the Project site is located within the Los Angeles River Ranger District of the ANF and the southern portion is located within the City of Arcadia (See Figure 1: Regional Vicinity Map and Appendix A: Local Vicinity Topographic Map). Elevations on top of the dam is 1,324 feet. The ground line within the reservoir ranges from about 1210 feet elevation at the face of the dam to about 1300 feet at the upper level of the proposed cleanout footprint. Downstream (below the dam) elevations range from approximately 600 feet to 1,800 feet at the base of the concrete dam.

The Project site is approximately 1.25 miles north of Foothill Boulevard and includes the Santa Anita Reservoir, the ponded area, and a small area above the ponded area to about the 1300 feet elevation level. The nonfederal portions of the Project are bounded by Highland Oaks Drive on the west and Cloverleaf Drive on the east. Land uses adjacent to the downstream portion of the Project site include the ANF and the City of Arcadia Wilderness Park to the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre Nature Preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres, with the balance of the preserve kept in its natural state.

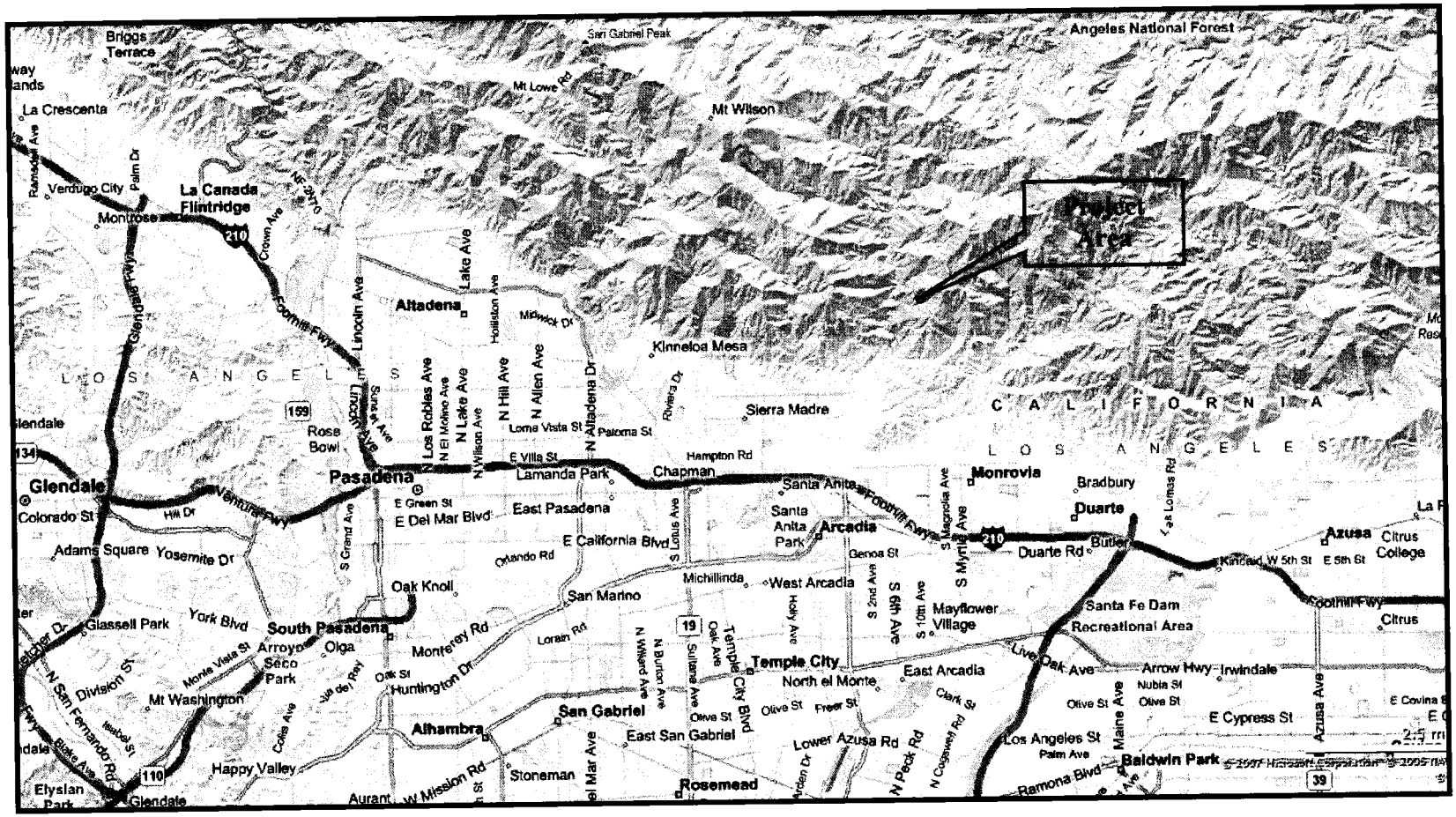
The purpose of this BA/BE is to analyses direct and indirect Project impacts that may occur on ANF lands and downstream indirect impacts that may occur on biological resources not within the ANF.

IV. PROJECT DESCRIPTION

The total Project footprint on Federal land occupies approximately 13 acres, including the Santa Anita reservoir (ponded water), Santa Anita Dam, surrounding access road (AR), and the foot of the canyon

walls. The proposed Project alternative consists of modifying the concrete dam's inlet/outlet works, draining the ponded area, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt through an existing tunnel and the access road), and depositing it on the Santa Anita Middle Sediment Placement Site (SPS). The sediment transport route extends southward approximately 1.5 miles from the reservoir to the SPS (see *Appendix B: Aerial Photo of Project Site*). The Project Environmental Impact Report (EIR) analyzes several other alternative methods and sites for deposition of the fill removed from the reservoir, each of which would require using trucks to transport sediments. This BA/BE is an Appendix to the EIR.

The cleanout of the Santa Anita Reservoir is scheduled to begin during the summer of 2009. Depending upon the final alternative selected from the EIR for implementation, the Project is expected to take a minimum of nine (9) months or a maximum of two (2) years. Excavation of the reservoir fill is scheduled to occur after the ponded water has drained and sufficient time has passed to allow the ground to dry. As noted below, the riser modification, dry sediment excavation, and a portion of the sediment conveyance system will be on ANF land. Sediment placement will occur on nonfederal lands. A Biological Technical Report (UltraSystems 2007) was prepared to cover the nonfederal analysis of the Project, and is included as an Appendix in the EIR.


Project Area
Angeles National Forest
Mt Wilson
Mt Lowe Rd
Sierra Madre
Altadena
Kinneloa Mesa
Pasadena
Glendale
La Canada Flintridge
Montrose
La Crescenta
Verdugo City
Rose Bowl
Lamanda Park
Chapman
Monrovia
Bradbury
Duarte
Arcadia
Santa Anita Park
East Pasadena
South Pasadena
San Marino
Oak Knoll
Michillinda
West Arcadia
Temple City
North el Monte
East Arcadia
Mayflower Village
Santa Fe Dam Recreational Area
Azusa
Citrus College
Irwindale
Baldwin Park
Rosemead
San Gabriel
East San Gabriel
Alhambra
Stoneman
Happy Valley
Mt Washington
Glassell Park
Elysian Park
Aurant
Los Angeles St
Arrow Hwy
E Cypress St
Duarte Rd
Foothill Fwy
Ventura Fwy
Glendale Fwy
Colorado St
E Del Mar Blvd
E California Blvd
Huntington Dr
Monterey Rd
Lake Ave
Lincoln Ave
Fair Oaks Ave
Allen Ave
Hill Ave
Wilson Ave
Altadena Dr
Rosemead Blvd
Peck Rd
Maine Ave
Azusa Ave
Temple City Blvd
Live Oak Ave
Olive St
Clark St
Lower Azusa Rd
Ramona Blvd
Palm Ave
Adams Square
Yosemite Dr
York Blvd
Arroyo Seco Park
Olga
Oak St
Monte Vista St
Division St
San Fernando Rd
Elysian Park
Glendale
Aurant
W Mission Rd
Stoneman
Lorain Rd
Orlando Rd
Genoa St
Nubia St
Freer St
Sierra Madre
Loma Vista St
Paloma St
E Villa St
Hampton Rd
Santa Anita
Foothill Fwy
Citrus
Kinneloa Mesa
Mt Wilson
Angeles National Forest
Sierra Madre
Monrovia
Duarte
Azusa
Citrus College
Irwindale
Baldwin Park
Rosemead
San Gabriel
Alhambra
Temple City
Arcadia
Pasadena
Glendale
La Canada Flintridge
Altadena
Sierra Madre
Monrovia
Duarte
Azusa

The Project consists of the following components:

- *Dam Outlet Modification* – The proposed Project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. To comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal Project.

  The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam at elevation 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 to freely pass through the dam, thus meeting The California Department of Water Resources, Division of Safety of Dams (DSOD) seismic safety requirements.

- *Dry Excavation* – The proposed Project would remove approximately 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal activities, the reservoir would be drained. A dry-out period, which could last several weeks, would be required before sediment removal would occur. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the elevation of 1,300 feet within the reservoir footprint. Removal of opportunistic aquatic vegetation at the north end (crest) of the ponded water may occur on ANF land. The acreage and type of emergent vegetation present within the Project footprint at the northern portion would be expected to fluctuate each season, is contingent upon water levels within the reservoir, the frequency of flooding events, and velocity of water entering the reservoir. This area behind (above) the ponded area that supports some riparian vegetation at the time reconnaissance surveys were conducted in 2007 was mapped at 0.4 acres.

- *Sediment Conveyance* – The preferred, proposed Project would transport sediment from the reservoir to the Middle SPS using an electrical conveyor belt system. This system and haul trucks would be used in the other Project alternatives. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed. The bulkhead of this tunnel is located at about 1200 feet elevation in the central portion of the reservoir pool. The conveyor belt would continue along the AR, and terminate at a staging area south of the dam, near Arcadia Wilderness Park's northwest parking lot. In the preferred Project alternative, the sediment would continue to be transported on a conveyer belt to the Middle SPS. Another Project alternative would require the sediments to be loaded onto haul trucks, transported across the Wilderness Park parking lot, past the upper portion of the Debris Basin (DB), and finally to the Middle SPS area by an existing County maintenance road. About eight trucks at a time would be used to transport the sediment to the Middle SPS. A third Project alternative would require the sediments to be trucked over local streets and interstate highways to other deposit sites.

  The electric conveyance system would be approximately 5 feet wide. The existing access road above the Headworks that allows equipment into the reservoir bottom is about 12 to 15 feet wide. A section of it has been washed out and would be repaired. South of the Headworks, where the tunnel ends on the edge of a haul route, the access would follow the existing dirt maintenance road and Department of Public Works (DPW) AR to the Middle SPS. Vegetation may need to be trimmed adequately to install and operate the conveyance system on the ANF land at base of the

tunnel and in places along the conveyance route (access road) south of the reservoir. Species composition of the vegetation near the tunnel and along the conveyance route (access road) within the Project footprint was not mapped prior to the preparation of this BA/BE.

Because modification of the riser requires the dam's outlet to be dry, a PVC pipe would be used to bypass reservoir inflow through a tunnel to the downstream area. The PVC pipe would drain into Santa Anita Creek immediately south of the tunnel entrance.

Sediment Placement – Sediment placement will occur on lands in the City of Arcadia, but not on ANF lands. Sediment placement would occur mainly on an approximately 13-acre area in the upper portion of the Middle SPS, located between the access road on the west, a wide stream on the east, and below the existing Upper SPS. Some sediment will be placed to complete the already disturbed Lower SPS, which will then be contour graded, landscaped, and closed out. The amount of sediment that can be placed in the Lower SPS is dependent upon the time the Project is implemented. The majority of sediment from the reservoir will be placed on the 13-acre portion of the Middle SPS.

The base of the 13-acre area will be tiered to accommodate up to 750,000 cubic yards of material; however, contour grading is also planned for the Middle SPS so the actual sediment capacity is expected to be lower. The proposed ultimate height of the upper Middle SPS would be 60 feet. The western edge of the Middle SPS will be contour graded and landscaped to serve as a visual buffer for the residences to the west.

The proposed Project would require the removal of approximately 12 acres of downstream native vegetation in the upper portion of the undeveloped Middle SPS (non-ANF land). The remaining one-acre of the sediment placement footprint is comprised of the existing access roads. Approximately 500,000 cubic yards of sediment would be transported to the new SPS as part of the proposed Project. Some sediment may be trucked to the Lower SPS along existing maintenance roads. The remaining sediment capacity in the 13-acre footprint, up to 250,000 cubic yards depending on contour grading, will be used for future routine and emergency sediment removal activities of other facilities served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, will be closed out.

Flow Modifications – The bypass system is expected to pass reservoir inflows through the dam with little or no ponding of water in the reservoir area. This should result in continuous outflow from the dam during sediment removal activities. Current operational guidelines impound water behind the dam with no release of water from the dam until water reaches the restricted evaluation of 1,258 feet, at which point a release of approximately 30 cubic feet per second (cfs) is initiated to return the reservoir elevation to 1,250 feet. These 30 cfs releases usually last for a period of less than 24- hours.

During Project activities, the amount of water bypassed to the downstream stretches will depend upon the amount of reservoir inflow from the natural watershed. Wetted downstream stretches will be dependent on the amount of water produced by the natural watershed which is greatly affected by the amount of rainfall received during storm season. Generally, the reservoir has small inflows during the driest months that will be passed through the dam. Whether or not these bypassed low flows will be sufficient to wet all downstream sections of Santa Anita Wash is unknown, and will be contingent on amount of rainfall received during storm season.

The modifications to the riser will turn the dam into a free flowing structure. At elevation 1,230 feet, any flows entering the reservoir will flow over the top of the riser and through the dam.

These flows will be uncontrolled. There may be some controlled releases made for water conservation purposes. These flows will be redirected into spreading facilities downstream. The increased water storage capacity will not increase the reservoir footprint over the existing conditions. The increased water storage capacity comes from the additional storage created by the removal of sediment in the reservoir.

Avoidance and Minimization Measures on ANF Land to be incorporated in the Project Specifications:

1. Staging of equipment, tools, and human activities will occur within the project footprint and to the extent possible, within already disturbed areas such as roads and parking lots.
2. Preconstruction focused plant surveys will be conducted to identify any federal listed or Forest Service Sensitive Plant Species. These surveys will take place on all potential disturbance areas including disposal sites.
3. In addition to pre-construction plant surveys, special consideration must be taken with the slender-horned spineflower (*Dodecahema leptoceras*) which is a federal and state endangered plant. It is a small annual that is heavily dependent on rainfall. Suitable habitat occurs within the project site. Two pre-construction surveys of the suitable habitat must be conducted prior to project implementation. However, prior to pre-construction plant surveys, reference population of slender-horned spineflower must be visited to identify the known condition of plant. Preconstruction plant surveys will be conducted when the reference population is most identifiable.
4. Designated Critical Habitat for Braunton's milkvetch (*Astragalus brauntonii*) is immediately adjacent to the sediment placement site. There are no current plans to place sediment within the critical habitat. However, since these areas are immediately adjacent to each other, the edge of the critical habitat will need to be flagged prior to implementation. Construction crews will to be advised of the critical habitat and which areas to avoid.
5. To limit the spread and establishment of invasive plant species into the Project area, off-road heavy equipment used during Project implementation will be free of noxious weeds and seeds or invasive exotic weeds and seeds before entering the Project area. Additionally, hand tools, (e.g., picks, shovels), must also be free of noxious weeds and seeds or invasive exotic weeds and seeds. The ANF Botanist will provide guidance for a wash down method for Project activities.
6. Any reseeding or planting plans for the ANF must first be approved by the ANF Botanist. Any landscaping will utilize native plants appropriate to the site conditions.
7. Any mulch, hay or rice straw brought to the site must be certified to be weed free.
8. During Project implementation and after the Project is completed, the site will be monitored for noxious weeds. Monitoring should be conducted monthly for the first year, and then on a bi-monthly basis. District personnel can be trained by the ANF Botanist to conduct this monitoring activity. Any populations of noxious weeds will be immediately treated as directed by the ANF Botanist.
9. Appropriate Best Management Practices (BMPs) shall be implemented to minimize damage to surface soil structure and to reduce potential for erosion and sediment transport to drainages caused by Project activities.
10. Equipment refueling must be conducted in a manner to ensure that no contamination of soils or water will occur.
11. Contractor must carry appropriate spill containment kits and be trained to respond to leaks and spills.
12. All excavation must be implemented in a manner that reduces the potential for entrapment of small mammals, reptiles or amphibians. Drift nets or other exclusionary fencing can be placed around excavations to reduce the potential for individuals entering excavated areas. If excavations with the potential for entrapment are to remain open for more than 12 hours they must include some means for small mammals, reptiles and amphibians to escape. This can be accomplished by placement of a ramp that reasonably allows trapped individuals to crawl or walk out of the excavation. Before an excavation is backfilled, it must be checked to ensure that there are no live individuals inside. Backfilling cannot occur until the excavation is clear of all live individuals.

13. Project generated garbage must be properly stored, then disposed off site on a daily basis. When operations are complete, any excess materials or debris shall be removed from the work area.
14. Noise shields will be used for generators employed during construction activities.
15. Personnel involved in Project implementation will receive a briefing from the Project Biologist to identify and describe sensitive resources that may be encountered in the Project area. Wildlife of any kind that is encountered during the course of Project implementation will either be moved or provided the opportunity to vacate the site.
16. Personnel will be reminded that harassment, handling or removal of wildlife from the site is not permitted.
17. To the extent possible, any necessary vegetation clearing will occur outside of the breeding season of special status species anticipated to be present. If vegetation clearing is required where sensitive wildlife occur, qualified wildlife biologists will also be present during implementation. If found, measures will be taken to avoid or minimize impacts.
18. In areas of suitable habitat, pre-construction surveys for least Bell's vireo and southwestern willow flycatcher will be conducted by qualified biologists to confirm that those species are not present.
19. If project activities are scheduled to take place during the nesting season of native migratory birds (February 15 to August 15), the following steps will be implemented:
    - Three days prior to construction activity, a nesting bird survey shall be conducted by a Biologist, with previous experience conducting such studies, to determine the presence or absence of active breeding migratory bird nests within or adjacent to the Project site.
        - If an active nest is found, the bird shall be identified as to species and the distance from the closest work site to the nest. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 500 feet for raptors; or (b) 250 feet for other non-special-status bird species.
        - If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to construction activities, nests shall be avoided by placing a 250-foot (500-foot for raptors) non-disturbance buffer zone around the nest tree. The buffer zone shall be fenced with orange construction fencing prior to initiation of grading or vegetation removal. The non-disturbance buffer zone shall remain in place until it has been determined by a qualified biologist that the young have fledged and are flying well enough to avoid the Project construction zone, typically by August 31.
        - The Biologist shall periodically monitor any confirmed nest sites (with non-disturbance buffer zones) during construction to determine if grading activities occurring outside the buffer zone disturb the nesting birds, and if the buffer zone should be increased to prevent nest abandonment. The nest trees shall be monitored until nests have been abandoned (for non-Project related reasons) or the young have fledged.

V. SPECIES EVALUATED

The ANF's 2007 List of Sensitive Species with known distributions within the general Project vicinity and Project study area are evaluated below. For purposes of this report, the Project Vicinity is defined as a radius within 5 miles of the Project site boundary. The Project Study Area is defined as the area within Project's construction limits (the Project Site) or project footprint.

Species considered in this analysis were identified from:

- A list of Threatened, Endangered and Federal Concern Species potentially occurring in the Angeles National Forest, provided by the USFWS in September 2007

- The Angeles National Forest Sensitive Plants and Animals List, revised September 2007 (Appendix G)
- The California Department of Fish and Game California Natural Diversity BIOS Database (CNDDB 2007) and the California Native Plant Society Online Rare Plant Inventory (CNPS 2007) was referenced for distribution and occurrence information for federal species known to occur within the Project vicinity and study area. California Special Status Species that are not designated as Federal Special Status Species are not analyzed in this document.

In combination, these lists identified a total of 90 Threatened, Endangered and Sensitive Species potentially present in the ANF. Table 1: *Threatened, Endangered & Sensitive Species Evaluated* lists the species that were considered for evaluation. The analyses of these species were partially based on general and focused surveys conducted by UltraSystems Environmental in 2007 and EDAW (2008) (for rare plants) by Duffles.

Table 1. Threatened, Endangered & Sensitive Species Evaluated

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
PLANTS							
San Gabriel Manzanita *(Arctostaphylos gabrielensis)*	FSS	Rocky Outcroppings, Chaparral. Limited elevation range around 4,920 feet. Known only from the area near Mill Creek Summit.	N	N	N	N	No suitable habitat present in reservoir area or downstream because site is outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
Braunton's Milk-vetch (*Astragalus brauntonii*)	FE	Coastal scrub and Chaparral. Recent burns or disturbed areas. <2,300 feet. Los Angeles, Orange, and Ventura Counties.	Y	N	N	N	Suitable habitat present adjacent to the reservoir and downstream. Plant was not detected during focused surveys. This plant is highly detectable. It was not been found during plant surveys in 2007. Additional preconstruction surveys will be conducted prior to implementation. It is assumed that this plant is absent from projrect site but additional surveys will confirm.. Critical habitat is adjacent to the sediment placement site so it will be flagged to identify the edge.
Bear Valley Woollypod (*Astragalus lentiginosus* var. *sierrae*	FSS	Openings in Yellow Pine Forest or Sagebrush Scrub, and stony lakeshores. Desert facings slopes (Wrightwood area). 5,905 to 7,875 feet.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Site is outside species known geogrphical and elevational range. Plant was not detected during general or focused surveys.
Nevin's Barberry (*Berberis nevinii*)	FE	Sandy to gravelly soils. Washes, Chaparral, Cismontane Woodland, and Coastal Scrub. Generally found in lowlands or drainages. <2,800 feet.	Y	N	N	N	Suitable habitat present within reservoir and adjacent areas and downstream. Plant was not detected during general or focused surveys. This plant is highly detectable. It was not been found during plant surveys in 2007. Additional preconstruction surveys will be conducted prior to implementation. It is assumed that this plant is absent from projrect site but additional surveys will confirm

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Slender-horned Spineflower (*Dodecahema leptoceras*)	FE	Sandy alluvial fans, benches, and terraces in Coastal Scrub, Chaparral and Cismontane Woodland areas. 700 to 3,000 feet.	Y	N	Y	N	Suitable habitat present adjacent to reservoir and downstream. Conditions were unfavorable for detection during focused surveys. Plant not found during EDAW's 2008 rare plant surveys. This plant is not highly detectable. Therefore two additonal preconstruction surveys will take place prior to project implmentation. This plant was not found in 2007 but 2009 surveys will confirm absence.
Thread-leaved Brodiaea (*Brodiaea filifolia*)	FT	Grasslands and vernal pools, openings in Chaparral or Coastal Sage Scrub, playas. 100 to 2,900 feet. Often found in clay. Southern base of San Gabriel Mountains at Glendora and San Dimas and San Bernardino at Arrowhead Springs.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Plant was not detected during genenral or focused surveys
Forest Camp Sandwort (*Arenaria macradenia* var. *kuschei*)	FSS	Chaparral (openings, granitic, usually oak dominated). 4,000 to 5,600 feet. Forest Camp, San Bernardino County; Liebre Mountain, Los Angeles County.	N	N	N	N	Site is well outside geographical and elevational range of species.
Crested Milk-vetch (*Astragalus bicristatus*)	FSS	Open, rocky areas in coniferous forests. 5,500 to 9,000 feet. Los Angeles, Riverside and San Bernardino counties.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Site is well outside elevational range of species. .
San Antonio Milk-vetch (*Astragalus lentiginosus* var. *antonius*)	FSS	Open slopes in Pine Forest, 5,000 to 8,500 feet, San Gabriel Mountains.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Site is well outside elevational range of species. .
Scalloped Moonwort (*Botrychium crenulatum*)	FSS	Bogs and fens, lower Montane Coniferous Forest, meadows and seeps, and marshes and swamps (freshwater). 4,900 to 10,800 feet.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Site is well outside elevational range of species.
Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)	FSS	Coastal Sage Scrub and Chaparral slopes or Canyons <3,940 feet. South base of San Gabriel Mountains. Blooms March to June.	Y	N	N	N	Suitable habitat is present adjacent to reservoir. No individuals detected during general or focused surveys.
Palmer's Mariposa Lily (*Calochortus palmeri* var. *palmeri*)	FSS	Meadows, vernally moist places in Pine Forest or Chaparral. 3,500 to 7,250 feet.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Plummer's Mariposa Lily (*Calochortus plummerae*)	FSS	Dry, granitic, rocky chaparral, Yellow Pine Forests, Cismontane Woodland, Coastal Scrub, and Valley And Foothill Grasslands. <5,600 feet.	Y	N	Y	N	Suitable habitat is present adjacent to the reservoir and downstream. Conditions were unfavorable for detection during 2007 focused surveys. Plant not located during EDAW's 2008 rare plant surveys.
Alkali Mariposa Lily (*Calochortus striatus*)	FSS	Alkaline Meadows and seeps, moist Creosote Bush Scrub, and Chenopod Scrub. 200 to 4,650 feet.	N	N	N	N	No suitable habitat is present.
Late-flowered Mariposa Lily (*Calochortus weedii* var. *vestus*)	FSS	Dry, open Cistmontane Woodland and Chaparral habitats from 1,300 to 4,920 feet. Locally up to 8,200 feet. Common in serpentine soils. Coastal ranges. Blooms June to August.	N	N	N	N	Site is outside species known elelvational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Pygmy Poppy (Canbya candida)	FSS	Sandy places, 2,000 to 4,000 feet. Joshua Tree Woodland, Mojavean Scrub, and Pinyon/Juniper Woodland. Mojave desert adjacent to Sierra Nevada.	N	N	N	N	Marginal habitat may be present in general area. Plant was not detected during general and focued surveys.
Mt. Gleason's Paintbrush (*Castilleja gleasonii*)	FSS	Granitic substrates in Coniferous Forest, generally west of Chileo area. 3,800 to 7,100 feet.	N	N	N	N	Site is well outside geographical range of species. No suitable habitat present.
Mojave Indian Paintbrush (*Castilleja plagiotoma*)	FSS	Dry Flats and ridges, Sage Scrub, Joshua Tree Woodland, Pinyon/Juniper Woodland, and Yellow Pine Forest at 900 to 8,200 feet. North base of San Gabriel Mountains.	N	N	N	N	Site is outside species known geogrphical range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)	FC	Sandy places, generally in coastal scrub. 650 to 4,000 feet, present near Elizabeth Lake in Liebre Mountains. Historically present at southern base of San Gabriel Mountains.	N	N	N	N	Site is well outside geographical range of species. Plant was not detected during general or focused surveys
Parry's Spineflower (*Chorizanthe parryi var. parryi*)	FSS	Chaparral, Cismontane Woodland, Coastal Scrub, Valley and Foothill Grassland. Sandy or rocky openings. 900 to 4,000 feet. Blooms April to June.	Y	N	N	N	Suitable habitat present adjacent to reservoir and downstream. Plant was not detected during general and focused surveys.
Peirson's Spring Beauty (*Claytonia lanceolata* var. *peirsonii*)	FSS	Gravelly conifer woodlands, steep slopes. 5,000 to 8,500 feet.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present. Plant was not detected during general and focused surveys.

* Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Mojave Tarweed (*Deinandra mojavensis*)	FSS	Chaparral, Coastal Scrub, and Riparian Scrub at 2,100 to5, 250 feet. Blooms July to October.	N	N	N	N	Site is outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
San Gabriel Mountain Dudleya (*Dudleya densiflora*)	FSS	Steep granitic canyon walls adjacent to Chaparral, Coastal Scrub, and Coniferous Forest. Southeast San Gabriel Mountains. 900 to 1,700 feet.	Y	N	N	N	Suitable habitat present adjacent to reservoir and downstream. Plant was not detected during general and focused surveys.
San Gabriel River Dudleya (*Dudleya cymosa crebrifolia*)	FSS	Occurs on exposed granite outcroppings and steep slopes in Chaparral and Coastal Scrub habitats from 900 to 3,600 feet. Blooms April to July.	N	N	N	N	Known only from occurrences along the San Gabriel River (Fish Canyon area). Plant was not detected during general and focused surveys.
Many-stemmed Dudleya (Dudleya multicaulis)	FSS	Heavy soils, often clayey, coastal plain. Chaparral, Coastal Scrub, and Valley and Foothill Grassland. <2,000 feet.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
Southern Alpine Buckwheat (*Eriogonum kennedyi* var. *alpigonum*)	FSS	Alpine boulder and rock fields, subalpine, granitic gravel, found on high peaks and ridgetops. 8,500 to 11,550 feet.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
Johnston's Buckwheat (*Eriogonum microthecum* var. *johnstonii*)	FSS	Rocky, subalpine coniferous forest and upper Montane Coniferous Forest. 8,500 to 9,500 feet.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
Pine Green Gentian (*Fraseria neglecta*) Syn: *Swertia neglecta.*	FSS	Lower Montane Coniferous Forest, Pinyon/Juniper Woodland, and Upper Montane Coniferous Forest. 4,500 to 8,300 feet.	N	N	N	N	Site is well outside geographical range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
San Gabriel Bedstraw (Galium grande)	FSS	Open, broad-leafed forest, open Chaparral, Cismontane Woodland, and Lower Coniferous Forest. Rocky slopes. 1,450 to5,000 feet. San Gabriel Mountains.	Y	N	N	N	Potentially suitable habitat present adjacent to reservoir. Site is outside of elevation range. Plant was not detected during general and focused surveys.
Abram's Alumroot (*Heuchera abramsii*)	FSS	Occurs in rocky upper Montane Coniferous Forest at 4,900 to 8,200 feet. Blooms July to August.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Urn-flowered alumroot (*Heuchera elegans*)	FSS	Occurs in Cismontane Woodland, Lower and Upper Montane Coniferous Forest, and Riparian Forest at elevations of 4,900 to 8,200 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
Mesa Horkelia (*Horkelia cuneata ssp. Puberula*)	FSS	Sandy or gravely areas in Chaparral and Coastal Sage Scrub at 165 to 2,790 feet.	Y	N	N	N	Suitable hablitat present in reservoir area and downstream. Plant was not detected during 2007 general and focused surveys. Plant not found during EDAW's 2008 rare plant surveys.
San Gabriel Mountains Sunflower (*Hulsea vestita ssp. Gabrielensis*)	FSS	Sub-Alpine Coniferous Forest, Upper Montane Coniferous Forest, slopes and rocky outcroppings from 4,900 to 9,515 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Pigmy alpinegold (*Hulsea vestitata ssp pygmaea*)	FSS	Gravelly sites. Alpine or subalpine forest from 9,200 to 12,800 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Calfornia satintail (*Imperata brevifolia*)	FSS	Calcareous seeps, hot springs, disturbed wet areas from 1,000 to 4,900 feet.	N	N	N	N	Site is outside species known geogrphical. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Fragrant Pitcher Sage (*Lepechinia fragrans*)	FSS	Chaparral/disturbed Chaparral. Dependent on fire. Occurs from 65 to 4,430 feet. Blooms from March to October.	Y	N	N	N	Suitable habitat present in reservoir area and downstream. Plant was not detected during general and focused surveys.
Lemon Lily (*Lilium parryi*)	FSS	Meadows, streams, and springs in Montane Coniferous Forest, Riparian Scrub. 4,000 to 9,000 feet.	N	N	N	N	Site is well outside geographical range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
San Gabriel Linanthus (*Linanthus concinnus*)	FSS	Dry, rocky slopes, Coniferous Forest. 5,000 to 9,200 feet. San Gabriel Mountains.	N	N	N	N	Site is well outside geographical and elevational range of species. No suitable habitat present. Plant was not detected during general and focused surveys.
Peirson's Lupine (*Lupinus peirsonii*)	FSS	Joshua Tree Woodland, Pinyon/Juniper Woodland, Upper Montane Coniferous Forest. Decomposed granite slide and talus, on slopes and ridges. 3,280 to 6,500 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Hall's Monardella (*Monardella macrantha* ssp. *hallii*)	FSS	Chaparral, Broadleaved Upland Woodland, Cismontane Woodland, Coniferous Forest (usually Big cone Spruce), and Valley and Foothill Grassland. 2,000 to 6,600 feet. San Gabriel and San Bernardino Mountains.	N	N	N	N	Site is well outside elelvational range of species. Plant was not detected during general and focused surveys.
Rock Monardella (*Monardella viridis* ssp. *saxicola*)	FSS	Broadleaved upland forest, Montane Chaparral, Coniferous Forest, and Cismontane Woodland. Usually in dry, rocky areas. 1,650 to 6,000 feet. San Gabriel Mountains.	N	N	N	N	Site is well outside elelvational range of species. Plant was not detected during general and focused surveys.
Baja Navarretia (*Navarretia peninsularis*)	FSS	Wet areas in open forest or chaparral. 4,950 to 7,600 feet.	N	N	N	N	Site is well outside elelvational range of species. Plant was not detected during general and focused surveys.
Short-joint Beavertail (*Opuntia basilaris* var. *brachyclada*)	FSS	Chaparral, Joshua Tree Woodland, Pinyon/Juniper Woodland, and Mojavean Desert Scrub. 4,000 to 7,500 feet. Northern regions, San Gabriel and San Bernardino Mountains.	N	N	N	N	Out of geographical and elevational range. Plant was not detected during general and focused surveys.
Woolly Mountain-parseley (*Oreonana vestitata*)	FSS	Loose rock, Upper Montane and Subalpine Coniferous Forest. High ridges of San Gabriel Mountains from 7,500 to 11,500 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Rock Creek Broomrape (*Orobanche valida* ssp. *valida*)	FSS	Chaparral, Pinyon/Juniper, decomposed granite. 4,100 to 6,600 feet. Topatopa and San Gabriel Mountains.	N	N	N	N	Plant recorded in general area but not from recreation residence site. Marginal, degraded habitat in area. The plant's preferred host was not found. Plant was not detected during general and focused surveys.
Parish's Checkerbloom (*Sidalcea hickmanii* ssp. *parishii*)	FSS	Chaparral, Cismontane Woodland, and open Coniferous Forest. Often in disturbed areas. 3,300 to 8,250 feet.	N	N	N	N	Site is well outside elevational range of species. Plant was not detected during general and focused surveys.
Fringed grass-of-parnassus (*Parnassia cirrata cirrata*)	FSS	Open, Broad-Leafed Forest, open Chaparral, Cismontane Woodland, and Lower Forest. Rocky slopes from 1,500 to 5,000 feet of San Gabriel Mountains.	N	N	N	N	Site is outside species known elevational range. Plant was not detected during general and focused surveys.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Transverse Range phacelia *(Phacelia exilis)*	FSS	Upper Montane Conifer Forest, sandy slopes and flats and meadows from 3,600 to 8,860 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Ewan's cinquefoil *(Potentilla glandulosa ssp. Ewanii)*	FSS	Seeps, springs, wet areas in San Gabriel Mountains. from 6,235 to 8,875 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
Southern skullcap *(Scutellaria bolanderi ssp. Austromontana)*	FSS	Gravelly stream banks and mesic sites, Chaparral, Cismontane Woodland, Lower Montane Conifer Forest from 1,395 to 6,500 feet. Blooms July to August. Known from only one occurrence in Los Angeles County. Occurs primarily in San Diego County.	N	N	N	N	Site is outside species known geogrphical range. No suitable habitat present in reservoir area or downstream. Plant was not detected during general and focused surveys.
Chickweed Starry puncturebract *(Sidotheca caryphylloides* (syn. *Oxytheca caryphylloides)*	FSS	Chaparral, Montane Conifer Woodlands. Sandy or gravelly flats, washes, and slopes at 3,940 to 8,930 feet.	N	N	N	N	Site is outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
Laguna Mountains Jewelflower *(Streptanthus bernardinus)*	FSS	Chaparral and lower Montane Coniferous Forest from 2,200 to 2,800 feet. Known from Riverside, San Bernardino, San Diego counties.	N	N	N	N	Site is outside species known elevational range. Plant was not detected during general and focused surveys.
Southern Jewelflower *(Streptanthus campestris)*	FSS	Chaparral, Conifer Forest, Oak Woodland from 1,970 to 9,150 feet. Rocky openings. Known from Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura counties.	N	N	N	N	Site is well outside species known geogrphical and elevational range. Plant was not detected during general and focused surveys.
San Bernardino Aster *(Symphyotrichum defoliatum)*	FSS	Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, Meadows and seeps, marshes and swamps, Valley and Foothill Grassland. Ditches, streams, and springs. 6 to 6,692 feet.	N	N	N	N	Site is outside species known geogrphical range. Plant was not detected during general and focused surveys.
Sonoran Maiden Fern *(Thelypteris puberula)*	FSS	Streams, meadows, and seeps <2,000 feet.	Y	N	N	N	Suitable habitat potentially present in Project area at crest of reservoir water body. Plant was not detected during general and focused surveys.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
BIRDS							
Bald Eagle (*Haliaeetus leucocephalus*)	FSS	Typically winters in several favored deep lakes and reservoirs in San Bernardino, Riverside, and San Diego counties. Roosts in tall trees and cliffs. May occasionally forage in Project vicinity during the winter.	N	N	N	N	Species not recorded from this reservoir or downstream area.
California Condor (*Gymnogyps californianus*)	FE	Mountains, cliffs, open country in Ventura and Santa Barbara counties, rarely forages in San Gabriel Mountains near Santa Anita Dam.	N	N	N	N	No suitable habitat present in reservoir or downstream area.
Coastal California Gnatcatcher (*Polioptila californica californica*)	FT	Coastal Sage Scrub, Desert Scrub, and Alluvial Scrub.	N	N	N	N	No suitable habitat within project area on ANF. Potentially suitable habitat present downstream and outside ANF boundary. CCGN was not detected during field surveys.
Least Bell's Vireo (*Vireo bellii pusillus*)	FE	Riparian Woodlands, Coastal Sage Scrub, Live Oak Woodland. Habitat criteria: 1) woody riparian vegetation present, 2) patch size $\geq$ 0.5 acres, 3) vegetation cover meets criteria (see handout), and 4) dense clumps of woody vegetation are present.	N	N	N	N	No suitable habitat within project area on ANF. Suitable habitat present downstream of reservoir and outside ANF boundary. Individuals were not detected during focused surveys. LBVs are not documented to occur in the Project area.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	FE	Dense riparian tree/shrub habitat. Habitat criteria: 1) surface water, or presence of OBL/FACW, 2) 20% cover woody riparian on floodplain or adjacent to stream, 3) dense clumps or stands of woody vegetation.	N	N	N	N	No suitable habitat within project area on ANF. Suitable habitat present downstream of reservoir and outside ANF boundary. Individuals were not detected during focused surveys. SWWF are not documented to occur in the Project area.
Northern Goshawk (*Accipiter gentilis*)	FSS	Coniferous Forest. Large trees, closed canopy, and open understory.	N	N	N	N	No suitable habitat present in reservoir area or downstream.
Swainson's Hawk (*Buteo swainsoni*)	FSS	Grasslands, agricultural fields with scattered trees.	N	N	N	N	No suitable habitat present in reservoir area or downstream.
Peregrine Falcon (*Falco peregrinus*)	FSS	Cliffs, near water.	N	N	N	N	No suitable habitat present.
California Spotted Owl (*Strix occidentalis occidentalis*)	FSS	Mature forest stands, riparian corridors.	N	N	N	N	No suitable habitat present in reservoir area or downstream.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
MAMMALS							
San Gabriel Mountains Bighorn Sheep (Syn Nelson's Bighorn Sheep) (*Ovis canadensis nelsoni)*	FSS	Steep slopes (>80%) with abundant rock outcrops and sparse shrubs for escape terrain. Escarpment Chaparral w/ *Ceanothus* (Mountain Mahogany) associations for foraging. Range from 3,000 to 10,000 feet.	N	N	N	N	Site is outside elevational range and no suitable habitat present in reservoir area or downstream.
Pallid Bat (*Antrozous pallidus)*	FSS	Low and middle elevation areas (< 6,000 feet) throughout California in a variety of habitats.	Y	N	Y	N	Suitable foraging habitat present.
Townsend's Big-Eared Bat (*Corynorhinus townsendii*)	FSS	Humid coastal regions, limestone caves, lava tubes. Will only roost in open, hanging from walls and ceilings.	Y	N	Y	N	Suitable foraging habitat present. No occurences documented in Project vicinity.
Western Red Bat (*Lasiurus blossevillii*)	FSS	Summer resident of California in riparian habitat with trees, shrubs, and leaf litter.	Y	N	Y	N	Suitable foraging habitat present. No occurences are documented within the Project vicinity.
White-eared Pocket Mouse (*Perognathus alticolus alticolus*)	FSS	Known only in western portion of San Bernardino Mountains in vicinity of Strawberry Peak. 5,400 to 5,800 feet. Sagebrush or other shrubs, Ponderosa Pine, Pinyon/Juniper woodland. Big Bear Basin, San Bernardino Forest.	N	N	N	N	Site is well outside elevation range and no suitable habitat present in reservoir area or downstream.
Tehachapi Pocket Mouse (*Perognathus alticolus inexpectatus*)	FSS	Arid grass/scrub, Pine Woodland. 3,500 feet to 6,000 feet. Tehachapi Pass to Elizabeth Lake in San Gabriel Mountains.	N	N	N	N	Site is well outside elevation range No suitable habitat present in reservoir area or downstream.
Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*)	FSS	Lower elevation of Grassland, Coastal Sage in the Los Angeles basin. Found in San Bernardino and Riverside counties.	N	N	N	N	No suitable habitat present in reservoir area or downstream.
FISH							
Santa Ana Sucker (*Catostomus santaanae*)	FT	Permanent streams with course gravel (Piru). Cool, clear, rocky pools and runs.	N	N	N	N	No suitable habitat present in reservoir area or downstream. Critical Habitat for this species is approximately 5.5 miles northeast in separate drainage. No occurrences doucmented in Project vicinity.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Unarmored Threespined Stickleback (Gasterosteus aculeatus williamsoni)	FE	Clear, slow-flowing streams with sand or mud substrate. Water temperature <24°C and abundant vegetation. Occurs in deep, slow pools or behind obstructions. Lack of turbidity is required.	N	N	N	N	No suitable habitat present in reservoir area or downstream. No occurrences doucmented in Project vicinity. .
Arroyo Chub (*Gila orcutti*)	FSS	Slow-moving area or backwater of warm to cool streams with mud or sand substrates.	N	N	N	N	No suitable habitat present in reservoir area or downstream.
Santa Ana Speckled Dace (*Rhinichthys osculus*)	FSS	Cool, perennial streams in shallow cobble/gravel riffles. Historically: Santa Ana, Los Angeles, and San Gabriel river systems. Mountains and foothills of Santa Ana and San Gabriel rivers.	N	N	N	N	No suitable habitat present in reservoir area or downstream. No occurrences doucmented in Project vicinity.
AMPHIBIANS							
Arroyo Southwestern Toad (*Bufo microscaphus californicus*)	FE	Shallow, sandy, low gradient streams. Sandy stream terraces with cottonwoods, oaks, and willows, no grasslands. Sandy, small gravel, or bedrock substrate, sediment-free. 0 to 4,500 feet.	N	N	N	N	No suitable habitat present in reservoir area or downstream.
California Red-Legged Frog (*Rana aurora draytonii*)	FT	Deep pools, low-gradient and slow streams. Highly aquatic, requires extensive riparian and emergent vegetation.	N	N	N	N	Suitable habitat not present in project area. Not observed during reconnaissance surveys.
Mt. Yellow-Legged Frog (*Rana muscosa*)	FE	Rocky, shaded, cool streams. Sloping banks with rocks or vegetation to edge. 1,200 to 7,500 feet. Pacoima River south.	N	N	N	N	No suitable habitat present. Designated Critical Habitat not present on Project site.
San Gabriel Mtn. Slender Salamander (*Batrachoseps gabrieli*)	FSS	Downed woody debris, ferns. Discovered in the San Gabriel Mountains in 1996. 3,400 to 5,000 feet. Known from only 11 locations in San Gabriel Mountains: Soldier Creek and Rockbound Canyon.	N	N	N	N	No suitable habitat present adjacent to the reservoir and downstreawm. Site is outside elevational range.
Yellow-Blotched Salamander (*Ensatina eschscholtzii croceater*)	FSS	Oak/conifer woody debris. Rather generalized: black/blue/canyon oak to pine and fir forests.	N	N	N	N	No suitable habitat present in reservoir area or downstream.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Foothill Yellow-Legged Frog (*Rana boylii*)	FSS	Perennial streams, highly aquatic. Various substrate/vegetation. At least some shade. 0 to 6,000 feet.	N	N	N	N	No suitable habitat present. Extirpated from the Angeles NF.
REPTILES							
Desert Tortoise (*Gopherus agassizii*)	FT	Mojave and Sonoran desert, uplands east of the Salton Sea. Creosote / Cactus / Shadscale Scrub, Joshua Tree Woodland.	N	N	N	N	Site is well outside geographicalrange and no suitable habitat present in reservoir area or downstream.
California Legless Lizard (*Anniella pulchra*)	FSS	Chaparral, Pine-Oak Woodland, riparian, <3,500 feet. Sandy loose loamy soils under debris, prefers soils with high moisture content.	N	N	N	N	No suitable habitat present adjacent to the reservoir and downstreawm.
Southern Rubber Boa (*Charina bottae unbratica*)	FSS	>4,900 feet, moist woodland/conifer forest, desert, Chaparral, foothills, grassland, Coastal Scrub in moist microsites.	N	N	N	N	Outside of the species elevational and range.
Southwestern Pond Turtle (*Clemmys marmorata pallida*)	FSS	<4,000 feet, river/streams with deep pools. Slow-moving waters, permanent aquatics with basking beaches, exposed flat rocks, and floating logs.	N	N	N	N	No suitable habitat present in project footprint. Species is not documented to occur in the Project area and was not observed during surveys.. Steep-sided reservoir does not accomodate presence of the species.
San Bernardino Ring-neck Snake (*Diadophis punctatus modestus*)	FSS	Moist habitats in forest, Chaparral, woodland, grassland, farms, and gardens. Under debris with moist microsites.	Y	N	Y	N	Suitable habitat present adjacent to the reservoir and downstreawm. No occurences are documented within the Project area.
San Bernardino Mtn. Kingsnake (*Lampropeltis zonata parvirubra*)	FSS	Illuminated canyons with rocky outcrops or talus. Associated with Big Cone Spruce and Canyon Chaparral at low elevations and black oak/pine at high elevations. 1,200 to 8,000 feet.	Y	N	Y	N	Suitable habitat is present. Species is not documented to occur in the Project area.
Coastal Rosy Boa (*Lichanura trivirgata roseofusca*)	FSS	<4,000 feet, desert, arid scrub, rocky Chaparral covered hillsides and canyons where moisture is available as around springs, streams and canyon floors.	Y	N	Y	N	Suitable habitat is present in reservoir area and downstreawm. Species is not documented to occur in the Project area.
San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillii*)	FSS	<7,000 feet, Coastal Sage, Chaparral, Grassland, Coniferous/Oak Forest, Riparian.	Y	N	Y	N	Suitable habitat is present adjacent to the reservoir and downstream. Individuals not detected during focused surveys.

Common Name *Scientific Name*	Status	General Habitat Description for ANF area	Presence of Suitable Habitat Within the Site	Presence of Species Within the Site	Potentially Affected by Project?	Viability Threat?	Comments
Two-Striped Garter Snake *(Thamnophis hammondii)*	FSS	Perennial streams bordered by willow thickets or dense vegetation. Also utilizes stock ponds and other aquatic habitats if densely vegetated.	Y	N	Y	N	Potentially suitable habitat is present within the reservoir area and downstream.

Federal Status:

FSS: Forest Service Sensitive

FT: Federal Threatened

FE: Federal Endangered

FC: Federal Candidate

Project vicinity is defined as within 5-miles of the Project site.

VI. EXISTING ENVIRONMENT

On a broad scale, the Project site contains the following vegetation communities and wildlife habitats: Venturan Coastal Sage Scrub, Southern Mixed Chaparral, Alluvial Sage Scrub, Coast Live Oak Woodland, and Southern Sycamore-Alder Riparian Woodland (Holland 1986). *Appendix C* provides the Flora and Fauna observed on site, including invasive species. Focused plant surveys were conducted on March 2, June 14 and July 5, 2007.

A. ANF Land (Reservoir Area)

The description of the reservoir area, for purposes of this report, can be grouped into five sections as described below:

Slope directly adjacent to the north side of the reservoir

The northern slope above and below the reservoir access road is dominated by native species of Coastal Sage Scrub and Chaparral communities, with the exception of a few dominant non-natives. Native species observed on this south-facing slope include a mix of perennials and annuals including Sugar Bush (*Rhus ovata*), California Buckwheat (*Eriogonum fasciculatum* var. *foliolosum*), Common Sunflower (*Helianthus annuus*), Chaparral Yucca (*Yucca whipplei*), and Cliff Aster (*Malacothrix saxatile*). The dominant non-native species include Fountain Grass (*Pennisetum setaceum*), Slender Wild Oat (*Avena barbata*), and Short-Pod Mustard (*Brassica geniculata*). The vegetation on this slope ends abruptly at a staircase located along the reservoir, just above a layer of impervious material near the foundation of the dam. On the western end of this northern slope and below the reservoir access road is a small cluster of ornamental trees and riparian shrubs and trees such as Peruvian Pepper Tree (*Schinus molle*) and Gooding's Willow (*Salix goodingii*).

Access road that runs along the northern end of the reservoir

The access road that parallels the northern boundary of the reservoir is dominated by ruderal, non-native vegetation mixed with a few annual natives. The dominant non-native species along both sides of the road include Short Pod Mustard, Yellow Sweet Clover (*Melilotus indicus*), One-sided Blue Grass (*Poa secunda*), Red-Stem Filaree (*Erodium cicutarium*), Wild Radish (*Raphanus sativus*), and Sow Thistle (*Sonchus oleraceus*). The sparsely distributed native species along the road include Stinging Lupine (*Lupinus hirsutissimus*) and White Everlasting (*Gnaphalium canescens* ssp. *microcephalum*).

Slope directly adjacent to the south side of the reservoir

The opposing slope along the southern edge of the reservoir is a north-facing slope that contains exposed bedrock and similar Coastal Sage Scrub and Chaparral communities as the northern slope, albeit a lower occurrence of non-native species, including densely clustered Mexican Elderberry (*Sambucus mexicana*) and Sugar Bush, in wetter soils due to the aspect of the slope.

Northeast end, or crest, of the reservoir (above the pooled water)

The northeast crest of the reservoir consists of opportunistic riparian vegetation mixed with non-natives. A narrow meandering channel of water is surrounded by small boulders, debris, and riparian species, including Mulefat (*Baccharis salicifolia*), Mugwort (*Artemisia douglasiana*), Arroyo Willow (*Salix lasiolepis*), and Watercress (*Rorippa nasturtium-aquaticum*). Non-native species observed in this portion include Castor Bean (*Ricinus communis*) and Common Bedstraw (*Galium aparine*).

Tunnel outlet and conveyance system area near the base of the Santa Anita Dam

The vegetation on the southern end of the conveyance tunnel (on ANF land) consists of ruderal vegetation on the access road, such as Italian Thistle (*Carduus pycnocephalus)* and Telegraph Weed (*Heterotheca grandiflora*). Coastal Sage Scrub species, such as Scarlet Monkeyflower (*Mimulus cardinalis*), occur on the slope to the east, where there are also rocky outcrop species, such as Canyon Live-forever (*Dudleya cymosa*). The Riparian vegetation across the road in Santa Anita Creek, adjacent to the tunnel outlet, includes White Alder (*Alnus rhombifolia)*, Arroyo Willow, Mulefat, and various sedges.

B. Non-ANF Land (Downstream)

The description of the downstream area, for purposes of this report, can be grouped into seven sections as described below:

Riparian area north of the Arcadia Wilderness Park parking lot

The Riparian vegetation west of the access road and just north of the "Santa Anita Headworks" sign on the chain link fence includes White Alder, Mulefat, and Arroyo Willow.

North of the Debris Basin

Just south of the Arcadia Wilderness Park parking lot is an area dominated by a boulder-filled streambed with Riparian and Coastal Sage Scrub species. Due to the streambed and associated rocky soils, the herbaceous understory species differed slightly from that in the actual DB. Riparian dominants include White Alder, Western Sycamore, Mexican Tea (*Chenopodium ambrosioides)*, and various willow species. coastal sage scrub species occur closer to the access road to the east and include Deerweed (*Lotus scoparius*), Cheeseweed Mallow (*Malva parviflora*), and Wild Rose *(Rosa californica)*. The canyon walls come very close together in this section and many plants found on rocky outcrops were found in only this portion of the Project area.

Debris Basin (outside Project footprint)

The DB supports approximately 6-acres of riparian vegetation, consisting of several willow species, Fremont's Cottonwood *(Populus fremontii)*, Western Sycamore, White Alder, Stinging Nettle *(Urtica dioica)*, Showy Penstemon *(Penstemon speciosus),* sedges and several herbaceous species. Reed species exists in the south-central portion. Aquatic animals may breed in this basin, and could possibly forage on the project site.

West of Debris Basin (outside Project footprint)

This section supports approximately 4-acres of Coastal Sage Scrub elements, with dominant plant species that include California Sagebrush, Mulefat, California Buckwheat, California Cudweed (*Gnaphalium californicum)*, Common Sunflower, Sticky Monkeyflower, and Black Sage.

Percolation basins (outside Project footprint)

This section consists of several percolation basins with Ruderal vegetation. These basins are infrequently filled with overflow water from the small retention basin located to the north. Dominant plant species in these basins include Wild Radish, Shortpoded Mustard, Canadian Horseweed (*Conyza canadensis*), Castor Bean, and several other herbaceous species, including non-native grasses.

Middle SPS

Dominant plant species in the Middle SPS include Coast Live Oak (*Quercus agrifolia*), Western Sycamore, Poison Oak (*Toxicondendron diversilobium*), Laurel Sumac, Chaparral Yucca, Black Sage (*Salvia melifera)* and several herbaceous understory species. The soils are sandy, especially near the southern end of the section. The Middle SPS is dominated by Coast Live Oak Woodland. This community intergrades with Alluvial Sage Scrub. The steep hillside at the eastern edge of the Middle SPS is dominated by Coast Live Oak Woodland.

Existing (Upper) SPS

The existing SPS is surrounded by natural and planted hillside vegetation. The majority of this existing SPS consists of graded land that is barren and would likely succeed into ruderal vegetation with time. The eastern slope borders residential areas and supports small amounts of Coastal Sage Scrub elements mixed with escaped and cultivated ornamentals from neighboring gardens. This SPS is a disturbed area that contains sediment from previous cleanouts. It has a remaining capacity of 250,000 cubic yards, but would not be used for sediment placement for this Project.

VII. SPECIAL STATUS SPECIES ANALYZED

Plants

- Braunton's Milk-vetch (*Astragalus brauntonii*)
- Nevins Barberry (*Berberis nevinii*)
- Slender-horned Spineflower (*Dodecahema leptoceras*)
- Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)
- Plummer's Mariposa Lily (*Calochortus plummerae*)
- Parry's Spineflower (*Chorizanthe parryi var. parryi*)
- San Gabriel Mountains Dudleya *(Dudleya densiflora)*
- San Gabriel Bedstraw *(Galium grande)*
- Mesa Horkelia (*Horkelia cuneata ssp. Puberula*)
- Fragrant Pitcher Sage (*Lepechinia fragrans*)
- Sonoran Maiden Fern (*Thelypteris puberula*)

Wildlife

- Coastal California Gnatcatcher (*Polioptila californica californica*)
- Least Bells's Vireo *(Vireo bellii pusillus)*
- Southwestern Willow Flycatcher *(Empidonax traillii extimus)*
- Pallid Bat (*Antrozous pallidus*)
- Townsend's Big-eared Bat *(Corynorhinus townsendii)*
- Western Red Bat (*Lasiurus blossevillii*)
- San Bernardino Ring-necked Snake *(Diadophis punctatus modestus)*
- San Bernardino Mountain Kingsnake *(Lampropeltis zonata parvirubra)*
- Coastal Rosy Boa (*Lichanura trivirgata roseofusca*)
- San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillii)*
- Two Striped Garter Snake (*Thamnophis hammondii*)

Braunton's Milk-vetch *(Astragalus brauntonii)*

Regulatory Status: Braunton's Milk-vetch is a federal-listed Endangered Species and CNPS List 1B species.

Habitat, Natural History, and Distribution: Braunton's Milk-vetch is a robust, short-lived perennial in the pea family that blooms from March to July and occurs from 13 to 2,100 feet (4 to 640 meters). Braunton's Milk-vetch is apparently restricted to carbonate or calcareous soils (USFWS 1999). It is found in Closed-cone Coniferous Forest, Chaparral, Coastal Scrub, Valley and Foothill Grassland, and recently burned or disturbed areas. Carbonate outcrops are extremely rare within the current range of *A. brauntonii,* and, as a result, this species is naturally rare. Every known population has been compromised by habitat loss and modification.

It is currently found in four geographic areas that harbor metapopulations in Ventura, Los Angeles, and Orange counties. The northwestern region includes three small sites in the Simi Hills. One site was reported with three individuals from the northwest shoulder of the Simi Hills during a public comment period. The occurrences along the south slope of the Simi Hills of eastern Ventura and western Los Angeles Counties include the Oak Park and Palo Comado Canyon sites. The northeastern region is on the south flank of the San Gabriel Mountains along the Clamshell Motorway and Canyon north of Monrovia, where a small population has been documented to contain 57 plants in 2 colonies (USFWS 1999).

Three occurrences were documented in the CNDDB in 1986, 2001, and 2002 within 5-miles of the reservoir. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although recent occurrences have been documented within the Project vicinity, and suitable habitat is present, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F). Designated critical habitat occurs adjacent to the sediment placement site. There are no plans to place sediment within the critical habitat. However, since the two sites are adjacent, the edge of the critical habitat will be flagged for identification purposes.

Suitable habitat is present in the Coastal Sage/Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet (ANF land). These small areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land), which may be affected by the Project. However, focused surveys did not detect the species.

Nevin's Barberry (*Berberis nevinii*)

Regulatory Status: Nevin's Barberry is a State and federal-listed Endangered Species and a CNPS List 1B species.

Habitat, Natural History, and Distribution: Nevin's Barberry occurs in washes, Chaparral, Cismontane Woodland, Riparian Scrub, and Coastal Scrub habitats. It is generally found in lowlands or drainages in sandy to gravelly soils at elevations of 900 to 2,870 feet (274 to 875 meters). This species blooms from March to June. Threats to this species include illegal dumping, fire suppression, and vehicles. It is found in Los Angeles, Riverside, San Bernardino, and San Diego counties.

No occurrences are documented by the CNDDB to occur within the reservoir vicinity or within the Mount Wilson Quadrangle (Project Quadrangle). The nearest known occurrences were documented in 1927 and

1990, 8-miles west in the adjacent Pasadena Quadrangle. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F) and no occurrences are documented within the Project vicinity.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel output area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present within the opportunistic riparian scrub vegetation within the northern portion of the reservoir (ANF land) and downstream within the general Project area and Middle SPS (non-ANF land). This area may be temporarily affected by the Project; however focused surveys did not detect the species.

Slender-horned Spineflower (*Dodecahema leptoceras*)

Regulatory Status: The Slender-horned Spineflower is a State and federal-listed Endangered Species and is a CNPS List 1B species.

Habitat, Natural History, and Distribution: Slender-horned Spine Flower occurs in rocky and sandy soils in low elevation Coastal Scrub and Alluvial Scrub habitats, particularly in the Santa Ana River Basin. It is often found among Scalebroom And Brittlebush in washes and flood deposited terraces at elevations of 656 to 2,493 feet. This plant is known from occurrences in Los Angeles, Riverside and San Bernardino counties. There are records of this species occurring approximately 8-miles northeast of the Project site (Regents of the University of California, Updated February 2, 2007)

Occurrences are documented within the Mount Wilson Quadrangle (Project Quadrangle), approximately 2-miles south of the reservoir and 6-miles east of the reservoir (CNDDB, 2007). An additional nearby occurrence was documented approximately 3-miles northeast of the reservoir. The three occurrences were documented in 1979.

Occurrence Potential: Potential exists for this species to be affected by the Project.

Focused surveys for this species conducted in March, June and July 2007 by UltraSystems determined that conditions on-site were not favorable for detections (UltraSystems, 2007). Several occurrences are documented nearby. Focused rare plant surveys conducted by EDAW in 2008 did not locate this species on the project site.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project.

This species is not highly detectable and it has suitable habitat onsite with known occurrences within 8 miles of the project. As a result, additional precautionary measure will be taken. Two pre-construction surveys of the suitable habitat must be conducted prior to project implementation. However, prior to plant surveys, known locations of slender-horned spineflower must be visited to identify the known condition of plant. When the reference population is most identifiable, the pre-construction plant surveys of suitable habitat will be conducted. The assumption is that the slender-horned spineflower will not be

found and this project will have no effect. If it is found during spring 2009, the determination of no effect will likely change and the BA will need to be revised.

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

Regulatory Status: Slender Mariposa Lily is a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: This perennial bulbiferous herb occurs in Chaparral and Coastal Scrub habitats on slopes and canyons. It is also known to occur in Valley and Foothill Grasslands. It is found at the south base of the San Gabriel and Sierra Pelona Mountains at elevations of 1,180 to 3,200 feet. This species blooms March to June.

No occurrences are documented by the CNDDB to occur within the reservoir vicinity or within the Mt. Wilson Quadrangle (Project Quadrangle). One occurrence was documented in 1921 approximately 4-miles northeast in the Azusa Quadrangle. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F) and no occurrences are documented within the Project area.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel output area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

Plummer's Mariposa Lily (*Calochortus plummerae*)

Regulatory Status: Plummer's Mariposa Lily is a Forest Service Sensitive Species and is listed as a CNPS List 1B species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: Plummer's Mariposa Lily is a bulbiferous perennial herb. It occurs in rocky and sandy soils in low elevation Coastal Sage Scrub and Chaparral communities as well as Cismontane Woodlands, Lower Montaine Coniferous Forests, and Valley and Foothill Grasslands. Only about one-third to one-tenth of the lily's bulbs at a site may flower in a given year. Its blooming period is from May to July. No designated Critical Habitat for this species is present within the Project vicinity. Several occurrences are documented within 5-miles of the reservoir. The nearest and most recent (2001) records occurs less than approximately 2-miles south (CNDDB, 2007) of the Project site. Additional occurrences have been documents 3-miles northwest (1921), 3-miles south (1992), and 3-miles northwest (2003).

Occurrence Potential: Potential exists for this species to be affected by the Project.

Focused surveys for this species conducted in March, June and July 2007 by UltraSystems determined conditions on-site were not favorable for detections (UltraSystems, 2007). Several occurrences are documented nearby. Focused rare plant surveys conducted by EDAW in 2008 did not locate this species on the project site.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project.

Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)

Regulatory Status: Parry's Spineflower is a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: This annual herb occurs in sandy or rocky openings within Chaparral, Cismontane Woodland, Coastal Scrub, and Valley And Foothill Grasslands. It blooms from April to June and occurs at elevations of 900 to 4,000 feet. It is threatened by changes in flood regimes, urban encroachment, development, and competition from invasive plant species.

One occurrence was documented in 1902 in the Project Quadrangle (Mount Wilson). One additional occurrence was documented in the adjacent (west) Pasadena Quadrangles in 1920. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present and historic occurrences are documented within the Project vicinity, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F) and no recent (within 50 years) occurrences are documented within the Project vicinity.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

San Gabriel Mountains Dudleya *(Dudleya densiflora)*

Regulatory Status: San Gabriel Mountains Dudleya is a CNPS List 1B species and a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: San Gabriel Mountains Dudleya is a succulent perennial herb that blooms from March to July (CNPS 2006). As with many *Dudleya* species, it grows on granitic substrates on cliffs, from crevices in rocks, and on steep canyon walls (CDFG 2007). It occurs at elevations of 800-2,000 feet (240-600 meters) in chaparral, coastal scrub, mixed evergreen woodland, and riparian woodland (CDFG 2007). San Gabriel Mountains Dudleya occurs on the ANF at San Gabriel, Roberts and Fish Canyons, and on private land at the mouth of the San Gabriel River (CDFG 2007). Most of the individual plants recorded in 1989 occured on the ANF (Brown and Mistretta 1989).

Mining activities on private land in Fish Canyon obliterated all native vegetation at the mouth of the canyon, and the 1989 surveys were unable to locate any plants from this historic location (Brown and Mistretta 1989). A hiking trail passes through one population of the species, and could provide hikers the opportunity for collecting plants. This potential threat may increase as visitor use increases. The

population in the San Gabriel River Canyon could be affected by road maintenance if it damages adjacent cliff faces (Brown and Mistretta 1989).

Occurrences are documented by the CNDDB within 5-miles of the reservoir. Three occurrences were documented in 1989 approximately 2-miles east in the Azusa Quadrangle. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present and occurrences are documented within the Project vicinity, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F).

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

San Gabriel Bedstraw (*Galium grande)*

Regulatory Status: San Gabriel Bedstraw is a Forest Service Sensitive species and designated as a CNPS List 1b species. It is not a State or Federal-listed species.

Habitat, Natural History, and Distribution: San Gabriel Bedstraw is an endemic deciduous shrub. This species is known only from Los Angeles County and the San Gabriel Mountains. It occurs in rocky slopes of Broad-Leafed Upland Forest, Chaparral, Cismontane Woodland and Lower Montane Coniferous Forest habitats. It is found at elevations from 1,400 to 5,000 feet and blooms from January to July.

Several occurrences are documented within 5-miles of the reservoir. The nearest and most recent (2000) occurrence is documented less than 1-mile west in the Mount Wilson Quadrangle (Project Quadrangle) (CNDDB, 2007). No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present and several occurrences are documented within the Project vicinity, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F) and the Project site (<1,320 feet) is outside the known elevation range for the species (1,400-5,000 feet).

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

Mesa Horkelia (*Horkelia cuneata* ssp. *puberula*)

Regulatory Status: Mesa Horkelia is a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: This species occurs in Chaparral, Cismontane Woodland, and Coastal Scrub at elevations of 165 to 2,790 feet. This perennial herb blooms primarily from February to July. Potential threats include habitat conversions. It is known from several occurrences throughout Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, San Luis Obispo, and Ventura Counties.

The nearest occurrences are documented in the Mount Wilson Quadrangle (Project Quadrangle), 3.8 miles northwest (year unknown), 2.6 miles southwest (1918) and 4.7 west (1938). Additional occurrences are documented in the adjacent Azusa, Baldwin Park, Pasadena, Los Angeles, and El Monte Quadrangles. No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present and occurrences are documented within the Project vicinity, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in Spring 2007 (Appendix F). Focused rare plant surveys conducted by EDAW in 2008 did not locate this species on the project site.

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

Fragrant Pitcher Sage (*Lepechinia fragrans*)

Regulatory Status: Fragrant Pitcher Sage is a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: This shrub species occurs throughout Los Angeles, San Bernardino, and Ventura counties and Santa Catalina Island, Santa Cruz Island, Santa Rosa Island. It is found within Chaparral, particularly those disturbed by fire. It blooms from March to October and occurs at elevations of 65 to 4,430 feet. It is potentially threatened by habitat alteration and fire management.

No occurrences are documented within the Mount Wilson Quadrangle (Project Quadrangle). However, there are occurrences are documented within the adjacent Azusa (1964) and Condor Peak Quadrangles (1998). No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F).

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project; however focused surveys did not detect the species.

Sonoran Maiden Fern (*Thelypteris puberula*)

Regulatory Status: Sonoran maiden Fern is a Forest Service Sensitive Species. It is not a State or federal-listed species.

Habitat, Natural History, and Distribution: Sonoran maiden Fern is commonly found within meadows and seeps at elevations of 165 to 2,000 feet. Potential threats include urban encroachment, foot traffic and recreational activities. Found in California and to Arizona, to Baja California, to Sonora, Mexico. In California it occurs within Los Angeles, Riverside, Santa Barbara, and San Bernardino counties.

Occurrences documented within Mount Wilson Quadrangle (Project Quadrangle) less than 1 mile north of the reservoir (year unknown). An additional nearby occurrence is documented 1.5 miles east in Azusa Quadrangle (1967) and 5.5 miles east (1931). No designated Critical Habitat for this species is present within Project vicinity.

Occurrence Potential: Although suitable habitat is present and recent occurrences are documented within the Project area, this species is not expected to occur within the proposed Project footprint on ANF land or downstream (non-ANF land).

This species was not detected during general and focused surveys conducted by UltraSystems in spring 2007 (Appendix F).

Suitable habitat for this species is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel output area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present within the opportunistic Riparian vegetation within the northern portion of the reservoir (ANF land) and downstream within the general Project area and Middle SPS (non-ANF land). This area may be affected by the Project, however focused surveys did not detect the species.

Coastal California Gnatcatcher (*Polioptila californica californica*) (CAGN)

Regulatory Status: Coastal California Gnatcatcher (CAGN) species is a Federal-listed Threatened Species and a State Species of Species Concern.

Habitat, Natural History, and Distribution: CAGN is found primarily in scrub habitats in arid washes, slopes, and mesas along the coastal region of California and Mexico. This species prefers mature stands of Sage Scrub habitat, but has been known to nest in Alluvial Scrub and low growing ruderal vegetation (less than 5 feet). Its diet consists mainly of small invertebrates.

No recent occurrences are documented in the CNDDB for the Coastal California Gnatcatchers (within last 50 years) within the Mount Wilson Quadrangle (Project Quadrangle); and no occurrences within 5 miles of the Project site on the surrounding Quadrangles. One occurrence was documented 2 miles south of the reservoir in 1928. Additional occurrences are documented at much lower elevations and more than 5 miles from the Project site in adjacent Quadrangles.

Occurrence Potential: This species has is not expected to occur within the Project site on ANF land. Adjacent to the reservoir, there is no typically suitable habitat for the CAGN present where there will be Project activity. Potentially suitable habitat is present downstream (non-ANF land) within the general Project vicinity and Middle SPS. At the suggestion of Leslie Welch (Angeles National Forest Biologist), UltraSystems had an informal professional consultation with Mike San Miguel, a biologist who is familiar with the bird species within the Project area, on July 13, 2006. He recommended surveys only for the Least Bell's Vireo and the Southwestern Willow Flycatcher. In addition, there were no incidental observations of CAGN recorded during the general field surveys, rare plants surveys, or special status bird surveys that were performed by biologists who are familiar with CAGN calls, morphology, and behavior. The Project site does not contain designated Critical Habitat for the species.

Least Bell's Vireo *(Vireo bellii pusillus)*

Regulatory Status: The Least Bell's Vireo (LBV) is a migratory songbird that is a State and federal-listed Endangered Species.

Habitat, Natural History, and Distribution: The LBV is a migratory songbird dependent upon riparian habitat for breeding. Historically, this species was widespread throughout Riparian Woodlands in the Central Valley and low elevation riverine valleys of California and northern Baja California (USFWS 1998). Historically, the LBV was a common to locally abundant species in lowland Riparian habitat, ranging from coastal southern California through the Sacramento and San Joaquin Valleys as far north as Red Bluff (Tehama County). It was widespread throughout Riparian Woodlands in the Central Valley and low elevation riverine valleys of California and northern Baja California. Populations also occurred in the foothill streams of the Sierra Nevada and Coast Ranges, and in Owens Valley, Death Valley, and scattered locations in the Mojave Desert.

In the decade since federal listing in 1986, LBV numbers have increased 6-fold, and the species is expanding back into its historic range. In 1998, the population size was estimated at 2,000 pairs (USFWS 1998). Nesting LBV's have re-colonized the Santa Clara River (Ventura County) to the north, where 67 pairs nested in 1998, and the Mojave River (San Bernardino County) to the northeast. The northernmost reported sighting in recent years is of a nesting pair near Gilroy (Santa Clara County) in 1997. Roughly half of the current LBV population occurs on drainages within Marine Corps Base Camp Pendleton in San Diego County.

Elements of habitat that are essential to the conservation of LBV are Riparian Woodland vegetation that generally contains both canopy and shrub layers, and includes some associate upland habitats. LBV's are obligate riparian breeders, typically inhabiting structurally diverse woodlands along watercourses. They occur in a number of riparian habitat types, including cottonwood-Willow Woodlands/Forests, Oak Woodlands, and Mulefat Scrub. Two features that have been found to be essential components of their habitat are: 1) the presence of dense cover within 3-6 feet (1-2 meters) of the ground, where nests are typically placed and 2) a dense, stratified canopy for foraging. Although LBV are tied to riparian habitat for nesting, they sometimes extend their activities into adjacent upland habitat. For example, Coastal Sage Scrub is often found adjacent to riparian areas in southern California (Kus 2002) where, in places, LBV's maintain territories that incorporate both habitat types.

No occurrences are documented in the CNDDB for the Mount Wilson Quadrangle (Project Quadrangle). The nearest occurrences are documented approximately 5 miles southeast of the Project site along the San Gabriel River in the Azusa Quadrangle (1986, 1975 and 2007). Additional occurrences are at a lower elevation over 5 miles from the Project site in the El Monte (2001) and Baldwin Park Quadrangles (1984 and 2001). No designated Critical Habitat for this species is present within the Project vicinity.

Occurrence Potential: This species is not expected to occur within the Project site on ANF-land. Adjacent to the reservoir, there is no typically suitable habitat for the LBV present in areas that will be affected by Project activity. Suitable habitat is present downstream (non-ANF land) within the general Project vicinity and Middle SPS. Focused surveys were conducted in spring 2007. These surveys did not locate LBV occurrences on the Project site. The results of the LBV survey are discussed in more detail in the *LBV Survey Report (Appendix D).*

Southwestern Willow Flycatcher *(Empidonax traillii extimus)*

Regulatory Status: The Southwestern Willow Flycatcher (SWWF) is a State and federal-listed Endangered Species.

Habitat, Natural History, and Distribution: SWWF currently breeds in relatively dense riparian habitats in all or parts of six southwestern states, from near sea level to over 8,000 feet (Craig 1998). The SWWF breeds in riparian habitats along rivers, streams, or other wetlands, where relatively dense growths of trees and shrubs are established, near or adjacent to surface water, or in areas underlain by saturated soil. Habitat characteristics, such as dominant plant species, size and shape of habitat patch, canopy structure, vegetation height, and vegetation density, vary widely among sites. SWWF nests in thickets of trees and shrubs ranging in height from 6 to 98 feet (2-30 meters). Lower-stature thickets (6–13 feet or 2–4 meters tall) tend to be found at higher elevation sites, with tall-stature habitats at middle and lower elevation riparian forests. Nest sites typically have dense foliage at least from the ground level up to approximately 13 feet (4 meters) above ground, although dense foliage may exist only at the shrub level, or as a low dense canopy. Nest sites typically have a dense canopy. As a neo-tropical migrant (migrating between Central and South America and the United States), migration stopover areas for the SWWF, even though not used for breeding, are critically important and essential resources affecting productivity and survival of the species.

Throughout the range of the SWWF, the riparian habitats tend to be rare, widely separated, in small and linear locales, separated by vast expanses of arid lands. Common tree and shrub species comprising nesting habitat include willows (*Salix* sp.), Boxelder (*Acer negundo*), Tamarisk (*Tamarix* sp.), and Russian Olive (*Eleagnus angustifolia*).

One occurrence of the SWWF is documented in the CNDDB for the Mount Wilson Quadrangle (Project Quadrangle) in 1906, approximately 5 miles west of the reservoir. Additional occurrences were recorded from lower elevations more than 5 miles from the Project site in the Pasadena Quadrangle (1894 and 1906; 7-miles southwest), Los Angeles Quadrangle (1894 and 1906; 13 miles southwest), and El Monte Quadrangle (1906 over 5 miles southeast). No designated Critical Habitat for this species is present within the Project vicinity.

Occurrence Potential: This species is not expected to occur within the Project site on ANF-land. Adjacent to the reservoir, there is no typically suitable habitat for the SWWF present in areas that will be affected by the Project. Suitable habitat is present downstream (non-ANF land) within the general Project vicinity and Middle SPS. Focused surveys were conducted in Spring 2007 and did not result in any SWWF occurrences. The results of the SWWF survey are discussed in more detail in the *LBV Survey Report (Appendix D).*

Pallid Bat (*Antrozous pallidus*)

Regulatory Status: The Pallid Bat is a Forest Service Sensitive Species and State Species of Special Concern.

Habitat, Natural History, and Distribution: Pallid Bat is most often found in low and middle elevation areas (< 6,000 feet) throughout California in a variety of habitats. This species is normally associated with Oak Woodland, Ponderosa Pine, Mixed Conifer, Redwood, and Giant Sequoia habitats in central and northern California. It is very sensitive to roost site disturbances and has suffered population declines from pesticide use (primarily by the loss of edible insects), human development, and the removal of Oak Woodland habitat. Mating takes place between late October and February. After a period of delayed fertilization, gestation occurs between April and June. One to two young are born per year, with two being most common. Nursery colonies may contain up to several hundred females, but generally fewer than 100. Maternity colonies are formed around April and usually consist of 20-100 individuals; males may roost in the nursery or separately. Young can fly well at 6 weeks of age, and are weaned by 7 weeks. Pallid Bats select a variety of day roosts, including rock outcrops, mines, caves, tree hollows, buildings, and bridges. Night roosts may vary, but are commonly under bridges; but also in caves and mines. Pallid Bats are intolerant of roosts with temperatures higher than 40°C. They commonly forage at 0.5 - 2.5 meters above the ground and feed on large ground-dwelling arthropods such as Jerusalem Crickets, beetles, and scorpions, but also eat large moths and grasshoppers. Typically this species has two nightly foraging periods with an intervening roosting period (Brown 1996).

Three occurrences are documented approximately 2 miles south of the reservoir within the Mount Wilson Quadrangle (Project Quadrangle). These records are over 50 years old (1930, 1910, and 1927). The most recent occurrences are both documented in 1969, 8-miles east in the Baldwin Park Quadrangle and 7 mile west in 1936 in the Azusa Quadrangle. Three additional occurrences were documented between 1910 and 1932 in the El Monte and Pasadena Quadrangles, which are over 5 miles from the Project site.

Occurrence Potential: Although no recent occurrences are documented within the area, potential exists for this species to occur in the Project vicinity.

The reservoir provides a flat water source for bats to forage over and skim for drinking. Suitable foraging habitat for this species occurs within the northern crest of the reservoir. Suitable habitat is also present within the Coastal Sage Scrub and Chaparral on the cliffs and slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

Townsend's Big-eared Bat *(Corynorhinus townsendii)*

Regulatory Status: The Townsend's Big-eared Bat is a Forest Service Sensitive Species and a federal Species of Concern.

Habitat, Natural History, and Distribution: In California, this species is typically found year-round in low-desert to mid-elevation montane habitats, although sightings have been reported up to 10,800 feet. Habitat associations include desert, native prairies, coniferous forests, mid-elevation Mixed Conifer, Mixed Hardwood-Conifer Forests, Riparian Communities, active agricultural areas and coastal habitats. Species distribution is strongly correlated with the availability of caves and cave-like roosting habitat. Roosts are found within caves, abandoned mines, and buildings. Buildings must offer cave-like spaces in order to be suitable. This species is highly sensitive to roost disturbance (Brown 1996). Night roosts may occur in more open settings, including under bridges. Individuals are very loyal to their natal sites, and usually do not move more than 10 kilometers from a roost site (Kunz 1982). Foraging associations include edge habitats along streams and areas adjacent to and within a variety of wooded habitats. In California, the species is shown to forage preferentially in association with native vegetation.

Although individual animals can be found hibernating in a number of places (buildings, caves, mines), most of the known hibernacula are in structurally stable caves. In these situations, the greatest risk to the

population is repeated human disturbance. Human presence in a hibernaculum can cause animals to arouse from torpor, thereby using up valuable fat stores that may be required to survive the winter. Repeated awakenings from hibernation can adversely affect a bat's survival chances and may result in a weakened condition leaving them more susceptible to mortality, and poor reproductive capability. Old mines and particularly mine shafts are of extreme importance as hibernation habitat (Kunz 1982). Suitable hibernating sites for this species seem to be limited in most areas since *C. townsendii* populations travel relatively short distances to find sites and have fairly restrictive roost requirements (especially regarding temperature regimes).

Having suitable, disturbance free, hibernating sites is probably essential to the long-term survival of this species. Identification and protection of significant roost sites is still needed in most areas, and significant populations need to be monitored over time. A four year survey (1987-1991) investigating the Townsend's Big-eared Bat in California shows that this species is roost limited, and the primary cause for the observed declines has been human disturbance of roosting, hibernating, and nursery sites. Currently in California, the majority of important roost sites remain in an unprotected status.

No occurrences are documented within the CNDDB for the Mount Wilson and surrounding eight (8) Quadrangles.

Occurrence Potential: Although no occurrences are documented within the area, potential foraging habitat exists for this species in the Project vicinity.

The reservoir provides a flat water source for bats to forage over and skim for drinking. Suitable foraging habitat for this species occurs within the northern crest of the reservoir. Suitable habitat is also present within the Coastal Sage Scrub and Chaparral on the cliffs and slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

Western Red Bat (*Lasiurus blossevillii)*

Regulatory Status: Western Red Bat is designated by the Regional Forester as a Forest Service Sensitive species.

Habitat, Natural History, and Distribution: Little is known about the distribution of the Western Red Bat across the ANF. This species utilizes riparian trees, shrubs, and leaf litter for roost sites (Stephenson and Calcarone 1999). The Western Red Bat is present on the ANF only in the summer. Conversion or loss of riparian habitat and other broad-leafed deciduous forests and woodlands are likely causes of population decline in this species (AZGFD 2006).

No occurrences are documented within the CNDDB for the Mount Wilson and surrounding eight (8) Quadrangles.

Occurrence Potential: Although no occurrences are documented within the area, potential foraging habitat exists for this species in the Project vicinity.

The reservoir provides a flat water source for bats to forage over and skim for drinking. Suitable foraging habitat for this species occurs within the northern crest of the reservoir. Suitable habitat is also present within the Coastal Sage Scrub and Chaparral on the cliffs and slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

San Bernardino Ring-neck Snake *(Diadophis punctatus modestus)*

Regulatory Status: The San Bernardino Ring-neck Snake is a Forest Service Sensitive Species.

Habitat, Natural History, and Distribution: San Bernardino Ring-Neck Snake has a narrow orange neck ring and bright orange-red belly with heavy black spotting. It can be found along the southern California coast from the Santa Barbara area south along the coast to San Diego County, and inland to the San Bernardino Mountains. The San Bernardino Ring-neck Snake prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, Chaparral, Mixed Coniferous Forests, and woodlands. It mates in Spring or Fall. Clutches of 1-10 elongate white or yellowish eggs are laid June to July in communal nesting sites. The young hatch in about 8 weeks. It is often found under flat rocks, logs, and loose bark, or else foraging beneath forest litter. When threatened, it winds its tail into a tight spiral and raises it, exposing the bright colored underside. It feeds on small snakes, lizards, amphibians (especially slender salamanders) and earthworms.

No occurrences are documented within the CNDDB for the Mount Wilson and surrounding eight (8) Quadrangles.

Occurrence Potential: Although no occurrences are documented within the Project vicinity, suitable habitat is present within the Project area.

Suitable habitat for this species occurs within Chaparral on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

San Bernardino Mountain Kingsnake *(Lampropeltis zonata parvirubra)*

Regulatory Status: The San Bernardino Mountain Kingsnake is a State Species of Concern and federal Species of Concern.

Habitat, Natural History, and Distribution: This brightly colored snake is known to inhabit moist woods, Coniferous Forests, Oak Woodlands, And Chaparral in mountains and canyons. This snake is generally diurnal; however, in warmer months it becomes crepuscular or nocturnal. The San Bernardino Mountain Kingsnake is one of five sub-species of the California Mountain Kingsnake. It occurs at elevations from 1,200 to 8,000 feet.

No occurrences are documented within the CNDDB for the Mount Wilson and surrounding eight (8) Quadrangles.

Occurrence Potential: Although no occurrences are documented within the Project vicinity, suitable habitat is present within the Project area.

Suitable habitat for this species occurs within Chaparral on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

Coastal Rosy Boa (*Lichanura trivirgata roseofusca*)

Regulatory Status: The Coastal Rosy Boa is as a Forest Service Sensitive Species.

Habitat, Natural History, and Distribution: Coastal Rosy Boa occurs in various habitats, including coastal desert canyons, rocky chaparrals, and desert slopes near water or moist area (streams, springs, and canyon floors). It can be found at elevations less than 4,000 feet and is primarily nocturnal. This species is one of the smallest members of the Boa family: it rarely grows longer than 1-meter in length. Its body is short with a blunt tail and small head. This snake ranges in color from gray to reddish brown and displays three (3) lengthwise stripes. Populations of the Coastal Rosy Boa range from southern California and western Arizona to Baja California and western Sonora, Mexico.

No occurrences are documented within the CNDDB for the Mount Wilson and surrounding eight (8) Quadrangles.

Occurrence Potential: Although no occurrences are documented within the Project vicinity, suitable habitat is present within the Project area.

Suitable habitat for this species occurs within Chaparral on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillii)*

Regulatory Status: The San Diego Coast Horned Lizard is a Forest Service Sensitive Species and a State Species of Special Concern

Habitat, Natural History, and Distribution: San Diego Coast Horned Lizards occur in a variety of habitat types, including Coastal Sage, Annual Grassland, Chaparral, Oak Woodland, Riparian Woodland, and Coniferous Forest, but are more common in shrub-dominated communities with a limited over-story (CDFG 1994, Stephenson and Calcarone 1999). Within these habitats, important elements include loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited over-story for basking, and low, but relatively dense, shrubs for refuge. In the foothill and mountain areas that are covered with dense brush or other vegetation, San Diego Coast horned lizards are largely restricted to areas with pockets of open microhabitat, such as fire breaks and roads (CDFG 1994).

Three occurrences (197? to 1969) are documented in the CNDDB within the Mount Wilson Quadrangle (Project Quadrangle). These occurrence dates are over thirty-five (35) years old. The nearest occurrence is documented less than 1-mile north of the reservoir in 197? (The CNDDB does not provide the exact citation year). The most recent nearby occurrence is documented as 11 miles northwest of the reservoir in the Condor Peak Quadrangle. Ten additional occurrences from 1911 to 2001 are documented in Waterman Mountain, Baldwin Park, Los Angeles, Pasadena, Condor Peak, and El Monte Quadrangles.

Occurrence Potential: Occurrences are documented within the Project vicinity and suitable habitat is present within the Project area.

This species was not detected during focused surveys conducted May to July 2007 within suitable habitat located downstream of the reservoir. The focused survey report for this species is provided in *Appendix G*. Suitable habitat for this species occurs within Chaparral on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

Two-striped Garter Snake (*Thamnophis hammondii*)

Regulatory Status: The Two-striped Garter Snake is a State Species of Concern and a Forest Service Sensitive Species.

Habitat, Natural History, and Distribution: Two-striped Garter Snake is a medium-sized snake with a head barely wider than the neck and keeled dorsal scales. There are two basic patterns (morphs) within the species; both have a drab olive, brown, or dark gray ground color, with no dorsal stripe, except for a spot on the neck (California Herps). The species is primarily aquatic and diurnal. It is also active at night and at dusk during hot weather in some areas. It can be active from January to November depending on weather conditions. Most garter snakes, when picked up, will often strike repeatedly and release cloacal contents and musk.

The Two-striped Garter Snake ranges continuously from near Salinas in Monterey County south along the coast mostly west of the south Coast ranges, to southern California where it ranges east through the Transverse ranges (and into the desert in Victorville) and south through the Peninsular ranges into northern Baja California. It also occurs in southern Baja in isolated areas and on Catalina Island at elevations from sea level to 6,988 feet.

Populations of the Two-striped Garter Snake exist in Riparian, wetland, and Vernal Pool areas of the San Jacinto Mountains, near Lake Elsinore and Skinner Reservoir, as well as moist areas from the Santa Ana and Elsinore Mountains, through interior valleys, over the San Jacinto Mountains, to elevations of at least 8,000 feet (Glaser, 1970). Known historic occurrences include the following: Santa Ana Mountains to 4,300 feet; Riverside; Mockingbird Canyon; Elsinore; Temecula to one mile north; San Jacinto River, 8.6 miles southeast of Hemet; Tahquitz Valley at 8,000 feet; Kenworthy; Hemet Lake to 1 mile west; Hall Creek at 5,000 feet; base of San Jacinto Mountains near Cabazon; Palm Canyon at 800 feet (UCR Retrieved 2007).

This species can generally be found often in rocky areas around pools, creeks, cattle tanks, and other water sources, in Oak Woodland, Chaparral, Brushland, and Coniferous Forest. This species is considered one of the most aquatic of garter snakes and is closely associated with streams with rocky beds bordered by willows, ponds, lakes, wetlands and vernal pools (Fisher 1997).

One occurrence is documented in 2000 within the Mount Wilson Quadrangle (Project Quadrangle) 4-miles north of the reservoir. Three additional occurrences have been documented within the Azusa Quadrangle 6-miles east of the Project site in 2000. No additional occurrences are documented within the CNDDB for the remaining seven (7) surrounding Quadrangles.

Occurrence Potential: Occurrences are documented within the Project vicinity and suitable habitat is present within the Project area.

Potentially suitable habitat for this species occurs within the northern crest of the reservoir when dense aquatic vegetation is present. Suitable habitat is also present downstream of the reservoir within along the streambed and Middle SPS (non-ANF Land).

VIII. EFFECTS OF THE PROPOSED PROJECT

A. General Overview

ANF Land

The Project will produce only temporary impacts on lands in the ANF.

Dewatering Reservoir

The reservoir will be dewatered through the existing valves to the approximate height of the lowest valve riser. Below the elevation of this riser, high levels of sediment are expected, and discharged through the low level outlet gate are anticipated to be highly turbid without implementing BMPs. Sediment will be removed from the front of the low level outlet gate prior to it being opened. Approved BMPs will be employed to prevent turbid flows. BMPs may include sandbag structures, filter fabric, and use of baker tanks to de-silt water. A bypass line may be installed to capture recession flows in the upper portion of the project and discharge them past the work area to prevent them from becoming turbid within the work area. Surveys for sensitive aquatic species will be conducted prior to the start of dewatering and any effects on biological resources within the reservoir pool will be appropriately mitigated.

Conveyance System

Vegetation removal adequate to install and operate the conveyance system would occur on ANF land at base of the tunnel and along the conveyance route (access road) south of the reservoir.

Non-ANF Land (Downstream)

Flow Modification

During and after the dewatering process, the riparian habitat in the natural channel (above the DB) will be affected similarly to that of a winter storm, with similar effects. The contractor will establish appropriate BMPs within the reservoir footprint and only clean water will be discharged into the stream.

Sediment Conveyance

The sediment conveyance and transport systems may disturb wildlife species in the adjacent upland and riparian zone. Small areas of vegetation adequate to install and maintain the sediment conveyance systems may be moved removed resulting in the temporary removal of native vegetation and result in soil compaction in some places.

Sediment Placement

The proposed action of utilizing the SPS for sediment deposition would permanently remove riparian vegetation and increase soil elevation, which is more appropriate for upland vegetation. Any herbivores or predators utilizing the SPS community would potentially be displaced northward to other upstream suitable habitat, perhaps reaching the ANF.

B. Direct and Indirect Effects (on species)

Plants

Direct and indirect affects on the following species would not occur because these plant species were not found, or are not expected to occur, within the proposed Project footprint on ANF land or downstream areas (non-ANF land).

- Braunton's Milk-vetch *(Astragalus brauntonii)*
- Nevin's Barberry (*Berberis nevinii*)
- Slender-horned spineflower (*Dodecahema leptoceras*)
- Slender Mariposa Lily (*Calochortus clavatus var. gracilis*)
- Parry's Spineflower (*Chorizanthe parryi var. parryi*)
- San Gabriel Mountains Dudleya *(Dudleya densiflora)*
- San Gabriel Bedstraw *(Galium grande)*
- Mesa Horkelia (*Horkelia cuneata* ssp. *puberula*)
- Fragrant Pitcher Sage (*Lepechinia fragrans*)
- Sonoran Maiden Fern (*Thelypteris puberula*)

Determination: It is my determination that the Project will not affect Braunton's milk-vetch and Nevin's barberry, slender-horned spineflower or their designated critical habitat.

Determination: It is my determination that the Project will not affect slender mariposa lily, Parry's spineflower, San Gabriel Mountains Dudleya, San Gabriel bedstraw, Mesa Horkelia, fragrant pitcher sage and Sonoran maiden fern.

Based on habitat suitability and known occurrences, it is possible that project implementation may result in impacts to the following plant species:

- **Plummer's Mariposa Lily (*Calochortus plummerae*)**

Potential exists for the Plummer's mariposa lily to be affected by the Project. Occurrences of this species is documented nearby. Focused surveys for this species conducted in March, June and July 2007 by UltraSystems and EDAW (2008) determined conditions on-site were not favorable for detections (UltraSystems, 2007).

Suitable habitat for the Plummer's mariposa lily is located in the Coastal Sage and Chaparral mix of vegetation on the slopes adjacent to the reservoir and tunnel outlet area (ANF land). These areas will not be directly affected by the Project. Suitable habitat is also present downstream within the general Project area and Middle SPS (non-ANF land) and these areas may be affected by the Project.

Direct Impacts:

- No direct affects are expected to occur on ANF land. If they were present, individual plants would be crushed by vehicles, equipment, and pedestrians or removed during vegetation clearing downstream (non-ANF land) within the Middle SPS or conveyance system installation and maintenance. This could result in destruction of the plants.

Indirect Impacts:

- Areas of equipment or pedestrian traffic in and along the conveyance route and within the SPS sites downstream may increase habitat suitability for exotic species and increase resource competition.
- Modification of adjacent and downstream habitat may displace herbivores and may lead to an increased risk of predation upstream on the ANF lands.

Determination: It is my determination that the proposed Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the Plummer's mariposa lily.

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Wildlife

Direct and indirect affects on the following species are discussed below:

- Coastal California Gnatcatcher (*Polioptila californica californica*)
- Least Bells's Vireo *(Vireo bellii pusillus)*
- Southwestern Willow Flycatcher *(Empidonax traillii extimus)*
- Pallid Bat (*Antrozous pallidus*)
- Townsend's Big-eared Bat *(Corynorhinus townsendii)*
- Western Red Bat (*Lasiurus blossevillii)*
- San Bernardino Ring-necked Snake *(Diadophis punctatus modestus)*
- San Bernardino Mountain Kingsnake *(Lampropeltis zonata parvirubra)*
- Coastal Rosy Boa (*Lichanura trivirgata roseofusca*)
- San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillii)*
- Two-Striped Garter Snake (*Thamnophis hammondii*)

Coastal California Gnatcatcher (*Polioptila californica californica*), Least Bells's Vireo *(Vireo bellii pusillus)* and Southwestern Willow Flycatcher *(Empidonax traillii extimus)*

The coastal California gnatcatcher, least Bells's vireo and southwestern willow flycatcher not expected to occur within the Project area on the ANF. Adjacent to the reservoir and in areas that will be affected by the Project on the ANF, there is no suitable habitat for these species. Outside of the ANF, potentially suitable habitat for these species is present downstream within the general Project vicinity and Middle SPS.

Focused surveys were conducted in Spring 2007 for the least Bell's vireo and southwestern willow flycatcher in the Project area. These surveys did not result in any LBV or SWWF occurrences. The results of the LBV and SWWF survey are discussed in more detail in the LBV and SWWF Survey Report (Appendix D). No recent occurrences are documented within the Project vicinity for the coastal California gnatcatcher, least Bells's vireo and southwestern willow flycatcher.

For Project activities occurring on the ANF, no direct or indirect impacts are expected for the coastal California gnatcatcher, least Bells's vireo and southwestern willow flycatcher. This conclusion is based on the absence of suitable habitat and potential for occurrence.

For Project activities occurring outside of the ANF, direct impacts are not expected. Focused surveys conducted in Spring 2007 did not result in any recorded occurrences of these species. Additionally, pre-disturbance surveys will be conducted to locate nesting birds in the project area. In the event that these species are present, measures would be implemented to avoid direct impacts.

Project activities occurring outside of the ANF will result in indirect impacts. Indirect impacts will be associated with both temporary and permanent impacts to potentially suitable habitat. None of the potentially impacted areas are designated critical habitat for the coastal California gnatcatcher, least Bell's vireo or southwestern willow flycatcher. Vegetation brushing/removal and short-term modifications to stream flows are considered temporary impacts. However, sediment deposition will result in permanent impacts to approximately 12-13 acres of native vegetation. As a result, the deposition site will be removed as suitable habitat for the coastal California gnatcatcher, least Bell's vireo and southwestern willow flycatcher. It is not anticipated that restoration of the site will allow for recovery of vegetation conditions needed to support these species.

Determination: It is my determination that the Project will not affect the coastal California gnatcatcher, least Bells's vireo and southwestern willow flycatcher or their designated Critical Habitats.

Pallid Bat, Townsend's Big-eared Bat, and Western Red Bat

Suitable foraging habitat for these species occurs within the project area both on the ANF and outside the ANF. The Project will temporarily modify surface water availability and result in both temporary and permanent impacts to vegetation. For the duration of Project implementation, noise and activity levels in the project area will be elevated.

Direct Impacts:

- Temporary impacts including noise, dust, vibration, and general human presence may result in disturbance or harassment of individuals in or directly adjacent to the project area.
- Individuals may be displaced or experience modified behavior as a result of project activities.
- Modified behavior or displacement of individuals may lead to an increased risk of predation.
- Individuals displaced from the Project area could experience increased competition with individuals already occupying adjacent habitats.

Indirect Impacts:

- Indirect impacts will include both temporary and permanent impacts. Vegetation brushing/removal will modify foraging habitat and represent a temporary impact. These impacts will be greatest where riparian habitat or conditions are affected. An additional temporary impact will be associated with decreased foraging and drinking opportunities during the time the reservoir is dry.
- Sediment deposition will result in permanent impacts to approximately 12-13 acres of native vegetation. As a result, the foraging habitat at the deposition site will be modified for the pallid bat, Townsend's big-eared bat and western red bat. Depending on the post-project level of restoration and revegetation of the site, modifications to the prey base and foraging opportunities could be permanent.

Determination: It is my determination that the proposed Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the pallid bat, Townsend's big-eared bat, or western red bat.

San Diego Coast Horned Lizard, San Bernardino Ring-neck Snake, San Bernardino Mountain Kingsnake, Coastal Rosy Boa, Two-striped Garter Snake

Suitable habitat for these species occurs within the project area both on the ANF and outside the ANF. The Project will temporarily modify surface water availability and result in both temporary and permanent impacts to vegetation. As long as water flows return to pre-Project conditions, changes in riparian habitat within the reservoir and downstream of the reservoir will be temporary. For the duration of Project implementation, noise and activity levels in the project area will be elevated.

Direct Impacts:

- Individuals may be injured or killed if crushed by vehicles, equipment or pedestrians.
- Temporary impacts including noise, dust, vibration, and general human presence may result in disturbance or harassment of individuals in or directly adjacent to the project area.
- Individuals may be displaced or experience modified behavior as a result of project activities.
- Modified behavior or displacement of individuals may lead to an increased risk of predation.
- Individuals displaced from the Project area could experience increased competition with individuals already occupying adjacent habitats.

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Indirect Impacts:

- Indirect impacts will include both temporary and permanent impacts. Vegetation brushing/removal will modify suitable habitat and represent a temporary impact. Modification of riparian habitat will have the greatest impact for these species. An additional temporary impact will be associated with the modified stream releases and the drying of the reservoir. Changes in water availability or soil moisture will impact the two-striped garter snake and San Bernardino ringneck snake the most.
- Sediment deposition will result in permanent impacts to approximately 12-13 acres of native vegetation. As a result, the suitable habitat at the deposition site will be modified for these species. Depending on the post-project level of restoration and revegetation of the site, modifications to habitat suitability could be permanent.

Determination: It is my determination that the Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the San Diego coast horned lizard, coastal rosy boa, San Bernardino ring-neck snake, San Bernardino Mountain kingsnake and two striped garter snake.

Cumulative Effects

Features and activities in the vicinity of the Project area potentially affecting habitat and distribution of plant and wildlife species include construction, use, and maintenance of buildings and roads, as well as urban development and dispersed or developed recreation facilities. Developments in the immediate Project vicinity include Big Santa Anita Reservoir, Chantry Flat Day Use Area, Arcadia Wilderness Park, Big Santa Anita Canyon Recreation Residence tract and multiple trails and roads. Chantry Flat Road is used by local residents as well as by recreation visitors to the Forest. Human activity associated with this road may result in disturbance to species' life history activities or result in injury or mortality of wildlife. In the vicinity of this Project, activities planned for the near-term future that may affect plant/wildlife individuals and their habitat include commercial and residential developments, fuel reduction treatments, and the maintenance/repair of facilities, roads, utility corridors and trails. The communities of Monrovia,

Sierra Madre, Arcadia, and Santa Anita are within a short commute of the Project area. These communities continue to expand in both commercial and residential developments. The increasing demand for recreational and other uses within the Project area will continue to affect plant and wildlife habitat/distribution in the future. The Project will add to the cumulative impact of the other existing or planned activities within the Project area, particularly at the SPS.

IX. SUMMARY OF DETERMINATION STATEMENTS

Based on the analysis presented above regarding anticipated effects of the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, the following determinations have been made:

Plants

Determination: It is my determination that the Project will not affect Braunton's milk-vetch, slender-horned spineflower and Nevin's Barberry or their designated critical habitat.

Determination: It is my determination that the Project will not affect slender mariposa lily, Parry's spineflower, San Gabriel Mountains Dudleya, San Gabriel bedstraw, Mesa Horkelia, fragrant pitcher sage and Sonoran maiden fern.

Determination: It is my determination that the proposed Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the Plummer's mariposa lily.

Wildlife

Determination: It is my determination that the Project will not affect the coastal California gnatcatcher, least Bells's vireo and southwestern willow flycatcher or their designated Critical Habitats.

Determination: It is my determination that the Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the San Diego coast horned lizard, coastal rosy boa, San Bernardino ring-neck snake, San Bernardino Mountain kingsnake, two striped garter snake, pallid bat, Townsend's big-eared bat and western red bat..

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MBTA This treaty with Canada, Mexico and Japan makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season. **16 U.S.C. 703-711**.

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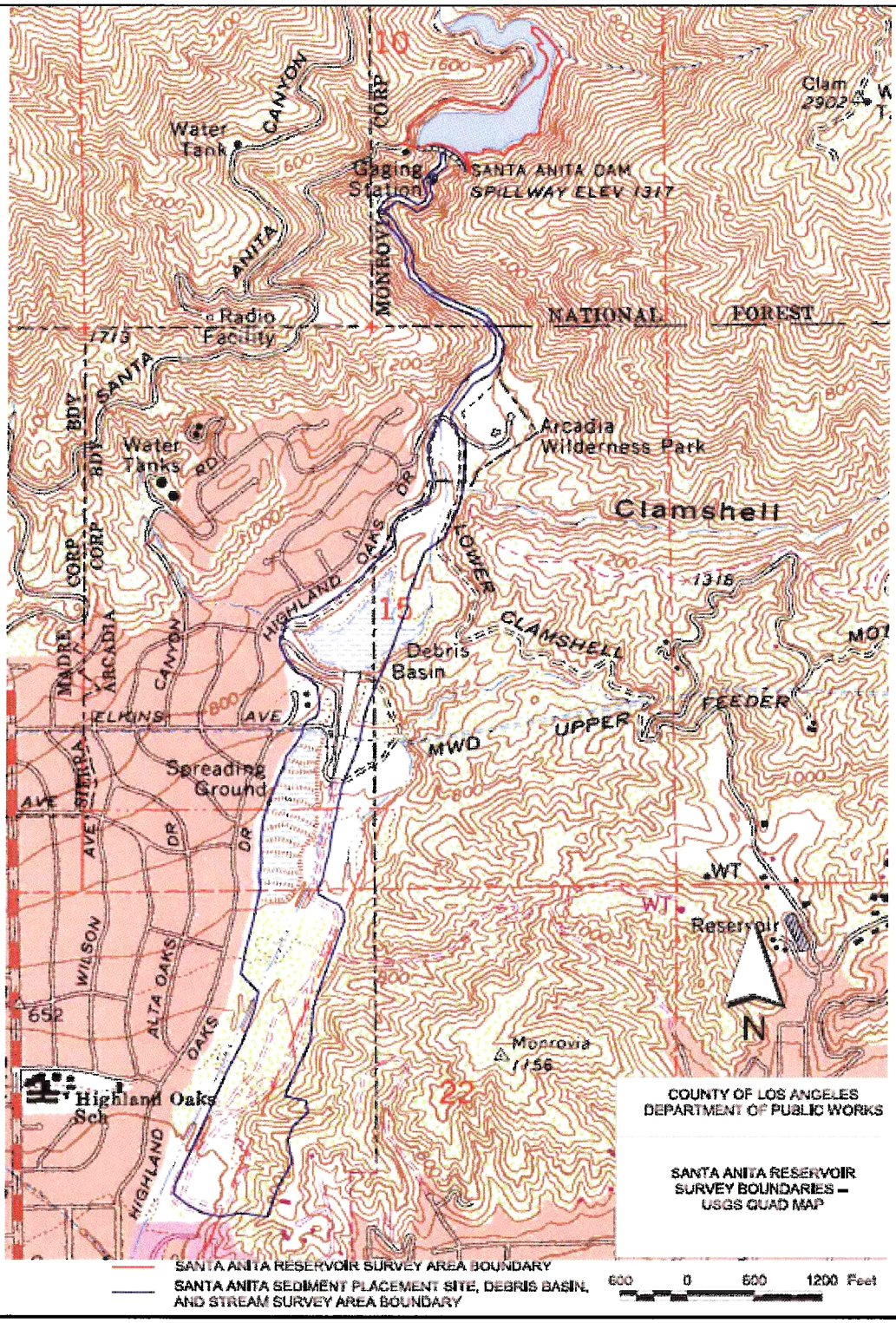
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APPENDIX A:
LOCAL VICINITY TOPOGRAPHIC MAP



UltraSystems

Source: LACDPW 2006

APPENDIX A.
Local Vicinity Topographic Map

APPENDIX B:
AERIAL PHOTO OF PROJECT SITE



UltraSystems

Source:
EDAW 2007

APPENDIX B.
Aerial Photo of Project Site

APPENDIX C:
SPECIES LIST

FLORA

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
Adenostoma fasciculatum	Chamise			X
*Ageratina adenophora**	Sticky Snakeroot	X	X	
*Agrostis viridis**	Bent Grass	X	X	
Alnus rhombifolia	White Alder		X	
Ambrosia acanthicarpa	Annual Bursage	X		X
Ambrosia psilostachya	Western Ragweed		X	
*Anthriscus caucalis**	Bur Chervil			X
Artemisia californica	California Sagebrush	X	X	X
Artemisia douglasiana	Mugwort	X		X
Asclepias fascicularis	Narrow Leaf Milkweed			X
*Avena barbata**	Slender Wild Oat	X	X	X
Baccharis salicifolia	Mulefat	X	X	X
*Bidens pilosa**	Common Beggar-Ticks		X	X
*Bromus tectorum**	Cheatgrass			X
*Brachypodium distachyon**	Purple False Brome			X
*Brassica geniculata**	Shortpod Mustard	X	X	X
Brickellia californica	Brickell Bush	X	X	X
*Bromus diandrus**	Ripgut Brome	X		
*Bromus hordeaceus**	Soft Chess			X
Bromus madritensis ssp. *rubens**	Red Brome	X		X
*Bromus sterilis**	Sterile Brome			X
Calystegia macrostegia	Island Morning Glory			X
Camissonia bistorta	California Sun cup			X
Camissonia californica	California Primrose			X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
*Carduus pycnocephalus**	Italian Thistle		X	X
*Centaurea melitensis**	Maltese Star-thistle		X	X
Cercocarpus betuloides	Mountain Mahogany		X	X
Chaenactis glabriuscula	Yellow Pincushion			X
*Chenopodium ambrosioides**	Mexican Tea			
Chenopodium berlandieri	Berlandier's Goosefoot		X	X
*Chenopodium botrys**	Jerusalem Oak Goosefoot	X		
*Cirsium vulgare**	Bullthistle		X	X
Clarkia purpurea	Purple Clarkia			X
Claytonia parviflora	Streambank Springbeauty	X		X
Claytonia perfoliata	Miner's Lettuce			X
*Convolvulus arvensis**	Bindweed	X		
Conyza canadensis	Canadian Horseweed		X	X
*Cotula australis**	Australian Waterbuttons			X
Cryptantha intermedia	Common Cryptantha	X		X
Cuscuta californica	Dodder		X	X
*Cynodon dactylon**	Bermuda Grass	X		X
Cyperus eragrostis	Tall Flatsedge		X	
Datura wrightii	Toluaca		X	
*Digitaria sanguinalis**	CrabGrass	X	X	X
Dudleya lanceolata	Southern California Dudleya			X
*Echinochloa crus-galli**	Watergrass		X	
Elymus condensatus	Giant Ryegrass			X
Epilobium cilliatum	Slender Willow-Herb		X	
Eriogonum fasciculatum var. foliolosum	California Buckwheat	X	X	X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
Eriophyllum confertiflorum	Golden Yarrow	X		X
*Erodium cicutarium**	Redstem Filaree	X		X
Eucrypta chrysanthemifolia	Spotted Hideseed			X
*Euphorbia maculata**	Spotted Spurge		X	
*Euphorbia peplus**	Petty Spurge			X
*Festuca myuros**	Rattail Fescue		X	X
*Filago gallica**	Narrow-leaved Filago			X
Galium angustifolium	Narrow-leaved Bedstraw			X
*Galium aparine**	Common Bedstraw	X		X
*Geranium**	Geranium			X
Gnaphalium californicum	California Cudweed	X		X
Gnaphalium canescens ssp. beneolens	Fragrant Everlasting			X
Gnaphalium canescens ssp. microcephalum	White Everalsting	X		X
*Gnaphalium luteo-album**	Everlasting Cudweed	X	X	X
*Helianthus annuus**	Common Sunflower	X		X
Heteromeles arbutifolia	Toyon			X
Keckiella ternata	Blue stemmed Keckiella			X
*Lactuca serriola**	Prickly Lettuce	X		X
*Lamarckia aurea**	Goldentop Grass	X		
Lepidospartum squamatum	Scalebroom			X
Lonicera subspicata	Southern Honeysuckle			X
Lotus scoparius var. brevialatus	Short-winged Deerweed	X		X
Lotus strigosus	Hairy Lotus			X
Lupinus bicolor	Miniature Lupine			X
Lupinus hirsutissimus	Stingling Lupine	X		

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
Lupinus sparsiflorus	Mohave Lupine	X		X
Lupinus truncatus	Blunt-leaved Lupine			X
Malacothrix saxatile	Cliff Aster	X		X
Marah macrocarpus	Wild Cucumber		X	X
*Marrubium vulgare**	Horehound			X
*Medicago polymorpha**	Burclover	X		X
*Melilotus indicus**	Yellow Sweet-clover		X	
Mimulus aurantiacus var. aurantiacus	Sticky Monkeyflower			X
Mimulus floribundus	Manyflowered MonkeyFlower	X		
Mimulus guttatus	Yellow Monkeyflower	X	X	
*Nicotiana glauca**	Tree Tobacco		X	X
Oenothera elata	Evening Primrose			
Opuntia littoralis	Coast Prickly Pear			X
Pellaea mucronata	Birdfoot Cliffbrake			X
*Pennisetum setaceum**	Fountaingrass	X	X	
Penstemon spectabilis	Showy Penstemon			X
Phacelia cicutaria var. cicutaria	Caterpillar Phacelia			X
Phacelia cicutaria var. hispida	Caterpillar Phacelia		X	
Phacelia minor	California Bluebell	X	X	X
Phacelia ramosissima	Branching Phacelia			X
*Piptatherum miliaceum**	Rice Grass		X	X
Platanus racemosa	Western Sycamore		X	X
Poa secunda	One sided Blue Grass	X		
*Polygonum aviculare**	Common Knotweed	X		X
Polypodium californicum	California Polypody			X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
Quercus agrifolia var. agrifolia	Coast Live Oak		X	X
*Raphanus sativus**	Wild Radish			X
Rhamnus ilicifolia	Hollyleaf Redberry	X		X
Rhus integrifolia	Lemonade Berry			X
Rhus laurina	Laurel Sumac	X	X	X
Rhus ovata	Sugarbush	X	X	X
Ribes aureum	Golden Currant			X
*Ricinus communis**	Castor Bean	X	X	X
Rorippa nasturtium-aquaticum	Watercress	X	X	
Rubus ursinus	Pacific Blackberry	X		X
Salix gooddingii	Gooding's Willow		X	
Salix laevigata	Red Willow		X	
*Salsola tragus**	Prickly Russian thistle	X		X
Salvia apiana	White Sage	X	X	X
Salvia mellifera	Black Sage	X	X	X
Sambucus mexicana	Blue Elderberry	X	X	X
*Schinus molle**	Peruvian Pepper tree	X		
*Schismus barbatus**	Common Mediterranean Grass	X		X
Selaginella bigelovii	Bigelow's Spike Moss	X		X
*Senecio vulgaris**	Common Groundsel			X
*Silene gallica**	Windmill Pink	X		
*Silybum marianum**	Milk Thistle			X
*Sisymbrium irio**	London Rocket	X		X
*Sisymbrium orientale**	Oriental Hedge Mustard	X		X
Solanum douglasii	Douglas' Nightshade	X	X	X

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Non-native species *				
*Sonchus oleraceus**	Sow Thistle	X		X
*Stellaria media**	Common Chickweed	X		X
Stephanomeria virgata	Twiggy Wreath Plant	X		X
Toxicodendron diversilobum	Poison Oak	X		X
Urtica dioica	Stinging Nettle		X	
*Urtica urens**	Dwarf Nettle	X		
*Verbascum virgatum**	Wand Mullein		X	
Xanthium strumarium	Cocklebur	X	X	
Yucca whipplei	Chapparal Yucca	X	X	X

FAUNA

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Mammals				
Canis latrans	Coyote			
Odocoileus hemionus	Mule Deer			
Sciurus carolinensis	Gray Squirrel			
Spermophilus beecheyi	California Ground Squirrel			
Ursus americanus	Black Bear			
Birds				
Aimophila ruficeps	Rufous-crowned Sparrow			
Amazona virisdigenalis	Red-crowned Parrot			
Aphelocoma californica	Western Scrub-jay			
Buteo jamaicensis	Red-tailed Hawk			
Calypte anna	Anna's Hummingbird			
Carduelis psaltria	Lesser Goldfinch			
Carpodacus mexicanus	House Finch			
Chamaea fasciata	Wrentit			
Charadrius vocferus	Killdeer			
Cistothorus palustris	Marsh Wren			
Corvus brachyrhynchos	American Crow			
Dendroica coronata	Yellow-rumped Warbler			
Empidonax oberholseri	Dusky Flycatcher			
Empidonax sp.	Empidonax Flycatcher			
Falco spaverius	American Kestrel			
Geothylypis trichas	Common Yellowthroat			
Icetrus bullockii	Bullock's Oriole			
Melanerpes formicivorus	Acorn Woodpecker			
Melospiza melodia	Song Sparrow			

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Mimus polyglottos	Northern Mockingbird			
Molthrus ater	Brown-headed Cowbird			
Petrochelidon pyrrhonota	Cliff Swallow			
Phainopepla nitens	Phainopepla			
Pheucticus melanocephalus	Black-headed Grosbeak			
Picoides pubescens	Downey Woodpecker			
Pipilo crissalis	California Towhee			
Pipilo macuklatus	Spotted Towhee			
Psaltriparus minimus	Bushtit			
Quiscalus mexicanus	Great-tailed Grackle			
Sayornis nigricans	Black Phoebe			
Selasphorus sasin	Allen's Hummingbird			
Stanus vulgaris	Euporean Starling			
Stelgidopteryx serripennis	Northern Rough-winged Swallow			
Troglodytes aedon	House Wren			
Turdus migratorius	American Robin			
Vermivora ruficapilla	Nashville Warbler			
Zenaida macroura	Mourning Dove			
Amphibians				
Pseudacris regilla	Pacific Treefrog			
Reptiles				
Cnemidophorus tigris stejnegeri	Coastal Western Whiptail			
Sceloporus occidentalis	Western Fence Lizard			
Uta stansburiana	Common Side-blotched Lizard			
Insects				

Scientific Name	Common Name	Reservoir (RES)	Access Road (AR)	Middle Sediment Placement Site (SPS)
Enallagama cyathigerum	Blue Damselfly			
Nelumbo nucifera	Red Dragonfly			
Papilio glaucas	Tiger Swallow-tail			
Pieris rapae linnaeus	Cabbage Butterfly			

APPENDIX D:
LBV FOCUSED SURVEY REPORT

This appendix is included below this Biological Assessment and Biological Evaluation as part of Appendix C of the Final EIR.

APPENDIX E:
SWWF FOCUSED SURVEY REPORT

This appendix is included below this Biological Assessment and Biological Evaluation as part of Appendix C of the Final EIR.

APPENDIX F:
RARE PLANT FOCUSED SURVEY REPORT

This appendix is included below this Biological Assessment and Biological Evaluation as part of Appendix C of the Final EIR.

APPENDIX G:
CHL FOCUSED SURVEY REPORT

This appendix is included below this Biological Assessment and Biological Evaluation as part of Appendix C of the Final EIR.

Southwestern Willow Flycatcher

Presence-Absence Survey Report

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

City of Arcadia, California

Prepared by:



Federal Recovery Permit TE-062907-3

State Scientific Collecting Permit SC-003750

Prepared for:

UltraSystems Environmental Inc.

100 Pacifica, Suite 250

Irvine, CA 92618

July 26, 2007

Revised October 2007

This report is a true and accurate statement regarding the results of an *Empidonax traillii extimus* presence-absence survey at Santa Anita Reservoir and Debris Basin, City of Santa Anita, Los Angeles, California

Signature

07-27-07

Date

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Exhibits

Exhibit A: Aerial Map Depicting Survey Site

Exhibit B: Topographic Map Depicting Survey Site

Exhibit C: Site Photographs

Exhibit D: Willow Flycatcher Survey & Detection Form

SUMMARY

I, Andrew McGinn Forde, conducted presence-absence surveys for southwestern willow flycatcher (*Empidonax traillii extimus*) at Santa Anita Reservoir, Santa Anita Debris Basin, and along portions of a creek that runs between them, in the City of Arcadia, Los Angeles County, California, using the *Southwestern Willow Flycatcher Survey Protocol* (U.S. Fish and Wildlife Service, 2000). I did not detect southwestern willow flycatcher (SWWF) or incidental detections of least Bell's vireo (*Vireo bellii pusillus*).

INTRODUCTION

SWWF is a neotropical migrant that breeds in southern California, from the Santa Ynez River in Santa Barbara County south to the Mexican border, throughout Arizona and New Mexico, the extreme southern portions of Nevada and Utah, extreme southwest Colorado, and western Texas. Records of SWWF breeding in Mexico are rare, and restricted to extreme northern Baja California del Norte and Sonora. As neotropical migrants, they spend less than half of each year on their breeding grounds. The remainder of the year is spent in the subtropical and tropical areas of southern Mexico, Central America and northern South America, south to eastern Ecuador and east to northwestern Venezuela (Stiles and Skutch 1989, Howell *et al*. 1995, Ridgely and Gwynne 1989, Ridgely and Tudor 1994, Unitt 1997, Meyer de Schauensee 1978) with wintering habitat similar to the breeding grounds (Lynn *et al*., 2003). SWWF have been recorded on the wintering grounds from central Mexico to southern Central America as early as mid-August (Stiles and Skutch, 1989; Howell and Webb, 1995), and wintering, resident individuals have been recorded in southern Central America as late as the end of May (Koronkiewicz *et al*., 2006). As its common name implies, SWWF inhabits riparian deciduous shrub and small tree riparian zones, generally dominated by willows (*Salix* spp.) near languid streams, standing water, or seeps. The U.S. Fish and Wildlife Service listed SWWF as endangered in 1995, under the authority of the federal Endangered Species Act (USFWS, 1995). The breeding range of willow flycatchers in the United States, including SWWF, is depicted in Figure 1.

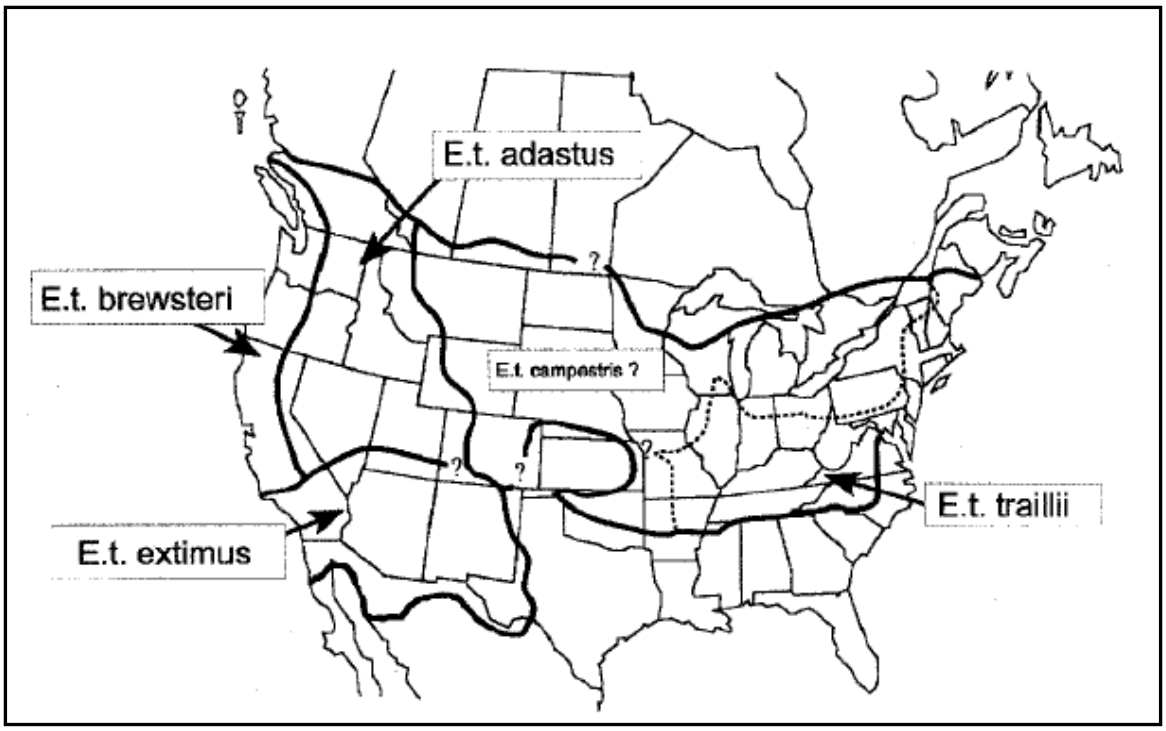


Figure 1. Breeding range of *Empidonax traillii* subspecies.
Adapted from Unitt (1987), Browning (1993), and Sogge et al. (1997).

SURVEY LOCATION

The survey area is located within the area covered by the U.S. Geological Survey, CA, 7.5-minute Mount Wilson Quadrangle (Township 1N, Range 11W, Sections 10 and 15) approximately 1.25 miles north of Foothill Boulevard and west of Highland Oaks Drive in the City of Arcadia, Los Angeles County, California. Exhibits A and B depict the location and extent of the survey area.

SITE CHARACTERISTICS

Santa Anita Reservoir lacks habitat suitable for SWWF. The 6-acre debris basin consists of dense riparian vegetation best described as Valley Foothill Riparian. The over-story consists of white alder (*Alnus rhombifolia)*, western sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), and willows. The under-story consists of willows and several herbaceous species including mugwort, sturdy sedge (*Carex alma*), stinging nettle (*Urtica dioica*), and prairie bulrush (*Scirpus maritimus*), among others. These species are also present, although less abundant, along the creek that flows between the reservoir and debris basin. There was no

flowing or standing water in the debris basin during the surveys, but water was flowing in the creek during this time. The debris basin consists of vegetation with characteristics similar to that in which SWWF use and nest in; however, the creek lacks these characteristics. Photographs depicting these areas are included in Exhibit C.

METHODOLOGY

The *Southwestern Willow Flycatcher Survey Protocol* requires at least five surveys during three survey periods. At least one survey is required during Survey Period 1 (May 15 – May 31) and one during Survey Period 2 (June 1 – June 21). Three surveys are required during Survey Period 3 (June 22 – July 17). Surveys conducted in different survey periods and multiple surveys within the third survey period must be at least five days apart and be conducted between one hour before sunrise and 10:00 am. Surveys should not be conducted during inclement weather.

I conducted the surveys on May 25, June 4, June 30, July 5, and July 15, 2007, between sunrise and 10:00 a.m. Weather conditions during the surveys were ideal. To elicit responses from potentially occurring SWWF, I broadcast recorded conspecific vocalizations using a second-generation Apple iPOD shuffle and a Sony SRS-T33 Digital Active Speaker System. I also carried a Garmin Etrex Global Positioning Unit and Bausch and Lomb Elite 8x42 Waterproof Binocular with a focal range of less than 5 feet. At each survey point, I listened, broadcast vocalizations, and then listened and watched for responses. The initial survey during the migration period, survey periods 1 and 2 included the debris basin and boulder filled streambed; however, surveys in survey period 3 mostly concentrated on the debris basin due to the lack of suitable nesting habitat in the streambed. This methodology is in accordance with the *Southwestern Willow Flycatcher Survey Protocol*.

RESULTS

Although the debris basin appears to have vegetation characteristics similar to that in which SWWF use and nest in, I did not detect them during the surveys. I did not detect least Bell's vireo either. Survey forms are included in Exhibit C.

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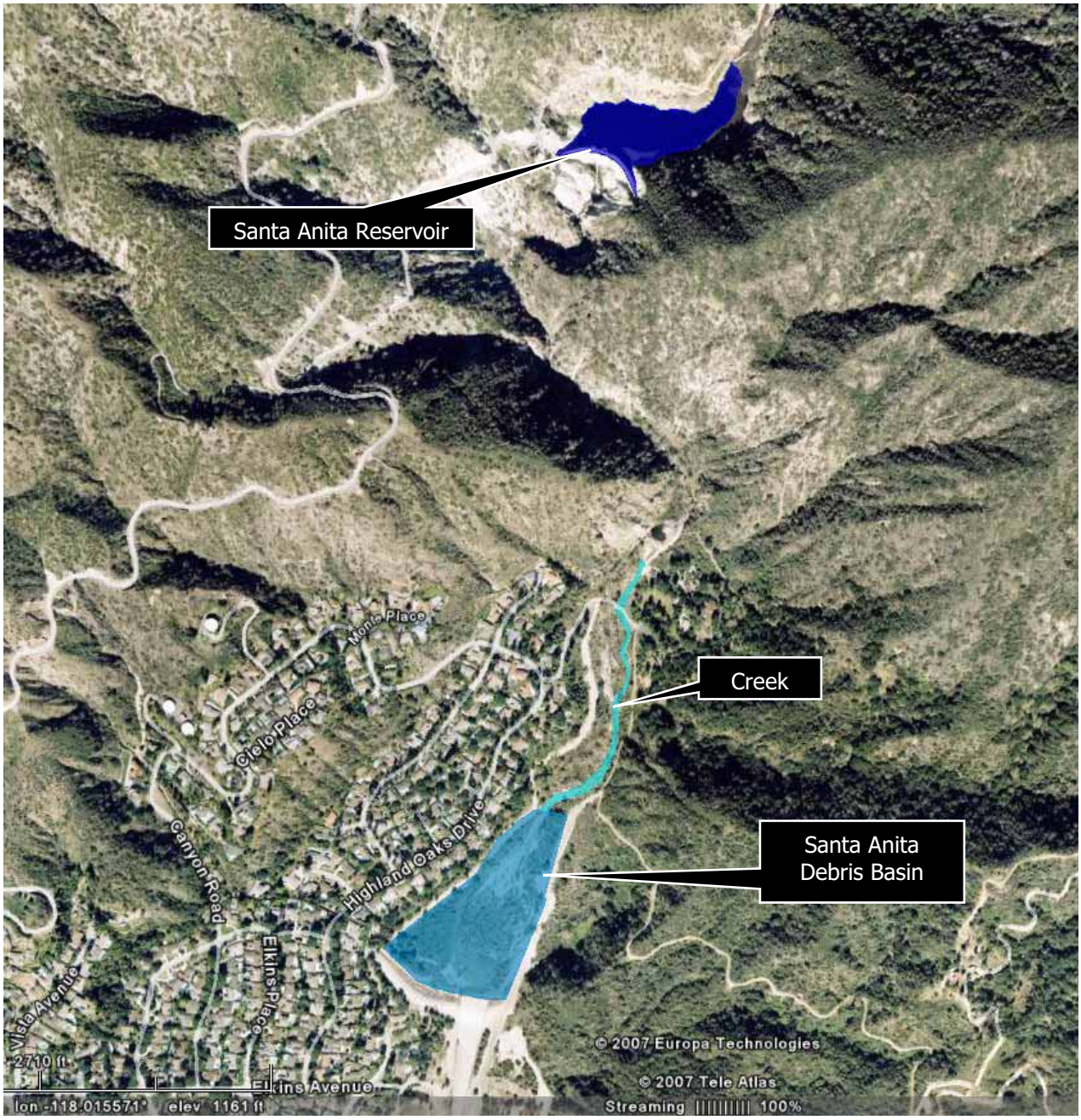
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Exhibit A

SWWF Survey Area Map



UltraSystems

Source: Google Earth, 2007
UltraSystems 2007

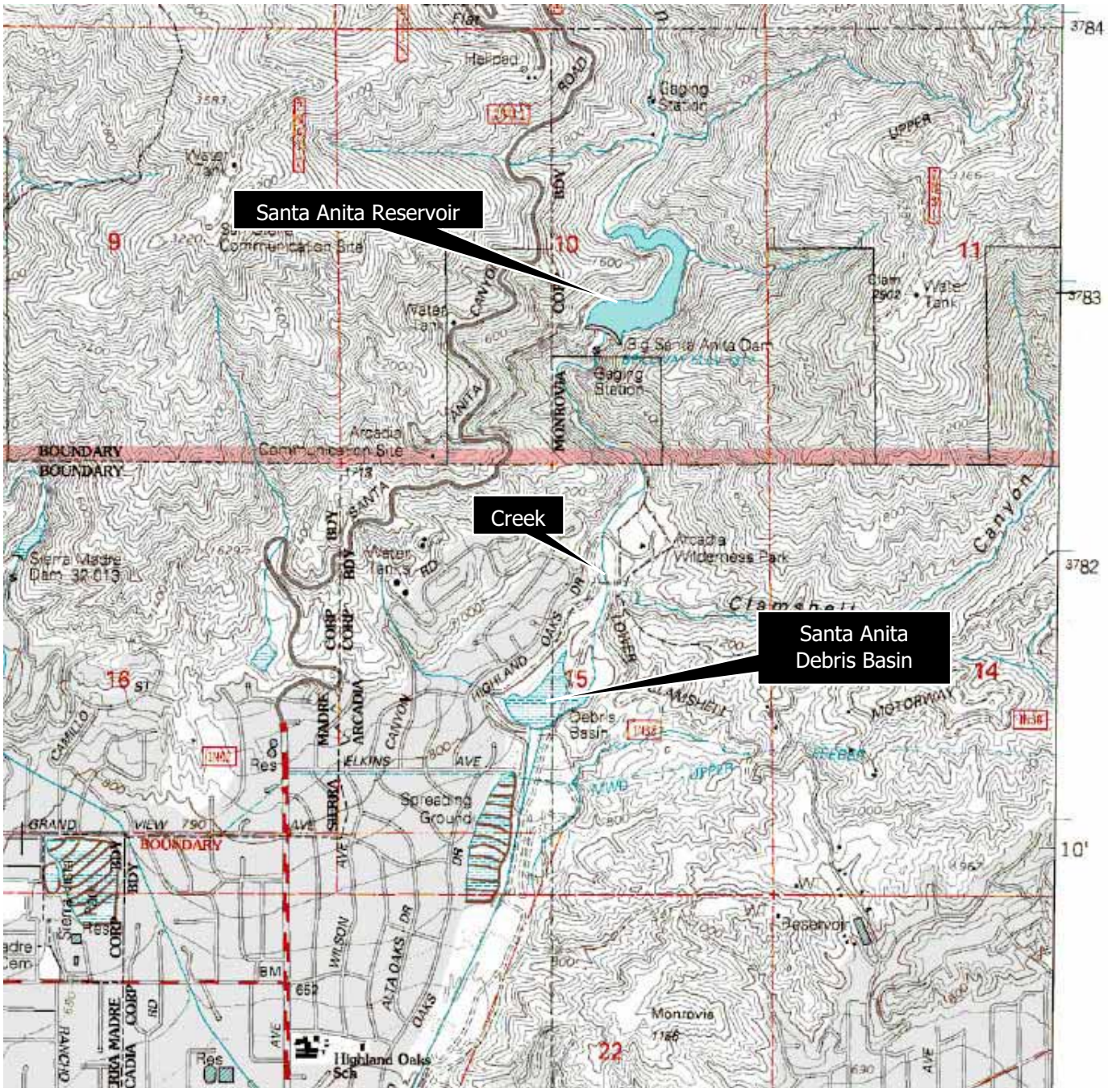
SWWF Survey Area Map

Exhibit B

Topographic Map

Of

Survey Area



UltraSystems

Source: All Topo Maps
USGS Mount Wilson 7.5' Quadrangle, 1995

Topographic Map

Exhibit C

Site Photographs



Photo 1: Debris basin from edge of habitat



Photo 2: Debris basin from edge of habitat



Photo 3: Road to west of reservoir



Photo 4: Reservoir habitat



Photo 5: Riparian vegetation along creek



Photo 6: Creek habitat facing upstream

Exhibit D

Willow Flycatcher

Survey and Detection Form

Willow Flycatcher Survey and Detection Form (revised April, 2004)

Site Name: Santa Anita reservoir and Debris Basin | State: CA | County: Los Angeles
USGS Quad Name: Mount Wilson | Elevation: 730 - 1316 feet

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes

Site Coordinates: Start: N 3783350 E 406190 UTM Datum NAD27
Stop: N 3781549 E 405809 UTM Zone 11

***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign, If Yes, Describe Y or N	Comments about this survey (e.g., bird behavior, evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1 Andrew Forde	Date 05/25 Start 06:00 Stop 10:00 Total hrs 4	0	0	0	N	Y	N	
2 Andrew Forde	Date 06/04 Start 06:00 Stop 10:00 Total hrs 4	0	0	0	N	N	N	
3 Andrew Forde	Date 06/30 Start 06:00 Stop 10:00 Total hrs 4	0	0	0	N	N	N	
4 Andrew Forde	Date 07/05 Start 06:00 Stop 10:00 Total hrs 4	0	0	0	N	Y	N	
5 Andrew Forde	Date 07/15 Start 06:00 Stop 10:00 Total hrs 4	0	0	0	N	Y	N	

Overall Site Summary (Total **resident** WIFLs only) Total survey hrs 20	Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? ☐ Yes ☒ No If yes, report color combination(s) in the comments section on back of form
	0	0	0	0	

Reporting Individual: Andrew McGinn Forde Date Report Completed: July 27, 2007
US Fish and Wildlife Service Permit #: TE 062907-3 California Department of Fish and Game Permit #: SC-003750

Submit original form by August 1st. Retain a copy for your records.

Fill in the following information completely. <u>Submit original</u> form by August 1st. Retain a copy for your records.

Reporting Individual: Andrew McGinn Forde Phone #: 805-383-1261

Affiliation: Forde Biological Consultants E-mail: andrew@fordebio.com
Site Name: Santa Anita reservoir and Debris Basin Date Report Completed: July 27, 2007

Did you verify that this site name is consistent with that used in previous years? ☐Yes ☒ No (check one)
If name is different, what name(s) was used in the past? _____
If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.
Did you survey the same general area during each visit to this site this year? Yes / No If no, summarize in comments below.

Management Authority for Survey Area (check one): ☐ Federal ☒ Municipal/County ☐ State ☐ Tribal ☐ Private
Name of Management Entity or Owner (e.g., Tonto National Forest) Newhall Land

Length of area surveyed: 0.5 miles (specify units, e.g., miles = mi, kilometers = km, meters = m)

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

☒ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)

☐ Mixed native and exotic plants (mostly native)

☐ Mixed native and exotic plants (mostly exotic)

☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: Populus fremontii and Salix spp.

Average height of canopy (Do not put a range): 25 feet

Was surface water or saturated soil present at or adjacent to site? ☒Yes ☐ No (water absent in debris basin, present in creek)
Distance from the site to surface water or saturated soil:

Did hydrological conditions change significantly among visits (did the site flood or dry out)? ☐Yes ☒ No (check one)
If yes, describe in comments section below.

Remember to attach a copy of a USGS quad/topographical map (REQUIRED) of the survey area, outlining the survey site and location of WIFL detections. Also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map. Please include photos of the interior of the patch, exterior of the patch, and overall site and describe any unique habitat features.

Comments (attach additional sheets if necessary)
<u>Creek stopped flowing halfway through survey. Ponded water present throughout the remaining surveys.</u>
WIFL Detection Locations:

Date Detected	N UTM	E UTM	Date Detected	N UTM	E UTM

Least Bell's Vireo

Presence-Absence Survey

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

City of Arcadia, California

Prepared by:



Federal Recovery Permit TE-062907-3

State Scientific Collecting Permit SC-003750

Prepared for:

UltraSystems Environmental Inc.

100 Pacifica, Suite 250

Irvine, CA 92618

July 27, 2007

Revised October 2007

This report is a true and accurate statement regarding the results of a *Vireo bellii pusillus* presence-absence survey at Santa Anita Reservoir and Debris Basin, City of Santa Anita, Los Angeles, California

Signature

07-27-07

Date

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EXHIBITS

Exhibit A: Aerial Map Depicting Survey Site

Exhibit B: Topographic Map Depicting Survey Site

Exhibit C: Site Photographs

SUMMARY

I, Andrew McGinn Forde, conducted presence-absence surveys for Least Bell's Vireo (*Vireo bellii pusillus*) at Santa Anita Reservoir, Santa Anita Debris Basin, and along portions of a creek that runs between them, in the City of Arcadia, Los Angeles County, California, using the *Least Bell's Vireo Survey Guidelines* (U.S. Fish and Wildlife Service, 2000). I did not detect Least Bell's Vireo (LBV) or incidental detections of southwestern willow flycatcher (*Empidonax traillii extimus*) (SWWF).

INTRODUCTION

Bell's vireo (*Vireo bellii*) is a subtropical migrant. It inhabits riparian forests characterized by low growing thickets of willows (*Salix* spp.), mulefat (*Baccharis glutinosa*), blackberry (*Rubus ursinus*), mugwort (*Artemisia douglasiana*) or other similar species, which are an essential part of the habitat. In desert areas, mesquite (*Prosopis* spp.) thickets are used. An over-story composed of taller willows, cottonwood (*Populus fremontii*), and sycamore (*Platanus racemosa*) is also present. The dense riparian thickets they occupy are usually impenetrable, with ground cover in the shrub layer being nearly 100%. There are four subspecies of Bell's vireo currently recognized, two of which occur in California. LBV is endemic to California occurring in San Benito and Monterey counties and in coastal southern California from Santa Barbara County south to the Mexican border. Arizona Bell's vireo (*V. b. arizonae*) (ABV) occurs along the Colorado River from Needles in San Bernardino County south to Blythe in Riverside County and near Laguna Dam in Imperial County. The subspecies are believed to be isolated from one another during both the breeding and wintering seasons (Hamilton 1962). LBV were designated endangered in 1980 and ABV were designated endangered in 1988 under the authority of the California Endangered Species Act. The U.S. Fish and Wildlife Service listed LBV as endangered in 1986, under the authority of the federal Endangered Species Act (USFWS 1995). The subspecies that occurs closest to the project site is LBV. The breeding range of the species is depicted in Figure 1.

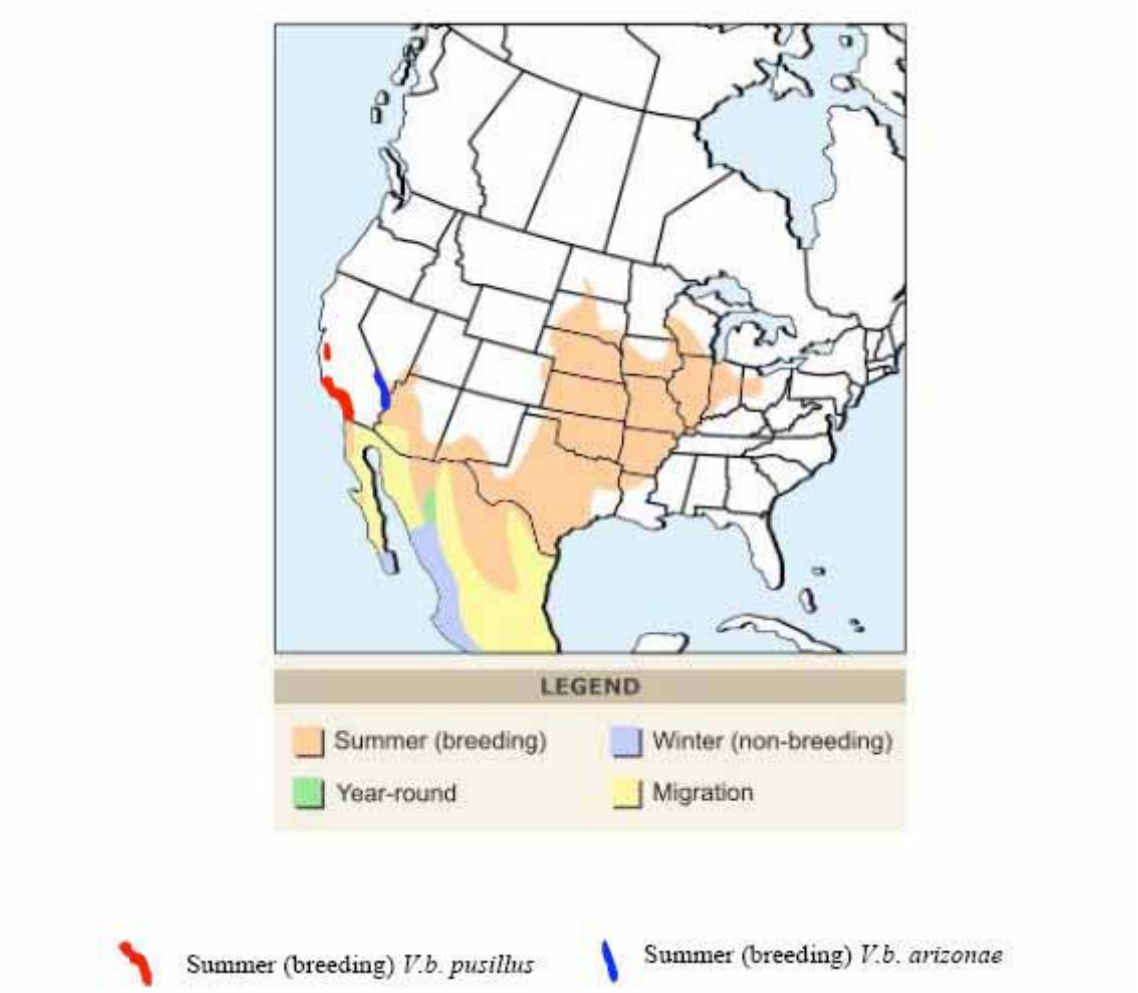


Figure 1. Breeding Range of LBV *(V.b. pusillus)* and ABV *(V.b. arizonae).*

SURVEY LOCATION

The survey area is located within the area covered by the U.S. Geological Survey, CA, 7.5-minute Mount Wilson Quadrangle (Township 1N, Range 11W, Sections 10 and 15) approximately 1.25 miles north of Foothill Boulevard and west of Highland Oaks Drive in the City of Arcadia, Los Angeles County, California. Exhibits A and B depict the location and extent of the survey area.

SITE CHARACTERISTICS

Santa Anita Reservoir lacks habitat suitable for LBV. The 6-acre debris basin consists of dense riparian vegetation best described as Valley Foothill Riparian. The over-story consists of white alder (*Alnus rhombifolia)*, sycamore, Fremont's cottonwood, and willows. The under-story

consists of willows and several herbaceous species including mugwort, sturdy sedge (*Carex alma*), stinging nettle (*Urtica dioica*), and prairie bulrush (*Scirpus maritimus*), among others. These species are also present, although less abundant, along the creek that flows between the reservoir and debris basin. There was no flowing or standing water in the debris basin during the surveys, but water was flowing in the creek during this time. The debris basin consists of vegetation with some characteristics similar to that in which LBV use and nest in; however, the creek lacks these characteristics. Photographs depicting these areas are included in Exhibit C.

METHODOLOGY

The *Least Bells Vireo Survey Guidelines* require at least eight individual surveys between April 10 and July 31. The surveys must be at least 10 days apart and be conducted between sunrise and 11:00 am. Surveys should not be conducted during inclement weather. I conducted the surveys on April 10, April 23, May 13, May 28, June 14, June 29, July 10, and July 20, 2007 between sunrise and 11:00 a.m. Weather conditions during the surveys were ideal. I carried a Garmin Etrex Global Positioning Unit and Bausch and Lomb Elite 8x42 Waterproof Binocular with a focal range of less than 5 feet. At each survey point, I listened for LBV vocalizations and watched for visual cues.

RESULTS

Although the debris basin appears to have vegetation characteristics similar to that in which LBV use and nest in, I did not detect them during the surveys. I did not detect SWWF either.

REFERENCES

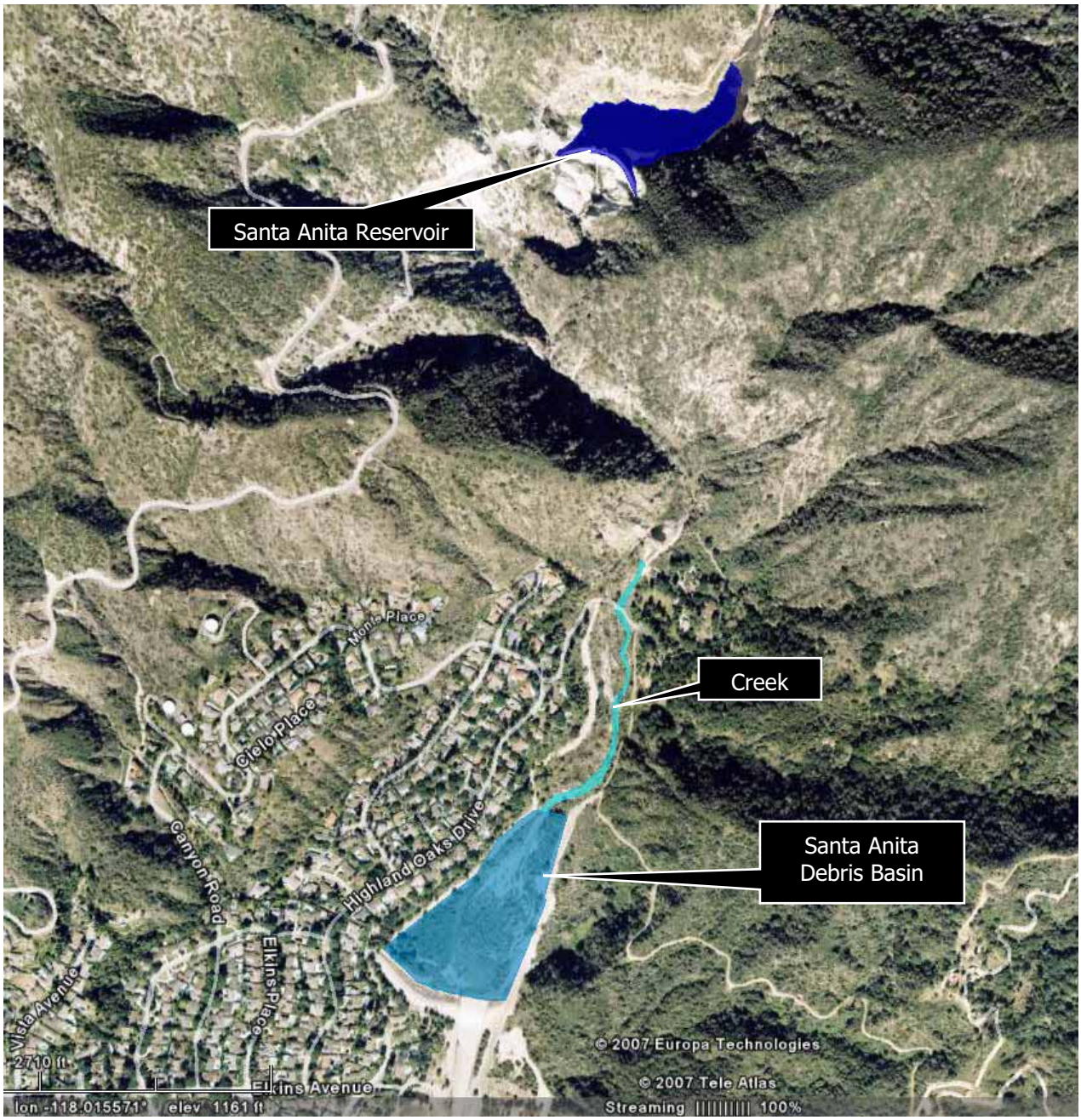
Hamilton, T. 1962. Species relationships and adaptations for sympatry in the avian genus Vireo. Condor 64:40-68.

Ridgely, R.S., and G. Tudor. 1994. The birds of South America; Volume II: the Suboscine passerines. University of Texas Press, Austin, Texas.

U.S. Fish and Wildlife Service, 2001. Least Bells Vireo Survey Guidelines.

Exhibit A

LBV Survey Area Map



UltraSystems

Source: Google Earth, 2007
UltraSystems 2007

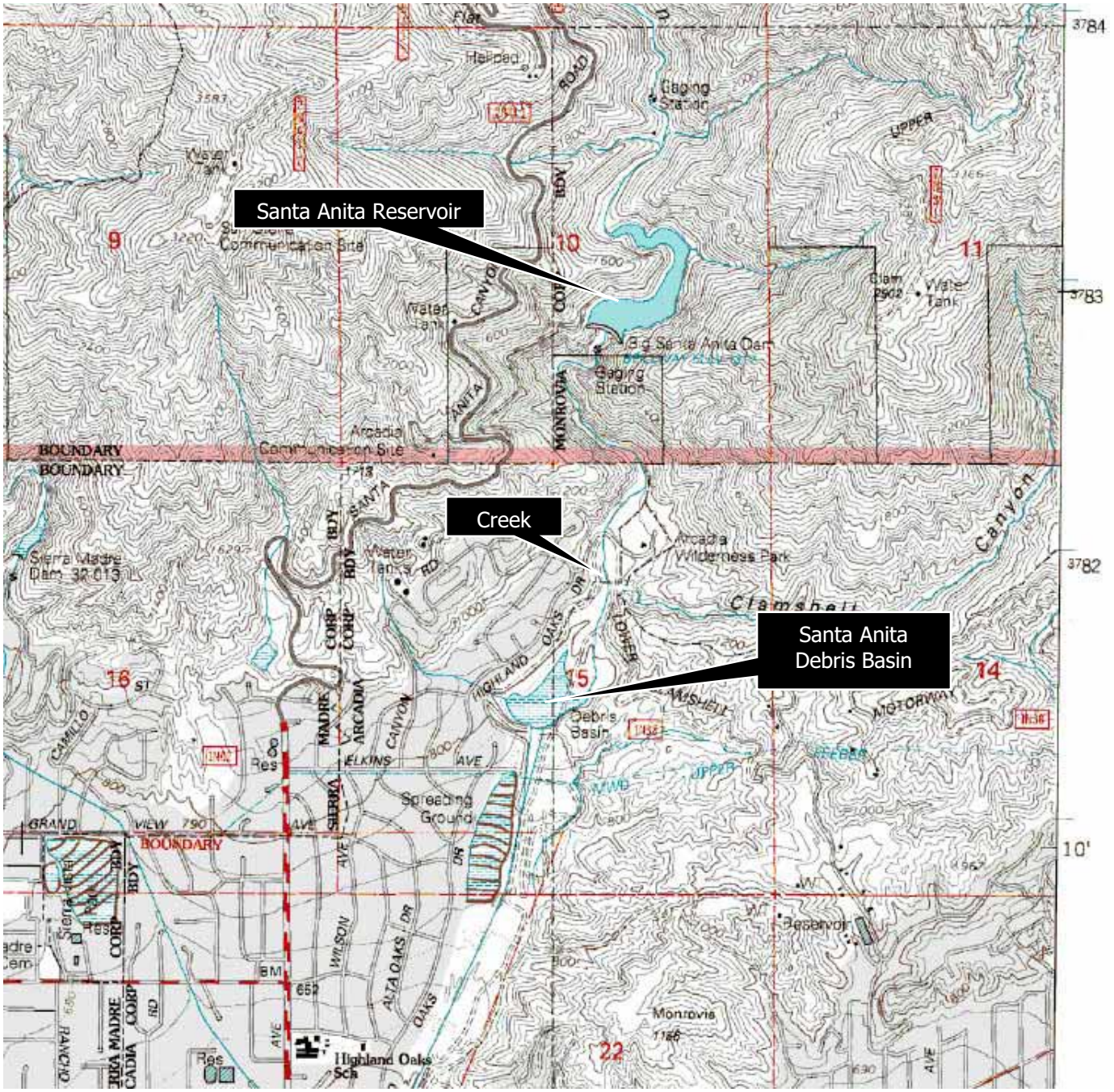
LBV Survey Area Map

Exhibit B

Topographic Map

Of

Project Area



UltraSystems

Source: All Topo Maps
USGS Mount Wilson 7.5' Quadrangle, 1995

Topographic Map

Exhibit C

Site Photographs



Photo 1: Debris basin from edge of habitat



Photo 2: Debris basin from edge of habitat



Photo 3: Road to west of reservoir



Photo 4: Reservoir habitat



Photo 5: Riparian vegetation along creek



Photo 6: Creek habitat facing upstream

UltraSystems
environmental management planning

November 9th, 2007

Belinda Kwan, Water Resources Division
Los Angeles County Department of Public Works
Water Resources Division
900 S. Fremont Avenue
Alhambra CA 91803

RE: Coast (San Diego) Horned Lizard and Silvery Legless Lizard Surveys for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Site

Dear Belinda:

This letter report transmits the results of the focused species surveys for the coast (San Diego) horned lizard (*Phrynosoma coronatum* (*blainvillii)* and the silvery legless lizard (*Anniella pulchra pulchra*) conducted by UltraSystems Environmental, Inc. (UltraSystems) in support of the Santa Anita Dam Riser Modification and Reservoir Sediment Removal EIR. The project site is located within the Santa Anita Canyon in the County of Los Angeles, California. No special status plant or wildlife species were found during the prior biological surveys conducted on the project site.

The Biological Technical Report produced by UltraSystems in November 2007 described the potential occurrence of two State-Listed Species of Special Concern: coast (San Diego) horned lizard (CHL) and the silvery legless lizard (SLL). The objective of these focused species surveys was to assess the presence/absence of each of these lizard species within the project area.

Coast (San Diego) Horned Lizard

The CHL is designated as a California Species of Special Concern. Its elevational range is from 40-7,000 feet. Its diet consists of insects, mostly native harvester ants and its habitat varies from coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest. It prefers fine, loose soils with a high abundance of ants and other insects[1].

Silvery Legless Lizard

The SLL is designated as a California Species of Special Concern. It is a small, secretive, snake-like lizard that lives and forages in leaf litter, under debris, or within sandy soil. It occurs in a variety of habitats, including sandy washes, coastal scrub habitats, and woodlands. The SLL preys on insect larvae, small adult insects, and spiders[2].

[1] CDFG (2005). California Wildlife Habitat Relationships. Version 8.1. California Interagency Wildlife Task Group. Sacramento, California
[2] Ibid.

PROJECT LOCATION

The project site is located within the San Gabriel Valley, in the U.S. Geological Survey Mount Wilson, CA 7.5' series topographic quadrangle (Township 1N, Section 10, Range 11W) (IGAGE Mapping Corporation 1999). The northern portion of the project area is located within the Los Angeles River Ranger District of the Angeles National Forest and the southern portion is located within the City of Arcadia (See *Figure 1: Regional Vicinity Map*).

The project site is approximately 1.25 miles north of Foothill Boulevard and meets the Santa Anita Reservoir at its northern limits. It is bounded by Highland Oaks Drive to the west and Cloverleaf Drive to the east.

Land uses adjacent to the project area include the Angeles National Forest and the City of Arcadia Wilderness Park to the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

The project action area includes the Santa Anita Dam, the Santa Anita Reservoir, the tunnel from the reservoir to the streamside access road, the access road and portions of the Santa Anita Debris Basin (DB) adjacent to it, and the proposed Santa Anita Sediment Placement Site (SPS). The Santa Anita Reservoir, the tunnel and a portion of the access road are located in the Angeles National Forest. The rest of the access road and the proposed SPS are located in the City of Arcadia. The total project area, including the reservoir, canyon with tunnel and access road, and sediment placement site, is approximately 125 acres.

METHODS

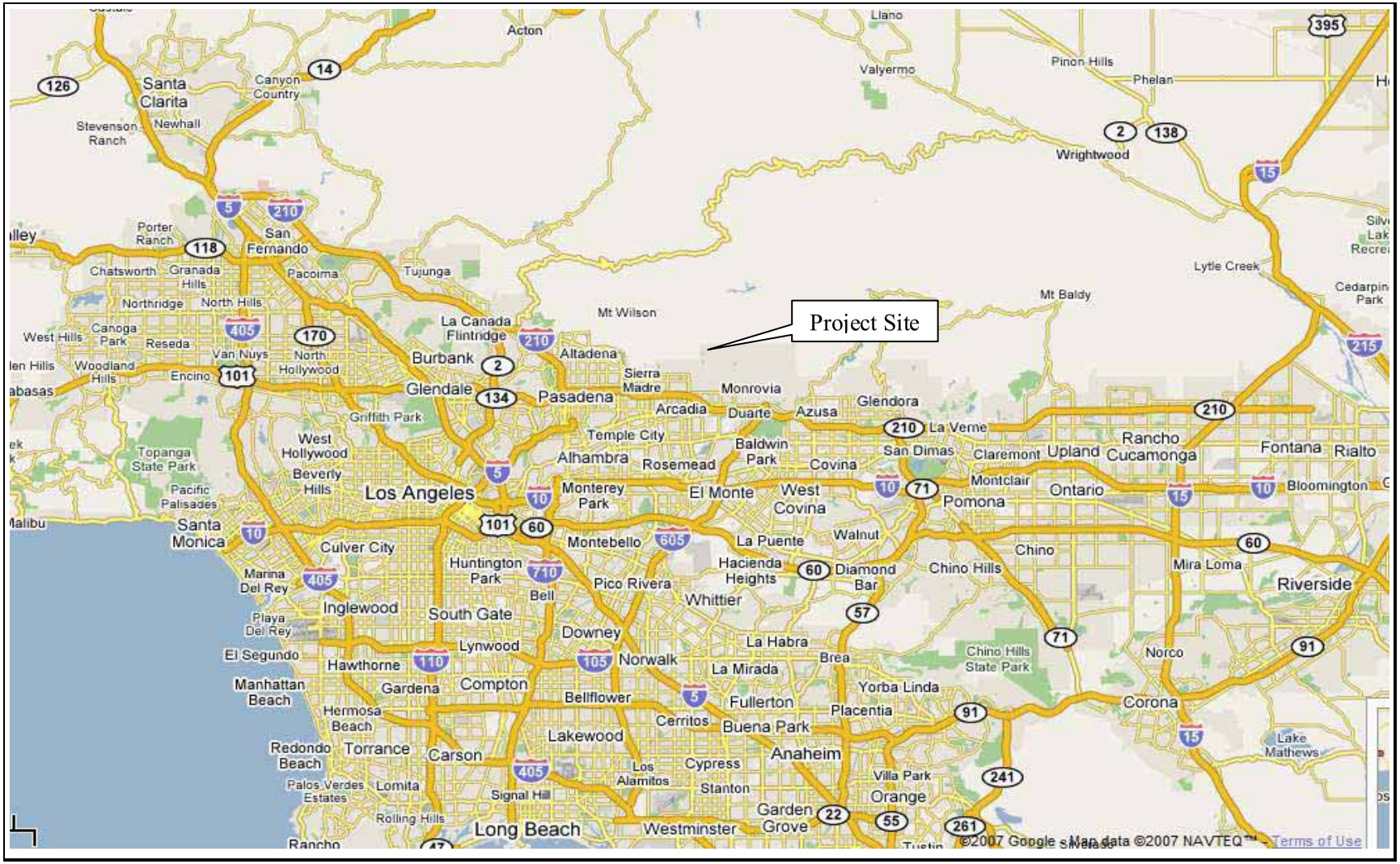
Field Surveys

On May 25, June 4, June 30, July 5 and July 15, 2007, UltraSystems biologist's Katie Kurtz and biologist Andrew Forde conducted concurrent surveys for the CHL and the SLL within potential habitat on the project site. Surveys for each lizard species were conducted during their active season (March to July). The assessment included a 100% pedestrian survey for both lizard species as shown in *Figure 2: CHL & SLL Survey Locations*. The search pattern used was a random meander within the survey areas. Field notes and photos were taken on the general biological conditions of these areas with particular focus on sensitive biological resources including habitats that may support either of these species (see *Appendix A: Site Photographs*). The following is a description of the methods used to survey for each species.

Coast (San Diego) Horned Lizard

CHL surveys were conducted within the SPS and the DB. The CHL basks on low boulders and rocks, with the highest level of activity occurring during the middle of the day in the spring and fall[3]. Surveys for this species were conducted during the appropriate time of day. The surveys consisted of visually searching appropriate areas from a safe distance as to not disturb any potentially basking lizards.

[3] CDFG (2005). California Wildlife Habitat Relationships. Version 8.1. California Interagency Wildlife Task Group. Sacramento, California



UltraSystems

Source:

Google Earth 2007

Figure 1.
Regional Vicinity Map
Santa Anita Reservoir Project Site



UltraSystems

Source: EDAW, 2007
UltraSystems, 2007

Figure 2.
CHL & SLL Survey Locations

Silvery Legless Lizard
SLL surveys were conducted within the SPS where oak trees (*Quercus* spp.) occur. The SLL relies on camouflage for protection[4]. Surveys consisted of raking the leaf litter surrounding the base of large oak trees. To determine their presence/absence within this area, the soil beneath the leaf litter was visibly searched for any movement by these elusive lizards.

RESULTS

Literature Review

The results of the literature review indicate the potential occurrence of both the CHL and the SLL lizard species within the project area. More specifically, the CHL was determined to have a moderate potential to occur within the proposed SPS and the DB. The SLL was determined to have a moderate potential to occur in the SPS.

Field Surveys

Coast (San Diego) Horned Lizard
The CHL was not observed during any of the survey days. However, suitable habitat for this species was found within the proposed SPS and DB. The absence of lizards during the survey does not confirm their absence from the site or surrounding area.

Silvery Legless Lizard
The SLL was not observed during any of the survey days. However, suitable habitat for this species was found within the proposed SPS. The absence of lizards during the survey does not confirm their absence from the site or surrounding area.

RECOMMENDED MITIGATION MEASURES

Although no lizard species were observed during the focused species surveys, proposed project activities could result in the direct loss of suitable habitat for the coast (San Diego) horned lizard and the silvery legless lizard within the proposed SPS. While project activities will not occur within the DB, portions of it are adjacent to the access road trucks will be using to transport sediment from the reservoir to the proposed SPS. Efforts should be made to avoid impacts due to the uncertainty of the overall population status of sensitive species within the general vicinity of the project site. The implementation of the following mitigation measures will ensure that no significant impacts will occur from the proposed project to either of these species.

MM 1 Limit the spatial area of grading and other habitat disturbing activities to the smallest area practicable.

MM 2 To prevent injury or damage to both lizard species, an animal exclusion fence shall be placed along the boundary of both the proposed SPS area. The fence shall be a minimum of 4 feet in height with ¼ inch mesh hardware cloth attached to wooden posts or studded "T" steel posts. Fence material should also be buried a minimum of 12 inches below the ground surface.

[4] Ibid.

MM 3 Prior to construction, a qualified biologist shall conduct a pre-construction survey for the coast (San Diego) horned lizard, silvery legless lizard and other reptiles within the exclusion fenced area. If any reptiles are found within the exclusion (fenced) area, the biologist shall safely relocate these species to a suitable area outside of the fenced area.

Sincerely,



Katie A. Kurtz
Biologist

APPENDIX A: SITE PHOTOGRAPHS



Photo 1. Debris basin from edge of habitat. Facing west.



Photo 2. Debris basin from within riparian vegetation. Facing west.



Photo 3. Proposed sediment placement site. Facing south.



Photo 4. Proposed sediment placement site. Facing north.



Photo 5. Representative oak tree habitat surveyed. Facing west.

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APPENDIX D

CULTURAL RESOURCES REPORT

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CULTURAL RESOURCES ASSESSMENT FOR THE PROPOSED SANTA ANITA RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Los Angeles County Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803

Prepared by:

EDAW, Inc.
515 S. Flower Street, 9th Floor
Los Angeles, California 90071
(213) 593-7700

Authors:

Monica Strauss, M.A.
Christy Dolan, M.A.
Sara Dietler, B.A.

November 2007

U.S.G.S. Quadrangles: Mount Wilson, CA

Keywords: Santa Anita Dam, Santa Anita Reservoir, *Gabrielino*, Los Angeles County.

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MANAGEMENT SUMMARY

The proposed Santa Anita Reservoir Riser Modification and Reservoir Sediment Removal Project is being undertaken by the Los Angeles County, Department of Public Works (LACDPW) in conjunction with the United States Army Corps of Engineers (Corps) and consists of the removal of sediment from Santa Anita Reservoir and improvements to the reservoir's inlet/outlet works. This report describes efforts to identify potential cultural resources within the proposed project Area of Potential Effects (APE) in compliance with Section 106 of the National Historic Preservation Act and the implementing regulations of the Advisory Council on Historic Preservation. The proposed riser modification and sediment removal work is considered a "project" under the California Environmental Quality Act (CEQA). Accordingly, the cultural resources assessment has been conducted pursuant to CEQA Guidelines as well. This document details the methods and results of the records search and literature review, the archaeological and historic architectural resources surveys, and efforts to coordinate with Native American representatives. Results of this study will be incorporated into an Environmental Impact Report (EIR) and Environmental Assessment (EA) for this proposed project.

A records search for the project APE was conducted at the South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton on January 29, 2007. The search indicated that seven cultural resources investigations have taken place within a 0.5-mile radius of the project APE and eight cultural resources have been previously recorded. No cultural resources were previously recorded within the project APE itself. Additional research was conducted to inform the historical context of the project APE, including a review of Santa Anita Dam-related historical documents.

Archaeological field surveys of the APE were conducted on February 20, 2007, February 23, 2007, and October 11, 2007 for the purposes of identifying and recording archaeological resources within the project APE. No archaeological resources were identified within the project APE. A historic architectural survey was conducted on September 13, 2007 for the purposes of identifying historic-era buildings and structures within the project APE. Six historic-era buildings and structures associated with the Santa Anita Dam Complex were identified during the historic architectural survey of the project APE. The six identified buildings and structures were recorded as part of the Santa Anita Dam Complex, on Department of Parks and Recreation (DPR) forms and will be assigned Primary numbers by the State Office of Historic Preservation. The resources were evaluated and are not considered eligible for National Register of Historic Places or California Register of Historical Resources listing.

The proposed project involves the removal of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir and the placement of the sediment in the Santa Anita Lower and Middle Sediment Placement Sites (SPS) or alternatively trucking the sediment off-site. The sediment being removed is not anticipated to contain cultural resources, as it is recent alluvium that has been carried downstream. The Lower SPS is presently covered with previously-placed sediment and placement of additional sediment in this SPS is not anticipated to impact cultural resources. The Middle SPS is comprised of mostly pristine coast live oak woodland and

Riversidean alluvial fan sage scrub and appears to have experienced little previous disturbance, with the exception of mounded dirt around the edges. Although no evidence of surface archaeological resources was observed as a result of the archaeological survey, this does not preclude the existence of subsurface archaeological resources. In the event earthmoving activities expose archaeological resources, the construction contractor shall cease activity in the affected area until the discovery can be evaluated by a qualified cultural resources specialist (archaeologist) in accordance with the provisions of Section 106 of the National Historic Preservation Act (36 CFR 800) and CEQA Section 15064.5. The LACDPW, the Corps, and the State Historic Preservation Office (SHPO) shall, at that time, engage in consultation to determine appropriate treatment measures for any resources determined to be significant.

INTRODUCTION

This document reports a cultural resources assessment in connection with the proposed Santa Anita Reservoir Riser Modification and Reservoir Sediment Removal Project, located in the County of Los Angeles, California. The proposed project includes the Santa Anita Reservoir, and the Santa Anita Headworks, both of which are located in the Angeles National Forest just north of the City of Arcadia. The proposed project also includes the Santa Anita Debris Basin, Santa Anita Sediment Placement Sites and Santa Anita Spreading Grounds, all of which are located below the reservoir in the City of Arcadia. Because this proposed project is sponsored by the County of Los Angeles, the Department of Public Works and the Army Corps of Engineering, this cultural resources assessment was conducted under Section 106 of the National Historic Preservation Act and the implementing regulations of the Advisory Council on Historic Preservation and the California Environmental Quality Act (CEQA).

REPORT ORGANIZATION

This report is organized following the Archeological Resource Management Reports (ARMR): Recommended Contents and Format Guidelines, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. These guidelines provide a standardized format and suggested report content, scaled to the size of the proposed project. First, project description and location information are provided. Next, the environmental and cultural settings are presented along with a brief historic overview of the project APE. A description of the archival and field survey investigations follows. The final section summarizes the results of the research and provides recommendations for resource eligibility and further work.

PROJECT PERSONNEL

EDAW personnel involved in the cultural resources assessment are as follows: Monica Strauss, M.A., R.P.A., principal investigator and report author; Christy Dolan, M.A., R.P.A. Historian/Historical Archaeologist and report author; Sara Dietler, B.A. report author and surveyor; and Dan Brady, graphics specialist. Resumes of key personnel are included in Appendix A.

PROJECT DESCRIPTION

The following section provides a description of the proposed project location and setting, describes the various project components to be constructed, presents the construction scenario, and outlines four project alternatives and three non-feasible alternatives.

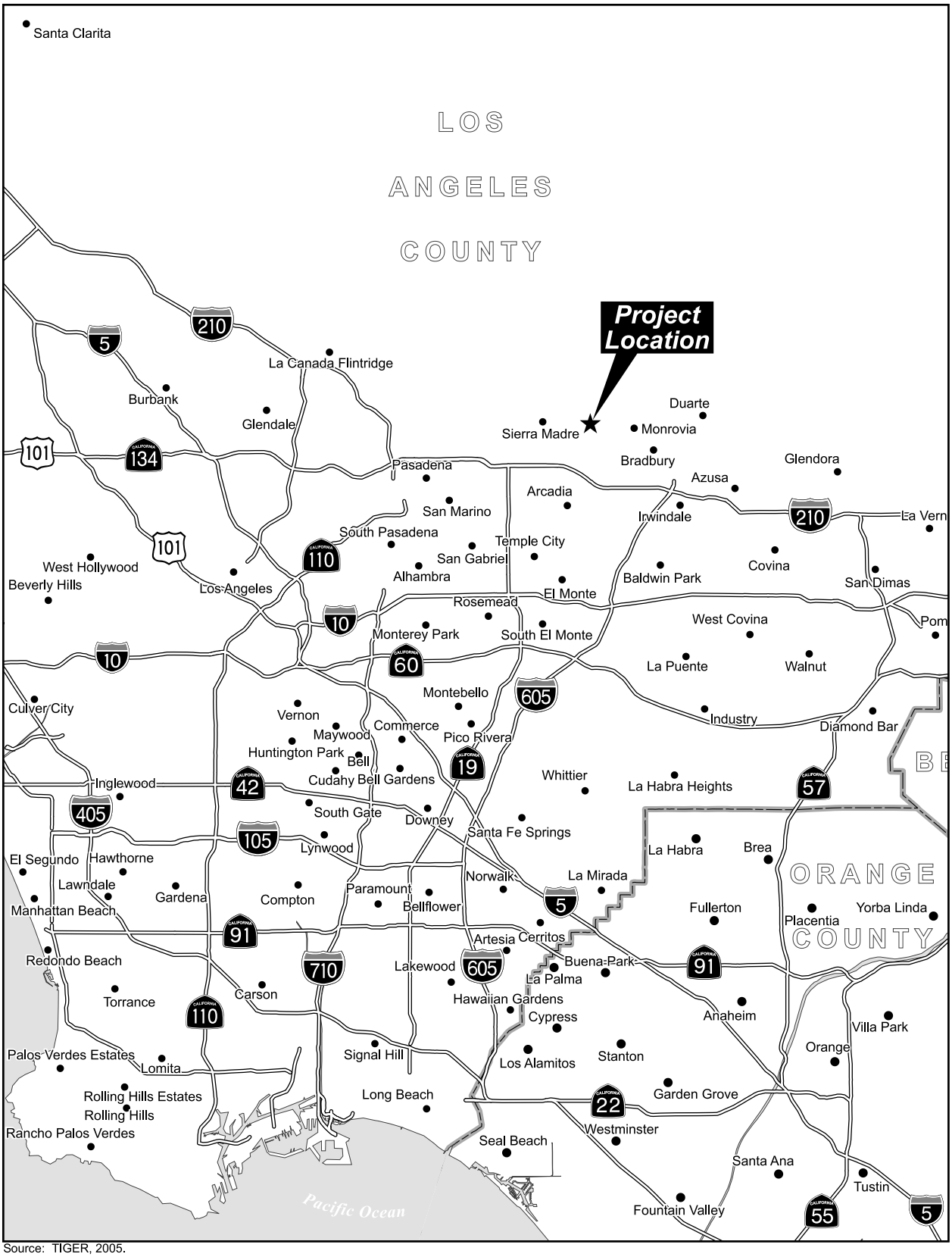
PROJECT LOCATION AND SETTING

The Santa Anita Reservoir Riser Modification and Reservoir Sediment Removal Project is located in the eastern portion of Los Angeles County, California (Figure 1). It is situated at the border of the City of Arcadia, in the western San Gabriel Valley, approximately 15 miles northeast of downtown Los Angeles (Figure 2).

The project APE is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the proposed project include the Angeles National Forest and the City of Arcadia Wilderness Park to the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres while the remainder of the preserve remains in its natural state.

The project APE includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, the Santa Anita Debris Basin (DB), the Santa Anita Sediment Placement Sites (SPS), and the LACDPW access road. These facilities are owned and operated by the LACDPW. The Santa Anita Reservoir, the downstream access road, and the Headworks are located in the Angeles National Forest and are under the jurisdiction of the U. S. Army Corps of Engineers north of the City of Arcadia. The Wilderness Park, LACDPW access road, DB, and SPS are all located below the reservoir in the City of Arcadia.

The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area that is filled to capacity with sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities. The Middle SPS area has been set aside for sediment storage, but has not previously been used in this capacity. Apart from existing access roads it is relatively undisturbed and characterized by native vegetation. The Lower SPS area, located in the southerly end of the SPS, is an already disturbed area that contains sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities. It does not have sufficient capacity to accommodate the lower range of expected sediment from the reservoir, 300,000 cubic yards; some of the project sediment will be placed in the Lower SPS and then it will be contour graded and landscaped for mitigation and closed out for future sediment placement. The location of the SPS and its Upper, Middle, and Lower SPS areas is shown in (Figure 3).



Source: TIGER, 2005.

Figure 1
Regional Location Map

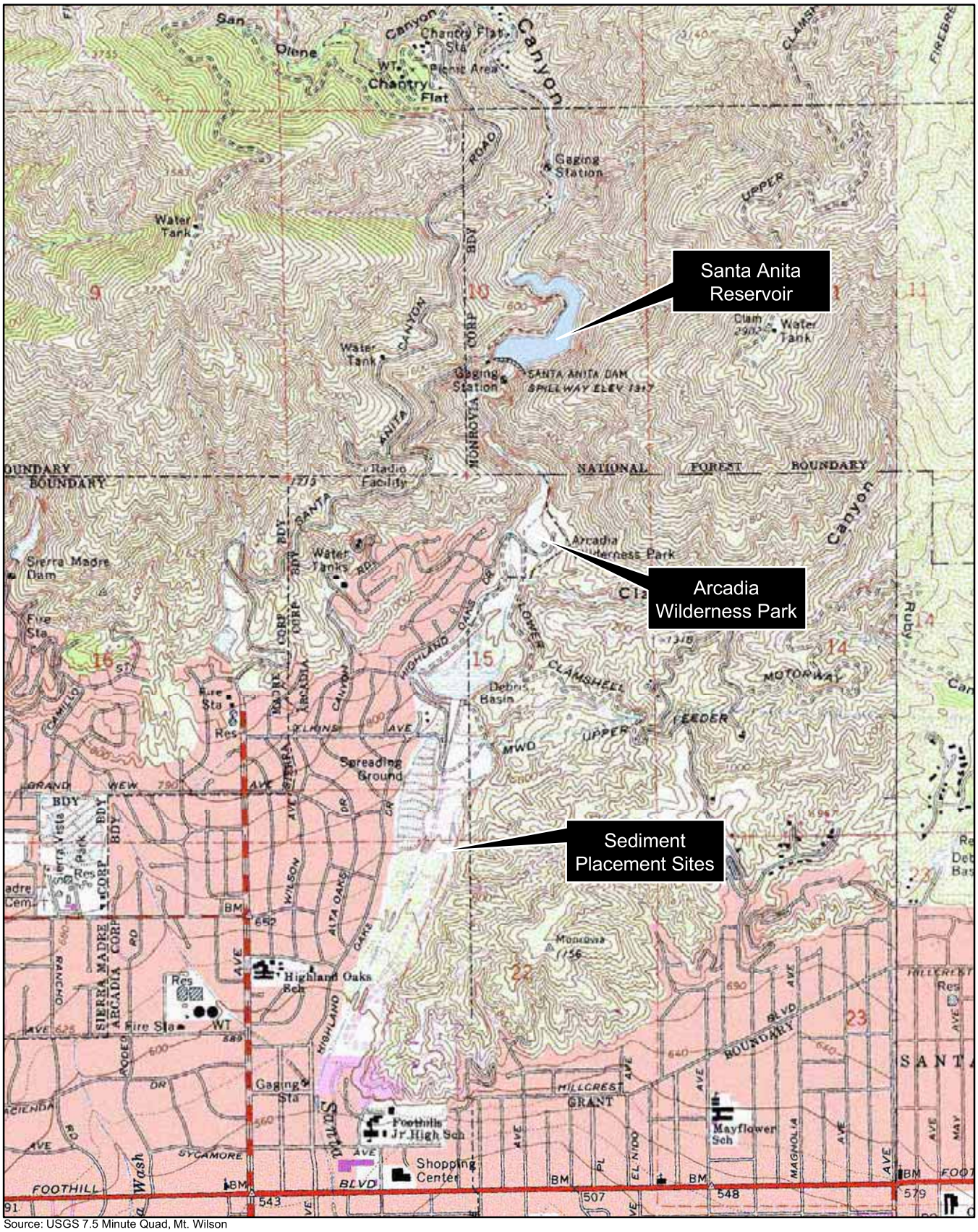


Figure 2
Vicinity Map



Source: GlobeXplorer, 2005.

NORTH 0 500 1,000 2,000 Feet

Figure 3
Proposed Project - Convey to Sediment Placement Site

PROJECT COMPONENTS

The proposed project consists of two components. The first component involves draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir (via conveyor belt), and placing it in the Santa Anita SPS. The second component involves improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser. In order to comply with California Department of Water Resources, Division of Safety of Dams (DSOD) seismic stability standards, the riser modification would be done concurrently with the sediment removal project.

Santa Anita Dam Sediment Removal

The proposed project would remove approximately 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal activities, the reservoir would be drained. A dry-out period, which could last several weeks, would be required before sediment removal would occur. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the elevation of 1,300 feet within the footprint shown on Figure 3.

The proposed project would transport sediment from the reservoir to the proposed SPS (approximately 1.5 miles) using an electrical conveyor belt system. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot (not obstructing traffic or emergency vehicles), south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS. The sediment conveyance route is shown on Figure 3. The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road north of the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and LACDPW access road to the SPS.

Because modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

Approximately 250,000 cubic yards of sediment would be placed in the approximately 5-acre already disturbed Lower SPS first (see Figure 3). The Lower SPS would then be closed out to future sediment placement; the remainder of the excavated sediment, approximately 250,000 cubic yards, would be placed at the 13-acre area in the Middle SPS, located east of the Santa Anita Wash, south of the existing Upper SPS.

The base of the 13-acre Middle SPS area can be tiered in order to accommodate up to 710,000 cubic yards of material; however, contour grading is planned for the Middle SPS so the actual

sediment capacity would be expected to be lower. The proposed ultimate height of the Middle SPS would be 60 feet from the lowest elevation at the southern end of the SPS. The western edge of the SPS would be contour graded and landscaped to serve as a visual buffer for the residences to the west.

The proposed project would require the removal of approximately 0.5 acres of vegetation in the Lower SPS. The current elevation of the Lower SPS ranges from approximately 630 feet to 650 feet. The proposed sediment height at the Lower SPS would increase up to 30 feet.

The proposed project would require the removal of approximately 11 acres of native vegetation in the undeveloped Middle SPS. The remaining two acres of the sediment placement footprint is comprised of existing access roads. In the proposed project, approximately 250,000 cubic yards of sediment would be conveyed to the already disturbed Lower SPS and up to 250,000 cubic yards of sediment would be conveyed to the Middle SPS. The remaining sediment capacity in the 13-acre footprint, up to 500,000 cubic yards depending on contour grading, would be used for future routine and emergency sediment removal activities of facilities served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, would be closed out for future sediment placement. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.

Santa Anita Dam Inlet/Outlet Modifications

The dam outlet modification component of the proposed project consists of constructing a concrete riser on the lowest outlet gate of the dam to El. 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would remain in place. An additional gate would be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 to freely pass through the dam, thus meeting DSOD's seismic safety requirements.

CONSTRUCTION SCENARIO

Sediment removal activities are anticipated to occur over the two 8-month periods of April through December (weather permitting) of 2009 and 2010. The removal of vegetation in a portion of the Middle SPS area is anticipated to occur after September 2008 and prior to March 2009. The riser construction would likely occur from May to December 2009, although the contractor may choose an alternate construction sequence. Dewatering of the reservoir would begin in early April and last for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below.

Dam Outlet Modification

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. LACDPW anticipates the outlet work to commence in May 2009.

Dry Excavation

Construction workers would access the reservoir via an existing access road (Dam Access Road) on the east side of Santa Anita Canyon Road (see Figure 3). Based on cleanout operations at LACDPW's other reservoirs, construction equipment at the reservoir during the dry excavation will likely consist of one crusher, three bulldozers, two excavators, and three loaders. The actual configuration may vary depending on the contractor chosen for the proposed project. Sediment and debris from the reservoir would be loaded on to the conveyor belt using the bulldozers and loaders. Equipment staging would occur within the reservoir area and along the existing access road. Best Management Practices (BMPs) would be implemented within the reservoir area to reduce downstream water quality impacts.

Sediment Conveyance

As discussed above, sediment would be transported to the SPS using an electric powered conveyor belt system, likely 5 feet wide. The conveyor route may require some clearing, grubbing, and grading of various locations along existing access and maintenance roads. Some vegetation clearing may be required along the access road, including a stream crossing approximately 600 feet south of the Wilderness Park parking area. No tunnel improvements would be required to accommodate the conveyor belt and PVC bypass pipe.

Sediment Placement

Prior to the use of the proposed Lower SPS area, approximately 0.5 acres of native and non-native vegetation would be cleared. Prior to the use of the proposed Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur after September and prior to March, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Construction equipment at the proposed Middle SPS area is expected to include of three bulldozers, one grader, and two sheepfoot rollers. Up to three bulldozers, one grader, and two

sheepfoot rollers may also be used at the Lower SPS. This construction scenario assumes the Lower SPS sediment placement would occur prior to the use of the Middle SPS. The actual configuration may vary depending on the construction contractor chosen for the project. The equipment would be used for the clearing, grubbing, and any grading that is necessary to prepare the proposed SPS areas. The equipment would also be used during sediment placement activities to spread and compact sediment throughout the tiered placement area. Construction equipment required for the proposed project is summarized in Table 1.

Prior to the use of the proposed Middle SPS area, approximately 12 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur after September 2008 and prior to March 2009, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Table 1. Construction Equipment Required for Proposed Project

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt Assembly/SPS Preparation	1 Bulldozers 1 Loaders 4 Trucks
Middle SPS and Lower SPS	3 Bulldozers 1 Grader 2 Sheepfoot Rollers
Entire Proposed Project Area	1 Water Truck

PROPOSED PROJECT ALTERNATIVES

In accordance with Section 15126.6(a) of the CEQA Guidelines, an EIR must discuss a range of reasonable alternatives to the proposed project ". . . which would feasibly attain most of the basic objectives of the proposed project . . . and evaluate the comparative merits of the alternatives." The factors that can determine feasibility are site suitability, other plan or regulatory limitations, and jurisdictional boundaries. An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. The alternatives

analysis must also include a comparative evaluation of the No Project Alternative per Section 15126.6(e) of the CEQA Guidelines. The following four alternatives are evaluated in Chapter 5 of this EIR and are summarized below:

- Alternative 1: No Project
- Alternative 2: Convey to Wilderness Park, Truck to SPS
- Alternative 3: Convey to Clearing North of the SPS, Truck Offsite
- Alternative 4: Convey to Wilderness Park, Truck Offsite

Alternative 1 – No Project

Alternative 1, No Project assumes that the Santa Anita Dam and the Santa Anita Reservoir would remain non-compliant with DSOD dam safety requirements for emergency drawdowns. The sediment level in the reservoir would continue to increase and exceed that deemed by DSOD as adequate for dam stability. Non-compliance would also subject LACDPW to potential penalties from DSOD. The LACDPW facility may become inoperable/structurally unstable in the future due to no construction, and the outlet would eventually silt up, making the dam inoperable. Additional consequences of Alternative 1 would be the potential loss of water supply, continued decrease in water storage capacity, and the inability to control releases if the dam outlet silts up.

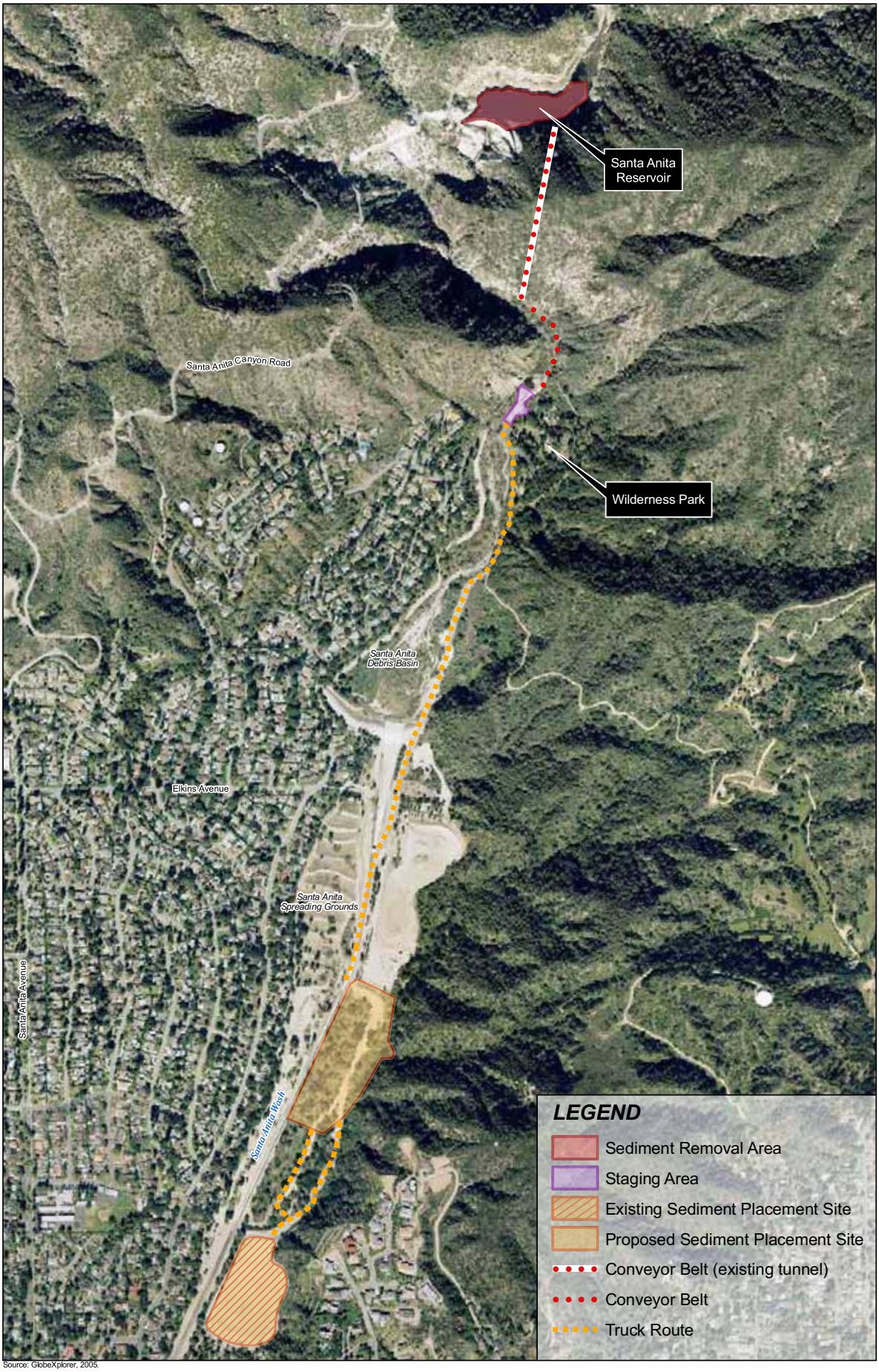
Alternative 2 – Convey to Wilderness Park, Truck to SPS

Alternative 2 (Figure 4), like the proposed project, would remove 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Alternative 2 would convey the sediment directly to the Wilderness Park area via conveyor belt then, the sediment would be transported by truck to the Lower and Middle SPSs. The conveyance system would be approximately 5 feet wide and up to 15 feet high. Public access to the park would be maintained during sediment conveyance activities. All other project characteristics of Alternative 2 would be the same as the proposed project.

Spreading and the compaction of sediment at the proposed SPS would be the same as the proposed project. Construction equipment required for this alternative is summarized in Table 2.

Alternative 3 – Convey to Clearing of the North SPS, Truck Offsite

Alternative 3 (Figure 5), like the proposed project, would remove 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir in the summer and fall of both 2009 and 2010. All of the proposed project characteristics would remain the same as the proposed project, except Alternative 3 would convey the sediment to a staging area above the Upper SPS area, where it would be loaded onto trucks and hauled to an off-site disposal location in Irwindale (Manning Pit SPS). Trucks would exit the Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS, in the City of Irwindale. Alternative 3 would require clearing, grubbing, and grading of various locations along the existing maintenance road.



Source: GlobeXplorer, 2005.

NORTH 0 500 1,000 2,000 Feet

Figure 4
Alternative 2
Convey to Park, Truck to Sediment Placement Site

Table 2. Construction Equipment Required for Alternative 2

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt Assembly/SPS Preparation	4 Trucks 1 Bulldozer 1 Loaders
Conveyor Belt/Haul Route	1 Bulldozer 2 Loader 8 Trucks
Middle and Lower SPS	3 Bulldozers 1 Grader 2 Sheepfoot Rollers
Entire Proposed Project Area	1 Water Truck

As with the proposed project, areas along the maintenance road to the south of the Wilderness Park, would require vegetation clearing where a stream crosses the existing access road, to allow for adequate truck access. It is estimated that about 20 trucks would be used at one time to transport sediment and that about 160 truck trips would occur per eight-hour day. Construction equipment required for this alternative is summarized in Table 3.

Alternative 4 – Convey to Wilderness Park, Truck Offsite

Alternative 4 (Figure 6), like the proposed project, would remove 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir in the summer and fall of both 2009 and 2010. All of the proposed project characteristics would remain the same as the proposed project, except Alternative 4 would convey the sediment to the Wilderness Park staging area, located above and within part of the park's western parking lot, truck the sediment along the existing maintenance road, truck the sediment to Irwindale, and place the sediment in the Manning Pit SPS.

Trucks would exit Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into



Source: GlobeXplorer, 2005.

NORTH 0 500 1,000 2,000 Feet

Figure 5
Alternative 3 - Convey to SPS Staging Area, Truck Offsite

Table 3. Construction Equipment Required for Alternative 3

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt	2 Bulldozers 2 Loaders
Arcadia/Sierra Madre Haul Route	1 Water Truck 1 Sweeper 20 Trucks
Manning Pit and Vicinity	2 Bulldozers 1 Water Truck 1 Sweeper

Vincent Avenue to enter Manning Pit SPS, in the City of Irwindale. Alternative 4 would require clearing, grubbing, and grading at various locations along the existing maintenance road below Santa Anita Dam. As with the other proposed project alternatives, some areas along the maintenance road to the south of the Wilderness Park would require vegetation clearing where a stream crosses the existing maintenance road, to allow for adequate truck access. It is estimated that about 20 trucks would be used at one time to transport sediment and that about 160 truck trips would occur per eight-hour day. Construction equipment required for this alternative is summarized in Table 4.

Non-Feasible Alternatives

Section 15126.6(c) of the CEQA Guidelines requires that an EIR identify any alternatives that were considered by the Lead Agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the Lead Agency's determination. Among factors that may be used to eliminate alternatives from detailed consideration in the EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; and (3) inability to avoid significant environmental impacts.

The following presents a brief description of three alternatives that were identified but eliminated from further analysis and consideration.



Source: GlobeXplorer, 2005.

NORTH 0 500 1,000 2,000 Feet

Figure 6
Alternative 4 - Convey to Park, Truck Offsite

Table 4. Construction Equipment Required for Alternative 4

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt	2 Bulldozers 2 Loaders
Arcadia/Sierra Madre Haul Route	1 Water Truck 1 Sweeper 20 Trucks
Manning Pit and Vicinity	2 Bulldozers 1 Water Truck 1 Sweeper

Sluicing/Fast

A sluicing operation consists of draining the reservoir and utilizing inflow to wash the sediment out of the reservoir and through the lowest gate of the dam to the stream below. Excavating equipment is used in the reservoir bottom to push the sediment into the flow. This operation is usually done outside the storm season. A FAST (Flow-Assisted Sediment Transport) operation involves: draining the reservoir at the beginning of the storm season; letting sediment-laden inflows pass through the lowest gate of the dam during minor storms; closing the gate during major storms for flood control operations and reopening the gate after such storms; closing the gate towards the end of the storm season to build up a reservoir pool for postseason water conservation operations.

Sluicing and FAST operations require sustained inflows at levels sufficient to carry the sediment downstream to the Santa Anita Debris Basin for later removal. Flows into Santa Anita Reservoir drop off very quickly. The streambed below the dam is very constricted in several ways, including its narrow winding alignment, the presence of the Headworks facility, and the bridge over the stream at the Wilderness Park entrance. Significant amounts of sediment, especially during a sluicing operation, would likely settle out at the constricting streambed and would need to be removed. The narrow width and winding alignment of the canyon severely limits access and maneuverability for the heavy equipment needed to remove that sediment. Regulatory agencies and other stakeholders have objected to sluicing at other facilities due to residual streambed sedimentation issues and would likely object to sluicing at Santa Anita Reservoir. Regulators and other stakeholders have also objected to past FAST proposals at other facilities. Although sediment accumulation in the streambed and at the constrictions during FAST operations would not be as much as that for sluicing, regulators and stakeholders had concerns regarding past FAST proposals at other facilities about the adequacy of post-storm season reservoir levels for beneficial uses.

Dredging

A dredging operation would require a pipeline to transport the slurry-like dredged material, booster stations along the pipeline, and a large dewatering area for the dredged material. The

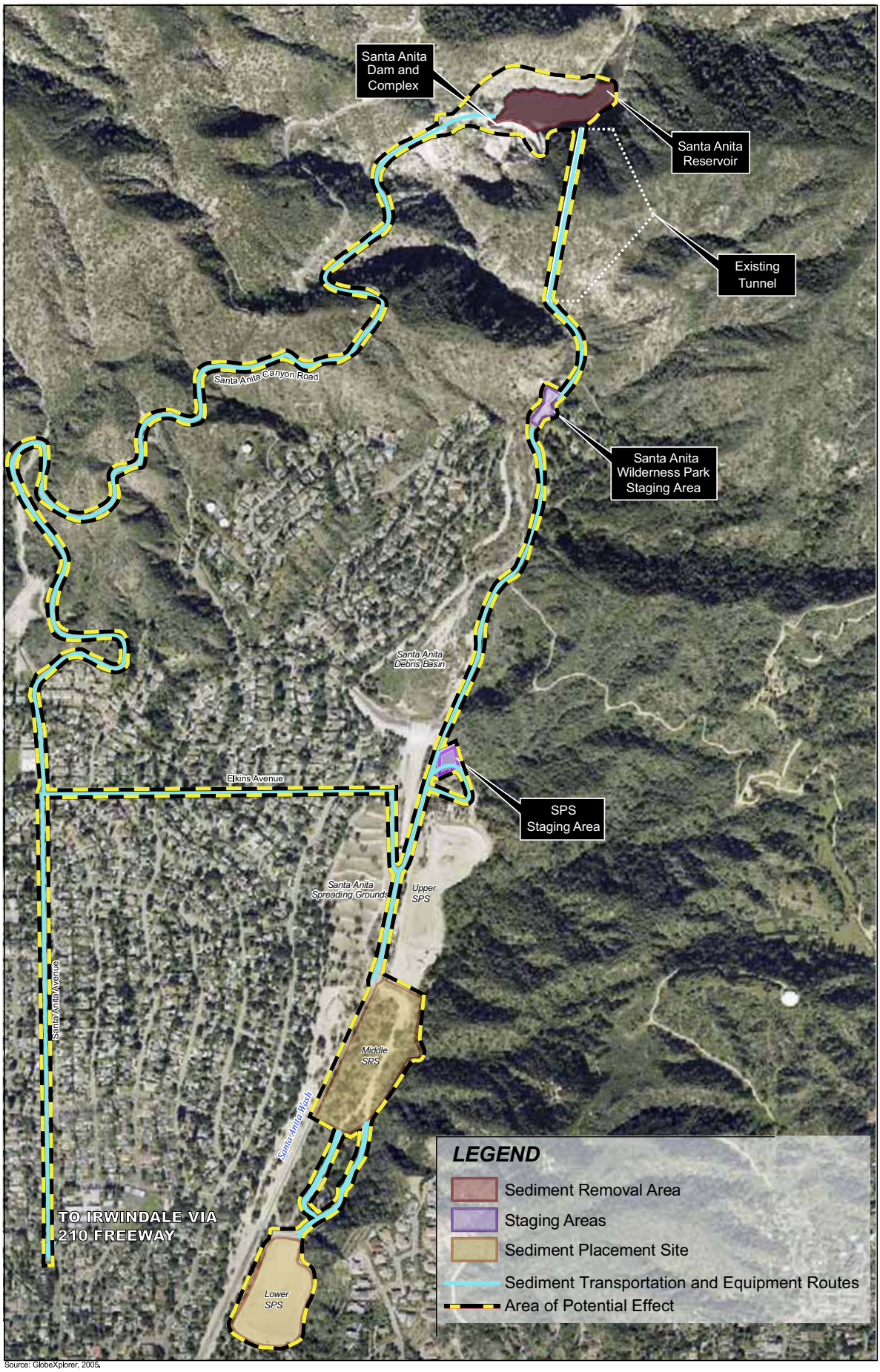
bottom of Santa Anita Canyon is very narrow, thus limiting room for a pipeline and booster stations. The dewatering area would have to be larger than the staging area footprint needed for a dry excavation transport operation and be located in Santa Anita Debris Basin. Regulatory agencies and other stakeholders have objected to past dredging proposals at other LACDPW facilities due to concerns about potential turbidity in the reservoir from the dredge operation, and the potential impact to habitat from the large dewatering areas, booster stations, and any pipeline failures.

Trucking Along Santa Anita Canyon Road

Bypassing the downstream streambed, access road, Wilderness Park, and debris basin would require trucking along the access road from the dam to Santa Anita Canyon Road and along Santa Anita Canyon Road to Santa Anita Avenue down to Elkins Avenue or to the 210 Freeway. The dam's access road to Santa Anita Canyon Road is structurally inadequate for major, sustained trucking operations. The winding and narrow nature of Santa Anita Canyon Road is also not suitable for major, sustained trucking operations.

AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) for this proposed project consists of all areas included in the proposed project, Alternative 2, Alternative 3 and Alternative 4, including Santa Anita Dam and Reservoir, sediment transportation and equipment routes, sediment placement sites and staging areas (see Figure 7).



Source: GlobeXplorer, 2005.

N

0 375 750 1,500 2,250 3,000 Feet

Figure 7
Area of Potential Effects
Including Proposed Project and Alternatives 2, 3 and 4

PROJECT SETTING

ENVIRONMENTAL SETTING

The Santa Anita Riser Modification and Reservoir Sediment Removal Project is located near the base of Santa Anita Canyon which is to the north of the City of Arcadia in the San Gabriel Valley. Portions of the project APE lie both within the City of Arcadia and the Angeles National Forest in the County of Los Angeles. The topography to the north of the project APE is characterized by the foothills and steep slopes of the San Gabriel Mountains, the area to the west and south of the project APE is generally flat with scattered rolling hills, and the area to the east contains mostly rolling hills.

Access to the Dam and Reservoir portions of the project APE is via Santa Anita Canyon Road, the SPS and spreading ground area is accessed via Elkins Avenue. Access to the Santa Anita Wilderness Park is via Highland Oaks Drive. The project APE occupies and follows the natural contours of the original Santa Anita Canyon Road, which eventually becomes Santa Anita Wash to the south of the project APE (Sierra Madre 15' Topographic Quadrangle 1928). The reservoir and dam sit at 1,318 feet above mean sea level (MSL) and the lower flood control structures in the City of Arcadia sit at 590-1000 MSL. Local soils consist of Pleistocene and Holocene alluvial deposits composed primary of sand, silt and gravel (CGS 1998).

The project site contains several vegetation communities including; coastal sage scrub, coast live oak woodland, Riversidean alluvial fan sage scrub, and disturbed Riversidean alluvial fan sage scrub. Coastal sage scrub in the project area consists of sparse cover of California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*). The coast live oak woodland is dominated by coast live oak (*Quercus agrifolia*) and western sycamore (*Platanus racemosa*) with a poorly developed understory of species such as toyon (*Heteromeles arbutifolia*), gooseberries and currants (*Ribes spp*.) and laurel sumac (Malosma laurina). Riversidean alluvial fan sage scrub intergrades with the coast live oak woodland and consists of stands dominated by California sagebrush, California buckwheat, and red brome (*Bromus rubens*) on severely drained soils.

Fauna observed on site include coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), gray squirrel (*Sciurus carolinensis*), California ground squirrel (*Spermophilus beecheyi*), coastal western whiptail (*Cnemidophorus tigris stejnegeri*), western fence lizard (*Sceloporus ocidentalis*), common side-blotched lizard (*Uta stansburiana*), pacific tree frog (*Pseudacris regilla*) and a wide variety of birds. Additionally, black bear (*Ursus americanus*) was detected adjacent to the project site. Several of these species were important food resources for local Native American communities prior to the arrival of Europeans.

CULTURAL SETTING

As a framework for discussing the cultural resources that may be encountered during the cultural resources investigations of the project APE, the following discussion summarizes our current understanding of major prehistoric and historic developments in and around Los Angeles. This is followed by a more focused discussion of the history of the project area itself.

Prehistoric Overview

While people are known to have inhabited southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al. 2004), the first evidence of human occupation in the Los Angeles area dates to at least 9,000 years B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Departing from the subsistence strategies of their nomadic big-game hunting predecessors, Millingstone populations established more permanent settlements. Settlements were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P., a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This was accomplished in part through use of the circular shell fishhook on the coast and more abundant and diverse hunting equipment. Evidence for shifts in settlement patterns has been noted at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of numerous rivers, marshes, and swamps served as ideal locations for prehistoric settlement during this period. These well-watered areas contained a rich collection of resources and are likely to have been among the more heavily trafficked travel routes.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of the contemporary Native American group whom the Spanish referred to as the *Gabrielino* (Wallace 1955). Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange counties, the *Gabrielino* are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The *Gabrielino* are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925) and maps produced by early explorers indicate that at least 26 *Gabrielino* villages were within close proximity to known Los Angeles river courses, while an additional eighteen villages

were within reasonably close proximity to the river (Gumprecht 1999). Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game were hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939[1852]). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly leafed-cherry (Reid 1939 [1852]).

Historic Overview

Spanish explorers made brief visits to *Gabrielino* territory in both 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Passing through the Los Angeles area, they reached the San Gabriel Valley on August 2, and traveled west through a pass between two hills where they encountered the Los Angeles River and camped on its east bank near the present-day N. Broadway Bridge. Father Juan Crespi's diaries indicate that on that day they "entered a spacious valley, well grown with cottonwoods and alders, among which ran a beautiful river. This plain where the river runs is very extensive and…is the most suitable site for a large settlement" (The River Project 2001). He goes on to describe this "green, lush valley", its "very full flowing, wide river", the "riot of color" in the hills, and the abundance of native grapevines, wild roses, grizzly, antelope, quail and steelhead trout. Crespi observed that the soil was rich and "capable of supporting every kind of grain and fruit which may be planted." The river was named El Rio y Valle de Nuestra Senora la Reina de Los Angeles de la Porciuncula.

Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers. Nine important villages were located within the San Gabriel Valley, including *´Ashuukshanga, Weniinga, ´Ahwiinga* and *Pemookanga* in the prairie-foothill transition zone. Reid reported that the Gabrielino community of *´Aluupkenga* was located on the grounds of the Rancho Santa Anita, which he owned. The grant includes the cities of Arcadia and Sierra Madre. A *Gabrielino* informant, Jose Zalvidea reported that *´Aluupkenga* was located at Santa Anita (McCawley 1996).

A string of 21 Missions were established in the years that followed the Portola expedition, the fourth being Mission San Gabriel *Archangel* founded in 1771, near the present-day city of Montebello, eight miles southwest of the project APE. This original location enjoyed fertile soils, but was repeatedly damaged by the periodic flooding of the San Gabriel River. In 1775, the mission was moved to higher ground five miles to the northwest (Lindsey and Schiesl 1976; McCawley 1996). By the early 1800s, the majority of the surviving *Gabrielino* population had entered the mission system, under the jurisdiction of Mission San Gabriel or Mission San Fernando several miles to the northwest. Mission life offered the Indians security in a time when their traditional trade and political alliances were failing and epidemics and subsistence

instabilities were increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for *Gabrielino* health and cultural integrity, however.

On September 4, 1781, 12 years after Crespi's initial visit, the El Pueblo de la Reina de Los Angeles was established not far from the site where Portola and his men camped. Watered by the river's ample flow and the area's rich soils, the original pueblo occupied 28 square miles and consisted of a central square, surrounded by twelve houses, and a series of 36 agricultural fields occupying 250 acres, plotted to the east between the town and the river. By 1786, the flourishing pueblo attained self-sufficiency and funding by the Spanish government ceased. Fed by a steady supply of water and an expanding irrigation system, agriculture and ranching grew, and by the early 1800s the pueblo produced 47 cultigens (Gumprecht 1999).

Alta California became a state when Mexico won its independence from Spain in 1821, and Los Angeles selected its first city council the following year. The authority of the California missions gradually declined, culminating with their secularization in 1834. Native Americans who had become dependent upon the missions were disenfranchised, and most *Gabrielino* neophytes either fled to the north or sought work as laborers for nearby private land owners. Former mission lands were quickly divided and granted to private citizens for use as agricultural and pastoral land (Reid 1977 [1851]).

As the possibility of a takeover of California by the United States loomed large in the 1840s, the Mexican government increased the number of land grants in an effort to keep the land in Mexican hands. More than 600 rancho grants were made between 1833 and 1846. The project APE falls within the 13,319.06 acre Santa Anita Rancho, Hugo Reid obtained a provisional title to the Rancho in April 16, 1841 and was granted full title four years later. He later sold the Rancho to Henry Dalton, the grant finalized on August 9, 1866 (California State Archives 2006).

The United States took control of California after the Mexican-American War of 1846, seizing Monterey, San Francisco, San Diego and Los Angeles with little resistance. Los Angeles soon slipped from American control, and was retaken in 1847. Approximately 600 U.S. sailors, marines, Army dragoons, and mountain men converged under the leadership of Colonel Stephen W. Kearney and Commodore Robert F. Stockton in early January of that year to challenge the California resistance, which was led by General Jose Maria Flores. The American party crossed the San Gabriel River and scored a decisive victory over the Californians, effectively ending the war and opening the door for increased American immigration (Takahashi 1980).

While small deposits of gold had been mined previously in southern California (Guinn 1977 [1915]), the discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. Retired American miner Elias Jackson "Lucky" Baldwin purchased over 30,000 acres of land in California between 1875 and 1880, and he eventually acquired the last intact portion of Ranch Santa Anita (Kielbasa 1997).

The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876. Newcomers continued to pour into Los Angeles and the population nearly doubled between 1870

and 1880. The completion of the second transcontinental line, the Santa Fe, took place in 1886 causing a fare war which drove fares to an unprecedented low. More settlers continued to head west and the demand for real estate skyrocketed. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45). During the first three decades of the 20th century, more than two million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area (Gumprecht 1999).

The rivers of the Los Angeles basin, like the San Gabriel River, flooded frequently in historic times, depositing rich soil that attracted early settlers. These unpredictable overflows became increasingly problematic as the landscape filled with ever more people in the late 19th and early 20th centuries, however. Until January of 1868, the San Gabriel River emptied into San Pedro Bay. Massive flooding that year caused the river to cut a new, more southerly course after leaving Whittier Narrows, destroying the young town of Galatin and ultimately discharging at Alamitos Bay. The new channel gradually took on the name of San Gabriel, while the original course of the San Gabriel River came to be known as Rio Hondo upstream and the Los Angeles River downstream (Gumprecht 1999).

The San Gabriel River experienced significant floods in 1884, 1889, 1911, 1914, and again in 1934 and 1938, each seemingly more destructive and costly than the last. A comprehensive flood control plan was drafted as a response, including the construction of 14 dams to impound San Gabriel Mountain storm waters. The Los Angeles County Flood Control District was also created at that time, and is now administered by the LACDPW. A federal flood control act, passed in 1936, placed flood control in the Los Angeles Basin under the ultimate control of the Corps (Lindsey and Schiesl 1976; Gumprecht 1999).

A Brief History of the Project Area

Sanborn Fire Insurance Maps were consulted for the identification of historic structures within the project APE and alternatives. Although Sanborn Map coverage does include a portion of the City of Arcadia, the area encompassing the project APE is not covered.

The review of historic USGS topographic maps was completed to gauge the amount and type of development which occurred historically in the project APE. The Sierra Madre 1928 15' Topographic Quadrangle predates the development of the Dam and flood control system and shows the natural configuration of Santa Anita Canyon with no development. Only one structure is indicated along Santa Anita Avenue, north of Foothill Boulevard on the east side. There is no other development indicated within the current project APE.

The 1941 USGS 15' Sierra Madre Topographic Quadrangle revealed very little development on any portions of the project APE prior to 1941. The dam and reservoir themselves are indicated on the map, but no other structures are present with the exception of a few, presumably residential structures, along Santa Anita Avenue, three at the southern base of Santa Anita Canyon Road, and eleven between Sierra Madre Boulevard and Foothill Boulevard on Santa Anita Avenue. None of the residences on Santa Anita Avenue are listed on the California or National Registers. Most of the residences are single-story ranch style homes which appear to be

1950's and 1960's era homes with the exception of a few residences and one school which may date to the 1940's.

In 1941, the Sierra Madre 15' Quadrangle indicates Elkins Avenue is a dirt road with no development. None of the residences on Elkins Avenue are listed on the California or National Registers. The stretch of Elkins Avenue within the project APE is developed currently with single family homes on what appear to be quarter acre lots. The road is tree lined and most of the residences are set back from the street. Most of the residences are single-story ranch style homes; a few of which are split-level.

A Brief History of Arcadia

The city of Arcadia covers eleven square miles in the western end of the San Gabriel Valley, and is situated at the base of the San Gabriel Mountains (LSA Associates 1996:1-1). One of Arcadia's first European settlers was Hugo Reid. Reid was granted the Rancho Santa Anita and was therefore the first individual land owner in the area. He developed the land for use in agriculture and ranching and built the first structure in Arcadia on his Rancho. The Rancho had a long succession of owners. Eventually Elias J. "Lucky" Baldwin bought the last intact portion of the rancho in 1875, including what is known as Arcadia for $200,000 ($25 an acre) (City of Arcadia 2007). Downtown Arcadia was first developed in the 1880's as the Los Angeles and San Gabriel Valley Railroads entered the City. In 1887 Lucky Baldwin financed the construction of the Arcadia Depot at First Avenue and Santa Clara (LSA Associates 1996). He eventually established the original Santa Anita Park horse racetrack in Santa Anita (Hale 1997). In 1903 Arcadia officially became incorporated as a City (LSA Associates 1996).

A Brief History of the Angeles National Forest

The Angeles National Forest (ANF) was originally known as the San Gabriel Timberland Reserve, it consisted of 555,520 acres in the San Gabriel Mountains. Under the Forest Reserve Act passed by Congress in 1891, President Benjamin Harrison created the ANF on December 20, 1892. It was the eighth reserve created in the United States and the first in California. The first ranger station was built in the park in 1900; the West Fork Ranger Station was built on the West Fork of the San Gabriel River. (Triem 1993: II-1 and II-3)

Fires and floods were of ongoing concern in the San Gabriel Mountains in the 1930's, floods in 1933 and 1938 were extremely destructive to the Civilian Conservation Corps camps in the area, Forest Service improvement and equipment and the surrounding San Gabriel foothill communities. Improvement funding was redirected toward flood control and by 1956 twelve flood control dams had been built (Triem 1993: 11-9).

In the early 1940's, Federal Flood Control funding became available to the Angeles National Forest. Federal funds in the War and post-War period underwrote the construction of flood control projects and administrative site buildings, including residences, barracks and garages. In 1946 the architect Keplar B. Johnson was hired by the Forest Service as the new regional

architect. (Treim 1993) "His use of concrete block and flat rooflines are particularly notable and were an omnipresent theme of the post-War era (Treim 1993: II-31)."

History of the Santa Anita Dam and Reservoir

As one of many dams built between 1920 and 1940, the history of the Santa Anita Dam is often difficult to separate from the other dams. Much of the historical information is general in nature and not specific to this dam. Files kept by the DPW provide one of the best sources for the history of work associated with the construction and maintenance of the dam since the 1920s. Files reviewed for this project came from a binder provided by the DPW entitled "Chronology of Santa Anita Dam" (Chronology). Supplemental information was found in the Chronology with Los Angeles Times newspaper articles on file at the Los Angeles Public Library. The following history represents the bulk of the information contained in these sources.

The Santa Anita Dam (also known as the Big Santa Anita Dam) was constructed between 1925 and 1927 in response to continual flooding in the Los Angeles basin. Within the 90-year period from 1825 to 1914, Los Angeles experienced eleven catastrophic floods. The flood of 1914 resulted in damages in excess of $10 million and brought a public outcry for action to address the city's recurrent flood problems. As a consequence, the Los Angeles County Flood Control District (LACFCD) was formed (Los Angeles Times April 20, 1924). The LACFCD oversaw the construction of dams and reservoirs for nearly sixty years.

Engineer James W. Reagan was appointed as the first engineer of the LACFCD in 1915 (Los Angeles Times August 31, 1915). He was tasked with investigating and preparing a plan for conserving flood waters and protecting flood prone areas and the harbor. One of his first projects included putting together a $4,000,000 bond issue (Los Angeles Times March 29. 1927). Taxpayers approved the bond in 1917. This bond allowed the LACFCD to begin to implement some preliminary flood control efforts, including some channelization and the construction of reservoirs. It also included the Devil's Gate Dam, which was built at the headwaters of the Arroyo Seco above Pasadena in 1920 and was the first of a number of LACFCD dams.

In 1924, a second bond issue was approved in the amount of $35,300,000 (Los Angeles Times August 24, 1924). The bond was intended to support the construction of 12 dams which could both prevent flooding and provide a stable water supply (Los Angeles Times May 4, 1924). The largest of the dams included the San Gabriel Dam (described as the largest in the United States at the time), the Pacoima Dam, the Big Tujunga Dam and the Puddingstone Dam (Los Angeles Times September 21, 1921; April 27, 1924). The Big Tujunga and the San Gabriel Dams were intended to have the greatest drainage area. All together, the four dams were expected to cost more than $30,000,000. The Santa Anita Dam was expected to cost $586,000 (Los Angeles Times May 4, 1924).

After the bond was approved, the Board of Supervisors for the LACFCD arranged for General George W. Goethals to act as consulting engineer for all of their bond-related projects (Los Angeles Times September 26, 1924). George Goethals was the engineer who oversaw the construction of the Panama Canal. In a newspaper article announcing the hiring of Goethals,

Chairman McClellan of the Board of Supervisors was quoted as saying "So vast is the program of work that lies ahead of the board in connection with the flood-control work that we have felt justified in retaining the services of the man we believe to be the greatest practical engineer in the country" (Los Angeles Times September 26, 1924).

The Santa Anita and the Pacoima were the first dams slated for construction (Los Angeles Times September 27, 1924). Initial plans for the Santa Anita Dam were reviewed by Goethals. An undated copy of a letter from Goethals to the Los Angeles County Board of Supervisors showed his approval regarding the plans for the Santa Anita Dam and the Pacoima Dam (Goethals N.D.). In addition to endorsing the plans for the Santa Anita Dam, Goethals also endorsed the use of engineer Lars Jorgensen on the project (Goethals N.D). Goethals had the following to say about both the dam drawings and Jorgenson:

> I have approved the drawings for the dam at Pacoima and Santa Anita, with the understanding that the details will be made to conform to the most unfavorable conditions required by the latest accepted formulae for such structures…I have discussed the matter with Mr. Jorgensen, designer of the constant angle arch dam specified, in whom I have the greatest confidence as a designer of dams…(Los Angeles Times October 3, 1924).

The Ross Construction Company won the bid to build the Santa Anita Dam (Los Angeles Times October 3, 1924). The dam was to be 225 feet high, 550 feet long at the top, 50 feet thick at the base, and seven feet thick at the top (Los Angeles Times September 6, 1925). The dam was expected to hold back approximately 1500 acre feet of water (Los Angeles Times September 27, 1924). In October, 1924, work began on the 3 ½ mile road that would be used to bring supplies to the Santa Anita Dam (Los Angeles Times October 13, 1924).

The Pacoima and the Santa Anita Dam were constructed in tandem, with the main work camp located at the Pacoima Dam (Los Angeles Times September 6, 1925). This was also where a field testing laboratory was established to check the strength of each batch of cement. The dams were built in vertical sections; one section was built from the bottom to the top and then the forms were moved over to start the next section. The sections were initially built out of order. The crew first built every second section and then returned to fill in the missing sections. This was done to allow the largest surface area to be exposed so the cement could cure before an adjoining section was installed (Los Angeles Times September 6, 1925).

By at least some accounts, work progressed well. A letter from Lars Jorgensen to the Flood Control District's Board of Supervisors dated September 10, 1925 discusses Jorgensen's visit to the dam construction site. Jorgensen comments on the progression of the construction at the Santa Anita Dam, saying that it was working like a factory (Jorgensen 1925). Jorgensen designed the Salmon Creek Dam in Alaska (1914) and founded the Constant Angle Arch Dam Company. The Salmon Creek Dam was the first constant angle arch dam ever constructed (Jackson 1993:569). Jorgensen's patented design was used by Reagan to design both the Santa Anita Dam and the Pacoima Dam (Los Angeles Times October 3, 1924).

Also known as a "variable radius arch concrete dam," an arch dam is one that has an alignment so that the convex curvature of the arch is directed upstream in order to direct water to the abutments at either side. Arch dams become narrower in length and thicker in width at the bottom. The Santa Anita Dam is one of about 40 such types constructed in California between 1912 and 1970 (Table 5).

During the year of 1925, the LACFCD spent $2,309,947 on flood control work (Los Angeles Times September 25, 1925). This work included initial construction of the Pacoima, Santa Anita, and Puddingstone dams as well as nearly 8 ½ miles of work in the drainage channels. It also included levee building and laying of rip-rap.

In 1925, there was a work stoppage during the construction of the dam. A letter from the Chief Engineer of the Los Angeles County Flood Control District to Roy Dowds, Special Council to the Los Angeles County Flood Control District talks about the stoppage (Reagan 1926). The letter tells how work on the Santa Anita Dam was stopped because the State Engineer, W.F. McClure, revoked approval for the dam's design. Work was able to continue at the site after Reagan took McClure to the site and showed him the progress at the site. At that time, McClure apparently re-approved the plans and work continued in late 1925.

By January of 1926, work was under way on six dams (Pacoima, Santa Anita, Puddingstone, Big Dalton Canyon, Thompson Creek and San Gabriel) (Los Angeles Times January 3, 1926). Four months later, the first forms were being filled at Santa Anita Dam (Los Angeles Times April 1, 1926). In August, the dam was halfway completed and stood 115 feet high (Los Angeles Times August 10, 1926). Ross Construction may have encountered some difficulties, however, because at this time, the reported cost of the dam was $1,000,000 rather than the $567,000 estimate that won them the bid (Los Angeles Times August 10, 1926).

As the dam neared completion, there must have been some unease about the strength of the dam. In a presentation given by B.F. Jakobsen to the Arcadia Goodfellowship Club, he described the dam and cited the strength of the natural rock around the dam site. (Author Unknown 1927). He noted that the concrete was just as strong as the surrounding rocks and the chances for a dam failure were remote.

Not everything went smoothly during construction of the Santa Anita Dam. In 1927, B. F. Jakobsen resigned, citing his dissatisfaction with the policies of James Reagan, his superior (Los Angeles Times January 23, 1927). According to Jakobsen, they disagreed over construction of the spillway at Santa Anita. According to Supervisor Graves (in charge of flood control work for the LACFCD board), Jakobsen thought Reagan was not competent and wanted his job. Graves stated that Jakobsen decided to leave when he realized that the LACFCD was going to hire E.C. Eaton as principal assistant flood control engineer (Los Angles Times January 23, 1927). Eaton was previously employed by the State Engineering Department and had been an inspector of several of the LACFCD dams (Los Angeles Times March 29, 1927). Before long, the LACFCD was reorganized and Eaton became Chief Engineer while Reagan became a member of a board of consulting engineers (Los Angeles Times March 29, 1927).

Table 5. Variable Radius Arch Concrete Dams Constructed in California

Dam Name	County	Year Built
Big Bear Dam	San Bernardino	1912
Lake Spaulding	Nevada	1913
Spaulding	Nevada	1913
Kerckhoff Diversion	Madera	1920
San Clemente	Monterey	1921
Lost Creek	Butte	1924
Concow	Butte	1925
Balch Diversion	Fresno	1927
Santa Anita	**Los Angeles**	**1927**
Buck Diversion	Plumas	1928
Camino	El Dorado	1928
Cedar Lake	San Bernardino	1928
Combie	Nevada	1928
Deer Creek Diversion	Nevada	1928
Grizzly Forebay	Plumas	1928
Railroad Canyon	Riverside	1928
Henry Jr.	San Diego	1929
Pacoima	Los Angeles	1929
Juncal	Santa Barbara	1930
Lyons	Tuolumne	1930
Big Tujunga #1	Los Angeles	1931
Tiger Creek Afterbay	Amador	1931
Gene Wash	San Bernardino	1937
Copper Basin	San Bernardino	1938
Parker	San Bernardino	1938
Englebright	Yuba	1941
Lake Loveland	San Diego	1945
San Marcos	San Diego	1946
Matilija	Ventura	1949
Vail	Riverside	1949
Monticello	Napa	1957
Donnells	Tuolumne	1958
Slate Creek Diversion	Plumas	1961
South Fork Diversion	Plumas	1961
Forbestown Diversion	Butte	1962
Junction	El Dorado	1962
Slab Creek	El Dorado	1967
Hour House	Sierra	1968
Log Cabin	Yuba	1968
New Drum Afterbay	Nevada	1968
Brush Creek	El Dorado	1970
New Bullards Bar	Yuba	1970

The Santa Anita Dam was completed in 1927 and final approval for its construction was granted on August 15, 1927 (Bailey 1927; Eaton 1927). A letter from Paul Bailey, State Engineer, to Eaton stated that the final inspection had been completed and approved. The final cost for the dam was $1,200,000 (Los Angeles Times September 16, 1969).

Subsequent documentation regarding the Santa Anita Dam mostly relates to the maintenance of the dam. Letters between the Flood Control District and various other parties tell of leaks at the spillways and blowouts at the contraction joints. Lars Jorgensen and the Constant Angle Arch Dam Company were associated with these repairs. Jorgensen wrote to E.C. Eaton on December 6, 1927 to inform him of the findings of a visit to the Santa Anita Dam and the methods for repairing leaking joints at the dam (Jorgensen 1927). These correspondences led to the grouting of joints at various points along the dam. An application for repairing the dam was filed by E.C. Eaton with State Department on Public Works Water Resources Division in 1931 (Eaton 1931). A copy of this application is included in the Chronology of Santa Anita Dam.

A report was filed by the County Flood Control District on August 4, 1931 responding to a letter from the Fish and Game Division (Hedger 1931). The State Fish and Game Commission had requested that screens be placed over the outlets of the dam to prevent fish from getting through. The report stated that the necessary screens would inhibit the normal flow of water at the outlet source and pose a potential danger to the integrity of the dam.

On November 3, 1932, E.C. Eaton sent a letter to John Spencer of the Division of Fish and Game informing him that the screens he had requested had been installed (Eaton 1932). The screens apparently remained in place until 1938 (Howell 1938). A letter dated December 30, 1937 from C.H. Howell, Chief Engineer to the Division of Fish and Game requested permission to remove the screens because they present a threat to the dam's operations and potentially a danger to the public (Howell 1937). It is not clear whether the screens were removed at this time.

On March 2, 1938, a storm caused flooding at the Santa Anita Dam. As a result, the LACFCD undertook studies to determine how to prevent a spillage from occurring again (Manotta 1940; Fuller and Burke 1941; Hedger 1941). The proposed plan resulted in a spillway pool designed to keep water from flowing over the top of the dam and preventing the release of discharge valves. No documentation appears in the files associated with the dam showing that this work was done.

The records associated with the dam become less consistent after the 1940s. The remaining documentation relates to repairs and additions to the dam in the 1960s and 1970s. An application for repair or alteration of the dam was filed on May 8, 1963 to reinforce an existing 18-inch valve at one of the outlets (Salsbury 1963a). On May 31, 1963, another application was filed in order to replace the trash racks at the dam with semi-circular reinforced concrete risers and structural steel trashracks (Salsbury 1963b).

The next major construction that was associated with the Santa Anita Dam was construction of a tunnel in 1968. The tunnel was constructed through approximately 1,500 feet of a mountain to the east of the dam. It was installed so that workers could place on a conveyor belt about 825,000 cubic yards of debris that they cleaned from the drained reservoir (Los Angeles Times

September 8, 1968). In 1969, workers replaced a sluice gate and hydraulic power unit on the Santa Anita Dam (Los Angeles Times September 16, 1969).

Records associated with the Santa Anita Dam from the 1970s and 1980s are not included with the documentation about the dam. In 1985, the District was merged with other engineering departments in Los Angeles County to form the LADPW. Today the Department of Public Works oversees the maintenance of dams, reservoirs, storm drains, and sediment management, in addition to flood control measures.

SOURCES CONSULTED

The cultural resources investigation for this proposed project included archival and other background research in addition to Native American consultation. The following section describes the research methods used in the investigation and the results of Native American consultation concerning the proposed project.

ARCHIVAL RESEARCH

Records Search

Archival research of the proposed project area was conducted by Linda Kry, B.A. on January 29, 2007 at the South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. The research focused on the identification of previously recorded cultural resources within a 0.5-mile radius of the project APE. The archival research involved review of archaeological site records, reports of previous cultural resources investigations, historic maps and historic site and building inventories.

The records search revealed that a total of seven cultural resource investigations were previously conducted within a 0.5-mile radius of the study area (Table 6). Three of these projects encompass a portion of the project APE (see Table 6). Less than five percent of the project APE has been previously surveyed.

Table 6. Previous Surveys Conducted within 0.5-Mile of the Project APE

Author	Report # (LA-)	Description	Date
ARM	2568	A Cultural Resource Assessment Conducted for a Ten Acre Parcel in Sierra Madre, Los Angeles County, California	1992
Bartoy, K.	7217	Los Angeles County Flood Control Water Line (Special Use Permit LAR101403) Angeles National Forest, Los Angeles County, California	2003
Bissell, Ronald M.	3308**	Cultural Resources Reconnaissance of the Madison/Cloverleaf Specific Plan Area, Monrovia, Los Angeles County, California	1993
Gilliland, Donald B.	1499	K.M.A.X. Radio Tower (Arcadia Electronic Site) A.R.R.	1985
Kerr, David	4734**	Clamshell Fuelbreak	1996
Unknown	6859**	Arcadia General Plan	1996
Woodward, Jim	247	Archaeological Survey of Lux Arboretum City of Monrovia, California	1988

** Indicates study overlapping with project area

The records search revealed that eight cultural resources were previously recorded within 0.5-mile radius of the proposed project; none of these were located within the boundaries of the APE (Table 7).

All eight of the previously recorded cultural resources within the 0.5-mile study area are historic in nature. No prehistoric resources have been previously recorded within the 0.5-mile study area.

Table 7. Previously Recorded Cultural Resources within 0.5 Mile of the Project APE

Permanent Trinomial (CA-LAN-)	P-Number (P-19-)	Other Number	Description	Date Recorded
2102H			Single historic wood frame structure	2/15/1993
2103H			Two historic period chimneys	2/15/1993
2106H			Site of former 1933 Monrovia survey monuments	2/03/1993
2109H			Historic concrete and wood plank channel	2/15/1993
	150019		Lux Arboretum property with associated structures (Built 1910-1927)	2/19/1993
	150025		Sierra Madre Ranger Station (Built 1936)	4/23/1992
	187817	2N31	Upper Clamshell Road	7/26/2006
	187819	2N41	Chantry Road	6/08/2006

NATIVE AMERICAN CONSULTATION

As part of this investigation, information concerning sacred lands located in the vicinity of the proposed project was solicited from the Native American Heritage Commission (NAHC). No sacred lands were reported. In addition, a Native American contact program was conducted to inform interested parties of the proposed project and to address any concerns regarding Traditional Cultural Properties or other cultural resources that might be affected by the proposed project. Initial contact was made in writing, with letters and response forms having been mailed to each representative on the NAHC list, on September 18, 2007. Copies of the contact letters are attached as Appendix B. Each letter was followed by a telephone call. Although no written responses were received, five representatives provided verbal responses. A brief description of each response is provided in Table 8.

Table 8. Native American Responses to Contact Program

Individual/Group Contacted	Date of Contact	Response To Follow-up Call	Date of Response
Ron Andrade, Director - LA City/County Native American Indian Commission	09/18/2007	Will review and coordinate with the local tribe-specifically Anthony Morales on this project.	10/12/07
Cindi Alvitre-Ti'At Society	09/18/2007	If human remains are encountered the coroner will be contacted and all laws regarding Native American human remains will be followed.	10/12/07
Mercedes Dorame, Tribal Administrator – *Gabrielino* Tongva Indians of California	09/18/2007	No phone number listed. Email sent to address listed-email was returned	n/a
Robert Dorame, Tribal Chair-*Gabrielino* Tongva Indians of California Tribal Council	09/18/2007	Mr. Dorame will contact us if he has any concerns or additional questions regarding the project.	10/15/07
Samuel H. Dunlap, Tribal Secretary-*Gabrielino*/Tongva Council/*Gabrielino* Tongva Nation	09/18/2007	Mr. Dunlap requests that archaeological monitoring be conducted during ground disturbance and that he be contacted should any Native American cultural resources be encountered.	10/15/07
Susan Frank-*Gabrielino* Band of Mission Indians of CA	09/18/2007	No Response.	
Charles Cooke	09/18/2007	No Response.	
Delia Dominguez – Kitanemuk and Yowlumne Tejon Indians	09/18/2007	No Response.	
Anthony Morales, Chairperson-*Gabrielino*/Tongva Tribal Council	09/18/2007	Mr. Morales is satisfied that we will follow procedure should any cultural resources be encountered.	10/16/07
John Tommy Rosas, Tribal Administrator-Tongva Ancestral Territorial Tribal Nation	09/18/2007	No Response.	
John Valenzuela, Chairperson San Fernando Band of Mission Indians	09/18/2007	No Response.	

Aside from a general concern about proposed project impacts to unknown cultural resources, none of the representatives contacted provided information pertaining to specific known resources of concern.

Cultural resources field surveys were conducted of the project APE as part of this cultural resources assessment. Field surveys focused on the identification of archaeological resources and historic architectural resources including buildings and structures. The methods and results of each are described in the following sections.

ARCHAEOLOGICAL SURVEY

Archaeological field surveys were conducted by Sara Dietler, B.A., and Linda Kry, B.A. on February 20, 2007, February 23, 2007 and October 11, 2007. The project APE for archaeological resources consists of sediment transportation and equipment routes, sediment placement sites, and staging areas included in the proposed project, Alternatives 2, 3, and 4.

The archaeological resources survey was conducted on foot with surveyors walking transects of no more than 10 to 20 feet apart, depending on survey conditions and ground visibility. Particular attention was paid to areas of good ground surface visibility. Rodent burrows and road cuts were inspected where possible for the presence of buried archaeological materials.

For the purposes of this discussion, the archaeological resources survey and results will be described in seven geographically-defined survey areas, which as a whole cover the entirety of the project APE. These areas include; Santa Anita Canyon Road, Santa Anita and Elkins Avenues, Sediment Placement Sites, SPS Staging Area, Santa Anita Wilderness Park Staging Area and Parking Lot and Sediment Transportation and Equipment Routes, LACDPW Maintenance Road, and Santa Anita Dam and Complex Area.

Santa Anita Canyon Road between the Terminus of Santa Anita Avenue and the Santa Anita Dam Access Road

Santa Anita Canyon Road is an entirely paved mountain road extending the terminus of Santa Anita Avenue on the north end and the Santa Anita Dam Access Road. Carved into the granite hillside, Santa Anita Canyon Road extends roughly in a north/south direction, although it is characterized by a number of curves and switchbacks. The west/northwest edge of the road is bounded by a steep upslope, while the south/southeast edge of the road is bounded by a precipitous downward slope. Metal barriers, guard rails and cobble and cement block walls have been constructed along the south/southeast edge (Plate 1). A marker inscribed "DC14/LACO/1973", possibly referring to a construction date, was observed in the wall near the entrance to the Santa Anita Dam Access Road. Intermittent drainages and culverts, as well as modern cliff stabilization were noted along the road at the creek crossing located in the U-bend near the south end of Santa Anita Canyon Road.

Because the Santa Anita Canyon Road is paved, archaeological surveyors focused on an inspection of the unpaved roadway shoulders. No archaeological resources were encountered in the portion of the project APE associated with the Santa Anita Canyon Road.

Santa Anita Avenue and Elkins Avenue

Santa Anita Avenue and Elkins Avenue are paved residential roadways in the City of Arcadia and make up the central and southwestern portion of the project APE. Because no ground surface is exposed within the roadway or immediately adjacent (no unpaved roadway shoulders exists along these street alignments), this portion of the project APE was not surveyed for archaeological resources.



Plate 1. View of Santa Anita Canyon Road with Guardrails and Cobble Wall, View to Northeast

Sediment Placement Sites

The project proposes to place sediment in the Middle SPS and to a lesser degree in the Lower SPS. The Middle SPS consists of relatively undisturbed vegetation including mature oak and pine trees, poison oak, vines, and prickly pear cactus. The vegetation ranges from extremely dense and impenetrable to accessible, although overall the ground surface visibility was less than 5%. Leaf litter covers the majority of the ground surface and some modern debris including large pieces of rusted metal, homeless camp debris, and shoes, was observed by surveyors. Soil observed in the Middle SPS is sandy with gravel, cobbles and boulders. Although the center portion of the Middle SPS appears relatively undisturbed, the mounded piles of dirt and boulders at the edges of the SPS suggest some degree of disturbance. Piles of cobbles were also noted intermittently throughout the Middle SPS, suggesting the area may have been used to deposit natural debris washed down the canyon (Plate 2). All accessible boulder outcroppings were inspected for possible prehistoric milling activities. No archaeological resources were encountered in the Middle SPS portion of the project APE.

Because the Lower SPS contains previously-placed sediment, none of the original ground surface in this portion of the project APE is exposed. Accordingly, this portion of the project APE was not surveyed for archaeological resources.



Plate 2. Middle Soil Placement Site: Typical Visibility and Rock Configuration

SPS Staging Area (North of the Upper SPS)

The SPS staging area is situated to the north of the Upper SPS. It is bound on its western margin by the main access road, paralleling the Santa Anita Wash. The north end of the staging area is a graded pad containing soils of sandy decomposing granite. Disturbances observed by archaeological surveyors in this portion of the project APE include a large bulldozer cut in the center of the pad and modern debris scattered about the surface. This area is covered with mature vegetation and granite boulders which are piled up against the nearby slope. A recently graded drainage extends along the eastern edge feeding into a cement culvert under the main access road. A modern rock ring was noted in the drainage. No archaeological resources were encountered in the SPS staging area and surrounding roads.

Santa Anita Wilderness Park Staging Area and Parking Lot and Sediment Transportation and Equipment Routes North to Reservoir

The Santa Anita Wilderness Park staging area is an open dirt area situated to the north of the Wilderness Park parking lot. The parking lot is a paved asphalt parking area (Plate 3)



Plate 3. Santa Anita Wilderness Park Parking Lot. View to North.

surrounded by cement and cobble walls on the east side, and chain link fencing on the south and west sides, with picnic areas that are located in clearings on the eastern side of the lot. The dirt staging area appears to be recently grubbed (Plate 4).

A dirt access road (sediment transportation and equipment route) located between the Wilderness Park Staging Area in the south and the reservoir in the north, extends approximately 1,000 feet before entering a tunnel. The tunnel opening is set in the hillside, just to the north of the Headworks. The door to the tunnel faces south. The façade around the two steel doors is cement and the structure itself is surrounded by solid rock. The tunnel was constructed in 1968. No cultural resources were encountered in this portion of the APE.

Archaeological surveyors focused on areas in this portion of the project APE where ground surface was visible including the open dirt area proposed as a staging area, edges of the parking lot, picnic area, as well as the dirt road extending northward to the tunnel. No archaeological resources were encountered in this portion of the project APE.

LACDPW Maintenance Road

The LACDPW maintenance road (Plate 5) extends between the northern edge of the Upper SPS staging area and the Santa Anita Wilderness Park. The road is dirt and has been graded. The soil



Plate 4. Staging Area to North of Wilderness Park Parking Lot. View to North

is decomposing granite and consistent with soils observed elsewhere in most other roadway locations within the project APE. A steep slope abuts the east side of the road, where it has been cut into the cliff. A stream channel runs along the western edge of the road. There are locked gates on either end of the maintenance road.

Archaeological surveyors inspected the road and the roadway shoulders for the presence of archaeological resources, but none were encountered.

Santa Anita Dam and Complex Area

The area surrounding the Santa Anita Dam and Complex consist of the Santa Anita Dam and a number of maintenance support structures. Access roads extend from Santa Anita Canyon Road into and around these facilities.

Archaeological surveyors inspected the roadway in areas where it was not paved as well as the adjacent shoulders in areas where it was paved. Soils along the unpaved portions of the roadways consist of decomposing granite with gravel and cobbles. Access from the roadway down to the reservoir water line is limited due to an extremely steep slope (Plate 6). Survey of these slopes was not conducted. No archaeological resources were encountered in this portion of the project APE.



Plate 5. County Maintenance Road. View to North Toward Nature Center.

HISTORIC ARCHITECTURAL RESOURCES SURVEY

A historic architectural resources survey was conducted by Christy Dolan, M.A., R.P.A and Sara Dietler, B.A. on September 13, 2007. The historic architectural resources survey addressed historic buildings and structures located within the project APE. For the purposes of this assessment, these resources have been designated the Santa Anita Dam and Complex and include the dam itself and five historic-era residential/maintenance support buildings. Although ancillary structures related to the dam are located adjacent transportation routes near the project APE, none of these occur within the project APE and accordingly are not evaluated as part of this assessment.



Plate 6. View of Santa Anita Reservoir from Reservoir Access Road to Southeast.

The Santa Anita Dam and Complex consists of the Santa Anita Dam, shelter house, hoist house, relief quarters, storage shed, sluice gate control house, dam keeper's house and garage, and paint shed. Figure 8 shows the relationship of the structures to one other. The dam was built in 1927. The dam keeper's house and garage, the sluice gate control house and the paint shed all appear to have been built in 1937. The shelter house was built in 1946. The hoist house, storage shed, and relief quarters appear to have been constructed in the 1960s or later. These last three structures will not be described as they are not more than 50 years old. Buildings at the Santa Anita Dam were marked with serial numbers that begin with "FC" for Flood Control.

Santa Anita Dam (1927)

The Santa Anita Dam is 230 feet high with a crest thickness of 7 feet, a base thickness of 61.5 feet and a crest length of 612 feet (Plate 7). The dam has two spillways. Spillway #1 is a side channel and Spillway #2 is at the center of the crest. Spillway #1 is a flat weir at the west end of the dam which discharges into a covered flume. It is approximately 20 feet long and 12 feet wide. This spillway sits under the shelter house (described below) and is approximately 10 feet below the crest of the dam. Spillway #2 is formed by a notch in the 3 feet high concrete parapet wall that is on the upstream side of the dam. It discharges water when it reaches the crest of the dam. The original spillway is approximately 90 feet long and 3 feet wide. An addition was made to the spillway which extends it another 14 feet downstream. This addition can be seen prominently in Plate 7. A hoist mechanism sits on the spillway addition.



Source: GoogleEarth 2007

Figure 8
Buildings Associated with Santa Anita Dam

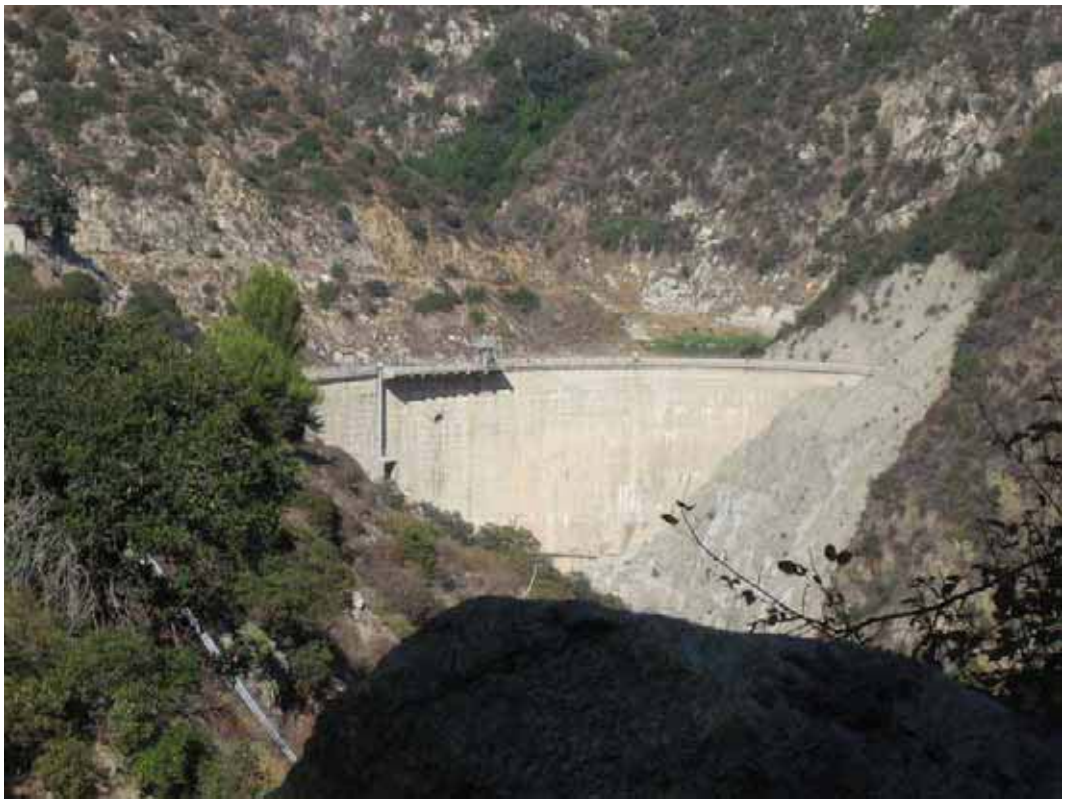


Plate 7. View of Santa Anita Dam, looking North

A chain link fence sits on top of the parapet wall, extending its height another three feet. The downstream side of the dam, where no parapet exists, has a chain link fence approximately 6 feet high. The dam is accessed by a series of concrete steps with a metal pole handrail. This allows access from the top of the dam to the bottom of the stream bed.

There are four outlets; an 18 in. gate valve near the bottom of the dam, a 20 in. gate valve about 50 feet higher, and two 30 in. needle valves that are 20 feet apart in elevation. A trash rack protects these outlets and the outlet tower is visible on the upstream side of the dam. The trash rack appears to have been constructed using old railroad rails. A sluice gate control house (described below) sits just west of the outlet tower on a projecting slab of concrete.

Alterations are listed in the Chronology of the Santa Anita Dam provided by the DPW. Most alterations have been relatively minor. There are several instances of grouting to reduce leaks (1929, 1931, 1945, 1960 etc.) In 1931, there were general repairs made as well as installation of additional bars on trash racks to prevent fish from entering the outlets. In 1934, the 30 in. outlet needles were replaced. In 1938, risers and trash racks were constructed for the 30 in. outlet pipes.

A major alteration was made in 1945 when a projecting slab supported by brackets was constructed along the downstream side of Spillway #2. It was 14 feet wide and 90 feet long. It

was intended to carry water away from the downstream face of the dam to protect workers who would operate flood discharge valves down below during a flood.

In 1963, the existing trashrack and 16 in. cast iron pipe riser was replaced with a 3.5 feet radius, semi-circular reinforced concrete riser and structural steel trashrack. In 1967, the 20 in. valve was replaced.

Dam Keeper's House and Garage (1937)

The Dam Keeper's Residence is a single story, stuccoed building with a covered porch on the main façade (Plate 8). The cross-gabled roof is clad in asphalt shingles. Louvered vents are at each apex of the roof. Windows are mostly metal sash windows, although some are fixed. The west façade has a plastered chimney that currently being repaired. The south façade contains a covered porch with a decorative metal railing. It is the main entrance to the house. The gable on this end is clipped, with a crescent shaped louvered vent in it. The rear (or north) elevation contains a single wooden door that leads to an entryway. A covered patio sits adjacent to this entrance. The original drawings for the house indicate it was built in 1937, the Office Engineer was W.B. Ream and the Chief Design Engineer was W. E. Chastison.



Plate 8. Dam Keeper's residence, looking Northeast.

A review of the original drawings for this house showed that several alterations have been made to the house since it was constructed. The house originally had wooden siding (which has been stuccoed) and an assortment of double hung windows, many with shutters. All of the windows have been changed out for metal sash windows without shutters and a few have been removed entirely. The porch originally had a wooden railing, not a metal one, and there was not originally an entryway or covered patio off the north façade.

The Dam Keeper's Garage is a single story, wood sided building with a moderately pitched roof covered in rolled asphalt (Plate 9). A metal roll up door is on the west façade. The building has a wooden porch extending from its south façade. This allows one to walk around the building as it sits over the slope. An open shed roof is attached to the north façade of the building.



Plate 9. Dam Keeper's garage (with residence behind), looking Northeast.

Paint and Explosives Shed (1936)

The Paint and Explosives Shed is a wooden shed that was used for storing paint and explosives until it was replaced by a newer structure (Plate 10). It is a single story building with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A single, wooden door is on the north façade and the east and west façades each have a single pivot window.

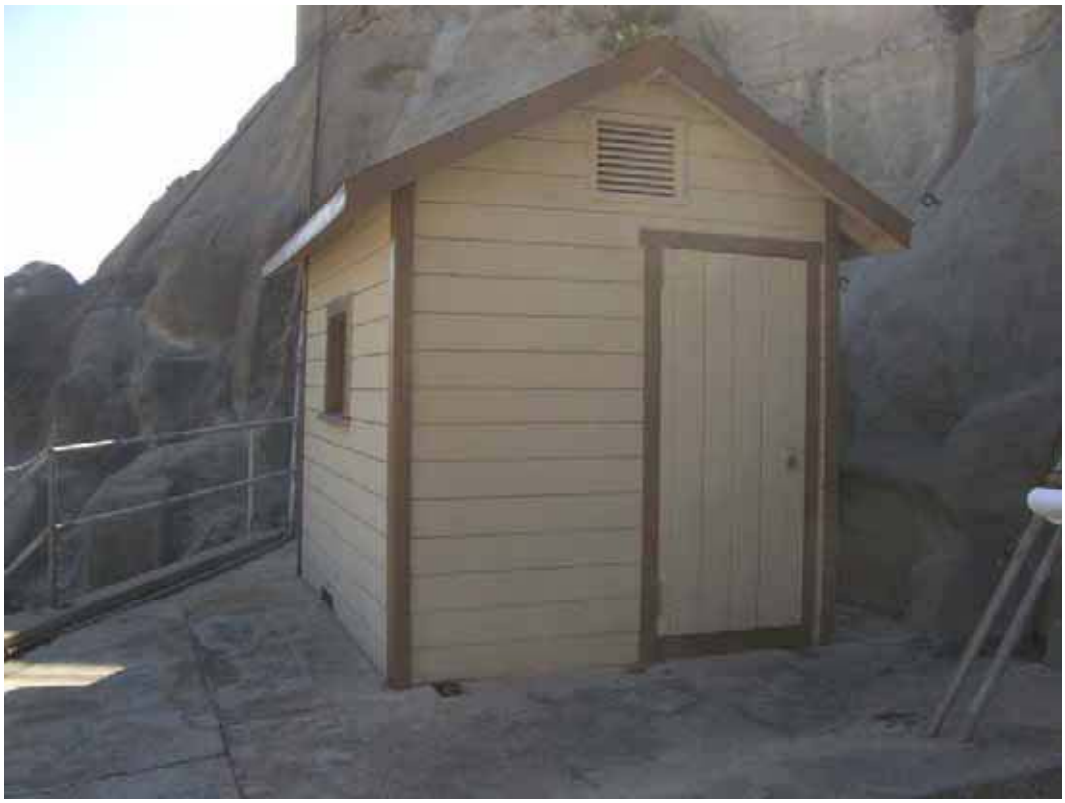


Plate 10. Paint Shed, looking South.

Sluice Gate Control House (1936)

The control house (Plate 11) is very similar to the paint shed in construction. It is a single story structure with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A large window opening is boarded up on the west façade. A single, wooden door is offset on the east façade.

Shelter House (1946)

The Shelter House (Plate 12) is a concrete, single story structure. The roof is flat, with a parapet and an 8 inch. vent. The north façade has a single wooden door with a glass light and a single, vented metal door. There are two small, single pane pivot windows in metal sashes. There are three top pivot windows with four lights on top and two fixed on the bottom. The building is approximately 18 by 18 feet. The original drawings for this structure indicate that it housed a generator, storage and shelter/radio room. They list the "Division Engineer In Charge of Design" as N. B. Ream and the plans were approved by H.E. Hedger.



Plate 11. Sluice Gate Control House, looking Northeast



Plate 12. Shelter House, Looking Southeast

SURVEY RESULTS

As a result of the cultural resources surveys conducted in connection with this assessment, no archeological resources and six historic-era buildings and structures were identified within the project APE.

EVALUATIONS AND RECOMMENDATIONS

The following discussion provides (1) an assessment of the National Register of Historic Places (National Register) and California Register of Historical Resources (California Register) eligibility of the resources identified as a result of the field survey, and (2) recommendations.

The criteria for evaluation of cultural resources for inclusion in the National Register of Historic Places are set forth in 36 CFR 60.4:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
B. that are associated with the lives of persons significant in our past; or
C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. that have yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing on the California Register. The California Register was designed to be used by state and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for the California Register (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852). A resource is considered significant if it:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or
2. is associated with the lives of persons important in our past; or
3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. has yielded, or may be likely to yield, information important in prehistory or history.

Applying the criteria set forth above, the resources identified (Santa Anita Dam and Complex) were evaluated for listing on both the National Register and the California Register. The assessment and application of eligibility criteria for each resource is provided below.

Significance Evaluation of the Santa Anita Dam and Complex

From 1914 to the 1950s, the Los Angeles County Flood Control District built numerous dams and structures in an attempt to control destructive flooding throughout the county. The Santa Anita Dam and associated buildings were part of that effort. Although these structures were constructed during a significant flood control effort, they played a small role relative to the larger dams such as San Gabriel or Big Tujunga. Therefore, they are not considered eligible under Criteria A or 1 for their association with significant events.

The Santa Anita Dam is associated with George Goethals, who oversaw the construction of the Panama Canal. Goethals oversaw all of the dams that were built under the same bond issue and he appears to have no special association with the Santa Anita Dam. Therefore, Criteria B and 2 do not apply.

Neither the Santa Anita Dam, nor its associated structures, embody a distinctive type, period or method of construction. Nor do they represent the same style or period of construction, having been constructed in stages between 1927 and 1946. Therefore, they are not eligible under Criteria C or 3.

Criteria D and 4 are usually reserved for archaeological sites. Since the Santa Anita Dam has been fully researched, there is no further information potential for the Santa Anita Dam. Therefore, the dam complex is not considered eligible under Criterion D or 4.

Recommendations

Six historic-era buildings and structures within the Santa Anita Dam Complex were identified during the historic architectural survey. The six identified buildings were recorded as part of the Santa Anita Dam Complex, on Department of Parks and Recreation (DPR) forms and will be assigned Primary numbers by the State Office of Historic Preservation. The resources were evaluated and are not considered eligible for National Register of Historic Places or California Register of Historical Resources listing.

Although the archaeological survey of the APE failed to reveal the presence of surface artifacts, some portions of the project APE may contain surface archaeological resources that were either obscured by vegetation or not visible to the surveyors, and may also contain subsurface archaeological materials. In the event any archaeological materials are encountered during earthmoving activities, the construction contractor shall cease activity in the affected area until the discovery can be evaluated by a qualified cultural resources specialist (archaeologist) in accordance with the provisions of Section 106 of the National Historic Preservation Act (36 CFR 800) and CEQA Section 15064.5. The LACDPW, the Corps, and the State Historic Preservation Office (SHPO) shall, at that time, engage in consultation to determine appropriate treatment measures for any resources determined to be significant.

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APPENDIX A
RESUMES OF KEY PERSONNEL

MONICA STRAUSS
Project Archaeologist

SUMMARY

Twelve years of experience in California archaeology

Trained in National Historic Preservation Act, Section 106 compliance

Directs field and literature research of prehistoric and historic southern California sites

Authors technical reports in support of CEQA and Section 106 compliance

Experience with sites containing prehistoric and historic human remains

Experience with excavation of complex coastal shell midden sites

EDUCATION

MA, Archaeology (Honors), California State University, Northridge, 2001

BA, Anthropology (Honors), California State University, Northridge, 1996

AA, Humanities, Los Angeles Pierce College, Woodland Hills, 1994

CERTIFICATIONS

Register of Professional Archaeologists

AFFILIATIONS

Society for American Archaeology

Society for California Archaeology

Monica Strauss is a project archaeologist with experience in cultural resources management and has participated in numerous archaeological investigations throughout southern California, the Baja peninsula and the Channel Islands. In addition to having earned a master's degree, she has worked in the field of archaeology since 1995.

As lead archaeologist for EDAW's Los Angeles and Pasadena offices, Ms. Strauss directs prehistoric and historic field and research projects throughout the area. She manages a staff who conduct various types of cultural resources compliance including phase I cultural resources surveys, construction monitoring, phase II archaeological investigations, and large-scale data recovery. Ms. Strauss prepares reports in support of CEQA and Section 106 compliance as well as cultural resources components for General and Specific Plans. As a result of extensive project work in the Los Angeles area, Ms. Strauss is well-versed in the history of the city. Her research interests include mid- to late- 19th century growth and development in Los Angeles and prehistoric maritime adaptation along the California coast. Ms. Strauss has specialized expertise in the analysis of groundstone tools and their ability to reflect shifts in resource exploitation.

REPRESENTATIVE EXPERIENCE

Central Los Angeles High School #9, Los Angeles, CA
Project Director
CLIENT: Los Angeles Unified School District
Directed staff of ten archaeologists in the data recovery of archaeological materials in connection with a 19th century cemetery in downtown Los Angeles. Currently managing the laboratory analysis of artifacts and human remains and the preparation of a technical report. Project has included construction monitoring, excavation and extensive historic research pursuant to CEQA and Health and Safety regulations.

State Route 90 Connector Road and the Admiralty Way Widening Projects, Marina del Rey, CA
Project Director
CLIENT: Los Angeles County Department of Public Works
Currently conducting Phase II investigations in compliance with Section 106 review. Designing research strategy, directing testing program, coordinating with Native American groups, and conducting evaluation pursuant to Caltrans guidelines.

Olive View Medical Center Emergency Services Expansion, Los Angeles, CA
Project Director
CLIENT: Los Angeles Department of Public Works
Directed a Phase I cultural resources evaluation of a portion of the Olive View Medical Center campus in Sylmar. Conducted a California Register eligibility assessment of the MacClay Highline, an underground spur of the Los Angeles Aqueduct. Prepared a Cultural Resources Technical Report and MND section with findings and recommendations for further work, pursuant to CEQA requirements.

MONICA STRAUSS

Lang Ranch Community Park, Thousand Oaks, CA
Project Director
CLIENT: Conejo Park and Recreation District
Directed a Phase I archaeological survey of the 46-acre project area. Project work involved the archaeological testing at two artifact isolate locations to determine presence of sub-surface deposits. Prepared an Archaeological Resources Technical Report and EIR section with findings and recommendations for further work, pursuant to CEQA requirements.

Woodland Duck Farm, Avocado Heights, CA
Project Director
CLIENT: San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy
Directed a Phase I cultural resources evaluation of the historic-era Woodland Duck Farm property. Conducted a California Register eligibility assessment for several duck farm buildings and archaeological features identified as a result of the survey. Conducted extensive background research concerning the history of the duck farm and poultry farming in general. Prepared a Cultural Resources Technical Report and MND section with findings and recommendations for further work, pursuant to CEQA requirements.

San Gabriel River Discovery Center at Whittier Narrows, Los Angeles County, CA
Project Director
CLIENT: Los Angeles Department of Public Works
Directed a Phase I cultural resources evaluation of the historic-era Discivery Center. Conducted a National Register and California Register eligibility assessment for several historic-era buildings identified as a result of the survey. Conducted background research concerning the history of the duck farm and poultry farming in general including consultation with local Native American representatives. Prepared a Cultural Resources Technical Report with findings and recommendations for further work, pursuant to NEPA and CEQA requirements.

Hellman Ranch Monitoring, Orange County, CA
Field Director
CLIENT: City of Seal Beach
Directed large-scale excavation and monitoring program under the terms of a Mitigation Plan. Coordinated twenty archaeological field personnel and worked closely with a staff of eight Native American monitors and construction crews. Field work included heavy-equipment monitoring, excavation of complex shell midden deposits and human remains, wet screening and artifact analysis.

Home Depot Monitoring – Lake Elsinore, Riverside County, CA
Project Director
CLIENT: Twining Laboratories, Fresno
Directed archaeological monitoring of Caltrans road-widening in vicinity of historic cemetery. Currently preparing negative report of findings. Coordinated with Caltrans.

Van Norman Reservoir Monitoring, Los Angeles County, CA
Project Director
CLIENT: City of Los Angeles, Department of Water and Power
Directed archaeological monitoring of geo-technical boring activities in the reservoir complex. Provided daily oversight of monitors and regular reports

to client.

Public Safety Facilities Master Plan, Los Angeles County, CA
Project Director
CLIENT: City of Los Angeles, Department of Public Work
Directed a Phase I archaeological resources evaluation of an approximately five-square block area in downtown Los Angeles. Project work involved an extensive investigation of the area during the cities' early pueblo years and specifically the Zanja Madre irrigation system. Prepared technical report with findings and recommendations for further work, pursuant to CEQA requirements.

San Clemente Island, Los Angeles County, CA
Project Director
CLIENT: U.S. Navy, Southwest Division
Designed research strategy and directed testing program in strict accordance with guidelines set forth by the U.S. Navy and in compliance with Section 106. Authored comprehensive technical report which considers the results of the testing program in relation to current California coast and San Clemente Island research questions and evaluates the sites for eligibility for the National Register.

Ivy Street Bridge, Murrieta, CA
Project Director (Cultural Resources Assessment)
CLIENT: T.Y. Lin International for the City of Murrieta
Conductedg Extended Phase I study in compliance with Section 106 review. Designing research strategy, directing testing program, coordinating with Native American groups, and conducting evaluation pursuant to Caltrans guidelines.

Alhambra 127, County of Los Angeles, CA
Project Director (Cultural Resources Assessment)
CLIENT: City of Alhambra
Conducted archival research in support of cultural resources assessment pursuant to CEQA requirements. Authored cultural resources technical section of Mitigated Negative Declaration.

Fire Station No. 13, Los Angeles, CA
Project Director
CLIENT: City of Los Angeles
Conducted archival research and historical architectural field survey in support of cultural resources assessment pursuant to CEQA requirements. Co-authored technical report.

Sepulveda Boulevard Reversible Lane, Los Angeles, CA
Project Director
CLIENT: City of Los Angeles
Directed built environment field survey and conducted archival research in support of cultural resources assessment in compliance with Section 106 and CEQA. Co-authored technical reports and consulted with Caltrans regarding effects to historical resources.

Lakewood Boulevard, Downey, CA
Project Director (Cultural Resources Assessment)
CLIENT: City of Downey
Directed field work and research in support of cultural resources assessment pursuant to CEQA requirements. Authored technical report.

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Lake Hodges, San Diego County, CA
Research Assistant
CLIENT: San Diego County Water Authority
Conducted study of groundstone tool collection and authored analytical report of findings.

Mid City Police Station, Los Angeles, CA
Project Director
CLIENT: City of Los Angeles, Bureau of Engineering
Managed research and field survey for architectural evaluation of historic-era structure and prepared technical report in compliance with CEQA.

Haiwee Dam, Lone Pine, CA
Field Archaeologist
CLIENT: City of Los Angeles, Department of Water and Power
Participated in archaeological field survey involving the identification and recording of prehistoric and historic archaeological sites and structures in preparation for the construction of a new dam.

Gateway Cities, Los Angeles County, CA
Project Director
CLIENT: County of Los Angeles, Department of Public Works
Conducted 28 records searches and reported on findings, including site surveys, previously-recorded archaeological sites, and historic structures.

Riverside OHV
Research Assistant
CLIENT: State of California
Conducted field reconnaissance and documented historic-era Lockheed facility.

Del Amo Blvd., Torrance, CA
Project Director (Cultural Resources Assessment)
CLIENT: City of Torrance
Conducted records search, archaeological field survey, historic structures documentation, historic research, and coauthored cultural resources assessment documentation in compliance with Section 106.

Arroyo Seco Bike Path, Los Angeles, CA
Project Director
CLIENT: County of Los Angeles, Department of Public Works
Managed all aspects of Section 106 review in accordance with Caltrans Cultural Resources Environmental guidelines. Orchestrated the research strategy, directed the field teams, and prepared cultural resources assessment documentation for approval by Caltrans and FHWA and cultural resources section for Mitigated Negative Declaration.

Hellman Ranch Monitoring, Orange County, CA
Field Archaeologist/Research Assistant
CLIENT: City of Seal Beach
Conducted archaeological monitoring and excavation of Native American burials discovered during construction of the Heron Point Development, a large housing development owned by John Laing Homes. Conducted research of prehistoric burials throughout southern California and performed comparative evaluation. Conducted in-depth analysis of large groundstone

tool collection.

Malibu Creek State Park, Malibu, CA
Research Assistant
CLIENT: California Department of Parks and Recreation
Conducted records search and general research of prehistoric and historic resources within the park in preparation of General Plan. Prepared historical overview and report identifying the nature and location of cultural resources. Directed Native American consultation.

Los Angeles Reservoir, San Fernando, CA
Field Archaeologist/Research Assistant
CLIENT: City of Los Angeles, Department of Water and Power
Conducted records search and intensive archaeological survey of portions of the Van Norman Archaeological District. Conducted research on the history of the dam, reservoir, and aqueduct complex and prepared historical overview for portion of the report.

Ambassador College, Pasadena, CA
Research Assistant
CLIENT: Worldwide Church of God
Conducted intensive research at both libraries and museums on the history of Pasadena and the development of the city's "cultural fabric." Assisted in the preparation of posters for presentation to clients and at public meetings.

Chapman College, City of Orange, CA
Field Assistant/Research Assistant
CLIENT: Chapman University
Assisted with the in-field documentation of historic structures. Consulted historic databases and libraries to define the historical evolution of the neighborhood and the design of specific buildings.

Vermont Avenue Relief Sewer, Los Angeles, CA
Project Director
CLIENT: City of Los Angeles, Bureau of Engineering
Conducted Phase I Archaeological Evaluation including records search, historic research, intensive site survey, and preparation of Technical Report.

Montrose Settlements Restoration Program, Los Angeles and Orange Counties, CA
Research Assistant
CLIENT: The National Oceanic and Atmospheric Administration
Conducted research and prepared report on the prehistory and history of the region along the coastlines of Los Angeles and Orange Counties and the eight Channel Islands with special attention to areas of cultural resource concentrations.

LMXU, San Diego County, CA
Research Assistant
CLIENT: Confidential
Conducted microlevel analysis of groundstone tool collection.

Cross Valley Connector, Los Angeles County, CA
Research Assistant
CLIENT: Caltrans
Conducted records search to identify prehistoric and historic cultural resources within the project area. Instigated contact with Native American

groups to document concerns.

Taylor Yard, Los Angeles County, CA
Research Assistant
CLIENT: California Department of Parks and Recreation
Conducted records search to identify cultural resources within the project area.

I-5 Manchester, San Diego County, CA
Research Assistant
CLIENT: Dokken Engineering for the City of Encinitas
Compiled profiles on properties within project area using property description database.

North Baja Pipeline Project, Ehrenberg, Arizona to Mexican Border
Field Archaeologist
CLIENT: Pacific Gas and Electric
Excavated, surveyed, and mapped (using a submeter GPS) prehistoric sites for the installation of a natural gas pipeline going from Blythe, California, to Yuma, Arizona.

San Clemente Island Testing Project, Los Angeles County, CA
Field Archaeologist
CLIENT: ASM Affiliates for the U.S. Navy, Southwest Division
Conducted excavation; auger testing; and site mapping, recording, and relocating of archaeological sites.

San Clemente Island Site Relocation Project, Los Angeles County, CA
Field Archaeologist
CLIENT: KEA Environmental for the U.S. Navy, Southwest Division
Participated in relocation, survey, and recording of prehistoric and historic sites.

San Clemente Island Eel Point Excavation, Los Angeles County, CA
Field Archaeologist/Research Assistant
CLIENT: In coordination with California State University, Northridge
Conducted excavation of multicomponent shell midden site and analysis of artifactual and ecofactual components.

Baja California Sur Site Survey Program, Baja California, Mexico
Field Assistant
CLIENT: In coordination with the University of Baja California Sur, La Paz
Participated in site survey and recording, including the illustration of rock art.

Center for Public Archaeology, California State University Northridge, California
Lab Assistant
Conducted shell, faunal, and lithic analysis, cataloging, and general curation.

MONICA STRAUSS

PROFESSIONAL PAPERS

Strauss, M. 2000. Trans-Holocene Use of Milling Tools in a Maritime Environment, Eel Point, San Clemente Island. Oral Presentation at the Society for California Archaeology Meeting, Riverside, California, April.

Strauss, M. and S. Dietler 2006. Bones, Beads and Bowls: Variation In Habitation And Ritual Contexts At Landing Hill. Oral Presentation at the Society for California Archaeology Meeting, Ventura, California, April.

SELECTED REPORTS

Archaeological Evaluation Proposal (Phase II) of the Admiralty Site (CA-LAN047) for the State Route 90 Connector Road and the Admiralty Way Widening Projects, Marina del Rey, County of Los Angeles, CA (with J. Dietler and S. Dietler). Prepared for Caltrans District 7. EDAW, Inc. (2007).

Cultural Resources Assessment for the Proposed San Gabriel River Discovery Center at Whittier Narrows, Los Angeles County, CA (with A. Tomes and J. Dietler). Prepared for Los Angeles County Department of Public Works (2007).

Cultural Resources Assessment for the Woodland Duck Farm Project, Avocado Heights, Los Angeles County, CA (with A. Tomes and S. Dietler). Prepared for San Gabriel River & Lower Los Angeles Rivers and Mountains Conservancy (2007).

Archaeological Resources Assessment for the Olive View Medical Center Emergency Services Expansion, City of Los Angeles, CA. Prepared for Los Angeles County Department of Public Works (2006).

Archaeological Resources Assessment and Phase II Testing Program for the Proposed Lang Ranch Community Park Project, Thousand Oaks, CA. Prepared for Conejo Recreation and Park District (2006).

Archaeological Resources Assessment for the Proposed Public Safety Facilities Master Plan Project, City of Los Angeles, CA. Prepared for City of Los Angeles, Department of Public Works (2004).

An Archaeological Evaluation of Four Sites in the Quarry and Ridge Road Vicinities, San Clemente Island, California. Prepared for Southwest Division, Naval Facilities Engineering Command, NRO. (2004).

Cultural Resources Assessment for the Proposed Lakewood Boulevard Improvement Project, City of Downey, CA (with A. Tomes). Prepared for City of Downey. EDAW, Inc. (2003).

Proposal for Extended Phase I Testing of CA-RIV-1085 and CA-RIV-1086 for the Proposed Ivy Street Bridge Project, City of Murrieta, CA. Prepared for Caltrans District 8. EDAW, Inc. (2003).

Historic Property Survey Report: Sepulveda Boulevard Tunnel at Mulholland Drive in Connection with the Proposed Sepulveda Boulevard Reversible Lane and Bike

Lanes Project, City of Los Angeles, CA (with A. Tomes). Prepared for City of Los Angeles. EDAW, Inc. (2003).

Historical Architectural Evaluation of the Sepulveda Boulevard Tunnel at Mulholland Drive in Connection with the Proposed Sepulveda Boulevard Reversible Lane and Bike Lanes Project, City of Los Angeles, CA (with A. Tomes). Prepared for City of Los Angeles. EDAW, Inc. (2003).

Cultural Resources Assessment for the Proposed Lakewood Boulevard Improvement Project, City of Downey, CA (with A. Tomes). Prepared for City of Downey. EDAW, Inc. (2003).

Lake Hodges: Milling Tool Analysis. San Diego County, CA (with R. Apple). Prepared for San Diego County Water Authority. EDAW, Inc. (2003).

Historical Architectural Survey and Evaluation for the Proposal Mid-City New Police Station Project, City of Los Angeles, CA (with C. Dolan). Prepared for City of Los Angeles. EDAW, Inc. (2003).

Historical Resources Evaluations Report for the Proposed Del Amo Boulevard Extension Project, City of Torrance, CA (with C. Dolan). Prepared for City of Torrance. EDAW, Inc. (2003).

Historical Resources Evaluation Report for the Proposed Arroyo Seco Bike Path Project, County of Los Angeles (with C. Dolan). Prepared for County of Los Angeles. EDAW, Inc. (2003).

Malibu Creek State Park General Plan, City of Calabasas, CA (with E. Wilson). Prepared for California Department of Parks and Recreation. EDAW, Inc. (2003).

Archaeological Survey for the Proposed Vermont Avenue Relief Sewer, City of Los Angeles, CA. Prepared for City of Los Angeles. EDAW, Inc. (2003).

Montrose Settlements Restoration Project: Preliminary Planning Report. (with K. Myers) Prepared for the National Oceanic and Atmospheric Administration. EDAW, Inc. (2003).

Taylor Yard State Park General Plan, Los Angeles, CA (with E. Wilson). Prepared of California State Parks and Recreation. EDAW, Inc. (2003).

PUBLIC OUTREACH AND EDUCATION

2006. Guest lecturer at Laurel Hall Elementary and Middle School regarding archaeology in southern California, North Hollywood, CA.

2003. Volunteer lecturer and field advisor at San Clemente Island Field School.

2003. Key speaker at Seal Beach Historical Society community outreach meeting regarding findings from the Hellman Ranch Archaeological Sites, Seal Beach, CA.

2002. Guest lecturer at Rosemead Elementary School regarding career opportunities in cultural resources management, Rosemead, CA.

1998–2000. Appointment at California State University, Northridge,

MONICA STRAUSS

Anthropology Department. Directed undergraduate peer student advisement center, counseled students regarding course selection, graduation preparation, and employment opportunities.

CHRISTY DOLAN, MA
Historical Archaeologist

SUMMARY

Advanced degree in historical archaeology

More than 15 years of field experience

EDUCATION

MA, Anthropology, Concentration Historical Archaeology, College of William and Mary, 1994

BA, History and Anthropology, University of New Hampshire, 1985

AFFILIATIONS

Society for Historical Archaeology

Society for California Archaeology

CERTIFICATION

Register of Professional Archaeologists (RPA)

Museum Studies Certificate Program, Harvard University

Christy Dolan has 15 years of experience in the study of historic period archaeological and architectural resources. Her archaeological experience includes document research; surveys; and excavations of 18th, 19th, and 20th century sites in California, Arizona, Nevada, Colorado, Virginia, and throughout New England. She has authored documents that represent the results of historic studies, surveys, inventories, evaluations, and preservation plans. Her work with several cultural resource management firms has broadened her knowledge of procedures for both the NHPA and CEQA and has allowed her to work with a variety of federal agencies.

Ms. Dolan has conducted numerous architectural surveys and is conversant with architectural styles and terminology for a broad array of structures, including military, industrial, municipal, commercial, and residential buildings. She has completed many special studies of the built environment, including National Register nominations, HABS, HAER, and National Historic Landmark nominations. She has a broad knowledge of material culture, building styles, and structural engineering practices in the 19th and 20th centuries.

Ms. Dolan is also actively involved in museum work and public outreach, and has given lectures to both the public and professional community. She has created numerous exhibits and put together several type collections. Her dedication to the field has been exemplified by her efforts to increase public appreciation of the subject through her lectures and museum work.

HISTORIC PRESERVATION

Seacoast Fortifications Preservation Manual, San Francisco, CA
Historian
CLIENT: National Park Service
Conducted archival research and interviewed informants for the creation of a preservation manual for the Seacoast Fortifications at the San Francisco Presidio.

Conditions Assessment Report for the San Diego Presidio, San Diego, CA
Archaeologist
CLIENT: City of San Diego
Prepared report on the San Diego Presidio outlining past archaeological work, current conditions of the archaeological remains, and recommendations for short-term goals for preservation of the site.

Society for the Preservation of New England Antiquities Project, Boston, MA
Historical Archaeologist
CLIENT: Society for the Preservation of New England Antiquities (SPNEA)
As museum studies intern, conducted archival research and assisted in the preparation of an archaeological management plan for the Society for the Preservation of New England Antiquities property in South Berwick, Maine.

CHRISTY DOLAN, MA

El Cuervo Adobe Conditions Assessment Report, San Diego, CA
Historical Archaeologist
CLIENT: City of San Diego
Assembled team of specialists to prepare a conditions assessment of the El Cuervo adobe ruins in Los Peñasquitos Preserve. Prepared historic background and overview for report and presented results of the study to several interested groups.

Black Canyon Road Bridge Historic American Engineering Record Documentation and Historic Preservation Plan, San Diego County, CA
Historian
CLIENT: County of San Diego
Prepared Historic American Engineering Record documentation and Historic Preservation Plan for concrete bridge built in 1913. Conducted extensive historical research, including a patent search.

Walking Box Ranch Master Plan and Preservation Plan, Searchlight, NV
Historical Archaeologist
CLIENT: ARG
Conducted archaeological survey and prepared report to update the results of a previous survey of Walking Box Ranch, a ranch once owned by silent film stars Clara Bow and Rex Bell. Provided input into future use of the site and preservation of significant archaeological resources.

Cumbres & Toltec Scenic Railroad Cultural Landscape and Archaeological Assessment, Colorado
Historical Archaeologist
CLIENT: UNiT
Conducted reconnaissance survey of Colorado portion of the Cumbres & Toltec Scenic Railroad between Antonito and Cumbres. Identified archaeological sites, discussed their historic significance, and made recommendations for preservation and future interpretation.

LAND DEVELOPMENT PROJECTS

Harper Lake Specific Plan; Cultural Resources Constraints Report, San Bernardino County, CA
Historical Archaeologist
CLIENT: ENSR International
Conducted site visit and prepared report identifying archaeological sites and constraints for a proposed 3,300-acre Specific Plan area near Barstow, California.

Caltrans Headquarters Archaeological Monitoring, San Diego, CA
Historical Archaeologist
CLIENT: Department of General Services
Supervised monitoring program for Caltrans District 11 new headquarters building. Oversaw staff monitoring soil remediation activities as well as construction and demolition activities. Coordinated monitoring with construction contractor and consulted with SHPO on discoveries.

Ballpark Monitoring, San Diego, CA
Historical Archaeologist
CLIENT: Sverdrup/CCDC
Supervised the archaeological monitoring for 12-block area in downtown San Diego. Recorded several features related to early settlement of San Diego. Responsible for all monitoring activities, related excavation, and for responsiveness to the needs of the client and the schedule.

San Diego City Schools EIR, San Diego, CA
Historian/Archaeologist
CLIENT: Cotton/Bridges/Associates
Conducted historic research, archaeological survey, architectural survey, and evaluation of several neighborhoods as part of an EIR. Prepared technical report with the findings.

Caltrans Headquarters Cultural and Historical Research Report, San Diego, CA
Historical Archaeologist
CLIENT: State of California Department of General Services
Conducted historic research and prepared documentation for the Caltrans District 11proposed building. Assessed potential for archaeological resources through intense historical research including a review of Sanborn fire insurance maps and aerial photographs for an area that was first settled in the late 19th Century. Followed up with the creation of a research design and testing plan for archaeological resources.

Russell Lands Master Plan, Tallapoosa County, AL
Project Manager/Historian
CLIENT: Russell Lands
Conducted oral histories, archival research, and site visits. Collected information was used to prepare sustainable and compatible master planning documents and inform design.

City of San Diego On-call Cultural Services, San Diego, CA
Historical Archaeologist
CLIENT: City of San Diego
Laboratory director for project in Old Town San Diego. Responsible for assessing previously catalogued historic materials and providing consultation to the City on the best treatment and curation plan for the artifacts.

Pacific Design Center Cultural Resource Survey, West Hollywood, CA
Historical Archaeologist
CLIENT: City of West Hollywood
Conducted historic research and prepared document assessing the potential for the presence of archaeological resources. Reviewed Sanborn fire insurance maps, early photographs, and historical accounts to determine the archaeological sensitivity for the property.

Chapman University Cultural Resource Survey, Orange, CA
Historical Archaeologist
CLIENT: Chapman University
Performed an inventory of 25 properties within the historic urban core of Orange. Conducted historical research and architectural assessments for each property within the project area. Also assessed potential for the presence of subsurface cultural resources through review of Sanborn fire insurance maps.

CHRISTY DOLAN, MA

Public Safety Facilities Master Plan, Historical Assessment, Los Angeles, CA
Project Manager
CLIENT: City of Los Angeles, Bureau of Engineering
Oversaw historical assessment of 1950s building that serves as the Los Angles Police headquarters. Also assessed associated landscaping. The landscaping and building were designed by architect Welton Beckett. Prepared the technical report, which evaluated the resources and assesses impacts.

Pine Hill Barracks Historic American Building Survey Documentation, San Diego, CA
Historical Archaeologist
CLIENT: USDA Forest Service
Directed the investigation of HABS documentation for a Depression-era fire station.

River Islands Architectural History Report, Lathrop, CA
Historian
CLIENT: City of Lathrop
Conducted fieldwork to record and evaluate early farming and ranching buildings in Lathrop. Resources within the project area included irrigation canals, early 20th century dairy, late 19th century railroad, and farming/ranching complexes from 1900-1950. Results were summarized for inclusion in an EIR.

SEMPRA On-call Cultural Services, San Diego, CA
Archaeologist
CLIENT: Sempra Energy
Supervised the archaeological monitoring of Sempra's remediation excavations on downtown San Diego Block 157. This is the location of Station A, which began the production of gas in the 1880s and continued until the 1950s. Recorded several features relating to gas production that began in the 1880s on this block. Victorian-era household goods were also recorded. Currently in the process of preparing the report documenting the findings.

Ballpark Remediation, San Diego, CA
Archaeologist
CLIENT: Centre City Development Corp.
Supervised the archaeological monitoring of 12-block area in downtown San Diego. Recorded archaeological features related to the industrial and domestic activities that began in the late 1800s. Currently conducting archival research utilizing census data and city directories that will be compiled with a GIS database to aid in the interpretation of the archaeological data.

Ballpark Infrastructure, San Diego, CA
Archaeologist
CLIENT: Sverdrup Civil, Inc.
Supervised the archaeological monitoring of the demolition of a 12-block area in downtown San Diego. Excavated and recorded archaeological features relating to household and industrial activities in the area from the late 1800s to the 1950s. Currently analyzing the data and creating a report to document the findings.

CHRISTY DOLAN, MA

San Diego Courthouse Project, San Diego, CA
Archaeologist
CLIENT: County of San Diego
Conducted archival research for a downtown San Diego block to determine the potential for archaeological features. Prepared a report with the findings and submitted it to the County of San Diego. Subsequent work focused on monitoring geotechnical trenching on this block.

San Diego Army Barracks Project, San Diego County, CA
Archaeologist
CLIENT: Catellus Development Corporation
Conducted historical research and test of mid-19th century Army barracks. Used both remote sensing and excavation methods. Prepared report on the findings.

Los Angeles County Courthouse EIR, Los Angeles, CA
Historian
CLIENT: Burns and McDonnell
Conducted archaeological and architectural survey of four city blocks. Conducted in-depth historic research for each of the blocks and recorded and assessed several buildings. Prepared technical reports and EIR sections with findings.

Historical Research for Parcel 2 (Block M299/775) of the Santa Fe Depot Composite Site, San Diego, CA
Historical Archaeologist
CLIENT: Bosa Development
Conducted archival research for a downtown San Diego block and former railroad freight yard to determine the potential for archaeological remains. Compiled data from Sanborn fire insurance maps, historic photographs, historic parcel maps, and railroad documents. Proposed a preexcavation trenching plan to explore archaeologically sensitive areas identified by the historic research.

Mission Santa Barbara Project, Santa Barbara, CA
Historical Archaeologist
CLIENT: National Park Service
Recorded archaeological remains at Mission Santa Barbara in order to revise National Historic Landmark forms and determine the boundaries. Conducted extensive mapping using AutoCad technology.

National Register Eligibility Evaluation for the House Located at 842 Second Street, San Diego County, CA
Historian
CLIENT: County of San Diego
Conducted architectural survey for the City of Encinitas. Prepared a technical report for a 1920s Tudor Eclectic-style house.

Sierra Pacific Industries/BLM Land Exchange Project, Weaverville, CA
Historical Archaeologist
CLIENT: Sierra Pacific Industries
Conducted archaeological survey and archival research of mining-period resources.

Carlsbad Ranch Cultural Resource Survey, San Diego County, CA
Historical Archaeologist
CLIENT: City of Carlsbad
As project archaeologist, conducted a site records search and survey for a development project in Carlsbad. Coauthored a cultural resources survey report.

Montgomery Residence Cultural Resource Survey, San Diego County, CA
Historical Archaeologist
CLIENT: City of San Diego
As project archaeologist, conducted a site records search and survey in La Jolla. Coauthored a cultural resources survey report for this residential property.

Turner House Excavation, Salem, MA
Historical Archaeologist
CLIENT: Lorinda Goodwin
As project archaeologist, supervised and conducted public interpretation of an excavation of a house occupied in the 17th, 18th, and 19th centuries.

Public Archaeology Laboratory Archaeological Investigations, Pawtucket, RI
Historical Archaeologist
CLIENT: Various Clients
As project archaeologist, prepared reports and supervised archaeological investigations of both historic and prehistoric sites throughout New England. Identified and catalogued cultural material from a variety of sites in Massachusetts ranging from the 17th century to the 19th century. Developed ceramic type collection for 16th century and 17th century sites, and set up archaeological exhibits. Instructed new employees in the use of the computerized cataloguing system.

California Cordage Company Historic American Buildings Survey (HABS), Orange, CA
Project Manager for Historical Resources
CLIENT: Chapman University
Oversaw the HABS documentation of an old industrial complex in Orange, California. This included extensive historic research, oral histories, large format photo-documentation, and documentation of the architectural features of the building. The end result was a comprehensive historic context, architectural description, and photographic depictions of the resource.

Simpson Farms, San Diego County, CA
Project Manager for Historical Resources
CLIENT: PBS&J
Recorded and evaluated Simpson Farms, a farming complex that was originally constructed in the 1890s. Conducted historic research including a review of historic maps, photographs, newspaper accounts, and local histories. Oral interviews were also conducted to learn more about the original builders and alterations to the complex.

CHRISTY DOLAN, MA

FEDERAL PROJECTS

Disaster 1464-DR-TN, Nashville, TN
Historic Resource Specialist
CLIENT: Federal Emergency Management Agency, Region IV
Processed more than 1,000 projects related to repairs to damage caused in 56 counties by a tornado and associated storms in May 2003. Worked for 3 months on projects that included repairs to utility lines, buildings, bridges, culverts, drains, and other structures that sustained damage and were 50 years or older. Coordinated with SHPO to ensure that all projects being funded by FEMA complied with federal regulations. Conducted archaeological surveys in areas where ground disturbance was required and provided results to SHPO for concurrence.

Disaster 1539-DR-FL, Hardee County, FL
Long-Term Recovery Planner - Historic Resource Specialist
CLIENT: Federal Emergency Management Agency, Region IV
Worked with team of planners, engineers, and other specialists to assist communities with developing plans for their long-term recovery following several hurricanes in 2004. Tasks included conducting meetings with stakeholders, the general public, and local officials to determine the needs of the community; identifying and developing projects to address long-term recovery needs; and coordinating with representatives from other federal agencies to keep them informed of projects and community needs. Wrote several projects for Long-Term Recovery Plan and helped produce the final products.

Disaster 1551-DR-FL, Santa Rosa County, FL
Long-Term Recovery Planner - Historic Resource Specialist
CLIENT: Federal Emergency Management Agency, Region IV
Worked on team of planners, engineers, and other specialists to assist communities with developing plans for their long-term recovery following Hurricane Ivan in 2004. Worked with stakeholders, the general public, and local officials to determine the needs of the community and to identify and develop projects to address long-term recovery needs. Coordinated with representatives from other federal agencies to keep them informed of projects and community needs. Wrote several projects for Long-Term Recovery Plan.

Disasters 1607-DR-LA, Baton Rouge and New Orleans, LA
Long-Term Recovery Planner – Group Leader
CLIENT: Federal Emergency Management Agency, Region VI
Coordinated more than 250 planners, engineers, and other specialists on 19 teams who were assisting communities with developing plans for their long-term recovery following Hurricanes Rita and Katrina in 2005. Provided training, staffing assistance, and Oversaw the production of dynamic web-based long-term recovery planning tool Coordinated with representatives from other federal agencies (NOAA, HUD, EPA, etc.) to keep them informed of projects and community needs.

ENERGY AND TRANSMISSION PROJECTS

North Baja Pipeline Project, Ehrenberg, Arizona to Mexican Border
Historical Archaeologist
CLIENT: Foster Wheeler
Historical archaeologist on an international pipeline. Responsible for archival research, overseeing artifact analysis, site evaluation, and data recovery.

Historic sites included a railroad town, a stage stop, historic roads, and numerous can scatters.

Coronado 69 kV Utilities Relocation Area Monitoring, San Diego, CA
Historical Archaeologist
CLIENT: Sempra Energy and Utilities
Prepared historic analysis for report documenting two buried historic features discovered during monitoring.

Imperial Irrigation District M-line Pole Replacement Survey, Imperial Valley, CA
Historical Archaeologist
CLIENT: Imperial Irrigation District
Conducted historical research and archaeological survey of 40-mile segment of transmission line that stretched between El Centro and Niland in southern California. Recorded seven sites and three isolates, including historic trash deposits, an early 20th century railroad stop, and debris from railroad construction camps. Prepared Cultural Resources Inventory Report with the findings.

Tuscarora Gas Transmission Line Nontechnical Report, OR, CA, and NV
Historical Archaeologist
CLIENT: Tuscarora Gas Transmission Company
Wrote historical section and contributed to the preparation of a brochure that interpreted the archaeological investigations for the 229-mile Tuscarora Gas Transmission Line project.

MILITARY PROJECTS

Air Station San Francisco EA – Public Works Building, San Francisco, CA
Historic Resources Specialist
CLIENT: U.S. Coast Guard
Conducted review of historic resources on Air Station San Francisco and prepared sections for an EA that evaluated the impacts of constructing a new public works building. This included evaluating potential impacts from the demolition of a structure eligible for inclusion in the National Register of Historic Places.

National Register Eligibility Assessment for Naval Base Ventura County, Port Hueneme, CA
Historic Resources Specialist
CLIENT: U.S. Navy, Southwest Division, Naval Facilities Engineering Command
Recorded and evaluated more than 40 buildings for eligibility for the NRHP. Conducted extensive research to provide a context that could be used to assess each building.

El Centro Weapons Impact Scoring Set (WISS), El Centro, CA
Project Manager for Historical Resources
CLIENT: U.S. Navy, Southwest Division, Naval Facilities Engineering Command
Worked on Cultural Resources Inventory for the proposed Weapons Impact Scoring Set (WISS) on Range 2512 of the Naval Air Facility, El Centro. Archaeological research included a records and literature search and an archaeological field survey to determine if cultural resources potentially

eligible for the National Register of Historic Places would be affected by the proposed project or project alternative.

Cultural Resource Inventory Survey at Salton Sea Test Base, Imperial County, CA
Laboratory Director
CLIENT: U.S. Navy, Southwest Division
Oversaw laboratory analysis of artifacts collected during an evaluation program for 170 sites. Compiled tables and coordinated with specialists for complex analysis of artifacts.

Eglin Air Force Base Architectural Inventory, Fort Walton Beach, FL
Historian
CLIENT: Eglin Air Force Base, Cultural Resources Division
Conducted inventory of 150 military structures from World War II and the Cold War era. Created a site record for each structure and compiled the data into a database to be included in a report.

Tustin Historic American Buildings Survey, Orange County, CA
Historian
CLIENT: U.S. Navy, Southwest Division
Prepared written document and oversight of photographic documentation for two World War II-era blimp hangars.

P-527 Historic Railroad Study, MCB Camp Pendleton, San Diego County, CA
Historical Archaeologist
CLIENT: U.S. Navy, Southwest Division
Surveyed segment of historic railroad at Camp Pendleton. Systematically recorded the railroad ties, tie plates, rails, rail connectors, trestles, and associated artifacts. Prepared report on findings.

HARP for the Fleet Antisubmarine Warfare Training Center, San Diego County, CA
Historian
CLIENT: U.S. Navy, Southwest Division
Completed survey of 11 buildings in San Diego that predated 1947 and 50 Cold War-Era buildings. Compiled data in a database program.

Cultural Resource Phase I Inventory Report for Small Arms, Demolition Ranges, and Training Areas on San Clemente Island, Los Angeles County, CA
Historical Archaeologist
CLIENT: U.S. Navy, Southwest Division; SRS
Inventoried historic resources on San Clemente Island including World War II-era military sites, Chinese abalone camps, and sites relating to the early ranching period on the island.

MCAS Yuma EIS and Technical Report, Yuma County, AZ
Historical Archaeologist
CLIENT: MCAS Yuma
Conducted oral history interviews, and prepared a technical report and the cultural resource portion of an EIS, evaluating alternative means of increasing ordnance storage.

CHRISTY DOLAN, MA

Archaeological Survey, MCB Camp Pendleton, San Diego County, CA
Historical Archaeologist
CLIENT: U.S. Navy, Southwest Division
Managed archaeological survey of target ranges at Camp Pendleton.

Evaluation of Historic Sites and Eligibility for the NRHP, Naval Air Facility El Centro, CA
Historical Archaeologist
CLIENT: U.S. Navy, Southwest Division
Investigated early 19th century historic sites related to early homesteading in Imperial Valley. Conducted a testing and evaluation program.

Los Angeles Air Force Base Contextual Study, Los Angeles, CA
Historian
CLIENT: Air Force Materiel Command
Conducted historic research at the Los Angeles Air Force Base, a Space and Missiles System Center. The information was used to create a contextual study for the base.

WATER PROJECTS

Emergency Storage Project, San Diego County, CA
Historical Archaeologist
CLIENT: San Diego County Water Authority
Supervised the archaeological investigations for an early homestead site in San Diego as well as investigations of the historical town of Foster. Created historic context, research design, and testing plan. Implemented testing plan and, based on those results, prepared a data recovery plan.

San Vicente Dam HAER, San Diego, CA
Historian
CLIENT: San Diego County Water Authority
Conducted research and prepared HAER documentation for a gravity dam built in the 1930s. Coordinated large format photography of the structure.

Riverside Canal Tunnel HAER, Riverside, CA
Historian
CLIENT: City of Riverside
Conducted fieldwork to record and evaluate a 19-mile canal in Riverside that was scheduled to be upgraded and relined. Surveyed entire length of the late 19th century canal and provided map that identified the degree of integrity retained by the various segments. Provided HAER documentation for two of the segments that retained the highest degree of integrity. This included a detailed history, large format photographs, and an architectural description.

TRANSPORTATION PROJECTS

Las Vegas Supplemental Airport EIS, Las Vegas and Primm, NV
Project Manager, cultural resources
CLIENT: ENSR International
Manager for large alternatives study for a proposed supplemental airport for Las Vegas. Oversaw archaeological and architectural reconnaissance surveys. Upcoming work includes archaeological survey of 17,000 acres in the Nevada desert.

CHRISTY DOLAN, MA

Davis Railroad Depot Survey, Davis, CA
Historical Resources
CLIENT: City of Davis
Conducted archaeological survey and prepared an HPSR for a late 19th century railroad depot.

Marina Drive Bike Path, Seal Beach, CA
Historian/Archaeologist
CLIENT: City of Seal Beach
Conducted National Register eligibility study for several historic buildings under Caltrans guidelines. Prepared HRER with the findings and coordinated with Caltrans to define APE.

Indian Canyon Drive and Bridge Widening, Palm Springs, CA
Historian
CLIENT: City of Palm Springs
Conducted National Register eligibility study for several historic buildings and structures under Caltrans guidelines. Prepared HRER with the findings.

Plaza Boulevard Widening, National City, CA
Historian/Archaeologist
CLIENT: City of National City
Conducted National Register eligibility study for several historic buildings and structures under Caltrans guidelines. Prepared HRER with the findings Completed archaeological survey and records search and prepared ASR. As part of this study, conducted Native American contact program.

Pacific Street Bridge Architectural and Cultural Resources Survey and Evaluation, San Diego, CA
Historian
CLIENT: City of Oceanside
Conducted historic research and archaeological survey, and prepared HASR and ASR. Assessment conducted following Caltrans guidelines.

South Santa Fe Avenue Reconstruction Project, Vista, CA
Historian
CLIENT: County of San Diego
Conducted National Register eligibility study for several historic buildings and structures under Caltrans guidelines. Prepared HRER with the findings.

West Mission Bay Drive Bridge, San Diego, CA
Historian
CLIENT: City of San Diego
Conducted National Register eligibility study for several historic buildings and structures under Caltrans guidelines. Prepared HRER with the findings Completed archaeological survey and records search and prepared ASR.

Coronado Bridge Retrofit Archaeological Monitoring, San Diego, CA
Archaeologist
CLIENT: PCL Constructors
Oversaw archaeological monitoring for the retrofit of several supports for the Coronado Bridge. Coordinated with Caltrans and PCL Constructors. This work will be documented in a monitoring report at its conclusion.

CHRISTY DOLAN, MA

Palomar Street Widening Project, Chula Vista, CA
Historian
CLIENT: City of Chula Vista
Surveyed several blocks surrounding a portion of Palomar Street for the City of Chula Vista. Recorded several structures and buildings, three of which were part of a gas station that was in operation in the 1930s. Reported the results in several documents prepared in the Caltrans format. These included a Negative ASR, an HASR, and an HPSR.

SR-56 Cultural Resource Study, Addendum Technical Reports, San Diego County, CA
Historical Archaeologist
CLIENT: Caltrans and City of San Diego
Conducted archaeological testing of late 19th century homestead site.

SR-56 EIR and Cultural Resources Report, San Diego County, CA
Historical Archaeologist
CLIENT: Caltrans, District 11; City of San Diego
Prepared Historic Study Report section of the cultural resources report for a proposed 5-mile segment of SR-56.

Manchester Avenue/Interstate 5 Interchange Historic Properties Survey, San Diego, CA
Task Manager for Historic Resources
CLIENT: City of Encinitas
Conducted historic research and compiled information for the historic background and the assessment of historic structures for the HASR.

Arroyo Seco Bike Path Historic Property Survey, Los Angeles, CA
Historic Resource Specialist
CLIENT: County of Los Angeles
Conducted an architectural survey and archival research of the stone-mortared and concrete-lined Arroyo Seco Flood Control Channel and associated bridges for the HASR.

OTHER PROJECTS

Rincon Casino EA, Valley Center, CA
Archaeologist/Historian
CLIENT: Rincon San Luiseño Band of Mission Indians
Conducted fieldwork and prepared report for proposed Harrah's casino on the Rincon Indian Reservation. Work included survey and inventory as well as consultation with Native Americans. Upon completion of the analysis, an EA was prepared to cover the proposed gaming facility development. The EA conformed to the specifications of NEPA 40 CFR 1508.9 and the Tribal Environmental Policy Act.

St. Jude Hospital Architectural Historical Report, Fullerton, CA
Historic Resources Specialist
CLIENT: St. Jude Hospital
Recorded and evaluated a hospital built in the 1950s. Conducted historic research and oversaw creation of a context by which to evaluate the building.

CHRISTY DOLAN, MA

Mission San Juan Capistrano National Historic Landmark Nomination, San Juan Capistrano, CA
Historical Archaeologist
CLIENT: Mission San Juan Capistrano
Revised nomination for the seventh California mission and the Old Stone Church, circa 1800. Conducted historical research of the 11 California mission properties to prepare the nomination form.

Boston City Archaeology Department Projects, Boston, MA
Historical Archaeologist
CLIENT: City of Boston
Supervised the excavation and analysis of cultural material recovered from Boston Common. Conducted public interpretation, and participated in educational efforts with local schools.

Colonial Williamsburg Foundation Excavations, Williamsburg, VA
Historical Archaeologist
CLIENT: Colonial Williamsburg
Excavated various historic sites throughout the Virginia tidewater area. Compiled the results of all excavations at Colonial Williamsburg into a written report.

Strawbery Banke Museum Excavation, Portsmouth, NH
Historical Archaeologist
CLIENT: Strawbery Banke Museum
Monitored machine excavation of the foundation of the historic Rider-Wood House, and produced a report with the results. Assisted in the excavation of the 17th century Water Street site and participated in the analysis of the cultural material from the site.

Emerson Bixby House Project, Barre, MA
Historical Archaeologist
CLIENT: Old Sturbridge Village
Excavated and recorded 19th century cultural material from a house owned by a blacksmith.

Virginia Research Center for Archaeology Projects, Yorktown, VA
Historical Archaeologist
CLIENT: Virginia Research Center for Archaeology
Excavated historic sites in the Virginia tidewater area, analyzed cultural material, and set up archaeological exhibits.

Hall Property, Encinitas, CA
Staff Archaeologist/Historian
CLIENT: City of Encinitas
Oversaw a cultural resources survey of 43 acres. Directed historic research and the preparation of a historic context of the city of Encinitas. This resulted in the preparation of a technical report that assessed the significance to historic resources.

SELECTED REPORTS

Archaeological Monitoring and Trenching for the Caltrans District 11 New Headquarters (with C. Bowden-Renna). Prepared for Department of General Services, EDAW, Inc. San Diego (2006).

CHRISTY DOLAN, MA

Archaeology and Cultural Landscapes; Cumbres & Toltec Scenic Railroad. (with E. Russell). Prepared for UNiT, EDAW, Inc. San Diego (2006).

Harper Lake Specific Plan; Cultural Resources Constraints Report (with J. Hirsch and R. Apple). Prepared for ENSR International, EDAW, Inc. San Diego (2006).

Archaeological Monitoring and Evaluation for the Harbor Deepening 69kV Utilities Relocation Area, Coronado, California (with T. Wahoff and J. Cleland). Prepared for Sempra Energy and Utilities, EDAW, Inc. San Diego (2004).

Historical Architectural Evaluation of the Sepulveda Boulevard Tunnel (with M. Strauss). Prepared for the County of Los Angeles. EDAW, Inc. San Diego (2003).

Evaluation of 14 Cultural Resources at San Vicente Reservoir (with L. Willey and J. Underwood). Prepared for San Diego County Water Authority, EDAW, Inc. San Diego (2002).

Cultural and Historical Research and Technical Report for the Proposed Caltrans District 11 New Headquarters, San Diego, California. Prepared for GSA. EDAW, Inc. (2001).

Cultural Resources Survey of the Riverside Canal, Riverside, California (with A. Gustafson and C. Gregory). Prepared for the City of Riverside. EDAW, Inc. (2001).

Historic American Engineering Record for the Riverside Canal Grand Terrace Tunnel (with A. Gustafson). Prepared for the City of Riverside. EDAW, Inc. (2001).

Historic American Buildings Survey for the Pine Hills Barracks, Cleveland National Forest, California. Prepared for the Cleveland National Forest. (2000).

Historic American Buildings Survey for the Tustin Lighter-than-air Ship Hangars, Tustin, California (with K. Weitze). Prepared for the Department of the Navy, Southwest Division. EDAW, Inc. (2000).

San Diego Presidio Condition Assessment Report. Prepared for the City of San Diego. KEA Environmental, Inc. San Diego (1999).

Historic Preservation Plan for the Black Canyon Road Bridge, San Diego, California (with R. Allen, Ph.D.). Prepared for the County of San Diego, Department of Public Works. KEA Environmental, Inc., San Diego (1998).

Archaeological Research Design and Testing Plan for Downtown San Diego Block 31, San Diego, California. Prepared for Catellus Development Corporation. KEA Environmental, Inc., San Diego (1998).

Historic American Engineering Record Documentation for Black Canyon Road Bridge, San Diego County, California. Bridge No. 57C-361. Prepared for County of San Diego. KEA Environmental, Inc., San Diego (1998).

Historic Property Survey Report, Historic Study Report, and Archaeological Study Report for the Southern Pacific Railroad Depot Parking Lot Project, Davis, California. Prepared for the City of Davis. KEA Environmental, Inc., San Diego (1997).

CHRISTY DOLAN, MA

Archeological Literature Review and Historical Report, Marine Corps Air Station Yuma. Prepared for MCAS Yuma, Arizona. KEA Environmental, Inc., San Diego (1997).

Historic Study Report: State Route 56 (with R. Allen, Ph.D.). Prepared for Caltrans, District 11. KEA Environmental, Inc., San Diego (1996).

Archeological Investigations of Two Historic Sites for the Naval Air Facility El Centro (with R. Allen, Ph.D.). Prepared for the U.S. Navy, Southwest Division. KEA Environmental, Inc., San Diego (1996).
A Cultural Resource Survey for the Carlsbad Ranch Project in Carlsbad, California (with B.F. Smith, J. Buysse, and S. Moomjian). Prepared for the City of Carlsbad. Brian F. Smith and Associates, San Diego (1995).

A Cultural Resource Survey for the Montgomery Residence Project in La Jolla, California (with B.F. Smith). Prepared for the City of San Diego. Brian F. Smith and Associates, San Diego (1995).

An Intensive Archaeological Survey; Minute Man National Historical Park (with D. Ritchie). Prepared for the Massachusetts Historical Commission, Boston (1991).

Intensive (locational) Archaeological Survey; Henry Lord Middle School (with M. King and B.P. Miller). Prepared for the Massachusetts Historical Commission, Boston (1991).

An Intensive Archaeological Survey, Polpis Road Bicycle Path, Nantucket, MA (with D. Ritchie). Prepared for the Massachusetts Historical Commission, Boston (1990).

An Intensive Archaeological Survey, Gill Farm, Randolph, MA (with D. Ritchie). Prepared for the Massachusetts Historical Commission, Boston (1989).

An Intensive Archaeological Survey of the Proposed Howe Farm Development, Concord, MA (with M. King). Prepared for the Massachusetts Historical Commission, Boston (1989).

"Digging into Roxbury's Past." *The Fenway News*, Boston (1989).
Excavation of the Foundation of the Rider-Wood House. Prepared for Strawberry Banke Museum, Portsmouth, New Hampshire (1985).

PROFESSIONAL PAPERS

"Perspectives on a Mining Landscape near Weaverville, Trinity County." Presented with A. Medin at the Annual Conference of the Society for Historical Archaeology, Salt Lake City (1999).

"Dr. Horace Woodward's Privy, San Diego, California." Presented with R. Allen at the Annual Conference of the Society for Historical Archaeology, Atlanta (1998).

"Archaeological Resources on the Internet: The Good, the Bad, and the Ugly." Presented with R. Allen at the Annual Conference of the Society for Historical Archaeology, Corpus Christi (1997).

CHRISTY DOLAN, MA

"Are We Getting the Point Across? Teaching Archaeology and Historic Preservation." Presented at the Annual Conference of the Society for Historical Archaeology, Washington, D.C. (1995).

"The Charlestown Tavern: Commerce and Libation in a Port Town." Presented at the Annual Conference of the Society for Historical Archaeology, Vancouver, B.C., Canada (1994).

"Archaeological Investigations at the House of Seven Gables." Presented with L. Goodwin at the Annual Conference of the Society for Historical Archaeology, Kingston, Jamaica (1992).

"Multidisciplinary Investigations at the House of Seven Gables." Presented with L. Goodwin at the meetings of The Council for Northeast Historical Archaeology, Newark, Delaware (1991).

PUBLIC OUTREACH AND EDUCATION

Created and compiled an archaeology curriculum in booklet form for grades 4 through 6 and distributed it to archaeology educators (1995).

Researched and created exhibit commemorating the 100-year anniversary of a retail store in downtown San Diego (1996).

Taught middle school students early American history in a hands-on, interactive environment. SPNEA, Boston (1994).

Created curriculum for grades 4 through 6, focusing on archaeological method and theory. Courses and Travel Department, Boston Museum of Science, Boston (1993 and 1994).

Taught scientific principles to grades 1 through 12 in a program designed to mitigate the anxiety often associated with learning science. Camp-in Department, Boston Museum of Science, Boston (1989 to 1994).

SARA DIETLER
Staff Archaeologist

SUMMARY

Ten years of experience in California archaeology

Trained in National Historic Preservation Act, Section 106 compliance

Experience with survey, excavation, mapping, recordation, lab analysis and literature research of both prehistoric and historic southern California sites

Co-authors technical reports in support of CEQA and Section 106 compliance

Experience with excavation and analysis of complex coastal shell midden sites

EDUCATION

BA, Anthropology, San Diego State University, 1998

Minor, American Indian Studies, San Diego State University, 1998

AFFILIATIONS

Society for American Archaeology

Society for California Archaeology

Sara Dietler is an archaeologist with over ten years experience in cultural resource management in Southern and Central California. She has worked for more than five years in the Los Angeles area and has participated in numerous historic and prehistoric research projects throughout the county, as well as Orange and San Diego Counties. Since joining EDAW's Los Angeles office, she has completed research as well as co-authored technical reports on numerous projects relating to the historic development of Los Angeles. She has experience in historic/prehistoric record searches, general historic literature research, historic architectural survey, historic/prehistoric site survey, recordation and excavation, and the preparation of all related cultural resource documentation.

REPRESENTATIVE EXPERIENCE

Central Los Angeles High School #9, Los Angeles, CA
Research Assistant/Field Archaeologist
CLIENT: Los Angeles Unified School District
Conducted on-site monitoring and investigation of archaeological sites exposed as a result of construction activities. During data recovery phase in connection with a 19th century cemetery located on-site, participated in locating of features, feature excavation, mapping and client coordination. Organized background research on cemetery including; genealogical, local libraries, city and county archives, other local cemetery records, internet and local fraternal organizations. Advised in lab methodology and set up, as well as contributing to the initial technical report outline.

Hellman Ranch Monitoring, Orange County, CA
Lab Director
CLIENT: City of Seal Beach
Served as Lab Director for the final monitoring phase of the project, cataloging and analyzing artifacts recovered from salvage monitoring and test units placed in relation to recovered intact burials. Conducted microscopic analysis of small items such as bone tools and shell and stone beads. Directed lab assistants and oversaw special studies including the photo-documentation of the entire collection.

Home Depot Monitoring – Lake Elsinore, Riverside County, CA
Archaeological Monitor
CLIENT: Twining Laboratories, Fresno Participated in archaeological monitoring of Caltrans road-widening in vicinity of historic cemetery. Assisted in preparing negative report of findings. Coordinated with Caltrans.

Public Safety Facilities Master Plan, Los Angeles County, CA
Field Archaeologist/Research Assistant
CLIENT: City of Los Angeles, Department of Public Works
Assisted in research and survey of a Phase I archaeological resources evaluation of an approximately five-square block area in downtown Los Angeles. Completed a record search at the South Central Coastal Information Center in addition to research on specific historic attributes present on the properties and general site history within the APE.

SARA DIETLER

The Grove at Farmers Market Monitoring Project.
Lab Director
CLIENT: A.F. Gilmore Company
Served as Lab Director for the analysis of a historic collection recovered from the area surrounding the historic Farmers Market and the nearby Gilmore Adobe. The project included cataloging and analysis of all recovered artifacts, reconstruction of items, photo-documentation and preparation for display and curation of the entire collection. Co-authored the resulting technical report for the project, which detailed the results of monitoring. The report included an analysis of features and artifacts recovered and a detailed history of the property.

San Diego Ballpark Project
Archaeological Monitor
CLIENT: City of San Diego
Served as archaeological monitor for the construction of underground utility line installation for San Diego, California's downtown ballpark. Recovered historic artifacts and kept detailed records. Handled public relations and dealt with a variety of public officials and construction crews effectively, despite the controversial and complicated nature of this multimillion dollar project.

SANDAG Regional Beach Restoration Project.
Lead Archaeological Monitor
CLIENT: SANDAG
Acted as lead archaeological monitor in the inspection and analysis of offshore sediments along a large portion of coastal of San Diego County. The monitoring represented an effort to identify inundated archaeological sites in sediments representing former coastline. Collected samples of sediment, shellfish, and marine mammal remains from dredging spoils, and identified and described samples. Served as a vital member of a multidisciplinary team in materials evaluation. Job required familiarity with construction methods, and an ability to deal with a high level of media and public interest.

Hellman Ranch Monitoring, Orange County, CA
Lab Assistant
CLIENT: City of Seal Beach
Catalogued a portion of the materials from the archaeological excavation of over forty test excavation units at six Gabrielino sites in Seal Beach, California. Processed and analyzed in detail all invertebrate material recovered from the unit column samples.

Barona Reservation Cultural Center Project, San Diego County, CA
Lab Assistant
CLIENT: Barona Band of Mission Indians
Completed an inventory of the recently purchased core collection for a new archaeological museum. Identified, inventoried, cleaned, and restored the artifacts, including extensive lithic and ceramic assemblages. Transformed the old and poorly packaged collection into one professionally sorted, documented, and labeled, and curated to Federal standards.

All American Pipeline Conversion Survey
Field Archaeologist
CLIENT: Plains All American Pipeline, L.P.

Led a field crew as a part of a 170-mile long archaeological survey for the conversion of a high-pressure gas pipeline in the Mojave Desert between the towns of Daggett and Blythe, California. The survey located and updated previously unrecorded resources, including 93 archaeological sites and 22 isolated artifacts.

Level Three Long Haul Construction Monitoring.
Archaeological Monitor/Lab Assistant
CLIENT: Level Three Communications
Coauthored a technical report concerning the salvage excavation of a Chumash multiple human burial exposed during the project, researching and analyzing the unique assemblage of stone beads associated with the human remains. Monitored the directional drilling, trenching, and clean-up relating to the installation of fiber optic cable along the coast of Santa Barbara and Ventura Counties, California. Worked closely with Chumash monitors in the identification, boundary and significance testing, and protection of prehistoric archaeological sites.

Model Marsh Data Recovery.
Field Archaeologist/Lab Assistant
CLIENT: City of San Diego
Excavated and water screened as part of a archaeological data recovery project for a buried Late Prehistoric period shell midden site (CA-SDI-15,598) in southern coastal San Diego, California. Following the excavation of 41 archaeological test units and 23 shovel test pits, sorted, catalogued, and speciated over 77,000 grams of shellfish and other cultural materials. Wrote the Invertebrate Faunal Analysis chapter of the resulting technical report.

MILCON Monitoring and Data Recovery.
Field Archaeologist
CLIENT: Naval Facilities Engineering Command, Southwest Division
Served as field crew for the emergency salvage treatment of eleven flexed human burials on northern MCAS Camp Pendleton, San Diego County, California. Data recovery included the identification of burial features during monitoring, exposing, documenting, and identifying visible remains, and then pedestalling and removing them in blocks.

ARCO Burial Ground Salvage Excavation.
Lab Assistant
CLIENT: ARCO Gas
Assisted in cataloguing and analyzing artifacts following the salvage excavation of site CA-LAN-2682, a Protohistoric period Gabrielino habitation site and burial ground. Identified, sorted, and catalogued archaeological material including artifacts, large numbers of invertebrate and vertebrate faunal remains, as well as human remains. Conducted extensive research on several similar sites, culminating in an analytical paper presented at the 1999 Society for California Archaeology Meetings and published the following year in the group's proceedings.

PUBLICATIONS AND PROFESSIONAL PAPERS

Dietler, S. 2000. Protohistoric Burial Practices of the Gabrielino as Evidenced by the Comparison of Funerary Objects from Three Southern California Sites. In *Proceedings of the Society for California Archaeology, Volume 13*. Judyth Reed,

Greg Greenway, and Kevin McCormick eds. Society for California Archaeology. Fresno.

Strauss, M. and S. Dietler 2006. Bones, Beads and Bowls: Variation In Habitation And Ritual Contexts At Landing Hill. Oral Presentation at the Society for California Archaeology Meeting, Ventura, California, April.

PUBLIC OUTREACH AND EDUCATION

2005. Guest lecturer at Santa Monica Community College regarding career opportunities in cultural resources management, Santa Monica, CA.

2006. Guest lecturer at Santa Monica Community College regarding early Los Angeles history and cemetery research and excavation, Santa Monica, CA.

APPENDIX B
NATIVE AMERICAN CONTACT LETTERS

EDAW

EDAW INC

515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Ti'At Society
Cindi Alvitre
6602 Zelzah Avenue
Reseda, CA 91335

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Ms. Alvitre:

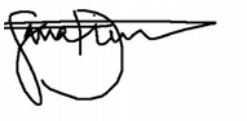
The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

EDAW, Inc. has been retained to conduct cultural resources investigations of the project area. The first phase of cultural resources work involves a search of existing archaeological and historic records and an extensive cultural resources survey of the property. No subsurface excavation or artifact collection is proposed at this time. Work will proceed under guidelines, procedures, and standards of the United States Army Corps of Engineers (ACOE) and the California Office of Historic Preservation (OHP).

The response form (Enclosure 2) is provided to help us identify and address your concerns with this project. Return of this form does not imply that you approve or disapprove of the project nor does it limit your opportunity to comment at a later time. Please return the response form to our office at the address shown above no later than October 18, 2007.

Please contact me at 213-593-8693, if you have any further questions. Thank you.

Very truly yours,



Sara Dietler, B.A.
Staff Archaeologist

Enclosures: (1) Map
(2) Response Form

EDAW

September 18, 2007

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LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

LA City/County Native American Indian Commission
Ron Andrade, Director
3175 West 6th Street, Room 403
Los Angeles, CA 90020

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Andrade:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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Very truly yours,

Sara Dietler, B.A.
Staff Archaeologist

Enclosures: (1) Map
(2) Response Form

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515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Charles Cooke
32835 Santiago Road
Acton, CA 93510

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Cooke:

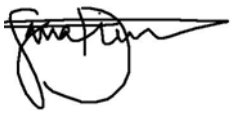
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Please contact me at 213-593-8693, if you have any further questions. Thank you.

Very truly yours,



Sara Dietler, B.A.
Staff Archaeologist

Enclosures: (1) Map
(2) Response Form

EDAW

EDAW INC

515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Gabrielino Tongva Indians of California Tribal Council
Mercedes Dorame
Tribal Administrator
20990 Las Flores Mesa Drive
Malibu, CA 90265

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Ms. Dorame:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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Please contact me at 213-593-8693, if you have any further questions. Thank you.

Very truly yours,

Sara Dietler, B.A.
Staff Archaeologist

Enclosures: (1) Map
(2) Response Form

EDAW

EDAW INC

515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame
Tribal Chair/Cultural Resources
5450 Slauson Ave., Suite 151 PMB
Culver City, Ca 90230

Subject: Santa Anita Reservoir Sediment Removal Project

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www.edaw.com

September 18, 2007

Gabrielino/Tongva Council/ Gabrielino Tongva Nation
Sam Dunlap, Tribal Secretary
761 Terminal Street; Bldg 1, 2nd Floor
Los Angeles, CA 90021

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Dunlap:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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EDAW

EDAW INC

515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Gabrielino Band of Mission Indians of CA
Ms. Susan Frank
PO Box 3021
Beaumont, CA 92223

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Ms. Frank:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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September 18, 2007

EDAW INC

515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

Gabrieleno/Tonva Tribal Council
Anthony Morales, Chairperson
PO Box 693
San Gabriel, CA 91778

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Morales:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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EDAW

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515 SOUTH FLOWER STREET, 9TH FLOOR

LOS ANGELES, CA

90071

TEL 213 593 7700

FAX 213 368 1614

www.edaw.com

September 18, 2007

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Administrator
4712 Admiralty Way, Suite 172
Marina Del Rey, CA 90292

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Rosas:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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90071

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FAX 213 368 1614

www.edaw.com

September 18, 2007

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
PO Box 221838
Newhall, CA 91322

Subject: Santa Anita Reservoir Sediment Removal Project

Dear Mr. Valenzuela:

The County of Los Angeles, Department of Public Works (LADPW) proposes improvements to the Santa Anita Dam and excavations of sediments from the Santa Anita Reservoir; including the construction of a new riser, dry excavation of 300,000 to 500,000 cubic yards of sediment from the Santa Anita Reservoir, and conveyance to a Sediment Placement Site. See attached map (Enclosure 1).

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Staff Archaeologist

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APPENDIX C
DPR 523 FORMS

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____
Other Listings _____
Review Code _____ Reviewer _____ Date _____

*Resource Name or #: (Assigned by recorder) Santa Anita Dam Complex

P1. Other Identifier:

*P2. Location: ☒ Not for Publication ☐ Unrestricted *a. County Los Angeles and P2c, P2e, and P2b or P2d. (Attach Location Map as necessary.)

*b. USGS 7.5′ Quad Mt Wilson Date 1988 T 1N ; R 11W : NE ¼ of SE ¼ of Sec 10 ; SB B.M.

c. Address City Zip

d. UTM: (Give more than one for large and/or linear resources) Zone: 11 ; 406153 mE/ 3782810 mN

*e. Other Locational Data: (E.g., parcel #, directions to resource, elevation, etc., as appropriate.)

The Santa Anita Dam and Reservoir is within the Angeles National Forest. From the 210 Freeway the project site can be reached via Santa Anita Boulevard north which becomes Santa Anita Canyon Road and continues in a northerly direction toward Chantry Flat. There is a gated access road leading to the dam and complex at approximately four miles north of the beginning of Santa Anita Canyon Road.

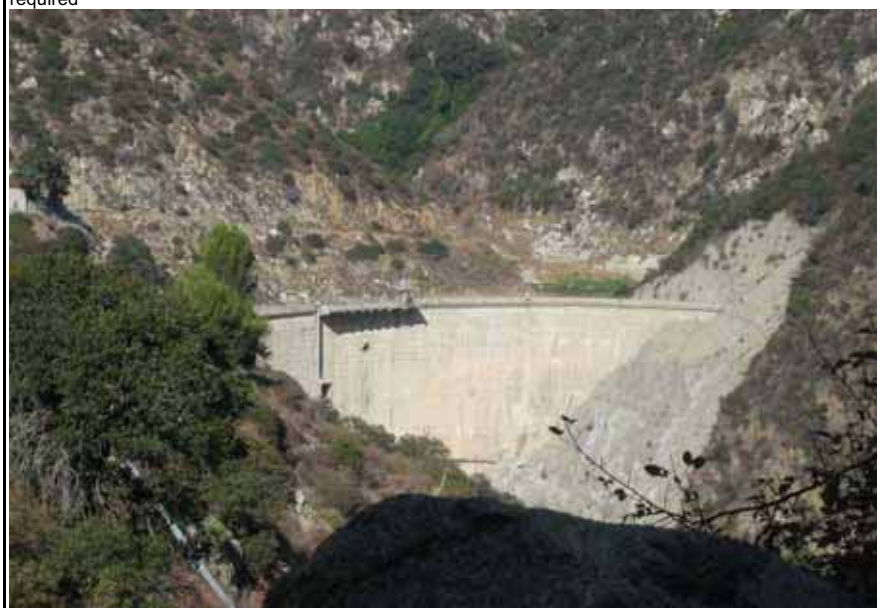
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.)

The complex consists of the Santa Anita Dam, shelter house, hoist house, relief quarters, storage shed, sluice gate control house, dam keeper's house and garage, and paint shed. The dam was built in 1927. The dam keeper's house and garage, the sluice gate control house and the paint shed all appear to have been built in 1937. The house has been heavily altered. The shelter house was built in 1946. The hoist house, storage shed, and relief quarters appear to have been constructed in the 1960s and were not old enough to be recorded. See Continuation Sheet

*P3b. Resource Attributes: (See attributes and codes) HP4. Ancillary Building, HP21. Dam

*P4. Resources Present: ☒ Building ☒Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required



P5b. Description of Photo: (View, date, accession #) View of Santa Anita Dam, Looking northeast
2007-CD-2525

*P6. Date Constructed / Age and Sources: ☒ Historic 1920s-1940s ☐ Prehistoric ☐ Both

*P7. Owner and Address:

Los Angeles County Department of
Public Works
900 South Fremont Avenue
Alhambra, California 91803

*P8. Recorded by: (Name, affiliation, and address)
EDAW, Inc.
1420 Kettner Boulevard, Suite 500
San Diego, California 92101

*P9. Date Recorded: September 13, 2007

*P10. Survey Type: (Describe)
Intensive

*P11. Report Citation: (Cite Survey report and other sources, or enter "none.")

Strauss, Monica, Christy Dolan and Sara Dietler
2007 *Cultural Resources Assessment for the Proposed Santa Anita Riser Modification and Reservoir Sediment Removal Project Los Angeles County, California.* Unpublished Report on File: EDAW, Inc. Los Angeles, California.

*Attachments: ☐ None ☒ Location Map ☐ Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐ Linear Resource Record ☐ Archaeological Record ☐ District Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List)

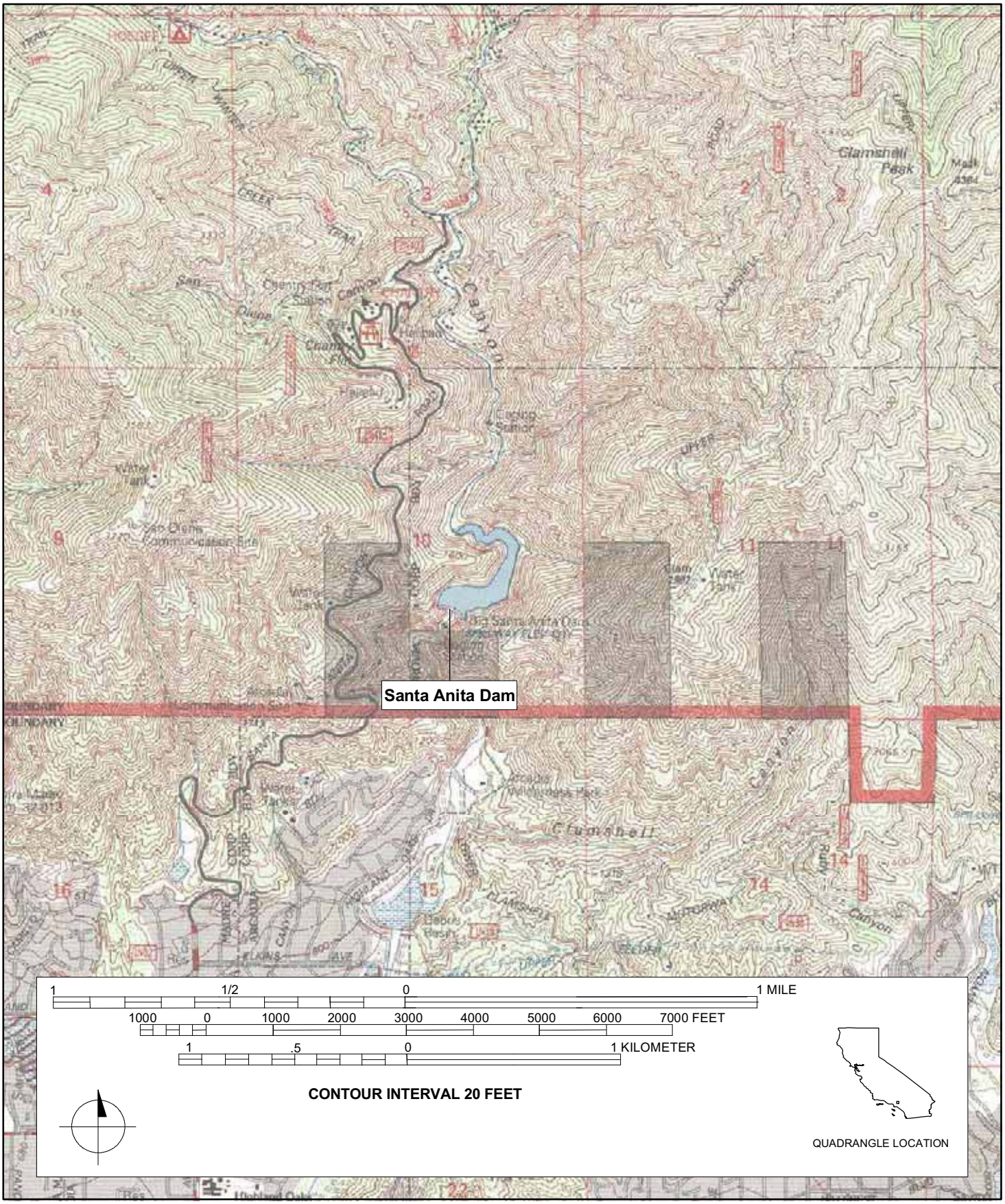
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI #
Trinomial

Page 2 of 7 * Resource Name or # (Assigned by recorder) Santa Anita Dam

* Map Name: Mt. Wilson, Calif. 7.5' Quadrangle * Scale: 1:24,000 * Date of Map: 1988



State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # _____
HRI# _____

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6z

***Resource Name or #** (Assigned by recorder) Santa Anita Dam Complex

B1. Historic Name: Big Santa Anita Dam

B2. Common Name: Santa Anita Dam

B3. Original Use: Dam for flood control

B4. Present Use: Same

***B5. Architectural Style:** Constant Angle Arch Concrete Dam

***B6. Construction History:** (Construction date, alterations, and date of alterations) See continuation sheets for dates of construction and alterations

***B7. Moved?** ☒**No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**

***B8. Related Features:** Dam keeper's house and garage, paint shed, control house, and shelter house.

B9a. Architect: Engineer: Lars Jorgensen **B9b. Builder:** Ross Construction Company

***B10. Significance: Theme** Flood Control **Area** Los Angeles County
Period of Significance 1900-1950 **Property Type** Dam **Applicable Criteria** NA
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

From 1914 to the 1950s, the Los Angeles County Flood Control District built numerous dams and structures in an attempt to control destructive flooding throughout the county. The Santa Anita Dam and associated buildings were part of that effort. The dam and some of the associated buildings have had alterations. In addition, the dam was built 10 years before any of the buildings, so there is no cohesion of style. Although these structures were constructed during a significant flood control effort, they played a small role relative to the larger dams such as San Gabriel or Big Tujunga. Therefore, they are not significant under Criterion A for their association with significant events. Likewise, they are associated with George Goethals (who oversaw the construction of the Panama Canal) but he oversaw all of the dams that were built at the time and appears to have no special association with the Santa Anita Dam. Therefore, significance under Criterion B is not possible. Neither the Santa Anita Dam, nor its associated structures, embody a distinctive type, period or method of construction. Therefore, they are not significant under Criterion C. There is no further information potential for the Santa Anita Dam, so it is not considered significant under Criterion D.

B11. Additional Resource Attributes: (List attributes and codes) _____

***B12. References:** Chronology of the Santa Anita Dam (on file with the Los Angeles County Department of Public Works.

B13. Remarks:

***B14. Evaluator:** Christy Dolan

***Date of Evaluation:** October 2007



(This space reserved for official comments.)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.) Continuation

Santa Anita Dam (1927)

The Santa Anita Dam is 230 ft high with a crest thickness of 7 ft, a base thickness of 61.5 ft and a crest length of 612 ft. The dam has two spillways. Spillway #1 is a side channel and Spillway #2 is at the center of the crest. Spillway #1 is a flat weir at the west end of the dam which discharges into a covered flume. It is approximately 20 ft long and 12 ft wide. This spillway sits under the shelter house (described below) and is approximately 10 ft below the crest of the dam. Spillway #2 is It is formed by a notch in the 3 ft high concrete parapet wall that is on the upstream side of the dam. It discharges water when it reaches the crest of the dam. The original spillway is approximately 90 ft long and 3 ft wide. An addition was made to the spillway which extends it another 14 ft downstream. A hoist mechanism sits on the spillway addition.

A chain link fence sits on top of the parapet wall, extending its height another three feet. The downstream side of the dam, where no parapet exists, has a chain link fence approximately 6 ft high. The dam is accessed by a series of concrete steps with a metal pole handrail. This allows access from the top of the dam to the bottom of the stream bed.

There are four outlets; an 18 in. gate valve near the bottom of the dam, a 20 in. gate valve about 50 ft higher, and two 30 in. needle valves that are 20 ft apart in elevation. A trash rack protects these outlets and the outlet tower is visible on the upstream side of the dam. The trash rack appears to have been constructed using old railroad rails. A sluice gate control house (described below) sits just west of the outlet tower on a projecting slab of concrete.

Alterations are listed in the Chronology of the Santa Anita Dam supplied to EDAW by the Department of Public Works. Most alterations have been relatively minor. There are several instances of grouting to reduce leaks (1929, 1931, 1945, 1960 etc.) In 1931, there were general repairs made as well as installation of additional bars on trash racks to prevent fish from entering the outlets. In 1934, the 30 in. outlet needles were replaced. In 1938, risers and trash racks were constructed for the 30 in. outlet pipes.

A major alteration was made in 1945 when a projecting slab supported by brackets was constructed along the downstream side of Spillway #2. It was 14 ft wide and 90 ft long. It was intended to carry water away from the downstream face of the dam to protect workers who would operate flood discharge valves down below during a flood.

In 1963, the existing trashrack and 16 in. cast iron pipe riser was replaced with a 3.5 ft radius, semi-circular reinforced concrete riser and structural steel trashrack. In 1967, the 20 in. valve was replaced.

Dam Keeper's House and Garage (1937)

The Dam Keeper's Residence is a single story, stuccoed building with a covered porch on the main façade (Photo 1). The cross-gabled roof is clad in asphalt shingles. Louvered vents are at each apex of the roof. Windows are mostly metal sash windows, although some are fixed. The west façade has a plastered chimney that currently being repaired. The south façade contains a covered porch with a decorative metal railing. It is the main entrance to the house. The gable on this end is clipped, with a crescent shaped louvered vent in it. The rear (or north) elevation contains a single wooden door that leads to an entryway. A covered patio sits adjacent to this entrance. The original drawings for the house indicate it was built in 1937, the Office Engineer was W.B. Ream and the Chief Design Engineer was W. E. Chastison.





Photo 1. Dam Keeper's residence, looking Northeast. Photo 2. Dam Keeper's garage, looking Northeast.

A review of the original drawings for this house showed that several alterations have been made to the house since it was constructed. The house originally had wooden siding (which has been stuccoed) and an assortment of double hung windows, many with shutters. All of the windows have been changed out for metal sash windows without shutters and a few have been removed entirely. The porch originally had a wooden railing, not a metal one, and there was not originally an entryway or covered patio off the north façade.

The Dam Keeper's Garage is a single story, wood sided building with a moderately pitched roof covered in rolled asphalt (Photo 2). A metal roll up door is on the west façade. The building has a wooden porch extending from its south façade. This allows one to walk around the building as it sits over the slope. An open shed roof is attached to the north façade of the building.

Paint and Explosives Shed (1936)

The Paint Shed is a wooden shed that was used for storing paint and explosives until it was replaced by a newer structure (Photo 3). It is a single story building with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A single, wooden door is on the north façade and the east and west façades each have a single pivot window.

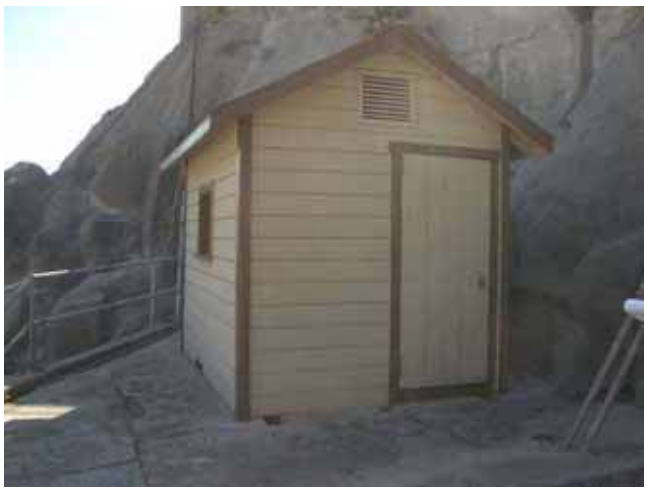


Photo 3. Paint Shed, looking South.

Sluice Gate Control House (1936)

The control house (Photo 4) is very similar to the paint shed in construction. It is a single story structure with a moderately pitched roof and wooden siding. The roof is covered with rolled asphalt and has open eaves with a louvered vent at the apex. A large window opening is boarded up on the west façade. A single, wooden door is offset on the east façade.



Photo 4. Sluice Gate Control House, looking Northeast

Shelter House (1946)

The Shelter House (Photo 5) is a concrete, single story structure. The roof is flat, with a parapet and an 8 in. vent. The north façade has a single wooden door with a glass light and a single, vented metal door. There are two small, single pane pivot windows in metal sashes. There are three top pivot windows with four lights on top and two fixed on the bottom. The building is approximately 18 by 18 ft. The original drawings for this structure indicate that it housed a generator, storage and shelter/radio room. They list the "Division Engineer In Charge of Design" as N. B. Ream and the plans were approved by H.E. Hedger



Photo 5. Shelter House, looking Southeast

APPENDIX E

TRAFFIC REPORT

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Traffic Study for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Arcadia, California

March 27, 2008

Prepared for:

EDAW
515 South Flower Street, 9th Floor
Los Angeles, California 90071
p (213) 593-7700
f (213) 368-1614

Prepared by:

KOA CORPORATION
PLANNING & ENGINEERING

1055 Corporate Center Drive, Suite 300
Monterey Park, California 91754
p (323) 260-4703
f (323) 260-4705

JA62L5X

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APPENDIX G - LEVEL-OF-SERVICE WORKSHEETS DURING CONSTRUCTION (ALTERNATIVE 4)

1. Introduction

This report documents the traffic analysis prepared by KOA Corporation to assess the traffic impact of the proposed Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project in Arcadia, California. This traffic study assesses the potential traffic impact of the construction of the preferred project as well as the construction of four alternatives to the preferred project. Due to the nature of the project (reservoir improvements and sediment removal), the project will not create any potential traffic impacts, once it is completed.

1.1 Project Location

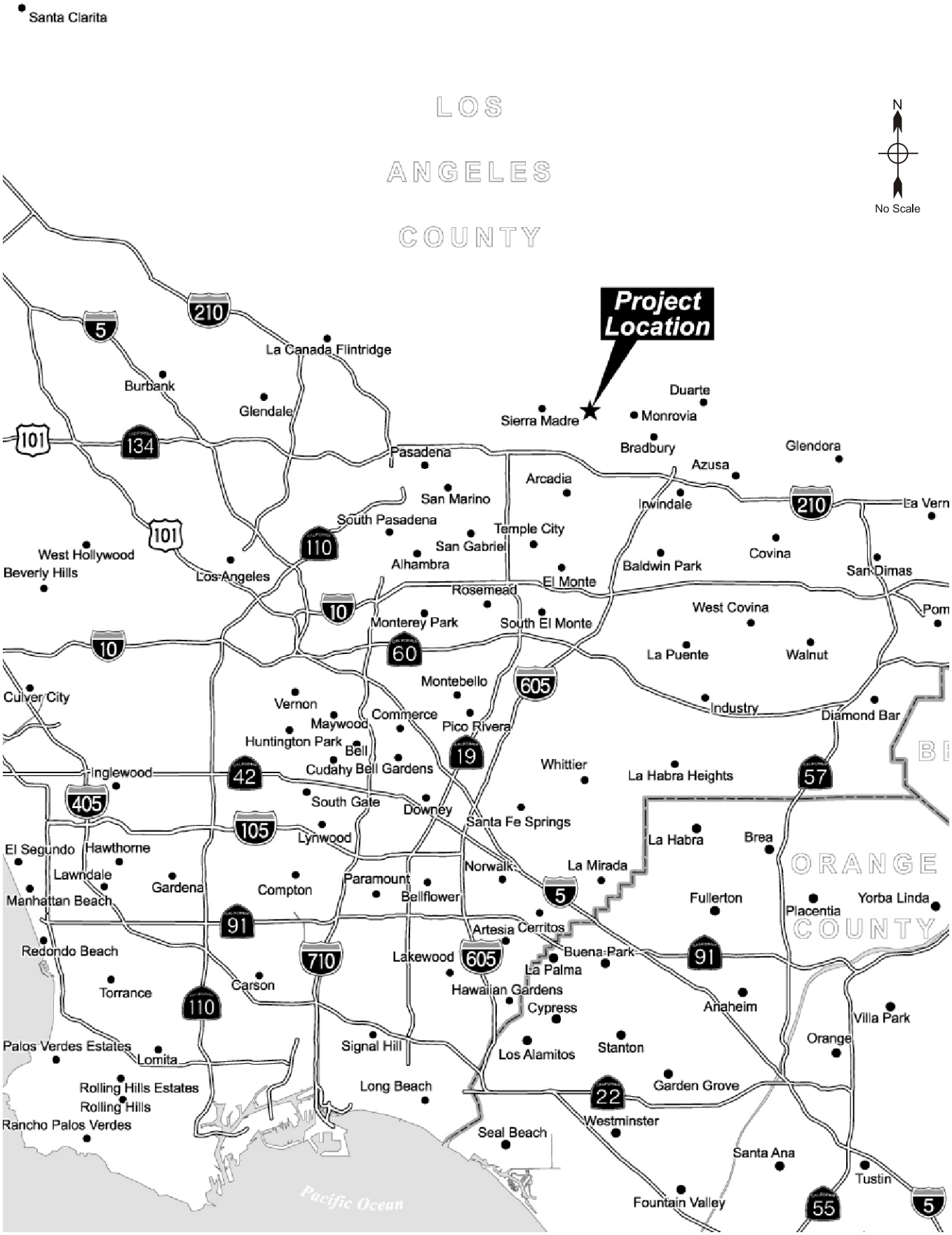
The Project is located on the northern border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles. The project location is illustrated on Figure 1.

As illustrated on Figure 2, the project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2.5 miles north of the 210 Foothill Freeway. Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state.

The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Santa Anita Debris Basin (DB), and the Santa Anita Sediment Placement Site (SPS). These facilities are owned and operated by the Los Angeles County Department of Public Works (LACDPW). The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia. The Wilderness Park, DB, and SPS are all located below the reservoir in the City of Arcadia.

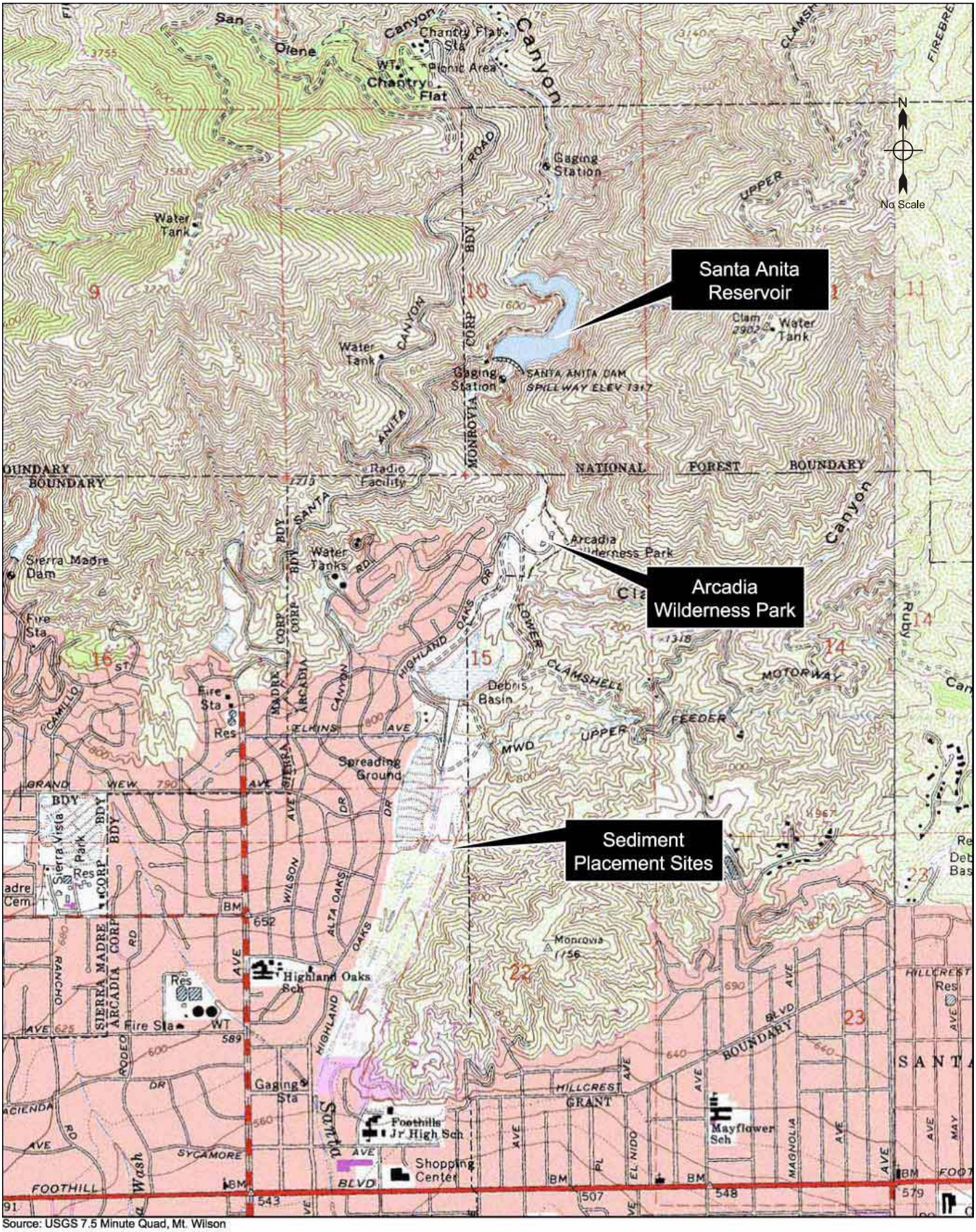
The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area that is filled to capacity with sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities. The Middle SPS area has capacity for sediment storage; apart from existing access roads it is relatively undisturbed and characterized by native vegetation. The Lower SPS area, located in the southerly end of the SPS, is a disturbed area that contains sediment from previous cleanouts of the reservoir, debris basin and other local flood protection facilities; it does not have sufficient capacity to accommodate the lower range of expected sediment from the reservoir, 300,000 cubic yards; some of the project sediment will be placed in the Lower SPS and then it will be contour graded and landscaped for mitigation and closed out for future sediment placement.

The locations of the overall SPS and its Upper, Middle, and Lower SPS areas are illustrated in Figure 3.



Source:
Santa Anita Reservoir EIR/EA
Los Angeles County, Department of Public Works

KOA CORPORATION PLANNING & ENGINEERING	Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project	Figure 1
	Project Vicinity Map	



Source: USGS 7.5 Minute Quad, Mt. Wilson

KOA CORPORATION PLANNING & ENGINEERING	Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project	Figure 2
	Project Location	



Source: GlobeXplorer, 2006.

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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Figure 3

Sediment Placement Sites

1.2 Purpose and Need for the Proposed Project

LACDPW owns and manages the dam, the reservoir, and the associated land south of the dam. The last complete drawdown of the reservoir occurred during the 1992-1993 storm season, when LACDPW performed a FAST (Flow-Assisted Sediment Transport) operation to minimize sediment accumulation behind the dam. The purpose of the proposed project is to remove the sediment that has accumulated behind the dam since the last clean out occurred and to construct a riser on the low-level outlet of the dam.

The California Department of Water Resources, Division of Safety of Dams (DSOD), currently restricts long-term water storage in the reservoir behind Santa Anita Dam to ensure the facility's compliance with the agency's seismic stability requirements. A recent seismic analysis of Santa Anita Dam showed the safe long-term maximum reservoir level is below the current restricted level. Due to concerns regarding the dam's compliance with DSOD's seismic stability standards, DSOD has mandated a lower long-term maximum reservoir level, effective May 2008.[1] .

Currently, the sediment level in Santa Anita Reservoir is nearing an elevation that is hindering valve operation at the dam and will hinder the facility's ability to comply with DSOD's requirements for drawing down the reservoir to the restricted level after storms and during an emergency. Approximately 300,000 to 500,000 cubic yards of sediment removal from the reservoir is needed to minimize impacts to the valves to ensure DSOD's requirements are met. LACDPW proposes removing the sediment in the summer and fall of 2009 and 2010.

1.3 Project Objectives

The goal of the proposed LACDPW project is to comply with DSOD's seismic safety requirements and ensure the ability to draw down the reservoir to the restricted level. The primary project objectives that have been identified to support this goal include:

- Remove the sediment accumulated in the reservoir to avoid plugging and damage to the dam's outlet works.
- Modify the riser on the dam's lowest gate to ensure that DSOD's water level restrictions and seismic safety requirements are met.

[1] The DSOD Certificate of Approval for Big Santa Anita Dam (signed December 18, 2006) allows water to be temporarily impounded to an elevation of 1,258 feet behind the dam until May 2008. During storm events, a temporary impound elevation of 1,316 feet is allowed.

2. Preferred Project Description

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir and placing it in the Santa Anita SPS, as shown on Figure 4. The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south.

The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works. Additional details of the sediment hauling plan for the preferred project are summarized below.

2.1 Dry Excavation

The proposed project would remove approximately 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir. Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required. Sediment would be removed from the reservoir and transported on the conveyor belt system described below. All sediment removal activities would occur below the El. 1,300 feet within the footprint.

2.2 Sediment Conveyance

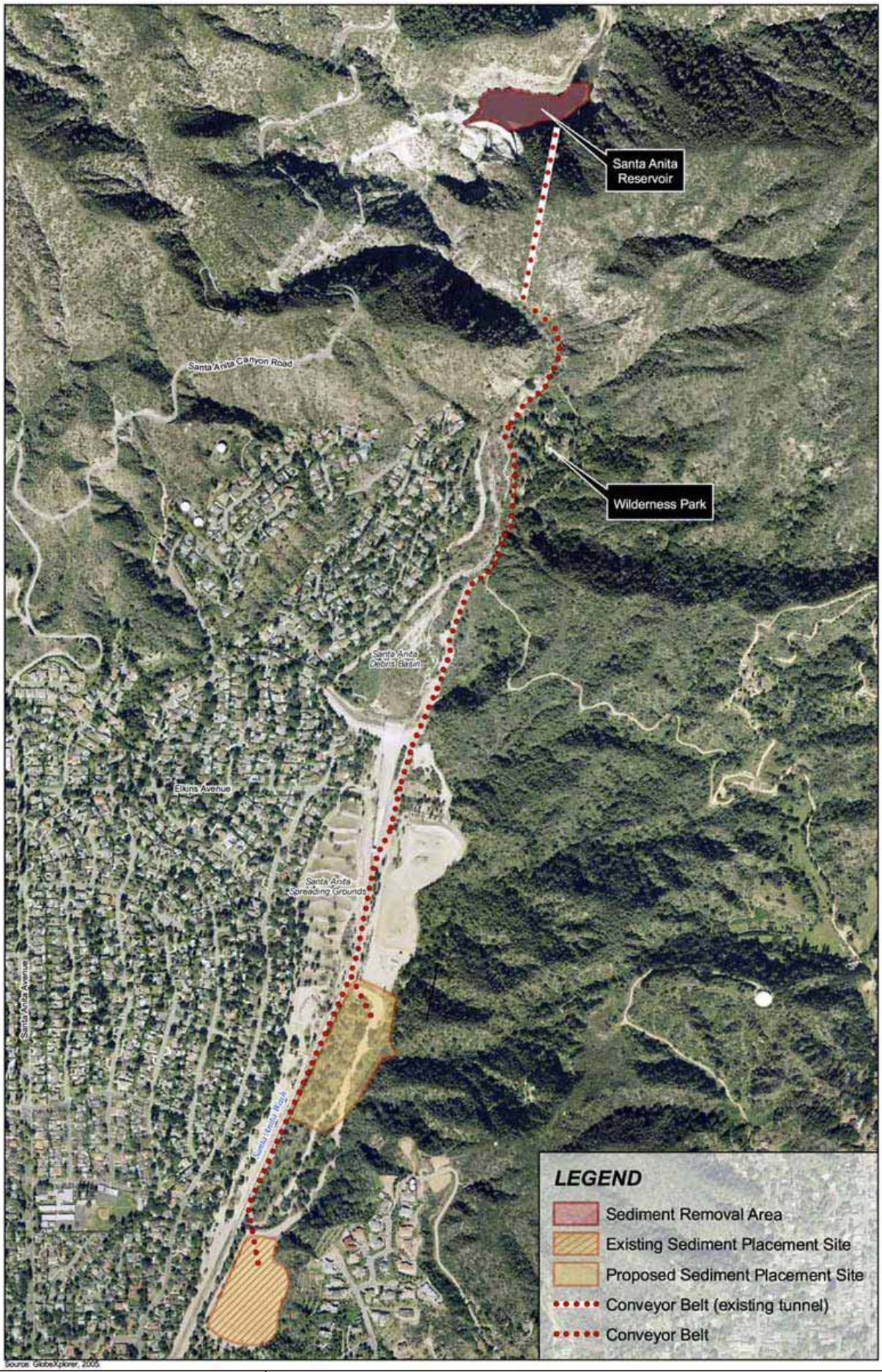
The proposed project would transport sediment from the reservoir to the proposed SPS areas using an electric conveyor belt system. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot (not obstructing traffic or emergency vehicles), south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS.

2.3 Sediment Placement

Approximately 250,000 cubic yards of sediment would be placed in the approximately 5-acre already disturbed Lower SPS first, which would then be closed out to future sediment placement; the remainder of the excavated sediment, approximately 250,000 cubic yards would be placed at the 13-acre area in the Middle SPS, located east of the Santa Anita Wash, below the existing Upper SPS.

The base of the 13-acre Middle SPS area can be tiered in order to accommodate up to 710,000 cubic yards of material; however, contour grading is planned for the Middle SPS so the actual sediment capacity would be expected to be lower. The proposed ultimate height of the Middle SPS would be 60 feet from the lowest elevation at the southern end of the SPS. The western edge of the SPS would be contour graded and landscaped to serve as a visual buffer for the residences to the west.

The proposed project would require the removal of approximately 0.5 acres of vegetation in the Lower SPS. The current elevation of the Lower SPS ranges from approximately 630 feet to 650 feet.



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 4

Preferred Alternative, Convey to Sediment Placement Site

The proposed project would require the removal of approximately 11 acres of native vegetation in the undeveloped Middle SPS. The remaining two acres of the sediment placement footprint comprises of existing access roads. In the proposed project, approximately 250,000 cubic yards of sediment would be conveyed to the already disturbed Lower SPS and up to 250,000 cubic yards of this sediment would be conveyed to the new Middle SPS. The remaining sediment capacity in the 13-acre footprint, up to 500,000 cubic yards depending on contour grading, would be used for future routine and emergency sediment removal activities of facilities served by the Santa Anita SPS. This is necessary since the Lower SPS, which currently serves this purpose, would be closed out for future sediment placement. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.

2.4 Construction Scenario

LACDPW would attempt to complete the sediment removal within the summer and fall of 2009, but sediment removal activities may last over the two 6 to 8 -month periods of April through October (possibly to December, weather permitting) of 2009 and 2010. The removal of vegetation in a portion of the Middle SPS area is anticipated to occur after September 2008 and prior to March 2009. The riser construction would likely occur from May to December 2009, although the contractor may choose an alternate construction sequence. Dewatering of the reservoir would begin in early April 2009 and last for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below.

2.4.1 Dam Outlet Modification

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. LACDPW anticipates the outlet work to commence in May 2009. The dry excavation activities, described in Section 2.4.2 below, would clear sediment away from the work area.

2.4.2 Dry Excavation

Construction workers would access the reservoir via an existing access road on the east side of Santa Anita Canyon Road (see Figure 2-6). Based on cleanout operations at LACDPW's other reservoirs, construction equipment at the reservoir during the dry excavation would likely consist of one crusher, three bulldozers, two excavators, and three loaders. The actual configuration may vary depending on the contractor chosen for the project. Sediment and debris from the reservoir would be loaded on to the conveyor belt using the bulldozers and loaders. Equipment staging would occur within the reservoir area and along the existing access road. Best Management Practices (BMPs) would be implemented within the reservoir area to reduce downstream water quality impacts.

2.4.3 Sediment Conveyance

As discussed above, sediment would be transported to the SPS using an electric powered conveyor belt

system, likely 5 feet wide. The conveyor route may require some clearing, grubbing, and grading of various locations along existing access and maintenance roads. Some vegetation clearing may be required along the access road, including a stream crossing approximately 600 feet south of the Wilderness Park parking area. No tunnel improvements would be required to accommodate the conveyor belt and PVC bypass pipe.

2.4.4 Sediment Placement

Prior to the use of the proposed Lower SPS area, approximately 0.5 acres of native and non-native vegetation would be cleared. Prior to the use of the proposed Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur in after September 2008 and prior to March 2009, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Construction equipment at the proposed Middle SPS area is expected to include of three bulldozers, one grader, and two sheepfoot rollers. Up to three bulldozers, one grader, and two sheepfoot rollers may also be used at the Lower SPS. This construction scenario assumes the Lower SPS sediment placement would occur prior to the use of the Middle SPS. The actual configuration may vary depending on the construction contractor chosen for the project. The equipment would be used for the clearing, grubbing, and any grading that is necessary to prepare the proposed SPS areas. The equipment would also be used during sediment placement activities to spread and compact sediment throughout the tiered placement area.

Disturbed sediments are more susceptible to erosion; however, excavation, grading, and sediment placement activities would be in accordance with LACDPW regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites.

The policy requires that the SPS site be cleared of vegetation and unsuitable topsoil to ensure proper interface between the sediment and the existing hillside. Clearing would also be completed with as little time between clearing and placement as possible to prevent erosion of exposed sediment. During placement of the sediment, a temporary storm drain with sediment collecting structures would be placed alongside the placement site to trap sediment eroded from surface runoff originating upstream of the SPS site.
The sediment would be placed in horizontal layers not exceeding 5 feet in thickness behind a 15-foot-wide layer of sediment compacted to at least 88 percent relative compaction. Sediment would be continuously graded during placement and no organic material or rocks greater than six inches would be placed within the sediment. Following placement of sediment, surface drainage structures would be installed, including gutters, inlet structures, and surface drains, which would direct stormwater runoff around the fill area to the storm drain system.

In areas that would not be restored with native vegetation, the surface of the sediment would be sown with a grass seed mixture to further prevent erosion.

The Construction equipment required for the proposed project is summarized in Table 1.

TABLE 1 - CONSTRUCTION EQUIPMENT REQUIRED FOR PREFERRED PROJECT

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Crusher, 3 Bulldozers, 2 Excavators, 3 Loaders
Reservoir (Riser Construction)	1 Truck, 6 to 10 Concrete Mixer Trucks, 1 Mobile Crane, 1 Pump / Generator
Conveyor Belt Assembly / SPS Preparation (3 months max)	4 Trucks, 1 Bulldozer, 1 Backhoe/Loader
Hauling from Middle to Lower SPS	4 Trucks
Middle & Lower SPS	3 Bulldozers, 1 Grader, 2 Sheepfoot Rollers
Entire Project Site	1 Water Truck

3. Alternatives to the Preferred Project

In accordance with Section 15126.6(a) of the CEQA Guidelines, an EIR must discuss a range of reasonable alternatives to the project "...which would feasibly attain most of the basic objectives of the project...and evaluate the comparative merits of the alternatives." The factors that can determine feasibility are site suitability, other plan or regulatory limitations, and jurisdictional boundaries. An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. The alternatives analysis must also include a comparative evaluation of the No Project Alternative per Section 15126.6(e) of the CEQA Guidelines.

An evaluation of the following alternatives, identified by LACDPW for the proposed project, is in Chapter 5 of this report:

- Alternative 1: No Project
- Alternative 2: Convey to Wilderness Parking Lot, Truck to SPS
- Alternative 3: Convey to Clearing North of the SPS, Truck Offsite
- Alternative 4: Convey to Wilderness Park, Truck Offsite

3.1 Alternative 1 – No Project

Alternative 1, No Project assumes that the Santa Anita Dam and the Santa Anita Reservoir would remain non-compliant with DSOD dam safety requirements for emergency drawdowns. The sediment level in the reservoir would continue to increase and exceed that deemed by DSOD as adequate for dam stability. Non-compliance would also subject LACDPW to potential penalties from DSOD. The dam outlet would eventually become inoperable under this alternative.

3.2 Alternative 2 - Convey to Wilderness Parking Lot, Truck to SPS

Project Alternative 2 would transport sediment from the reservoir to the proposed SPS using a combination of a conveyor belt system and a truck hauling route. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, and terminating at a staging area south of the Headworks, including part of the Arcadia Wilderness Park's north west parking lot. From here sediment would then be loaded onto the haul trucks and transported across the Wilderness Park parking lot, past the upper portion of the DB, to the proposed SPS area via an existing County maintenance road. Alternative 2 will also include the conveyor belt assembly/SPS areas preparation. It is estimated that about eight trucks at a time would be used to transport the sediment to the SPS.

The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road above the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the haul route would follow the existing dirt maintenance road and DPW access road to the SPS.

As modification of the riser requires the dam's outlet to be completely dry, a PVC pipe would be used to bypass reservoir inflow through the tunnel to the downstream area. The PVC pipe would outlet into Santa Anita Wash immediately south of the tunnel entrance.

As discussed above, sediment would be transported to the SPS using an electric powered conveyor belt system (north of the Headworks) and haul trucks (south of the Headworks). Use of these proposed haul routes would require clearing, grubbing, and grading of various locations along existing access and maintenance roads. No tunnel improvements would be required to accommodate the conveyor belt and bypass pipe.

Figure 5 illustrates the conveyance and truck hauling route for project Alternative 2.

TABLE 2 - CONSTRUCTION EQUIPMENT REQUIRED FOR ALTERNATIVE 2

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Crusher, 3 Bulldozers, 2 Excavators
Reservoir (Riser Construction)	1 Truck, 6 to 10 Concrete Mixer Trucks, 1 Mobile Crane, 1 Pump/generator
Conveyor Belt / Haul Route	1 Bulldozer, 2 Loaders, 8 Trucks
Middle & Lower SPS	3 Bulldozers, 1 Grader, 2 Sheepfoot Rollers
Entire Project Site	1 Water Truck



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 5

Alternative 2, Convey to Park, Truck to Sediment Placement Site

3.3 Alternative 3 – Convey To Clearing of the North SPS, Truck Offsite

Under alternative 3, all of the project characteristics would remain the same as the preferred project, except the conveyance of sediment would terminate at a staging area above the Upper SPS area. At this location, the sediment would be loaded onto trucks and hauled to an off-site disposal location in Irwindale (Manning Pit SPS). Trucks would exit the Santa Anita SPS and enter public roadways at Elkins Avenue, and then turn left on Santa Anita Avenue and enter the 210 Freeway, and then proceed via existing truck routes to the SPS in Irwindale.

Alternative 3 would require clearing, grubbing, and grading of various locations along the existing maintenance road. It is estimated that about 20 trucks would be used at one time to transport sediment and that about 160 truck trips would occur per eight-hour day. Construction equipment required for this alternative is summarized in Table 3.

TABLE 3 - CONSTRUCTION EQUIPMENT REQUIRED FOR ALTERNATIVE 3

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt	2 Bulldozers 2 Loaders
Arcadia / Sierra Madre Haul Route	1 Water Truck 1 Sweeper 20 Trucks
Manning Pit and Vicinity	2 Bulldozers 1 Water Truck 1 Sweeper

Figure 6 illustrates the on-site and on-street hauling routes under project Alternative 3.



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 6

Project Alternative 3, Convey to SPS Staging Area, Truck Offsite

3.4 Alternative 4 – Convey To Wilderness Park, Truck Offsite

Alternative 4, like the proposed project, would remove 300,000 to 500,000 cubic yards of sediment from Santa Anita Reservoir in the summer and fall of both 2009 and 2010 (see Figure 7). All of the project characteristics would remain the same as the proposed project, except this alternative would convey the sediment to the Wilderness Park staging area, located above and within part of the park's western parking lot, truck the sediment along the existing maintenance road, and then truck the sediment on public roadways to the SPS in Irwindale. Truck routing on public roadways would match that used for Alternative 3.

Trucks would exit Santa Anita SPS via Elkins Avenue, turn left on Santa Anita Avenue, enter the 210 Freeway, exit at Irwindale Avenue, turn left into Gladstone Street, and turn right into Vincent Avenue to enter Manning Pit SPS, in the City of Irwindale. Alternative 4 would require clearing, grubbing, and grading at various locations along the existing maintenance road below Santa Anita Dam. As with the other project alternatives, some areas along the maintenance road to the south of the Wilderness Park would require vegetation clearing where a stream crosses the existing maintenance road, to allow for adequate truck access. It is estimated that about 20 trucks would be used at one time to transport sediment and that about 160 truck trips would occur per eight-hour day. Construction equipment required for this alternative is summarized in Table 4.

TABLE 4 - CONSTRUCTION EQUIPMENT REQUIRED FOR ALTERNATIVE 4

Area of Site	Equipment
Reservoir (Dry Excavation)	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt	2 Bulldozers 2 Loaders
Arcadia/Sierra Madre Haul Route	1 Water Truck 1 Sweeper 20 Trucks
Manning Pit and Vicinity	2 Bulldozers 1 Water Truck 1 Sweeper

Figure 7 illustrates the on-site and on-street hauling routes under project Alternative 4.



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 7

Project Alternative 4, Convey to Park, Truck Offsite

4. Existing Area Roadways

The following roadways would be used to access the project site by contractor employees under all proposed alternatives, and by trucks hauling sediment off-site under proposed Alternative 3 and Alternative 4:

- Highland Oaks Drive *
- Elkins Avenue
- Santa Anita Avenue
- Interstate 210

** Highland Oaks Drive would only be used by employee trips. Truck trips would not utilize this roadway under any scenario.*

Highland Oaks Drive is a two-lane residential roadway that connects northeastern residential areas to Elkins Avenue. The speed limit is 25 miles per hour (mph) and on-street parking is permitted. The roadway also provides direct access to the entrance/exit driveway of the Arcadia Wilderness Park. Photographs 1 and 2 below provide views of typical segments of Highland Oaks Drive.



Photograph 1 – Looking north on Highland Oaks Drive from Elkins Avenue.



Photograph 2 – Looking south along Highland Oaks Drive from south of Wilderness Park driveway..

Elkins Avenue is a two-lane residential roadway that connects the project site east of Highland Oaks Drive with Santa Anita Avenue to the west. The typical curb-to-curb width of the roadway is 36 feet. Single-family homes are located along this roadway and on-street parking is permitted. The speed limit is 25 miles per hour (mph). The Elkins Avenue intersection at Highland Oaks Drive is controlled by a stop sign on Highland Oaks Drive. Photographs 3,4,5 and 6 provide views of Elkins Avenue within the study area.



Photograph 3 – Looking east along Elkins Avenue from east of Santa Anita Avenue.



Photograph 4 – Looking west along Elkins Avenue toward Santa Anita Avenue.



Photograph 5 – Looking east along Elkins Avenue toward Highland Oaks Drive.



Photograph 6 – Looking west along Elkins Avenue from Highland Oaks Drive.

Santa Anita Avenue is a two-lane divided local roadway in the project vicinity. Santa Anita Avenue is designated an arterial roadway south of Foothill Boulevard and provided an interchange with Interstate 210. The roadway has a landscaped median and the northbound leg of the roadway is generally 28 feet in width and the southbound leg is generally 24 feet in width. It traverses the area in a north-south manner.

The speed limit on Santa Anita within the study area is 35 mph. The Santa Anita Avenue intersection at Elkins Avenue is control by a stop sign on Elkins Avenue. The Santa Anita Avenue intersections with Grandview Avenue and Sierra Madre Boulevard are controlled by stops on all approaches. Photographs 7 through 12 provide views of Santa Anita Avenue in the study area.



Photograph 7 – Looking north along Santa Anita Avenue toward Sierra Madre Boulevard.



Photograph 8 – Looking South along Santa Anita Avenue near Sierra Madre Boulevard.



Photograph 9 – Looking north along Santa Anita Avenue from north of Grandview Avenue.



Photograph 10 – Looking south along Santa Anita Avenue toward Grandview Avenue.



Photograph 11 – Looking north along Santa Anita Avenue from south of Elkins Avenue.



Photograph 12 – Looking south along Santa Anita Avenue from south of Elkins Avenue.

Grandview Avenue is a two-lane local residential roadway located to the south of Elkins Avenue. The roadway is 32-feet in width within the study area and traverses the area in an east-west manner. Photographs 13 and 14 provide views of Grandview Avenue within the study area.



Photograph 13– Looking east along Grandview Avenue toward Santa Anita Avenue.



Photograph 14– Looking west along Grandview Avenue toward Santa Anita Avenue.

Sierra Madre Boulevard is a two-lane local residential roadway, located to the south of Grandview Avenue. The roadway is 36 feet in width and traverses the area in an east-west manner. Photograph 15 provides a view of Sierra Madre Boulevard within the study area.



Photograph 15– Looking west along Sierra Madre Boulevard toward Santa Anita Avenue.

Interstate 210 is a major east-west freeway that is located to the south of the project study area. The facility would provide regional access for the proposed off-site truck routes under project Alternative 3 and Alternative 4.

5. Project Construction Trip Generation Forecasts

Once completed, the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project will not generate any additional traffic volumes over base conditions within the study area. Traffic volumes and potential traffic impacts will be generated during the construction phase of the project. This section of the report provides traffic volume forecasts for the preferred project alternative and the four project alternatives.

Project construction will involve the following tasks:

- Dam Outlet Modification
- Dry Excavation
- Sediment Conveyance
- Sediment Placement

5.1 On-Site Trip Generation Basis

Table 5 summarizes the construction equipment to be utilized per alternative. Table 6 provides estimated totals for the number of employees that would be on-site during construction. For purposes of forecasting, it was assumed that one person would be required to operate each construction vehicle and that four support/supervisory persons would be on-site daily and that all activities may be going on concurrently.

Table 5 – Construction Equipment Required for All Alternatives

	Alternative				
Area of Site	**Preferred Alternative**	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**
Reservoir (Dry Excavation)	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders		1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders	1 Water Truck 1 Crusher 3 Bulldozers 2 Excavators 3 Loaders
Reservoir (Riser Construction)	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator		1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator	1 Truck 6 to 10 Concrete Mixer Trucks 1 Mobile Crane 1 Pump/generator
Conveyor Belt	2 Bulldozers 2 Loaders		2 Bulldozers 2 Loaders 8 Trucks	2 Bulldozers 2 Loaders	2 Bulldozers 2 Loaders
Hauling from Middle to Lower SPS	4 trucks				
Middle SPS	3 Bulldozers 1 Grader 2 Sheepfoot Rollers		3 Bulldozers 1 Grader 2 Sheepfoot Rollers		
Lower SPS	3 Bulldozers 1 Grader 2 Sheepfoot Rollers		3 Bulldozers 1 Grader 2 Sheepfoot Rollers		
Entire Project Site (Access along Conveyor Route and SPS)	1 Water Truck		1 Water Truck		
Arcadia/Sierra Madre Haul Route				1 Water Truck 1 Sweeper 20 Trucks	1 Water Truck 1 Sweeper 20 Trucks
Manning Pit and Vicinity				2 Bulldozers 1 Water Truck 1 Sweeper	2 Bulldozers 1 Water Truck 1 Sweeper

Table 6 – Estimate of Daily On-site Employees

Area of Site	Number of On-Site Employees				
	Preferred Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Reservoir (Dry Excavation)	10		10	10	10
Reservoir (Riser Construction)	3		3	3	3
Conveyor Belt	4		12	4	4
Hauling from Middle to Lower SPS	4				
Middle SPS	6		6		
Lower SPS	6		6		
Entire Project Site (Access along Conveyor Route and SPS)	2		2		
Support personnel/Supervisors (Assume 4)	4		4	4	4
Total On-Site Employees	**39**	**0**	**43**	**17**	**17**

For the calculation of the number of trips generated by on-site activities per alternative, it is assumed that the required number of construction vehicles would remain on-site during the course of the work. It is also assumed for the traffic analysis that off-site truck trip scheduling under Alternative 3 and Alternative 4 would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.)

5.2 Off-Site Trip Generation Basis

Trip generation forecasts for Alternatives 3 and 4 require trip generation calculations for the hauling of sediment from the Santa Anita SPS to the Manning Pit SPS in the City of Irwindale, via Elkins Avenue, Santa Anita Avenue and Interstate 210.

Alternatives 3 and 4 will utilize 20 trucks each making 8 round trips per day, or 160 one-way trips. For purposes of traffic analysis, a passenger car equivalent (PCE) factor of 2.5 was used in the analysis. This factor provides for the additional loss in roadway or intersection capacity caused by large trucks, as compared to standard passenger vehicles. The factor of 2.5 was defined with the Heavy Duty Truck Model, developed by the Southern California Association of Governments.

5.3 Preferred Project Alternative Construction Trip Generation Forecast

5.3.1 Daily Trip Generation Forecast (Preferred Alternative)

It is estimated that 39 employees will work on site under the preferred alternative. To evaluate a worst-case scenario, it is assumed each employee will drive to and from work and that each employee will generate one additional trip per employee during the day to account for lunch and errand trips. This would result in 117 employee trips per day.

For purposes of forecasting, it is also assumed that 5 trucks per day will arrive and depart the site per day to deliver supplies and equipment. This accounts for 10 one-way truck trips per day. Converting trucks to passenger car equivalents using a PCE factor of 2.5, trucks would add an additional 25 PCE trips per day.

Adding the employee trips and truck trips, it is estimated that the preferred alternative will generate 142 PCE (117 + 10*2.5) trips per day.

5.5.2 Mid-day Peak Hour Trip Generation Forecast (Alternative 2)

For purposes of forecasting future mid-day peak hour trip generation, it is assumed that 39 PCE trips would occur during the mid-day hour as employees run errands or go to and return from lunch. It is also assumed the truck trips to the site for support purposes would occur randomly throughout the 8-hour work day so the total number of trips generated by support trucks rounded up would be 4 PCE trips (25/8 = 3.125 rounds up to 4) during the mid-day peak hour.

The total number of peak hour trips generated by the Alternative 2 during the mid-day peak hour is 43 PCE peak hour trips with half leaving the site and half entering the site.

5.4 Project Alternative 1 Construction Trip Generation Forecast

Alternative 1 is the "no project" alternative and as such will generate no construction trips.

5.5 Project Alternative 2 Construction Trip Generation Forecast

5.5.1 Daily Trip Generation Forecast (Alternative 2)

It is estimated that 43 employees will work on site. To evaluate a worst-case scenario, it is assumed each employee will drive to and from work and that each employee will generate one additional trip per employee during the day to account for lunch and errand trips. This would result in 129 employee trips per day.

For purposes of forecasting, it is also assumed that 5 trucks per day will arrive and depart the site per day to deliver supplies and equipment. This accounts for 10 one-way truck trips per day. Converting trucks to passenger car equivalents using a PCE factor of 2.5, trucks would add an additional 25 PCE trips per day.

Adding the employee trips and truck trips, it is estimated that the preferred alternative will generate 154 PCE (129 + 10*2.5) trips per day.

5.3.2 Mid-day Peak Hour Trip Generation Forecast (Preferred Alternative)

For purposes of forecasting future mid-day peak hour trip generation, it is assumed that 43 PCE trips would occur during the mid-day hour as employees run errands or go to and return from lunch. It is also assumed the truck trips to the site for support purposes would occur randomly throughout the 8-hour work day so the total number of trips generated by support trucks rounded up would be 4 PCE trips (25/8 = 3.125 rounds up to 4) during the mid-day peak hour.

The total number of peak hour trips generated by the preferred alternative during the mid-day peak hour is 47 PCE (43+4) peak hour trips with half leaving the site and half entering the site.

5.6 Project Alternative 3 Construction Trip Generation Forecast

5.6.1 Daily Trip Generation Forecast (Alternative 3)

It is estimated that 17 employees will work on site. To evaluate a worst-case scenario, it is assumed each employee will drive to and from work and that each employee will generate one additional trip per employee during the day to account for lunch and errand trips. This would result in 51 employee trips per day.

For purposes of forecasting, it is also assumed that 5 trucks per day will arrive and depart the site per day to deliver supplies and equipment. This accounts for 10 one-way truck trips per day (25 PCEs). In addition, there would be 160 additional one-way truck trips per day to haul sediment with this alternative. Converting hauling trucks to passenger car equivalents using a PCE factor of 2.5, trucks would add 400 PCE (160*2.5) trips per day.

Adding the employee trips and truck trips, it is estimated that Alternative 3 will generate 476 PCE (51+25+400) trips per day.

5.6.2 Mid-day Peak Hour Trip Generation Forecast (Alternative 3)

For purposes of forecasting future mid-day peak hour trip generation, it is assumed that 17 PCE trips would occur during the mid-day hour as employees run errands or go to and return from lunch. It is also assumed the truck trips to the site for support purposes would occur randomly throughout the 8-hour work day so the total number of trips generated by support trucks rounded up would be 4 PCE trips (25/8 = 3.125 rounds up to 4) during the mid-day peak hour. In addition, there would be 50 PCE truck trips (400/8 =5) associated with the hauling of sediment during the mid-day peak hour.

The total number of peak hour trips generated by Alternative 3 during the mid-day peak hour is 71 PCE (17+4+50) peak hour trips with half leaving the site and half entering the site.

5.7 Project Alternative 4 Construction Trip Generation Forecast

5.7.1 Daily Trip Generation Forecast (Alternative 4)

It is estimated that 17 employees will work on site. To evaluate a worst-case scenario, it is assumed each employee will drive to and from work and that each employee will generate one additional trip per employee during the day to account for lunch and errand trips. This would result in 51 employee trips per day.

For purposes of forecasting, it is also assumed that 5 trucks per day will arrive and depart the site per day to

deliver supplies and equipment. This accounts for 10 one-way truck trips per day (25 PCEs). In addition, there would be 160 additional one-way truck trips per day to haul sediment with this alternative. Converting haul trucks to passenger car equivalents using a PCE factor of 2.5, trucks would add an additional 400 PCE (160*2.5) trips per day.

Adding the employee trips and truck trips, it is estimated that Alternative 4 will generate 476 PCE (51+25+160*2.5) trips per day.

5.7.2 Mid-day Peak Hour Trip Generation Forecast (Alternative 4)

For purposes of forecasting future mid-day peak hour trip generation, it is assumed that 17 PCE trips would occur during the mid-day hour as employees run errands or go to and return from lunch. It is also assumed the truck trips to the site for support purposes would occur randomly throughout the 8-hour work day so the total number of trips generated by support trucks would be 25 PCE trips (25/8 = 3.125 or 4) during the mid-day peak hour. In addition, there would be 50 PCE truck trips (400/8) associated with the hauling of sediment during the mid-day peak hour.

The total number of peak hour trips generated by Alternative 4 during the mid-day peak hour is 71 PCE (17+4+50) peak hour trips with half leaving the site and half entering the site.

5.8 Project Alternative Trip Generation Forecast Summary

Table 7 summarizes the project alternatives trip generation forecasts.

Table 7 – Project Alternatives Trip Generation Forecast Summary

Alternative	Daily Forecast Trips (PCEs)	Mid-day Peak Hour Forecast Trips (PCEs)
Preferred Alternative	142	43
Alternative 1	0	0
Alternative 2	154	47
Alternative 3	476	71
Alternative 4	476	71

6. Traffic Impact Analysis

6.1 Study Intersections/Roadway Segments/Time Frame

KOA Corporation compiled two-hour mid-day traffic counts at four intersections in the project vicinity as well as 24-hour machine counts on the roadway segments between the four intersections. Intersection peak-period turn movement counts were conducted by hand on October 25, 2007. Roadway segment counts were conducted by machine on October 25, 2007 and October 26, 2007. The four selected intersections and roadway segments are listed below:

Study Intersections

1. Highland Oaks Drive/Elkins Avenue
2. Santa Anita Avenue/Elkins Avenue
3. Santa Anita Avenue/Grandview Avenue
4. Santa Anita Avenue/Sierra Madre Boulevard

Roadway Segments

1. Highland Oaks Drive north of Elkins Avenue
2. Elkins Avenue between Wilson Avenue and White Oak Drive
3. Santa Anita Avenue south of Elkins Avenue
4. Santa Anita Avenue south of Andrea Lane
5. Santa Anita Avenue south of Sierra Madre Boulevard

Figure 8 shows the selected study intersections. The intersections that were selected were those in the project vicinity most likely to be used by employees and trucks to travel between the project site and Interstate 210.

The mid-day time period was selected to represent a typical period during the normal workday. It was assumed for the traffic analysis that off-site truck trip scheduling would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.) Figure 9 shows the intersection geometry and control at the selected study intersections. Figure 10 shows the mid-day peak hour volumes. Figure 11 shows the existing 24-hour traffic volumes.

6.2 Traffic Analysis Methodology

The TRAFFIX software was used to perform the analysis of the study intersections, which are all unsignalized The intersection analysis was performed utilizing the 2000 Highway Capacity Manual (HCM) methodology for unsignalized intersections.

Appendix A provides a detailed discussion of the HCM level-of-service methodologies used in the traffic analysis. Appendix B provides the traffic count data sheets.

The project alternatives were analyzed by adding the forecast peak hour project trips for each project alternative to the existing traffic counts, calculating the resulting intersection levels of service and then comparing those levels of service to existing conditions.

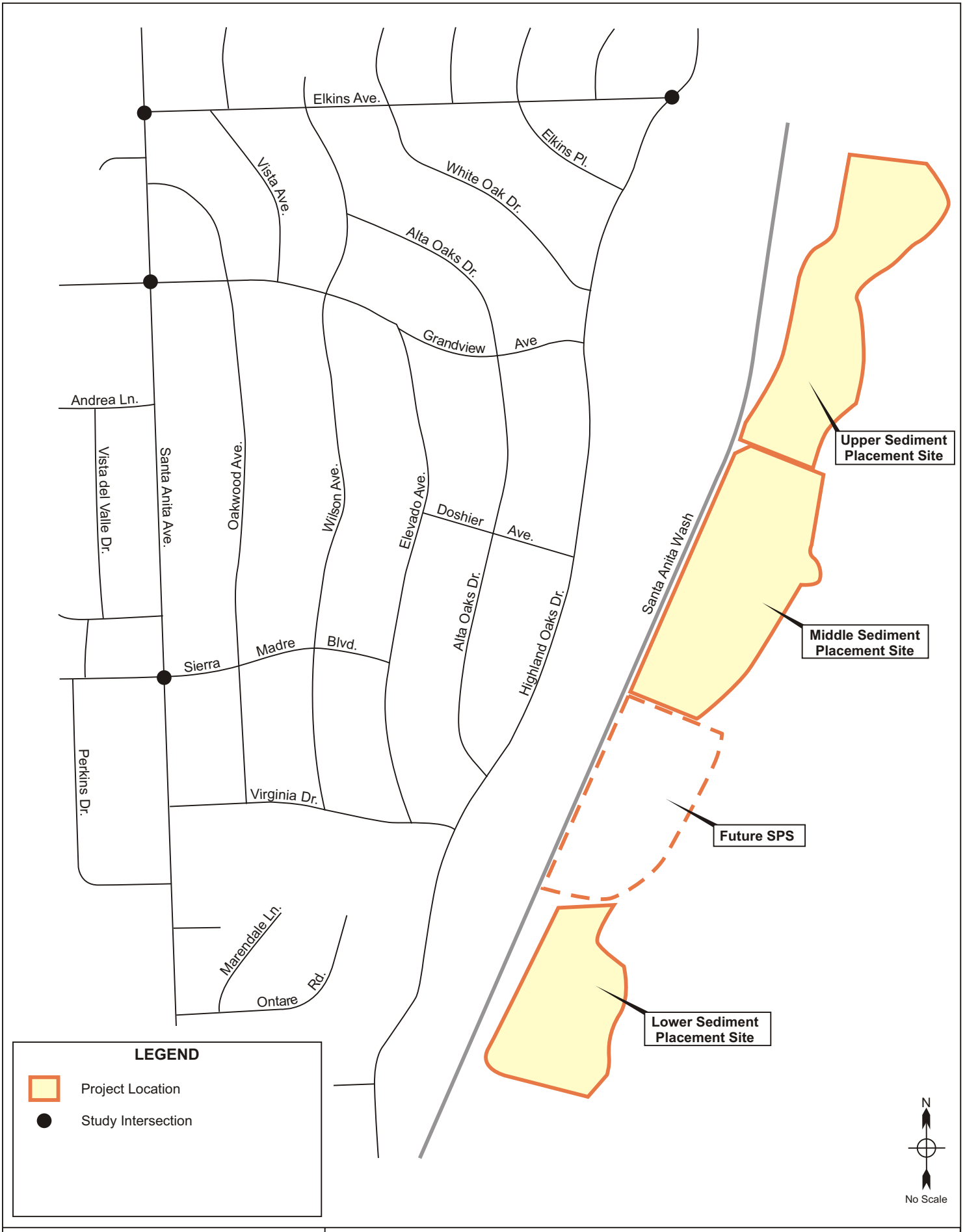
No ambient traffic growth was added to the existing traffic counts to account for future conditions since the area is fully developed. There are no major planned developments in the area that would add significant volumes to the study area intersections and roadway segments. Often there is a potential within an analyzed study area for future regional growth to send new through traffic onto major roadways. As the study area is located away from major commute corridors and freeway bypass surface routes, the potential for any significant growth in area volumes within the Project time period is greatly diminished.

Per City of Arcadia traffic impact standards, the following thresholds define significant impact standards, based on computed volume-to-capacity (V/C) ratios and level of service (LOS) values:

- When traffic generated by the project causes a signalized or unsignalized intersection to move to LOS E or F from LOS D or better, or
- When an intersection already at LOS E or F is worsened by 0.02 or greater change in volume/capacity ratio due to traffic added by the project *

** Per County Congestion Management Program standards, which are used by local jurisdictions that do not have established traffic study guidelines such as the City of Sierra Madre, the latter standard is the sole standard by which V/C-based impacts are determined.*

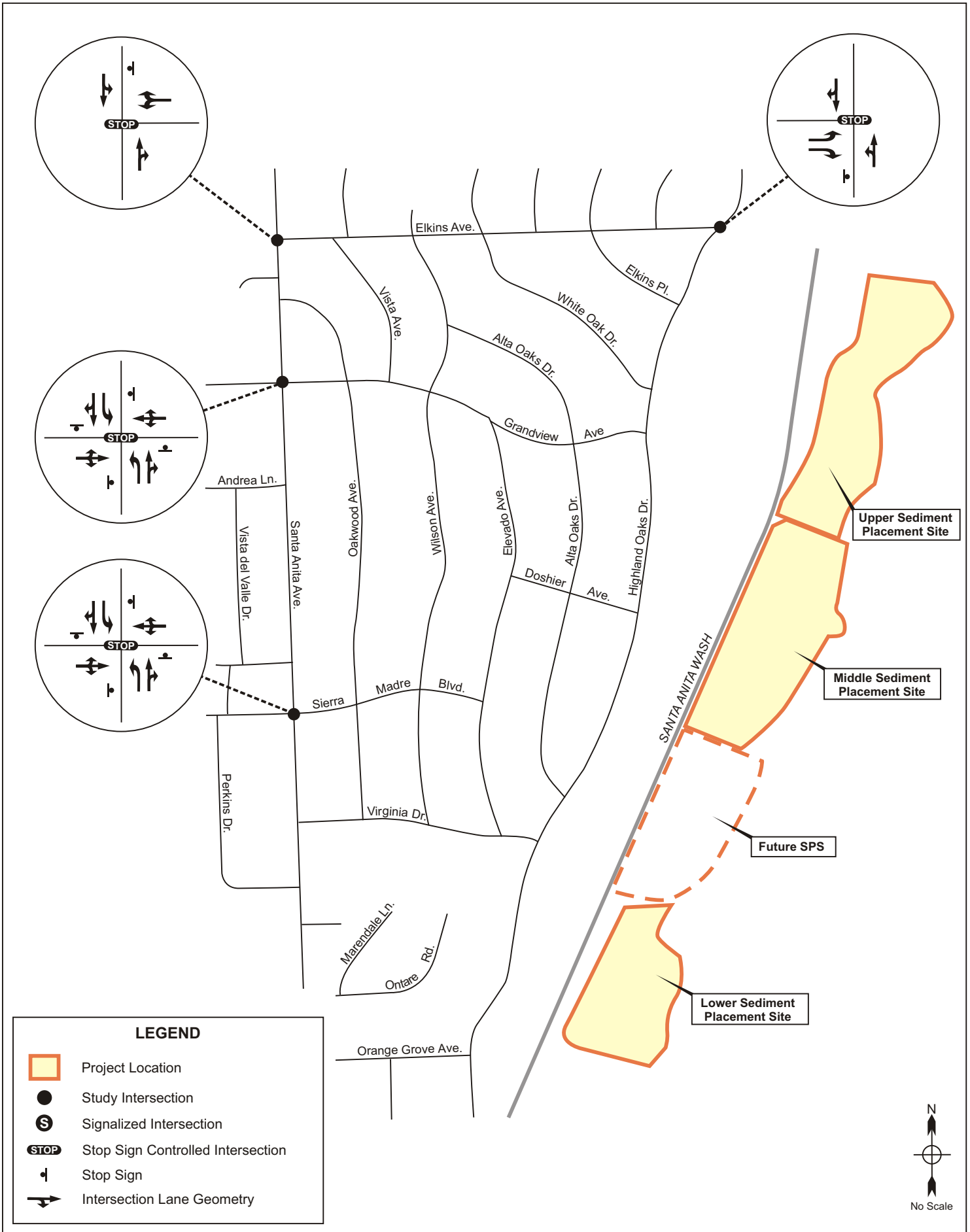
If these lower level of service values (E or F) are not anticipated to be reached by an analysis of a proposed project, a significant traffic impact is not defined.



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 8

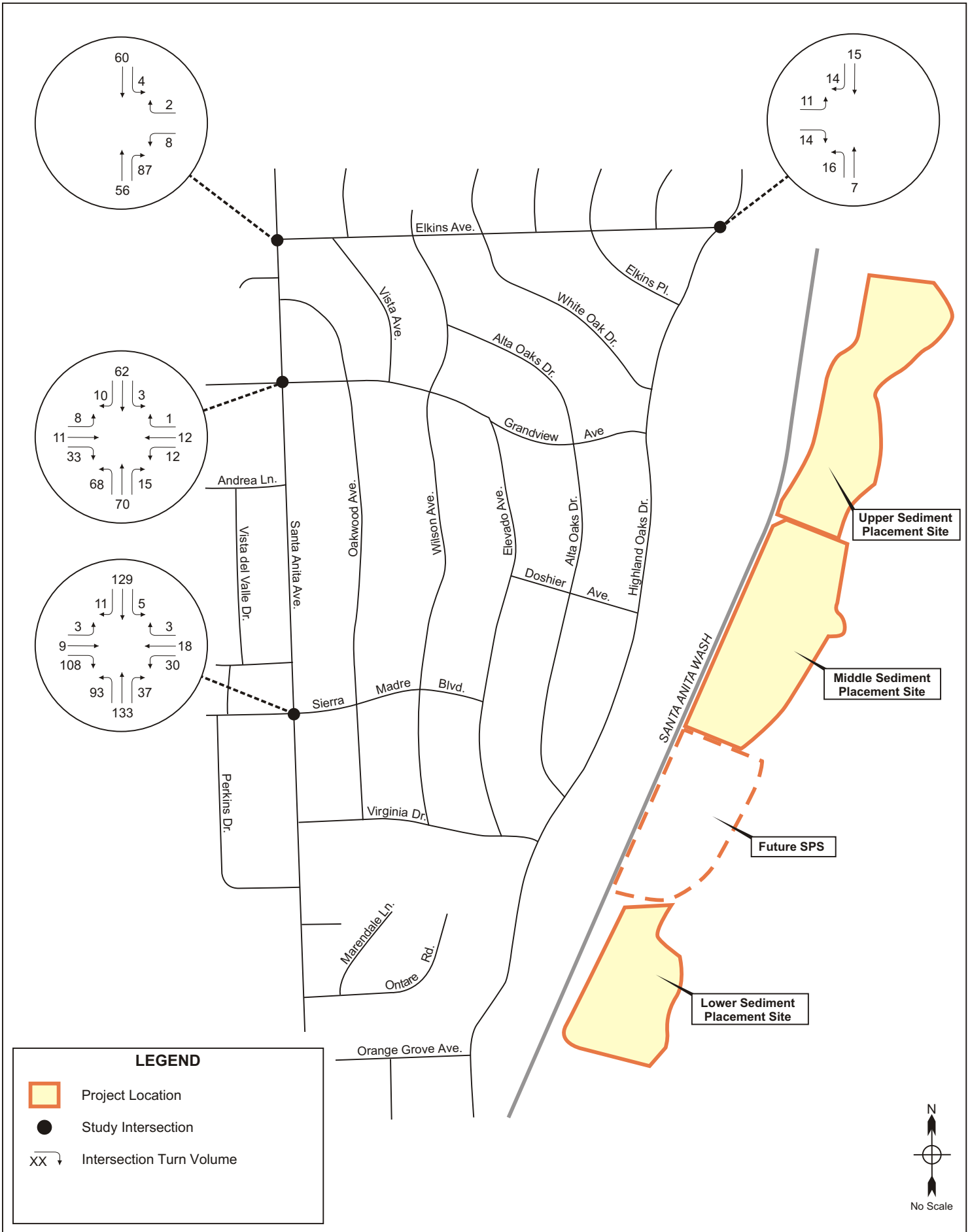
Study Intersections



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Figure 9

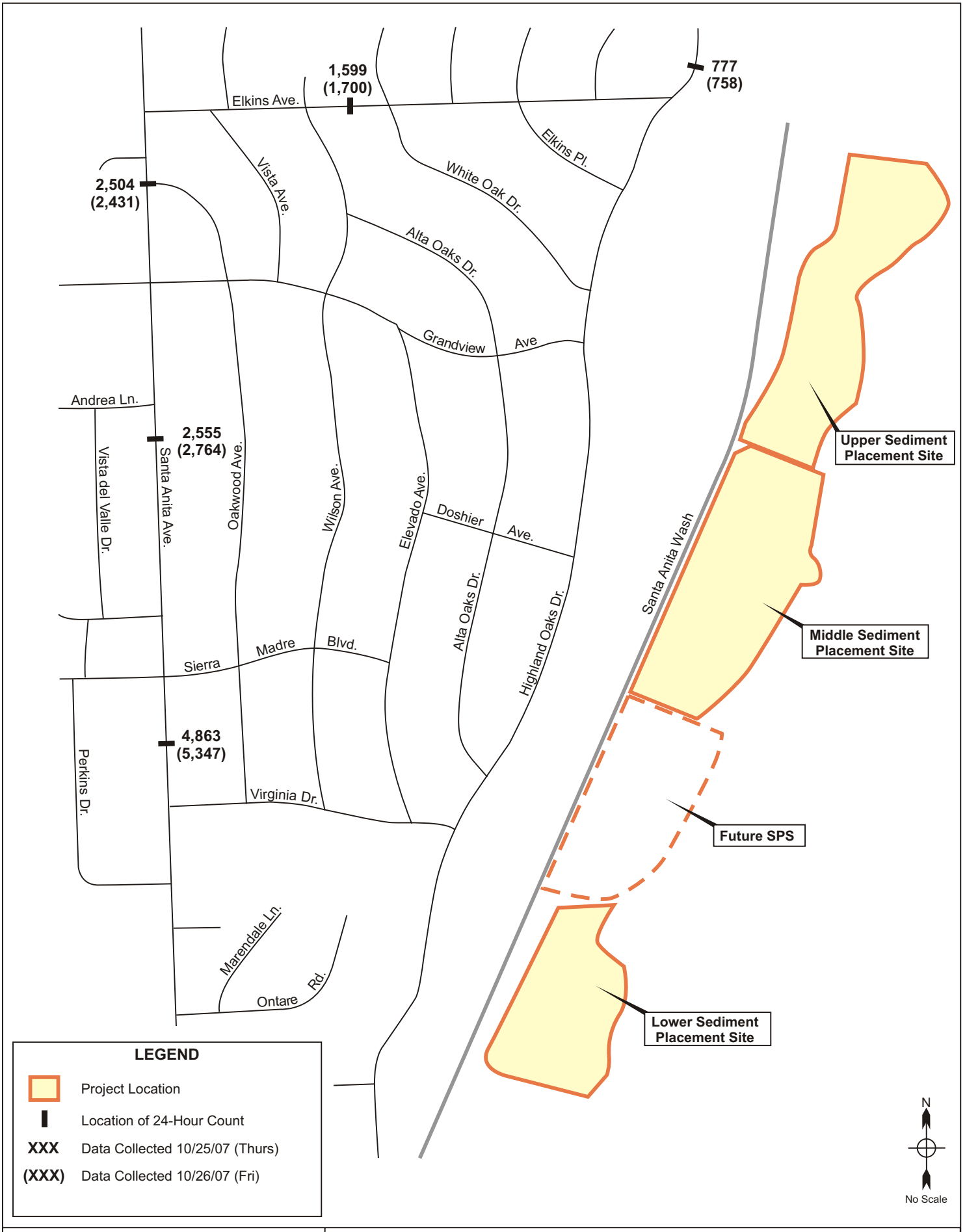
Intersections Geometrics and Control



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 10

Weekday Midday Peak Hour Volumes



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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project — Figure 11

Existing 24-Hour Volumes

6.3 Intersection Analysis

Level-of-service calculations were performed at each of the selected intersection for the mid-day peak periods for the following scenarios. Construction traffic was calculated within the previous section of this report:

- Existing Conditions
- Conditions with the Construction of the Preferred Alternative
- Conditions with the Construction of the Alternative 2
- Conditions with the Construction of the Alternative 3
- Conditions with the Construction of the Alternative 4

As Alternative 1 is the "no project" alternative, the study intersections level-of-service values would be the same as those calculated for existing conditions.

Table 8 shows a summary of the results of the weekday mid-day peak level of service analysis for existing conditions and conditions with the construction of the project alternatives. Level-of-service calculation worksheets are provides in Appendices C, D, E, F and G.

Table 8 – Mid-day Peak Hour Level-of-Service Calculation Summary

	Existing Conditions	Construction Alternative				
		Preferred	1	2	3	4
Intersection	Delay (sec) - LOS	Delay (sec) - LOS	Delay (sec) - LOS	Delay (sec) - LOS	Delay (sec) - LOS	Delay (sec) - LOS
Highland Oaks Drive/Elkins Avenue	8.7 - A	8.7 - A	8.7 - A	8.7 - A	8.8 - A	8.8 - A
Santa Anita Avenue/Elkins Avenue	10.1 - B	10.3 - B	10.1 - B	10.4 - B	10.5 - B	10.5 - B
Santa Anita Avenue/Grandview Avenue	7.9 - A	8.1 - A	7.9 - A	8.1 - A	8.2 - A	8.2 - A
Santa Anita Avenue/Sierra Madre Boulevard	8.8 - A	9.1 - A	8.8 - A	9.1 - A	9.2 - A	9.2 - A

As shown in Table 8, the intersections in the project vicinity currently operate at very good levels of service. The construction traffic is not sufficient to make a significant difference in the calculated mid-day delay at the selected study intersections. Alternatives 3 and 4 would be most noticed by area residents as these two alternatives involve the transport of sediment off on public roadways from the project site. As good level of service values would remain during project conditions, there would be no significant traffic impacts at the study intersections.

6.4 Roadway Segment Analysis

The collected daily traffic volume data shown in Figure 11 is tabulated in Table 9 below such that the collected Thursday and Friday data is averaged to get an average daily volume.

Table 9 – Average Daily Traffic Volumes on Area Roadways

Roadway Segment	*Thursday, October 25, 2007 Volume*	*Friday, October 26, 2007 Volume*	*Average Weekday Daily Volume*
Highland Oaks Drive north of Elkins Avenue	777	758	768
Elkins Avenue between Wilson Avenue and White Oak Drive	1,599	1,700	1,650
Santa Anita Avenue south of Elkins Avenue	2,504	2,431	2,468
Santa Anita Avenue south of Andrea Lane	2,555	2,764	2,660
Santa Anita Avenue south of Sierra Madre Boulevard	4,863	5,347	5,105

Table 10 shows and compares the daily constructed-added traffic volumes (converted to PCEs) to the daily traffic volumes on the selected roadway segments.

Table 10 – Daily Construction Traffic as Compared to Existing Daily Traffic on Selected Roadway Segments

	Added Construction Volume and % Daily Traffic Increase by Alternative									
	Preferred		1		2		3		4	
Roadway Segment	Added Volume	% Increase	Added Volume		Added Volume		Added Volume		Added Volume	
Highland Oaks Drive north of Elkins Avenue	142	18.5%	0	0.0%	154	20.1%	476	62.0%	476	62.0%
Elkins Avenue between Wilson Avenue and White Oak Drive		8.6%		0.0%		9.3%		28.9%		28.9%
Santa Anita Avenue south of Elkins Avenue		5.8%		0.0%		6.2%		19.3%		19.3%
Santa Anita Avenue south of Andrea Lane		5.3%		0.0%		5.8%		17.9%		17.9%
Santa Anita Avenue south of Sierra Madre Boulevard		2.8%		0.0%		3.0%		9.3%		9.3%

As expected, the project would have the greatest noticeable increase in traffic volumes on Highland Oaks Drive and Elkins Avenue, where traffic volumes are currently light.. Alternatives 3 and 4 will increase traffic on area roadways, on a percentage basis, approximately four times more than the Preferred Alternative and Alternative 2.

In addition to the project-related volumes on the segments summarized within Table 10, construction employees will also use Santa Anita Avenue to the north of Elkins Avenue to reach the dam job site. The volumes on Santa Anita to the north of Elkins Avenue would be less than those to the south of Elkins Avenue, due to the area roadway hierarchy and the relative distance of the roadway to major arterials to the south. As impacts have not been defined on Santa Anita Avenue to the south of Elkins Avenue, any traffic impacts to the north would be unlikely.

All roadway segments have sufficient capacity to satisfactorily handle construction-generated traffic, regardless of the alternative selected. Two-lane collector roadways (such as Santa Anita Avenue and Elkins Avenue) can operate at satisfactory levels of service with daily volumes approaching 10,000 vehicles per day. Two-lane local/residential roadways (such as Highland Oaks Drive) can similarly operate with daily volumes approaching 6,000 vehicles per day.

Volumes on the roadways in the project vicinity are well below the upper-end values for daily volumes for both collector roadways and local/residential roadways defined above.

As there would be capacity to handle project-related truck volumes and employee vehicle traffic under all proposed alternatives, and as the study area roadway segments are projected to operate at good level of service values, there would not be significant traffic impacts at the roadway segment locations. LOS E or F operations are not likely during the Project period, and therefore the Project would not create any significant impacts that would require capacity-based mitigation measures.

7. Local Access and Parking Impact Conclusions

The local roadways within the study area for this project traffic impact study generally have sufficient capacity to accommodate construction-generated traffic, regardless of the project alternative selected. Of the build alternatives, the Preferred Alternative and Alternative 2 would generate the least construction traffic and would not transport sediment in large trucks on public roadways adjacent to the overall project site.

Alternatives 3 and 4 haul sediment from the project site to Irwindale using local roadways and the I-210 freeway as part of the haul route. Localized traffic control measures, such as parking prohibition, may be required during sediment hauling hours. The Arcadia Wilderness Park vehicle parking area would be reconfigured for a conveyance route under the Preferred Project Alternative and Alternative 3, and an at-grade trucking route under Alternative 2 and Alternative 4.

As good level of service values would remain during project conditions, there would be no significant traffic impacts at the study intersections.

As there would be capacity to handle project-related truck volumes and employee vehicle traffic under all proposed alternatives, and as the study area roadway segments are projected to operate at good level of service values, there would not be any significant traffic impacts at the roadway segment locations.

7.1 Local Access

The local roadways have sufficient geometric characteristics to accommodate construction generated traffic for each potential construction alternatives. The roadways in the project vicinity are relatively narrow and are not well suited to handle heavy truck traffic. For example, Elkins Avenue is 36-feet wide, which would provide two travel lanes of nine feet in width each when on-street parking area (each of eight feet in width) are occupied by vehicles. In order to facilitate the movement of large truck to haul sediment on public roadways, as would be required in Alternatives 3 and 4, prohibition of on-street parking along the narrower portions of Highland Oaks Drive, Elkins Avenue and Santa Anita Avenue may be required during sediment haul hours.

It was assumed for the traffic analysis that off-site truck trip scheduling under Alternative 3 and Alternative 4 would be conducted outside of the a.m. peak traffic period (7:00 a.m. to 9:00 a.m.) and the p.m. peak traffic period (4:00 p.m. to 6:00 p.m.) Such scheduling would avoid any potential overlap with peak-hour commute traffic to and from the local residential areas and project-related truck trips.

Truck trips should be spaced and trucks should be held at the eastern end of Elkins Avenue and at the Irwindale SPS to provide gaps between trucks and avoid the platooning of trucks on local residential streets within the study area.

A private school exists along the east side of Santa Anita Avenue, immediately adjacent to the intersection of Santa Anita Avenue and Virginia Drive. This intersection has been signalized to provide safe access during school pick-up/drop-off activity periods. The routing of project trucks under Alternative 3 and Alternative 4 during off-peak periods would avoid conflicts with pick-up/drop-off activity at the school during the a.m. peak period, but could overlap with afternoon activity at the school. Scheduling of truck trips to avoid platooning will avoid the creation of any significant impacts in the vicinity of this school.

7.2 Construction Parking

The construction site is anticipated to accommodate all parking demand generated by construction activity. Localized on-street parking impacts are not anticipated during the project construction period.

7.3 Wilderness Park Vehicle Parking Area

Under the Preferred Project Alternative and Alternative 3, a conveyance system would be installed for the transport of sediment over the Wilderness Park parking area. The system would span over the vehicle parking lot for the Arcadia Wilderness Park. This system, and its support frame, would occupy much of the vehicle parking spaces at the west end of the parking lot.

Under Alternative 2 and Alternative 4, conveyance of materials would terminate at the Wilderness Park staging area, immediately north of the park's vehicle parking area. The truck hauling route would begin at this staging area, and would proceed south through the parking lot to access roads at the south end of the parking lot.

Demand within the parking lot is low on weekdays and does not reach capacity levels. On weekends, the park facilities are available to groups by reservation only and general public access is prohibited. It is not anticipated that the analyzed project alternatives would create any significant parking impacts within the park vehicle parking area. During the hauling routes planned under Alternative 2 and Alternative 4, flagpersons should be stationed within the parking area to provide for access control and avoid conflicts between park user vehicles and hauling trucks. The use of flagpersons at this location will avoid the creation of any significant access impacts at the Wilderness Park facility.

Appendix A
Level-of-Service Calculation Methodology

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of *level of service* has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Level-of-service categories are similar to report card ratings for traffic performance. Intersections are typically controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of Service D and E are progressively worse peak hour operating conditions and Level of Service F conditions represent where demand exceeds the capacity of an intersection. Most urban communities in the United States set Level of Service D as the minimum acceptable level of service for peak hour operations and plan for level of service C or better for all times of the day. Communities in Southern California where traffic congestion is common sometimes set Level of Service E as the threshold of the minimum acceptable level of service. The *Highway Capacity Manual* provides level of service calculation methodology for both intersections and arterials.[2]

The following sections provide interpretations of the analysis approaches.

ALL-WAY STOP CONTROLLED INTERSECTIONS

Unsignalized intersections and all-way stop controlled intersections are each subject to separate capacity analysis methodology. All-way stop controlled intersection operations are reported by leg of the intersection.

This method calculates a delay value for each approach to the intersection. The 2000 Highway Capacity Manual describes the detailed methodology. The following table describes the amount of delay associated with each level of service.

Delay (seconds)	Level of Service
0-10	A
10-15	B
15-25	C
25-35	D
35-50	E
>50	F

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

[2] 2000 Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2000, Chapters 16 and 17.

UNSIGNALIZED INTERSECTIONS (Two-way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left-turn movements). The method assesses available and critical gaps in the traffic stream, which make it possible for side street traffic to enter the main street flow. The *2000 Highway Capacity Manual* describes the detailed methodology. It is not unusual for an intersection to experience Level of Service E or F conditions for the minor street left-turn movements. It should be understood that, often, a poor level of service is experienced by only a few vehicles and that the intersection as a whole operates acceptably.

Unsignalized levels of service are described in the following table.

Level of Service	Expected Delay	(Seconds/Vehicle)
A	Little or no delay.	0-10.0
B	Short traffic delay.	>10.1 – 15.0
C	Average traffic delays.	>15.1 – 25.0
D	Long traffic delays.	>25.1 – 35.0
E	Very long traffic delays.	>35.1 – 50.0
F	Extreme delays potentially affecting other traffic movements in the intersection.	>50

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

SIGNALIZED INTERSECTIONS

For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, a queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the *Highway Capacity Manual* (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (seconds)	Description
A	≤ 10.0	**Free-Flow/Insignificant Delays:** No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1 – 20.0	**Stable Operation/Minimal Delays:** An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1 – 35.0	**Stable Operation/Acceptable Delays:** Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1 – 55.0	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red cycle indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths and high v/c ratios. The proportion of vehicles no stopping declines, and individual cycle failures are noticeable.
E	55.1 – 80.0	**Unstable Operation/Significant Delays:** Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	≥ 80.1	**Forced Flow/Excessive Delays:** Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington, D.C.

Appendix B
Traffic Volume Data

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Highland Oaks Dr DATE: 10/25/2007 LOCATION: City of Sierra Madre

E-W STREET: Elkins Ave DAY: THURSDAY PROJECT# 07-2507-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	1	0	0	1	0	
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
12:00 PM				1		5	3	2			2	1	14
12:15 PM				4		3	3	0			3	3	16
12:30 PM				3		8	3	1			2	7	24
12:45 PM				6		2	4	0			1	1	14
1:00 PM				5		4	6	2			3	2	22
1:15 PM				2		3	2	2			3	2	14
1:30 PM				2		4	3	2			4	7	22
1:45 PM				2		3	5	1			4	4	19
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM													
4:15 PM													
4:30 PM													
4:45 PM													
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 25	ST 0	SR 32	EL 29	ET 10	ER 0	WL 0	WT 22	WR 27	TOTAL 145

NOON Peak Hr Begins at: 100 PM

PEAK VOLUMES =	0	0	0	11	0	14	16	7	0	0	14	15	77
PEAK HR. FACTOR:		0.000			0.694			0.000			0.659		0.875

CONTROL: 1-Way Stop S

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Santa Anita Ave DATE: 10/25/2007 LOCATION: City of Sierra Madre

E-W STREET: Elkins Ave DAY: THURSDAY PROJECT# 07-2507-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	0	0	0	1	0	
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
12:00 PM	1	7	14	0	9		0			14	0	1	46
12:15 PM	3	9	9	0	11		0			7	0	1	40
12:30 PM	2	10	11	1	5		0			17	0	0	46
12:45 PM	2	8	9	0	2		0			5	0	0	26
1:00 PM	4	11	10	1	6		1			9	1	0	43
1:15 PM	1	2	12	2	9		0			7	0	0	33
1:30 PM	1	7	11	0	10		0			16	0	0	45
1:45 PM	1	2	11	0	8		0			13	0	0	35
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM													
4:15 PM													
4:30 PM													
4:45 PM													
TOTAL VOLUMES =	15	56	87	4	60	0	1	0	0	88	1	2	314

NOON Peak Hr Begins at: 1200 PM

PEAK VOLUMES =	8	34	43	1	27	0	0	0	0	43	0	2	158
PEAK HR. FACTOR:		0.924			0.636			0.000			0.662		0.859

CONTROL: 1-Way Stop W

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Santa Anita Ave DATE: 10/25/2007 LOCATION: City of Sierra Madre

E-W STREET: Grandview Ave DAY: THURSDAY PROJECT# 07-2507-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
12:00 PM	17	16	4	2	21	3	1	5	2	2	5	0	78
12:15 PM	20	18	2	0	14	2	1	2	15	2	4	1	81
12:30 PM	16	17	6	1	19	4	4	0	15	3	1	0	86
12:45 PM	15	19	3	0	8	1	2	4	21	5	2	0	80
1:00 PM	8	16	4	1	10	2	3	1	14	4	2	0	65
1:15 PM	8	15	3	0	15	3	1	2	7	4	1	0	59
1:30 PM	3	16	2	1	25	3	3	4	6	0	3	0	66
1:45 PM	12	16	3	0	19	2	1	2	7	3	3	0	68
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM													
4:15 PM													
4:30 PM													
4:45 PM													
TOTAL VOLUMES =	99	133	27	5	131	20	16	20	87	23	21	1	583

NOON Peak Hr Begins at: 1200 PM

PEAK VOLUMES =	68	70	15	3	62	10	8	11	53	12	12	1	325
PEAK HR. FACTOR:		0.956			0.721			0.667			0.893		0.945

CONTROL: 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Santa Anita Ave DATE: 10/25/2007 LOCATION: City of Sierra Madre

E-W STREET: Sierra Madre Blvd DAY: THURSDAY PROJECT# 07-2507-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	0	1	0	1	0		
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
12:00 PM	16	24	2	0	21	2	0	1	16	2	5	0	89
12:15 PM	21	26	1	0	28	1	1	3	17	8	3	0	109
12:30 PM	20	33	3	2	24	2	0	2	23	11	3	1	124
12:45 PM	25	37	8	1	31	3	1	5	27	9	6	1	154
1:00 PM	22	29	10	2	35	2	0	0	34	6	2	0	142
1:15 PM	26	34	16	0	39	4	2	2	24	4	7	1	159
1:30 PM	21	24	8	1	25	1	0	3	22	6	4	2	117
1:45 PM	18	22	7	1	20	0	3	1	19	4	1	1	97
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM													
4:15 PM													
4:30 PM													
4:45 PM													
TOTAL VOLUMES =	NL 169	NT 229	NR 55	SL 7	ST 223	SR 15	EL 7	ET 17	ER 182	WL 50	WT 31	WR 6	TOTAL 991

NOON Peak Hr Begins at: 1230 PM

PEAK VOLUMES =	93	133	37	5	129	11	3	9	108	30	18	3	579
PEAK HR. FACTOR:		0.865			0.843			0.882			0.797		0.910

CONTROL: 4 WAY STOP

Volumes for: Thursday, October 25, 2007 City: Sierra Madre Project #: 07-2508-001

Location: Highland Oaks Dr n/o Elkins Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	0		0					12:00	3		9				
00:15	0		0					12:15	4		6				
00:30	0		1					12:30	10		10				
00:45	1	1	0	1			2	12:45	8	25	8	33			58
01:00	0		0					13:00	7		7				
01:15	1		0					13:15	7		6				
01:30	0		0					13:30	8		7				
01:45	0	1	0	0			1	13:45	9	31	3	23			54
02:00	0		0					14:00	5		7				
02:15	0		0					14:15	5		5				
02:30	0		0					14:30	10		6				
02:45	0	0	0	0				14:45	5	25	4	22			47
03:00	1		0					15:00	6		9				
03:15	0		0					15:15	6		6				
03:30	0		0					15:30	4		8				
03:45	0	1	0	0			1	15:45	7	23	2	25			48
04:00	0		0					16:00	8		5				
04:15	0		0					16:15	15		8				
04:30	1		0					16:30	5		7				
04:45	0	1	0	0			1	16:45	4	32	4	24			56
05:00	0		1					17:00	3		6				
05:15	1		1					17:15	9		7				
05:30	0		1					17:30	7		4				
05:45	0	1	1	4			5	17:45	10	29	3	20			49
06:00	1		3					18:00	9		4				
06:15	2		4					18:15	7		2				
06:30	4		7					18:30	7		2				
06:45	0	7	3	17			24	18:45	4	27	4	12			39
07:00	1		9					19:00	5		2				
07:15	2		11					19:15	8		3				
07:30	2		11					19:30	6		4				
07:45	6	11	6	37			48	19:45	9	28	0	9			37
08:00	7		10					20:00	3		2				
08:15	9		10					20:15	8		4				
08:30	11		8					20:30	7		0				
08:45	5	32	8	36			68	20:45	14	32	1	7			39
09:00	1		10					21:00	3		3				
09:15	6		9					21:15	4		1				
09:30	6		6					21:30	5		0				
09:45	6	19	6	31			50	21:45	4	16	2	6			22
10:00	9		7					22:00	1		2				
10:15	12		11					22:15	2		0				
10:30	6		10					22:30	2		0				
10:45	3	30	7	35			65	22:45	0	5	1	3			8
11:00	6		11					23:00	1		0				
11:15	4		5					23:15	0		0				
11:30	7		7					23:30	0		0				
11:45	6	23	7	30			53	23:45	0	1	1	1			2
Total Vol.		127		191			**318**			274		185			**459**

Daily Totals

NB	SB	EB	WB	**Combined**
401	376			**777**

	AM			**PM**		
Split %	39.9%	60.1%	**40.9%**	59.7%	40.3%	**59.1%**
Peak Hour	07:45	10:15	**08:00**	15:45	12:00	**12:30**
Volume	33	39	**68**	35	33	**63**

Volumes for: Friday, October 26, 2007 City: Sierra Madre Project #: 07-2508-001

Location: Highland Oaks Dr n/o Elkins Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	0		0					12:00	5		9				
00:15	0		0					12:15	9		8				
00:30	1		0					12:30	7		6				
00:45	1	2	0	0			2	12:45	7	28	7	30			58
01:00	1		0					13:00	5		3				
01:15	0		0					13:15	5		2				
01:30	0		0					13:30	7		12				
01:45	0	1	0	0			1	13:45	8	25	3	20			45
02:00	0		0					14:00	10		12				
02:15	0		0					14:15	7		9				
02:30	0		0					14:30	5		6				
02:45	0	0	0	0				14:45	7	29	9	36			65
03:00	0		0					15:00	8		6				
03:15	0		0					15:15	11		4				
03:30	0		0					15:30	5		7				
03:45	0	0	0	0				15:45	2	26	11	28			54
04:00	0		0					16:00	6		4				
04:15	0		0					16:15	5		11				
04:30	0		1					16:30	6		7				
04:45	0	0	2	3			3	16:45	9	26	4	26			52
05:00	2		1					17:00	11		8				
05:15	2		0					17:15	4		5				
05:30	0		1					17:30	5		7				
05:45	2	6	1	3			9	17:45	3	23	6	26			49
06:00	0		1					18:00	5		9				
06:15	0		2					18:15	10		4				
06:30	1		3					18:30	7		5				
06:45	0	1	2	8			9	18:45	7	29	4	22			51
07:00	1		3					19:00	4		4				
07:15	6		8					19:15	6		5				
07:30	2		14					19:30	5		2				
07:45	4	13	6	31			44	19:45	2	17	1	12			29
08:00	5		16					20:00	4		5				
08:15	7		7					20:15	6		2				
08:30	2		5					20:30	8		5				
08:45	2	16	4	32			48	20:45	5	23	4	16			39
09:00	7		2					21:00	3		1				
09:15	5		5					21:15	3		1				
09:30	4		6					21:30	14		1				
09:45	3	19	7	20			39	21:45	6	26	3	6			32
10:00	8		8					22:00	5		3				
10:15	9		5					22:15	4		2				
10:30	2		6					22:30	4		0				
10:45	6	25	12	31			56	22:45	6	19	0	5			24
11:00	5		5					23:00	2		0				
11:15	2		8					23:15	0		2				
11:30	4		5					23:30	0		3				
11:45	5	16	5	23			39	23:45	3	5	0	5			10
Total Vol.		99		151			**250**			276		232			**508**

Daily Totals

NB	SB	EB	WB	**Combined**
375	383			**758**

	AM			PM		
Split %	39.6%	60.4%	**33.0%**	54.3%	45.7%	**67.0%**
Peak Hour	11:45	07:15	**07:15**	13:30	13:30	**13:30**
Volume	26	44	**61**	32	36	**68**

Volumes for: Thursday, October 25, 2007 City: Sierra Madre Project #: 07-2508-002

Location: Elkins Ave btwn Wilson Ave & White Oaks-Carolwood

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		1			12:00			16		12		
00:15			0		0			12:15			9		5		
00:30			0		1			12:30			12		14		
00:45			1	2	0	2	4	12:45			12	49	13	44	93
01:00			0		0			13:00			10		12		
01:15			1		0			13:15			10		7		
01:30			0		0			13:30			11		14		
01:45			1	2	1	1	3	13:45			10	41	11	44	85
02:00			1		0			14:00			11		6		
02:15			1		0			14:15			17		7		
02:30			0		0			14:30			11		16		
02:45			0	2	0	0	2	14:45			6	45	13	42	87
03:00			1		0			15:00			14		14		
03:15			0		0			15:15			11		11		
03:30			0		0			15:30			11		10		
03:45			0	1	0	0	1	15:45			11	47	13	48	95
04:00			0		1			16:00			12		14		
04:15			0		0			16:15			24		16		
04:30			1		1			16:30			13		11		
04:45			0	1	0	2	3	16:45			14	63	6	47	110
05:00			3		3			17:00			21		15		
05:15			1		2			17:15			17		10		
05:30			0		4			17:30			18		14		
05:45			2	6	6	15	21	17:45			22	78	5	44	122
06:00			1		4			18:00			17		12		
06:15			2		7			18:15			19		7		
06:30			4		13			18:30			15		16		
06:45			5	12	14	38	50	18:45			18	69	6	41	110
07:00			3		24			19:00			10		6		
07:15			5		36			19:15			17		6		
07:30			12		24			19:30			14		7		
07:45			20	40	15	99	139	19:45			17	58	3	22	80
08:00			12		22			20:00			13		3		
08:15			9		18			20:15			14		8		
08:30			19		16			20:30			7		4		
08:45			7	47	20	76	123	20:45			13	47	3	18	65
09:00			10		19			21:00			6		3		
09:15			14		15			21:15			7		3		
09:30			10		16			21:30			8		4		
09:45			11	45	7	57	102	21:45			15	36	7	17	53
10:00			10		16			22:00			8		3		
10:15			16		21			22:15			3		4		
10:30			12		13			22:30			6		2		
10:45			8	46	19	69	115	22:45			3	20	2	11	31
11:00			14		16			23:00			0		0		
11:15			8		17			23:15			3		0		
11:30			6		16			23:30			0		0		
11:45			13	41	12	61	102	23:45			0	3	0	0	3
Total Vol.				245		420	**665**					556		378	**934**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			801	798	**1599**

	AM			**PM**		
Split %	36.8%	63.2%	**41.6%**	59.5%	40.5%	**58.4%**
Peak Hour	07:45	07:00	**07:15**	17:00	14:30	**17:00**
Volume	60	99	**146**	78	54	**122**

Volumes for: Friday, October 26, 2007 City: Sierra Madre Project #: 07-2508-002

Location: Elkins Ave btwn Wilson Ave & White Oaks-Carolwood

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			0		2			12:00			13		11		
00:15			2		0			12:15			15		14		
00:30			1		1			12:30			17		12		
00:45			0	3	0	3	6	12:45			12	57	18	55	112
01:00			2		0			13:00			11		12		
01:15			0		0			13:15			11		5		
01:30			0		0			13:30			24		19		
01:45			1	3	0	0	3	13:45			12	58	20	56	114
02:00			1		1			14:00			13		14		
02:15			0		0			14:15			13		16		
02:30			1		0			14:30			6		14		
02:45			1	3	0	1	4	14:45			15	47	9	53	100
03:00			0		0			15:00			25		19		
03:15			1		0			15:15			19		14		
03:30			0		0			15:30			17		12		
03:45			0	1	0	0	1	15:45			1	62	12	57	119
04:00			0		1			16:00			15		5		
04:15			1		0			16:15			11		11		
04:30			1		1			16:30			20		15		
04:45			0	2	2	4	6	16:45			18	64	4	35	99
05:00			1		1			17:00			22		11		
05:15			0		0			17:15			17		7		
05:30			3		3			17:30			14		14		
05:45			2	6	4	8	14	17:45			12	65	5	37	102
06:00			0		1			18:00			15		16		
06:15			1		6			18:15			20		12		
06:30			2		11			18:30			17		20		
06:45			3	6	12	30	36	18:45			20	72	7	55	127
07:00			6		19			19:00			14		7		
07:15			6		29			19:15			9		14		
07:30			9		31			19:30			12		1		
07:45			12	33	14	93	126	19:45			7	42	3	25	67
08:00			11		23			20:00			8		14		
08:15			13		10			20:15			13		4		
08:30			16		23			20:30			9		7		
08:45			11	51	23	79	130	20:45			7	37	6	31	68
09:00			21		16			21:00			12		5		
09:15			11		17			21:15			7		5		
09:30			5		18			21:30			20		3		
09:45			15	52	11	62	114	21:45			7	46	7	20	66
10:00			15		13			22:00			11		3		
10:15			9		12			22:15			6		5		
10:30			7		12			22:30			10		1		
10:45			12	43	12	49	92	22:45			12	39	0	9	48
11:00			14		17			23:00			3		3		
11:15			7		14			23:15			3		3		
11:30			16		13			23:30			3		5		
11:45			20	57	18	62	119	23:45			4	13	3	14	27
Total Vol.				260		391	**651**					602		447	**1049**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			862	838	**1700**

	AM			PM		
Split %	39.9%	60.1%	**38.3%**	57.4%	42.6%	**61.7%**
Peak Hour	11:45	07:15	**08:30**	16:30	13:30	**13:30**
Volume	65	97	**138**	77	69	**131**

Volumes for: Thursday, October 25, 2007 City: Sierra Madre Project #: 07-2508-003

Location: Santa Anita Ave s/o Elkins Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	1		1					12:00	23		23				
00:15	1		1					12:15	16		14				
00:30	2		2					12:30	22		18				
00:45	1	5	0	4			9	12:45	21	82	8	63			145
01:00	0		0					13:00	23		14				
01:15	2		0					13:15	13		23				
01:30	1		1					13:30	20		25				
01:45	1	4	0	1			5	13:45	16	72	21	83			155
02:00	1		1					14:00	22		16				
02:15	2		0					14:15	21		14				
02:30	0		0					14:30	17		26				
02:45	0	3	0	1			4	14:45	13	73	12	68			141
03:00	1		0					15:00	26		20				
03:15	0		0					15:15	26		20				
03:30	0		0					15:30	21		25				
03:45	0	1	0	0			1	15:45	16	89	17	82			171
04:00	0		1					16:00	18		21				
04:15	0		1					16:15	25		19				
04:30	1		1					16:30	23		11				
04:45	0	1	0	3			4	16:45	20	86	11	62			148
05:00	2		4					17:00	23		26				
05:15	1		5					17:15	28		19				
05:30	1		7					17:30	29		26				
05:45	0	4	7	23			27	17:45	29	109	18	89			198
06:00	2		5					18:00	28		27				
06:15	1		11					18:15	31		11				
06:30	6		16					18:30	20		19				
06:45	12	21	20	52			73	18:45	27	106	15	72			178
07:00	14		24					19:00	15		7				
07:15	9		43					19:15	32		9				
07:30	14		38					19:30	21		7				
07:45	25	62	22	127			189	19:45	20	88	8	31			119
08:00	16		29					20:00	25		8				
08:15	16		29					20:15	21		11				
08:30	22		30					20:30	11		10				
08:45	15	69	30	118			187	20:45	23	80	6	35			115
09:00	19		31					21:00	6		7				
09:15	21		22					21:15	9		6				
09:30	17		27					21:30	16		6				
09:45	15	72	15	95			167	21:45	20	51	12	31			82
10:00	15		28					22:00	11		2				
10:15	19		30					22:15	7		6				
10:30	23		27					22:30	6		3				
10:45	17	74	28	113			187	22:45	5	29	2	13			42
11:00	19		24					23:00	2		2				
11:15	13		18					23:15	5		0				
11:30	16		23					23:30	0		1				
11:45	16	64	17	82			146	23:45	0	7	1	4			11
Total Vol.		380		619			**999**			872		633			**1505**

Daily Totals

NB	SB	EB	WB	**Combined**
1252	1252			**2504**

	AM			**PM**		
Split %	38.0%	62.0%	**39.9%**	57.9%	42.1%	**60.1%**
Peak Hour	07:45	07:15	**07:15**	17:30	17:15	**17:15**
Volume	79	132	**196**	117	90	**204**

Volumes for: Friday, October 26, 2007 City: Sierra Madre Project #: 07-2508-003

Location: Santa Anita Ave s/o Elkins Ave

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	1		2					12:00	17		27				
00:15	2		0					12:15	21		26				
00:30	2		1					12:30	28		18				
00:45	1	6	0	3			9	12:45	15	81	10	81			162
01:00	2		0					13:00	12		11				
01:15	1		0					13:15	16		15				
01:30	1		1					13:30	32		20				
01:45	0	4	1	2			6	13:45	16	76	21	67			143
02:00	2		1					14:00	21		15				
02:15	0		0					14:15	22		16				
02:30	2		0					14:30	15		20				
02:45	2	6	0	1			7	14:45	25	83	19	70			153
03:00	1		0					15:00	28		20				
03:15	1		0					15:15	36		18				
03:30	0		1					15:30	28		20				
03:45	0	2	1	2			4	15:45	8	100	19	77			177
04:00	0		1					16:00	21		15				
04:15	0		1					16:15	14		18				
04:30	1		1					16:30	30		10				
04:45	0	1	2	5			6	16:45	28	93	8	51			144
05:00	2		2					17:00	28		15				
05:15	0		2					17:15	26		20				
05:30	0		7					17:30	23		18				
05:45	2	4	4	15			19	17:45	22	99	10	63			162
06:00	1		5					18:00	23		11				
06:15	2		8					18:15	30		10				
06:30	1		20					18:30	21		8				
06:45	11	15	15	48			63	18:45	26	100	15	44			144
07:00	10		20					19:00	24		7				
07:15	12		44					19:15	13		8				
07:30	11		38					19:30	16		9				
07:45	12	45	27	129			174	19:45	16	69	7	31			100
08:00	14		27					20:00	15		7				
08:15	20		23					20:15	13		8				
08:30	22		25					20:30	27		9				
08:45	18	74	32	107			181	20:45	16	71	7	31			102
09:00	26		31					21:00	18		7				
09:15	16		20					21:15	14		9				
09:30	15		30					21:30	20		8				
09:45	21	78	27	108			186	21:45	19	71	7	31			102
10:00	24		20					22:00	6		6				
10:15	12		18					22:15	7		4				
10:30	15		20					22:30	3		5				
10:45	17	68	21	79			147	22:45	2	18	7	22			40
11:00	19		25					23:00	8		10				
11:15	9		20					23:15	7		8				
11:30	18		18					23:30	4		7				
11:45	23	69	21	84			153	23:45	2	21	1	26			47
Total Vol.		372		583			**955**			882		594			**1476**

Daily Totals

NB	SB	EB	WB	**Combined**
1254	1177			**2431**

	AM			**PM**		
Split %	39.0%	61.0%	**39.3%**	59.8%	40.2%	**60.7%**
Peak Hour	11:45	07:15	**08:15**	14:45	12:00	**14:45**
Volume	89	136	**197**	117	81	**194**

Volumes for: Thursday, October 25, 2007 City: Sierra Madre Project #: 07-2508-004

Location: Santa Anita Ave s/o Andrea Ln

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	3		5					12:00	40		38				
00:15	4		1					12:15	37		27				
00:30	5		3					12:30	39		42				
00:45	2	14	1	10			24	12:45	30	146	30	137			283
01:00	1		1					13:00	33		27				
01:15	4		0					13:15	31		26				
01:30	2		1					13:30	24		28				
01:45	2	9	0	2			11	13:45	30	118	26	107			225
02:00	2		2					14:00	40		28				
02:15	2		0					14:15	27		26				
02:30	0		0					14:30	24		42				
02:45	1	5	2	4			9	14:45	34	125	41	137			262
03:00	2		0					15:00	37		34				
03:15	0		0					15:15	35		30				
03:30	0		0					15:30	40		42				
03:45	0	2	1	1			3	15:45	31	143	38	144			287
04:00	1		1					16:00	32		35				
04:15	0		1					16:15	43		31				
04:30	0		3					16:30	47		30				
04:45	2	3	5	10			13	16:45	33	155	27	123			278
05:00	4		5					17:00	44		33				
05:15	1		8					17:15	51		35				
05:30	6		17					17:30	38		34				
05:45	2	13	19	49			62	17:45	51	184	33	135			319
06:00	2		19					18:00	51		38				
06:15	8		25					18:15	52		23				
06:30	12		31					18:30	40		30				
06:45	22	44	43	118			162	18:45	49	192	21	112			304
07:00	33		44					19:00	30		18				
07:15	31		65					19:15	44		16				
07:30	37		82					19:30	30		14				
07:45	46	147	56	247			394	19:45	32	136	13	61			197
08:00	33		59					20:00	40		13				
08:15	46		50					20:15	29		12				
08:30	34		56					20:30	18		17				
08:45	36	149	54	219			368	20:45	32	119	9	51			170
09:00	25		50					21:00	19		7				
09:15	35		48					21:15	25		10				
09:30	39		50					21:30	23		10				
09:45	30	129	44	192			321	21:45	22	89	11	38			127
10:00	32		48					22:00	13		9				
10:15	30		55					22:15	15		7				
10:30	36		49					22:30	11		4				
10:45	46	144	47	199			343	22:45	9	48	2	22			70
11:00	34		43					23:00	6		2				
11:15	27		46					23:15	8		4				
11:30	28		41					23:30	7		2				
11:45	34	123	29	159			282	23:45	1	22	3	11			33
Total Vol.		782		1210			**1992**			1477		1078			**2555**

Daily Totals

NB	SB	EB	WB	**Combined**
2259	2288			**4547**

	AM			**PM**		
Split %	39.3%	60.7%	**43.8%**	57.8%	42.2%	**56.2%**
Peak Hour	07:30	07:15	**07:15**	17:45	14:30	**17:15**
Volume	162	262	**409**	194	147	**331**

Volumes for: Friday, October 26, 2007 City: Sierra Madre Project #: 07-2508-004

Location: Santa Anita Ave s/o Andrea Ln

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	8		5					12:00	33		28				
00:15	5		1					12:15	48		26				
00:30	4		1					12:30	40		30				
00:45	1	18	0	7			25	12:45	32	153	26	110			263
01:00	4		0					13:00	37		30				
01:15	2		0					13:15	32		20				
01:30	0		2					13:30	43		48				
01:45	1	7	0	2			9	13:45	31	143	38	136			279
02:00	1		3					14:00	35		31				
02:15	0		0					14:15	32		44				
02:30	2		0					14:30	39		30				
02:45	2	5	0	3			8	14:45	41	147	43	148			295
03:00	2		1					15:00	44		34				
03:15	2		0					15:15	40		38				
03:30	0		2					15:30	47		34				
03:45	2	6	0	3			9	15:45	36	167	36	142			309
04:00	1		2					16:00	41		37				
04:15	0		2					16:15	33		28				
04:30	1		3					16:30	27		40				
04:45	0	2	5	12			14	16:45	52	153	28	133			286
05:00	1		5					17:00	50		35				
05:15	3		7					17:15	38		20				
05:30	1		17					17:30	48		33				
05:45	9	14	16	45			59	17:45	40	176	30	118			294
06:00	5		19					18:00	49		40				
06:15	7		17					18:15	44		34				
06:30	10		24					18:30	43		35				
06:45	23	45	28	88			133	18:45	40	176	28	137			313
07:00	25		43					19:00	38		19				
07:15	31		62					19:15	31		14				
07:30	41		81					19:30	31		17				
07:45	33	130	52	238			368	19:45	20	120	11	61			181
08:00	28		66					20:00	32		26				
08:15	40		45					20:15	38		19				
08:30	42		71					20:30	23		14				
08:45	37	147	59	241			388	20:45	29	122	11	70			192
09:00	38		66					21:00	22		10				
09:15	30		51					21:15	22		10				
09:30	25		55					21:30	35		13				
09:45	42	135	40	212			347	21:45	21	100	14	47			147
10:00	36		38					22:00	29		17				
10:15	33		42					22:15	22		12				
10:30	31		41					22:30	21		4				
10:45	34	134	34	155			289	22:45	21	93	4	37			130
11:00	30		43					23:00	14		6				
11:15	25		34					23:15	9		6				
11:30	36		43					23:30	17		8				
11:45	39	130	42	162			292	23:45	9	49	6	26			75
Total Vol.		773		1168			**1941**			1599		1165			**2764**

Daily Totals

NB	SB	EB	WB	**Combined**
2372	2333			**4705**

	AM			**PM**		
Split %	39.8%	60.2%	**41.3%**	57.9%	42.1%	**58.7%**
Peak Hour	11:45	07:15	**08:15**	16:45	13:30	**14:45**
Volume	160	261	**398**	188	161	**321**

Volumes for: Thursday, October 25, 2007 City: Sierra Madre Project #: 07-2508-005

Location: Santa Anita Ave s/o Sierra Madre Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	7		6					12:00	68		69				
00:15	5		2					12:15	68		52				
00:30	9		4					12:30	52		70				
00:45	4	25	3	15			40	12:45	61	249	61	252			501
01:00	2		1					13:00	50		51				
01:15	5		0					13:15	48		51				
01:30	2		4					13:30	48		51				
01:45	4	13	0	5			18	13:45	56	202	52	205			407
02:00	3		3					14:00	79		55				
02:15	2		0					14:15	56		63				
02:30	1		1					14:30	79		103				
02:45	1	7	2	6			13	14:45	76	290	81	302			592
03:00	3		6					15:00	63		66				
03:15	0		0					15:15	64		55				
03:30	1		1					15:30	68		77				
03:45	1	5	2	9			14	15:45	55	250	76	274			524
04:00	1		4					16:00	61		85				
04:15	1		3					16:15	64		79				
04:30	2		3					16:30	65		80				
04:45	1	5	7	17			22	16:45	60	250	77	321			571
05:00	7		7					17:00	76		93				
05:15	4		18					17:15	78		92				
05:30	9		24					17:30	67		74				
05:45	3	23	26	75			98	17:45	95	316	78	337			653
06:00	11		30					18:00	79		75				
06:15	11		47					18:15	71		59				
06:30	24		48					18:30	76		62				
06:45	44	90	66	191			281	18:45	76	302	48	244			546
07:00	53		69					19:00	68		49				
07:15	75		116					19:15	61		25				
07:30	79		144					19:30	59		34				
07:45	92	299	107	436			735	19:45	48	236	32	140			376
08:00	97		142					20:00	62		23				
08:15	133		148					20:15	46		20				
08:30	79		90					20:30	37		25				
08:45	64	373	96	476			849	20:45	47	192	16	84			276
09:00	42		77					21:00	35		18				
09:15	56		87					21:15	36		18				
09:30	60		88					21:30	40		18				
09:45	52	210	83	335			545	21:45	32	143	21	75			218
10:00	58		84					22:00	25		18				
10:15	57		80					22:15	26		13				
10:30	58		82					22:30	18		12				
10:45	64	237	91	337			574	22:45	14	83	8	51			134
11:00	63		87					23:00	13		3				
11:15	48		75					23:15	12		7				
11:30	53		95					23:30	14		4				
11:45	66	230	71	328			558	23:45	5	44	7	21			65
Total Vol.		1517		2230			**3747**			2557		2306			**4863**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
	4074	4536			**8610**

	AM			**PM**		
Split %	40.5%	59.5%	**43.5%**	52.6%	47.4%	**56.5%**
Peak Hour	07:30	07:30	**07:30**	17:45	16:30	**17:00**
Volume	401	541	**942**	321	342	**653**

Volumes for: Friday, October 26, 2007 City: Sierra Madre Project #: 07-2508-005

Location: Santa Anita Ave s/o Sierra Madre Blvd

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	13		5					12:00	63		51				
00:15	8		5					12:15	81		52				
00:30	10		3					12:30	63		66				
00:45	5	36	1	14			50	12:45	46	253	56	225			478
01:00	5		1					13:00	60		66				
01:15	4		2					13:15	68		53				
01:30	0		2					13:30	60		73				
01:45	3	12	2	7			19	13:45	64	252	73	265			517
02:00	3		5					14:00	63		63				
02:15	2		0					14:15	75		79				
02:30	4		2					14:30	89		91				
02:45	2	11	0	7			18	14:45	66	293	82	315			608
03:00	2		2					15:00	85		86				
03:15	2		1					15:15	58		64				
03:30	0		2					15:30	65		75				
03:45	4	8	2	7			15	15:45	67	275	82	307			582
04:00	1		3					16:00	65		87				
04:15	0		1					16:15	59		97				
04:30	2		5					16:30	56		91				
04:45	0	3	8	17			20	16:45	77	257	71	346			603
05:00	2		6					17:00	74		82				
05:15	6		17					17:15	78		70				
05:30	5		26					17:30	82		86				
05:45	12	25	20	69			94	17:45	66	300	78	316			616
06:00	17		24					18:00	86		82				
06:15	12		26					18:15	78		72				
06:30	19		52					18:30	73		74				
06:45	43	91	55	157			248	18:45	69	306	62	290			596
07:00	50		69					19:00	63		47				
07:15	52		94					19:15	57		38				
07:30	77		147					19:30	50		46				
07:45	73	252	95	405			657	19:45	37	207	26	157			364
08:00	87		128					20:00	48		42				
08:15	158		168					20:15	64		38				
08:30	72		117					20:30	45		24				
08:45	72	389	91	504			893	20:45	48	205	22	126			331
09:00	62		99					21:00	40		23				
09:15	48		78					21:15	39		25				
09:30	50		85					21:30	60		38				
09:45	62	222	79	341			563	21:45	44	183	30	116			299
10:00	46		76					22:00	47		30				
10:15	48		78					22:15	39		26				
10:30	49		70					22:30	28		14				
10:45	63	206	66	290			496	22:45	29	143	14	84			227
11:00	55		67					23:00	22		14				
11:15	59		78					23:15	17		10				
11:30	58		82					23:30	22		14				
11:45	80	252	87	314			566	23:45	17	78	10	48			126
Total Vol.		1507		2132			**3639**			2752		2595			**5347**

Daily Totals

NB	SB	EB	WB	**Combined**
4259	4727			**8986**

	AM			**PM**		
Split %	41.4%	58.6%	**40.5%**	51.5%	48.5%	**59.5%**
Peak Hour	07:30	07:30	**07:30**	14:15	15:45	**14:15**
Volume	395	538	**933**	315	357	**653**

Appendix C
Level-of-Service Worksheets
Existing Conditions

Existing (Year 2007) Conditions

Scenario Report

Scenario:	Existing Midday Peak Hour
Command:	Existing Midday Peak Hour
Volume:	Midday Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Existing Midday Peak Hour

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to KATZ OKITSU, MONTEREY PK

Existing (Year 2007) Conditions

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in	
# 1 Highland Oaks Dr/Elkins Ave	A	8.7	0.000	A	8.7	0.000	+ 0.000	D/V
# 2 Santa Anita Ave/Elkins Ave	B	10.1	0.000	B	10.1	0.000	+ 0.000	D/V
# 3 Santa Anita Ave/Grandview Ave	A	7.9	0.111	A	7.9	0.111	+ 0.000	V/C
# 4 Santa Anita Ave/Sierra Madre B	A	8.8	0.236	A	8.8	0.236	+ 0.000	V/C

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to KATZ OKITSU, MONTEREY PK

Existing (Year 2007) Conditions

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Highland Oaks Dr/Elkins Ave

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[8.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	11	0	14	16	7	0	0	15	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	11	0	14	16	7	0	0	15	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	11	0	14	16	7	0	0	15	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	11	0	14	16	7	0	0	15	15
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	62	62	23	30	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	950	833	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	943	825	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	1005	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Existing (Year 2007) Conditions

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Santa Anita Ave/Elkins Ave

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	15	56	87	4	60	0	0	0	0	80	0	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	56	87	4	60	0	0	0	0	80	0	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	56	87	4	60	0	0	0	0	80	0	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	56	87	4	60	0	0	0	0	80	0	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	60	xxxx	xxxxx	143	xxxx	xxxxx	xxxx	xxxx	xxxxx	198	198	100
Potent Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	796	702	962
Move Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	788	693	962
Volume/Cap:	0.01	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	792	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Existing (Year 2007) Conditions

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Santa Anita Ave/Grandview Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.111
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	70	15	3	62	10	8	11	53	12	12	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	70	15	3	62	10	8	11	53	12	12	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	68	70	15	3	62	10	8	11	53	12	12	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	70	15	3	62	10	8	11	53	12	12	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	68	70	15	3	62	10	8	11	53	12	12	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.82	0.18	1.00	0.86	0.14	0.11	0.15	0.74	0.48	0.48	0.04
Final Sat.:	673	628	135	662	641	103	94	130	626	360	360	30
Capacity Analysis Module:												
Vol/Sat:	0.10	0.11	0.11	0.00	0.10	0.10	0.08	0.08	0.08	0.03	0.03	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.2			7.9			7.4			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.2			7.9			7.4			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Existing (Year 2007) Conditions

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #4 Santa Anita Ave/Sierra Madre Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.236
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	93	133	37	5	129	11	3	9	108	30	18	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	133	37	5	129	11	3	9	108	30	18	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	133	37	5	129	11	3	9	108	30	18	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	133	37	5	129	11	3	9	108	30	18	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	133	37	5	129	11	3	9	108	30	18	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.78	0.22	1.00	0.92	0.08	0.03	0.07	0.90	0.59	0.35	0.06
Final Sat.:	636	563	157	618	632	54	19	57	690	388	233	39
Capacity Analysis Module:												
Vol/Sat:	0.15	0.24	0.24	0.01	0.20	0.20	0.16	0.16	0.16	0.08	0.08	0.08
Crit Moves:		****			****			****			****	
Delay/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	9.1			9.0			8.1			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.1			9.0			8.1			8.5		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.2	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Appendix D
Level-of-Service Worksheets
During Construction (Preferred Alternative)

Construction of Alternative 2

Scenario Report

Scenario:	**Preferred** Alternative
Command:	**Preferred** Alternative
Volume:	Midday Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	**Preferred** Alternative

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Construction of **Preferred** Alternative

Trip Generation Report

Forecast for Reservoir Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Project	0.00	**Alternative 2**	24.00	24.00	0	0	0	0.0
1	Project	1.00	**Preferred Proj**	22.00	22.00	22	22	44	100.0
	Zone 1 Subtotal		.....			22	22	44	100.0
TOTAL			.....			22	22	44	100.0

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Construction of Alternative 2

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in	
# 1 Highland Oaks Dr/Elkins Ave	A	8.7	0.000	A	8.7	0.000	+ 0.058	D/V
# 2 Santa Anita Ave/Elkins Ave	B	10.1	0.000	B	10.3	0.000	+ 0.255	D/V
# 3 Santa Anita Ave/Grandview Ave	A	7.9	0.111	A	8.1	0.142	+ 0.030	V/C
# 4 Santa Anita Ave/Sierra Madre B	A	8.8	0.236	A	9.1	0.269	+ 0.033	V/C

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Construction of Alternative 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Highland Oaks Dr/Elkins Ave

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[8.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	11	0	14	16	7	0	0	15	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	11	0	14	16	7	0	0	15	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	11	0	14	16	7	0	0	15	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	11	0	14	16	7	0	0	15	15
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	62	62	23	30	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	950	833	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	943	825	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	1005	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Construction of Alternative 2

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Santa Anita Ave/Elkins Ave

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	15	56	87	4	60	0	0	0	0	80	0	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	56	87	4	60	0	0	0	0	80	0	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	56	87	4	60	0	0	0	0	80	0	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	56	87	4	60	0	0	0	0	80	0	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	60	xxxx	xxxxx	143	xxxx	xxxxx	xxxx	xxxx	xxxxx	198	198	100
Potent Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	796	702	962
Move Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	788	693	962
Volume/Cap:	0.01	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	792	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Construction of Alternative 2

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Santa Anita Ave/Grandview Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.111
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	70	15	3	62	10	8	11	53	12	12	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	70	15	3	62	10	8	11	53	12	12	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	68	70	15	3	62	10	8	11	53	12	12	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	70	15	3	62	10	8	11	53	12	12	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	68	70	15	3	62	10	8	11	53	12	12	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.82	0.18	1.00	0.86	0.14	0.11	0.15	0.74	0.48	0.48	0.04
Final Sat.:	673	628	135	662	641	103	94	130	626	360	360	30
Capacity Analysis Module:												
Vol/Sat:	0.10	0.11	0.11	0.00	0.10	0.10	0.08	0.08	0.08	0.03	0.03	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.2			7.9			7.4			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.2			7.9			7.4			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Construction of Alternative 2

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #4 Santa Anita Ave/Sierra Madre Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.236
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	93	133	37	5	129	11	3	9	108	30	18	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	133	37	5	129	11	3	9	108	30	18	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	133	37	5	129	11	3	9	108	30	18	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	133	37	5	129	11	3	9	108	30	18	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	133	37	5	129	11	3	9	108	30	18	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.78	0.22	1.00	0.92	0.08	0.03	0.07	0.90	0.59	0.35	0.06
Final Sat.:	636	563	157	618	632	54	19	57	690	388	233	39
Capacity Analysis Module:												
Vol/Sat:	0.15	0.24	0.24	0.01	0.20	0.20	0.16	0.16	0.16	0.08	0.08	0.08
Crit Moves:		****			****			****			****	
Delay/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	9.1			9.0			8.1			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.1			9.0			8.1			8.5		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.2	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Appendix E
Level-of-Service Worksheets
During Construction (Alternative 2)

Construction of Preferred Alternative

Scenario Report

Scenario:	**Alternative 2**
Command:	**Alternative 2**
Volume:	Midday Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	**Alternative 2**

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Construction of Alternative 2

Trip Generation Report

Forecast for Reservoir Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Project	1.00	Alternative 2	24.00	24.00	24	24	48	100.0
	Zone 1 Subtotal					24	24	48	100.0
TOTAL						24	24	48	100.0

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Construction of Preferred Alternative

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Highland Oaks Dr/Elkins Ave	A	8.7	0.000	A	8.7	0.000	+ 0.064 D/V
# 2 Santa Anita Ave/Elkins Ave	B	10.1	0.000	B	10.4	0.000	+ 0.279 D/V
# 3 Santa Anita Ave/Grandview Ave	A	7.9	0.111	A	8.1	0.144	+ 0.033 V/C
# 4 Santa Anita Ave/Sierra Madre B	A	8.8	0.236	A	9.1	0.272	+ 0.036 V/C

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Construction of Preferred Alternative

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Highland Oaks Dr/Elkins Ave

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[8.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	11	0	14	16	7	0	0	15	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	11	0	14	16	7	0	0	15	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	11	0	14	16	7	0	0	15	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	11	0	14	16	7	0	0	15	15
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	62	62	23	30	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	950	833	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	943	825	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	1005	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Construction of Preferred Alternative

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Santa Anita Ave/Elkins Ave

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	15	56	87	4	60	0	0	0	0	80	0	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	56	87	4	60	0	0	0	0	80	0	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	56	87	4	60	0	0	0	0	80	0	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	56	87	4	60	0	0	0	0	80	0	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	60	xxxx	xxxxx	143	xxxx	xxxxx	xxxx	xxxx	xxxxx	198	198	100
Potent Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	796	702	962
Move Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	788	693	962
Volume/Cap:	0.01	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	792	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Construction of Preferred Alternative

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Santa Anita Ave/Grandview Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.111
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	70	15	3	62	10	8	11	53	12	12	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	70	15	3	62	10	8	11	53	12	12	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	68	70	15	3	62	10	8	11	53	12	12	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	70	15	3	62	10	8	11	53	12	12	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	68	70	15	3	62	10	8	11	53	12	12	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.82	0.18	1.00	0.86	0.14	0.11	0.15	0.74	0.48	0.48	0.04
Final Sat.:	673	628	135	662	641	103	94	130	626	360	360	30
Capacity Analysis Module:												
Vol/Sat:	0.10	0.11	0.11	0.00	0.10	0.10	0.08	0.08	0.08	0.03	0.03	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.2			7.9			7.4			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.2			7.9			7.4			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Construction of Preferred Alternative

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #4 Santa Anita Ave/Sierra Madre Bl

Cycle (sec):	100	Critical Vol./Cap.(X):	0.236
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	8.8
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	93	133	37	5	129	11	3	9	108	30	18	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	133	37	5	129	11	3	9	108	30	18	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	133	37	5	129	11	3	9	108	30	18	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	133	37	5	129	11	3	9	108	30	18	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	133	37	5	129	11	3	9	108	30	18	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.78	0.22	1.00	0.92	0.08	0.03	0.07	0.90	0.59	0.35	0.06
Final Sat.:	636	563	157	618	632	54	19	57	690	388	233	39
Capacity Analysis Module:												
Vol/Sat:	0.15	0.24	0.24	0.01	0.20	0.20	0.16	0.16	0.16	0.08	0.08	0.08
Crit Moves:		****			****			****			****	
Delay/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		9.1			9.0			8.1			8.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.1			9.0			8.1			8.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.2	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Appendix F
Level-of-Service Worksheets
During Construction (Alternative 3)

Consruction of Alternative 3

Scenario Report

Scenario:	Alternative 3
Command:	Alternative 3
Volume:	Midday Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Alternative 3

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Consruction of Alternative 3

Trip Generation Report

Forecast for Reservoir Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Project	0.00	Preferred Proj	24.00	24.00	0	0	0	0.0
1	Project	0.00	Alternative 2	22.00	22.00	0	0	0	0.0
1	Project	1.00	Alternative 3	36.00	36.00	36	36	72	100.0
	Zone 1 Subtotal					36	36	72	100.0
TOTAL						36	36	72	100.0

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Consruction of Alternative 3

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Highland Oaks Dr/Elkins Ave	A	8.7	0.000	A	8.8	0.000	+ 0.107 D/V
# 2 Santa Anita Ave/Elkins Ave	B	10.1	0.000	B	10.5	0.000	+ 0.429 D/V
# 3 Santa Anita Ave/Grandview Ave	A	7.9	0.111	A	8.2	0.161	+ 0.050 V/C
# 4 Santa Anita Ave/Sierra Madre B	A	8.8	0.236	A	9.2	0.290	+ 0.054 V/C

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Consruction of Alternative 3

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Highland Oaks Dr/Elkins Ave

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[8.7]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Stop Sign						Stop Sign						Uncontrolled						Uncontrolled					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	0	0	0		0	0	1!	0	0		0	1	0	0	0		0	0	0	1	0	
Volume Module:																								
Base Vol:	0	0	0				11	0			14		16		7	0			0		15		15	
Growth Adj:	1.00	1.00	1.00				1.00	1.00			1.00		1.00		1.00	1.00			1.00		1.00		1.00	
Initial Bse:	0	0	0				11	0			14		16		7	0			0		15		15	
User Adj:	1.00	1.00	1.00				1.00	1.00			1.00		1.00		1.00	1.00			1.00		1.00		1.00	
PHF Adj:	1.00	1.00	1.00				1.00	1.00			1.00		1.00		1.00	1.00			1.00		1.00		1.00	
PHF Volume:	0	0	0				11	0			14		16		7	0			0		15		15	
Reduct Vol:	0	0	0				0	0			0		0		0	0			0		0		0	
FinalVolume:	0	0	0				11	0			14		16		7	0			0		15		15	
Critical Gap Module:																								
Critical Gp:	xxxxx	xxxx	xxxxx				6.4	6.5			6.2		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
FollowUpTim:	xxxxx	xxxx	xxxxx				3.5	4.0			3.3		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
Capacity Module:																								
Cnflict Vol:	xxxx	xxxx	xxxxx				62	62			23		30	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Potent Cap.:	xxxx	xxxx	xxxxx				950	833			1060		1596	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Move Cap.:	xxxx	xxxx	xxxxx				943	825			1060		1596	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Volume/Cap:	xxxx	xxxx	xxxx				0.01	0.00			0.01		0.01	xxxx	xxxx		xxxx	xxxx	xxxx					
Level Of Service Module:																								
2Way95thQ:	xxxx	xxxx	xxxxx				xxxx	xxxx			xxxxx		0.0	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:	xxxxx	xxxx	xxxxx				xxxxx	xxxx			xxxxx		7.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	*	*	*				*	*			*		A	*	*		*	*	*					
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx	xxxxx				xxxx	1005			xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
SharedQueue:	xxxxx	xxxx	xxxxx				xxxxx	0.1			xxxxx		0.0	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shrd ConDel:	xxxxx	xxxx	xxxxx				xxxxx	8.7			xxxxx		7.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
Shared LOS:	*	*	*				*	A			*		A	*	*		*	*	*					
ApproachDel:	xxxxxx						8.7						xxxxxx						xxxxxx					
ApproachLOS:	*						A						*						*					

Note: Queue reported is the number of cars per lane.

Consruction of Alternative 3

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Santa Anita Ave/Elkins Ave

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	15	56	87	4	60	0	0	0	0	80	0	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	56	87	4	60	0	0	0	0	80	0	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	56	87	4	60	0	0	0	0	80	0	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	15	56	87	4	60	0	0	0	0	80	0	2
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	60	xxxx	xxxxx	143	xxxx	xxxxx	xxxx	xxxx	xxxxx	198	198	100
Potent Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	796	702	962
Move Cap.:	1556	xxxx	xxxxx	1452	xxxx	xxxxx	xxxx	xxxx	xxxxx	788	693	962
Volume/Cap:	0.01	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.10	0.00	0.00
Level Of Service Module:												
2Way95thQ:	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	7.3	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	792	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			10.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Consruction of Alternative 3

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Santa Anita Ave/Grandview Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.111
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 7.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	70	15	3	62	10	8	11	53	12	12	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	70	15	3	62	10	8	11	53	12	12	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	68	70	15	3	62	10	8	11	53	12	12	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	70	15	3	62	10	8	11	53	12	12	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	68	70	15	3	62	10	8	11	53	12	12	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.82	0.18	1.00	0.86	0.14	0.11	0.15	0.74	0.48	0.48	0.04
Final Sat.:	673	628	135	662	641	103	94	130	626	360	360	30
Capacity Analysis Module:												
Vol/Sat:	0.10	0.11	0.11	0.00	0.10	0.10	0.08	0.08	0.08	0.03	0.03	0.03
Crit Moves:	****			****			****			****		
Delay/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	8.2			7.9			7.4			7.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	8.2			7.9			7.4			7.7		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Consruction of Alternative 3

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #4 Santa Anita Ave/Sierra Madre Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.236
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1 0	0	1	0	1 0	0	1	0	0 0	1!	0	0	0 0	1!	0	0
Volume Module:																
Base Vol:	93	133	37		5	129	11		3	9	108		30	18	3	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	93	133	37		5	129	11		3	9	108		30	18	3	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	93	133	37		5	129	11		3	9	108		30	18	3	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	93	133	37		5	129	11		3	9	108		30	18	3	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	93	133	37		5	129	11		3	9	108		30	18	3	
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	0.78	0.22		1.00	0.92	0.08		0.03	0.07	0.90		0.59	0.35	0.06	
Final Sat.:	636	563	157		618	632	54		19	57	690		388	233	39	
Capacity Analysis Module:																
Vol/Sat:	0.15	0.24	0.24		0.01	0.20	0.20		0.16	0.16	0.16		0.08	0.08	0.08	
Crit Moves:		****				****				****				****		
Delay/Veh:	9.1	9.0	9.0		8.4	9.0	9.0		8.1	8.1	8.1		8.5	8.5	8.5	
Delay Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	9.1	9.0	9.0		8.4	9.0	9.0		8.1	8.1	8.1		8.5	8.5	8.5	
LOS by Move:	A	A	A		A	A	A		A	A	A		A	A	A	
ApproachDel:	9.1				9.0				8.1				8.5			
Delay Adj:	1.00				1.00				1.00				1.00			
ApprAdjDel:	9.1				9.0				8.1				8.5			
LOS by Appr:	A				A				A				A			
AllWayAvgQ:	0.2	0.3	0.3		0.0	0.2	0.2		0.2	0.2	0.2		0.1	0.1	0.1	

Note: Queue reported is the number of cars per lane.

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Appendix G
Level-of-Service Worksheets
During Construction (Alternative 4)

Construction of Alternative 4

Scenario Report

Scenario:	Alternative 4
Command:	Alternative 4
Volume:	Midday Peak Hour
Geometry:	Existing
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Alternative 4

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Construction of Alternative 4

Trip Generation Report

Forecast for Reservoir Project

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Project	0.00	Preferred Proj	24.00	24.00	0	0	0	0.0
1	Project	0.00	Alternative 2	22.00	22.00	0	0	0	0.0
1	Project	0.00	Alternative 3	36.00	36.00	0	0	0	0.0
1	Project	1.00	Alternative 4	36.00	36.00	36	36	72	100.0
	Zone 1 Subtotal					36	36	72	100.0
TOTAL						36	36	72	100.0

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Construction of Alternative 4

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Highland Oaks Dr/Elkins Ave	A	8.7	0.000	A	8.8	0.000	+ 0.107 D/V
# 2 Santa Anita Ave/Elkins Ave	B	10.1	0.000	B	10.5	0.000	+ 0.429 D/V
# 3 Santa Anita Ave/Grandview Ave	A	7.9	0.111	A	8.2	0.161	+ 0.050 V/C
# 4 Santa Anita Ave/Sierra Madre B	A	8.8	0.236	A	9.2	0.290	+ 0.054 V/C

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Construction of Alternative 4

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Highland Oaks Dr/Elkins Ave

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[8.7]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	11	0	14	16	7	0	0	15	15
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	11	0	14	16	7	0	0	15	15
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	11	0	14	16	7	0	0	15	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	11	0	14	16	7	0	0	15	15
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	62	62	23	30	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	950	833	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	943	825	1060	1596	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	0.00	0.01	0.01	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	1005	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	8.7	xxxxx	7.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	A	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.7			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Construction of Alternative 4

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Santa Anita Ave/Elkins Ave

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: B[10.1]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	1	0	0	0		0	0	0	0	0		0	0	1!	0	0	
Volume Module:																								
Base Vol:	15		56		87		4		60		0		0		0		0		80		0		2	
Growth Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	15		56		87		4		60		0		0		0		0		80		0		2	
User Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	15		56		87		4		60		0		0		0		0		80		0		2	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
FinalVolume:	15		56		87		4		60		0		0		0		0		80		0		2	
Critical Gap Module:																								
Critical Gp:	4.1	xxxx	xxxxx				4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx							6.4		6.5		6.2	
FollowUpTim:	2.2	xxxx	xxxxx				2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx							3.5		4.0		3.3	
Capacity Module:																								
Cnflict Vol:	60	xxxx	xxxxx				143	xxxx	xxxxx		xxxx	xxxx	xxxxx						198		198		100	
Potent Cap.:	1556	xxxx	xxxxx				1452	xxxx	xxxxx		xxxx	xxxx	xxxxx						796		702		962	
Move Cap.:	1556	xxxx	xxxxx				1452	xxxx	xxxxx		xxxx	xxxx	xxxxx						788		693		962	
Volume/Cap:	0.01	xxxx	xxxx				0.00	xxxx	xxxx		xxxx	xxxx	xxxx						0.10		0.00		0.00	
Level Of Service Module:																								
2Way95thQ:	0.0	xxxx	xxxxx				0.0	xxxx	xxxxx		xxxx	xxxx	xxxxx						xxxx		xxxx		xxxxx	
Control Del:	7.3	xxxx	xxxxx				7.5	xxxx	xxxxx		xxxxx	xxxx	xxxxx						xxxxx		xxxx		xxxxx	
LOS by Move:	A	*		*			A	*		*			*	*		*			*	*		*		
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx		792		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx				0.0	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx		0.3		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx				7.5	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx		10.1		xxxxx	
Shared LOS:	*		*		*		A		*		*		*		*		*		*		B		*	
ApproachDel:	xxxxxx						xxxxxx						xxxxxx						10.1					
ApproachLOS:	*						*						*						B					

Note: Queue reported is the number of cars per lane.

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Construction of Alternative 4

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Santa Anita Ave/Grandview Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.111
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	7.9
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	68	70	15	3	62	10	8	11	53	12	12	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	70	15	3	62	10	8	11	53	12	12	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	68	70	15	3	62	10	8	11	53	12	12	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	68	70	15	3	62	10	8	11	53	12	12	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	68	70	15	3	62	10	8	11	53	12	12	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.82	0.18	1.00	0.86	0.14	0.11	0.15	0.74	0.48	0.48	0.04
Final Sat.:	673	628	135	662	641	103	94	130	626	360	360	30
Capacity Analysis Module:												
Vol/Sat:	0.10	0.11	0.11	0.00	0.10	0.10	0.08	0.08	0.08	0.03	0.03	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	7.9	7.9	8.1	7.9	7.9	7.4	7.4	7.4	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.2			7.9			7.4			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.2			7.9			7.4			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Construction of Alternative 4

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

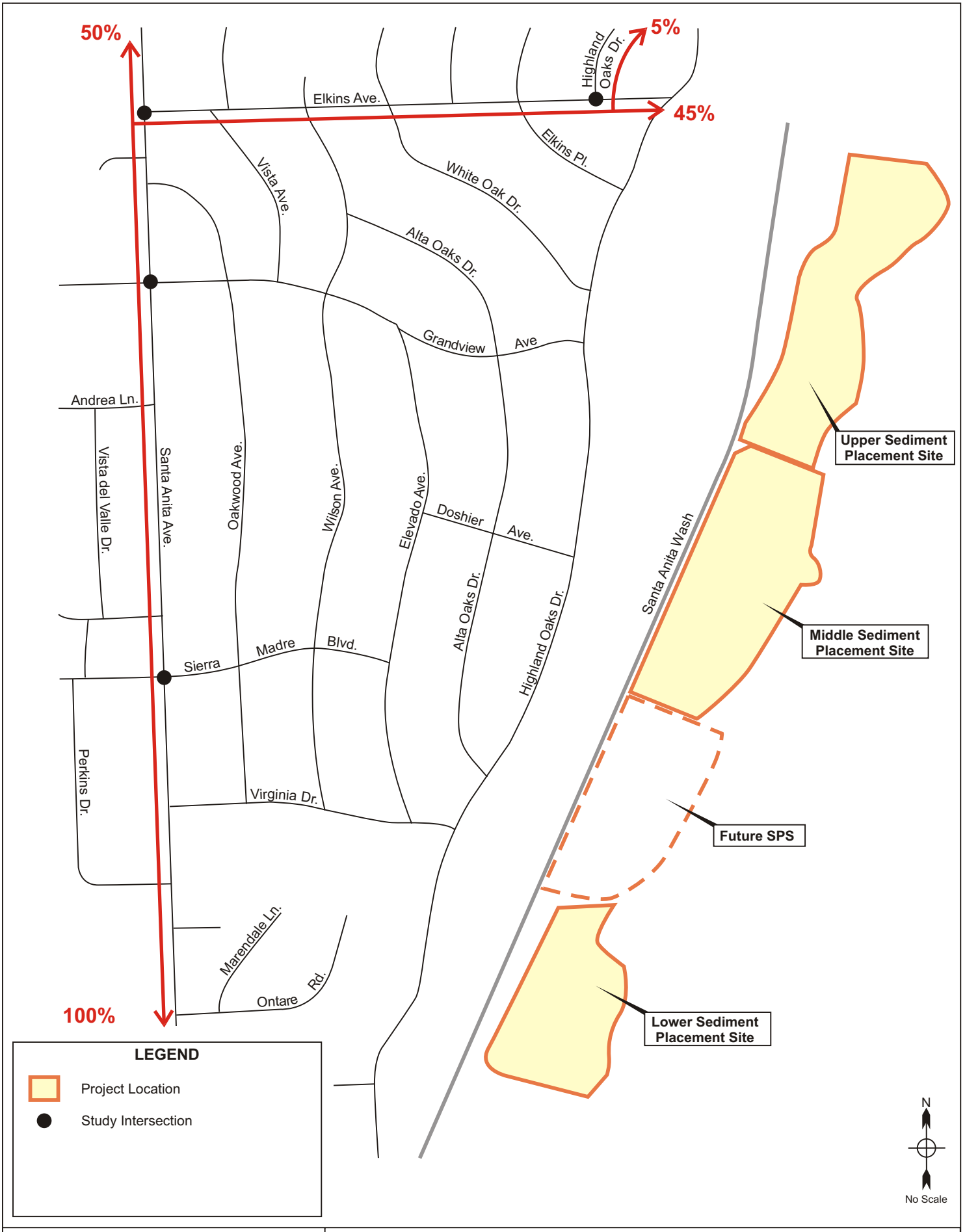
Intersection #4 Santa Anita Ave/Sierra Madre Bl

Cycle (sec): 100 Critical Vol./Cap.(X): 0.236
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 8.8
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	93	133	37	5	129	11	3	9	108	30	18	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	133	37	5	129	11	3	9	108	30	18	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	133	37	5	129	11	3	9	108	30	18	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	133	37	5	129	11	3	9	108	30	18	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	133	37	5	129	11	3	9	108	30	18	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.78	0.22	1.00	0.92	0.08	0.03	0.07	0.90	0.59	0.35	0.06
Final Sat.:	636	563	157	618	632	54	19	57	690	388	233	39
Capacity Analysis Module:												
Vol/Sat:	0.15	0.24	0.24	0.01	0.20	0.20	0.16	0.16	0.16	0.08	0.08	0.08
Crit Moves:		****			****			****			****	
Delay/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.1	9.0	9.0	8.4	9.0	9.0	8.1	8.1	8.1	8.5	8.5	8.5
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	9.1			9.0			8.1			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.1			9.0			8.1			8.5		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.2	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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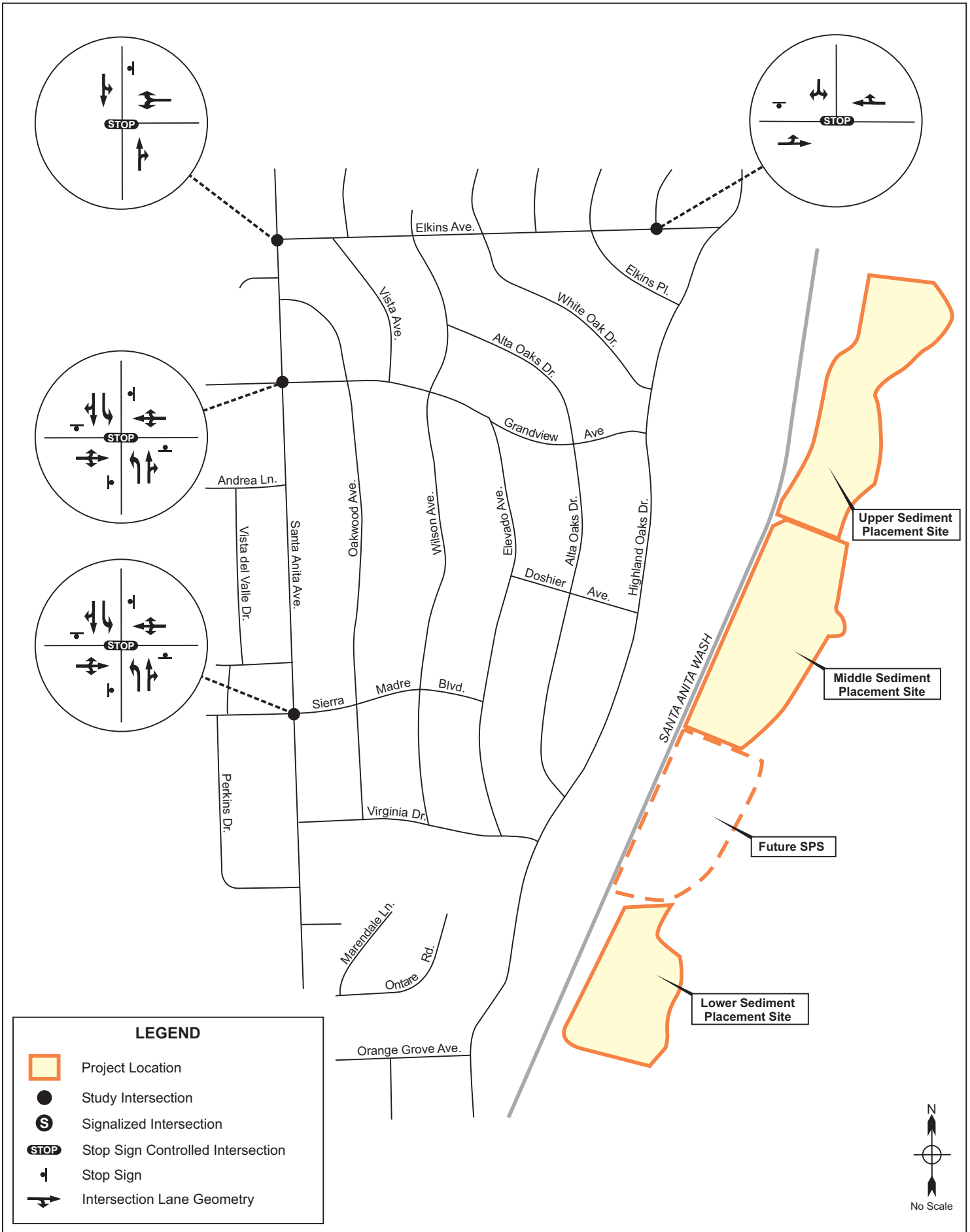


KOA CORPORATION
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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Figure

Project Trip Distribution



KOA CORPORATION
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Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Figure

Intersection Geometrics and Control

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APPENDIX F

ALTERNATIVES AIR QUALITY CALCULATIONS

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ALTERNATIVE 2

4 1 2008 09:45:44 AM

Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2008 TOTALS (lbs/day unmitigated)	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
2008 TOTALS (lbs/day mitigated)	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
2009 TOTALS (lbs/day unmitigated)	22.43	187.47	99.69	0.02	448.44	9.41	457.85	93.66	8.66	102.32	17,172.33
2009 TOTALS (lbs/day mitigated)	22.43	116.02	99.69	0.02	58.98	9.41	68.40	12.33	8.66	20.99	17,172.33
2010 TOTALS (lbs/day unmitigated)	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
2010 TOTALS (lbs/day mitigated)	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14

4 1 2008 09:45:52 AM

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2008 TOTALS (tons/year unmitigated)	0.08	0.63	0.35	0.00	1.12	0.03	1.15	0.23	0.03	0.26	52.27
2008 TOTALS (tons/year mitigated)	0.08	0.63	0.35	0.00	0.58	0.03	0.61	0.12	0.03	0.15	52.27
Percent Reduction	0.00	0.00	0.00	0.00	48.18	0.00	46.84	48.18	0.00	42.78	0.00
2009 TOTALS (tons/year unmitigated)	1.56	12.85	7.14	0.00	35.23	0.66	35.90	7.36	0.61	7.97	1,151.65
2009 TOTALS (tons/year mitigated)	1.56	8.13	7.14	0.00	4.90	0.66	5.57	1.02	0.61	1.64	1,151.65
Percent Reduction	0.00	36.72	0.00	0.00	86.08	0.00	84.49	86.07	0.00	79.47	0.00
2010 TOTALS (tons/year unmitigated)	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19
2010 TOTALS (tons/year mitigated)	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19
Percent Reduction	0.00	39.91	0.00	0.00	86.88	0.00	85.92	86.87	0.00	82.83	0.00

4 1 2008 09:27:04 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 10/1/2008-12/31/2008 Active Days: 66	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
Mass Grading 10/01/2008-02/27/2009	2.28	19.04	10.75	0.00	33.80	0.97	34.77	7.06	0.89	7.95	1,584.03
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.25	18.98	9.84	0.00	0.00	0.97	0.97	0.00	0.89	0.89	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.36
Time Slice 1/1/2009-2/24/2009 Active Days: 39	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/25/2009-2/25/2009 Active Days: 1	2.40	20.78	11.22	0.00	33.82	1.03	34.84	7.06	0.95	8.01	1,923.06
Mass Grading 02/25/2009-02/25/2009	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/26/2009-2/27/2009 Active Days: 2	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	33.80	0.91	34.72	7.06	0.84	7.90	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	33.80	0.00	33.80	7.06	0.00	7.06	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58

Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	22.43	187.47	99.69	**0.02**	**448.44**	9.41	457.85	**93.66**	8.66	102.32	17,172.33
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	6.38	51.94	29.61	0.00	224.14	2.61	226.75	46.81	2.40	49.21	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.31	51.83	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	11.93	97.34	55.59	0.01	224.19	5.26	229.45	46.83	4.84	51.67	8,835.93
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	11.18	88.79	48.73	0.00	0.00	4.90	4.90	0.00	4.51	4.51	7,399.45
Mass Grading On Road Diesel	0.63	8.33	3.20	0.01	0.03	0.35	0.38	0.01	0.32	0.33	1,032.08
Mass Grading Worker Trips	0.12	0.22	3.66	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.40
Time Slice 7/13/2009-12/31/2009 Active Days: 124	18.30	149.28	85.20	0.02	448.33	7.87	456.20	93.64	7.24	100.87	13,210.13
Mass Grading 05/31/2009-01/01/2010	6.38	51.94	29.61	0.00	224.14	2.61	226.75	46.81	2.40	49.21	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.31	51.83	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	11.93	97.34	55.59	0.01	224.19	5.26	229.45	46.83	4.84	51.67	8,835.93
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	11.18	88.79	48.73	0.00	0.00	4.90	4.90	0.00	4.51	4.51	7,399.45
Mass Grading On Road Diesel	0.63	8.33	3.20	0.01	0.03	0.35	0.38	0.01	0.32	0.33	1,032.08
Mass Grading Worker Trips	0.12	0.22	3.66	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.40
Time Slice 1/1/2010-1/1/2010 Active Days: 1	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading 05/31/2009-01/01/2010	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69

Phase Assumptions

Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

Total Acres Disturbed: 13.5

Maximum Daily Acreage Disturbed: 3.38

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25

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Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 243.51

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 10/1/2008-12/31/2008 Active Days: 66	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
Mass Grading 10/01/2008-02/27/2009	2.28	19.04	10.75	0.00	17.52	0.97	18.49	3.66	0.89	4.55	1,584.03
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.25	18.98	9.84	0.00	0.00	0.97	0.97	0.00	0.89	0.89	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.06	0.91	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.36
Time Slice 1/1/2009-2/24/2009 Active Days: 39	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/25/2009-2/25/2009 Active Days: 1	2.40	20.78	11.22	0.00	17.53	1.03	18.56	3.66	0.95	4.61	1,923.06
Mass Grading 02/25/2009-02/25/2009	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.21	2.74	1.05	0.00	0.01	0.11	0.13	0.00	0.11	0.11	339.07
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 2/26/2009-2/27/2009 Active Days: 2	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading 10/01/2008-02/27/2009	2.20	18.05	10.17	0.00	17.52	0.91	18.43	3.66	0.84	4.50	1,583.99
Mass Grading Dust	0.00	0.00	0.00	0.00	17.51	0.00	17.51	3.66	0.00	3.66	0.00
Mass Grading Off Road Diesel	2.17	18.00	9.33	0.00	0.00	0.91	0.91	0.00	0.84	0.84	1,490.67
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.32
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58

Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	22.43	116.02	99.69	**0.02**	58.98	9.41	68.40	12.33	8.66	20.99	17,172.33
Mass Grading 05/01/2009-07/10/2009	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	6.38	31.21	29.61	0.00	29.42	2.61	32.02	6.14	2.40	8.54	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.31	31.10	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	11.93	61.82	55.59	0.01	29.46	5.26	34.72	6.16	4.84	11.00	8,835.93
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	11.18	53.28	48.73	0.00	0.00	4.90	4.90	0.00	4.51	4.51	7,399.45
Mass Grading On Road Diesel	0.63	8.33	3.20	0.01	0.03	0.35	0.38	0.01	0.32	0.33	1,032.08
Mass Grading Worker Trips	0.12	0.22	3.66	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.40
Time Slice 7/13/2009-12/31/2009 Active Days: 124	18.30	93.03	85.20	0.02	58.87	7.87	66.74	12.30	7.24	19.54	13,210.13
Mass Grading 05/31/2009-01/01/2010	6.38	31.21	29.61	0.00	29.42	2.61	32.02	6.14	2.40	8.54	4,374.20
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.31	31.10	27.63	0.00	0.00	2.60	2.60	0.00	2.39	2.39	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.12	1.97	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.75
Mass Grading 06/01/2009-12/31/2009	11.93	61.82	55.59	0.01	29.46	5.26	34.72	6.16	4.84	11.00	8,835.93
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	11.18	53.28	48.73	0.00	0.00	4.90	4.90	0.00	4.51	4.51	7,399.45
Mass Grading On Road Diesel	0.63	8.33	3.20	0.01	0.03	0.35	0.38	0.01	0.32	0.33	1,032.08
Mass Grading Worker Trips	0.12	0.22	3.66	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.40
Time Slice 1/1/2010-1/1/2010 Active Days: 1	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading 05/31/2009-01/01/2010	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

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Phase Assumptions

Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0

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Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 243.51
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2008	0.08	0.63	0.35	0.00	1.12	0.03	1.15	0.23	0.03	0.26	52.27
Mass Grading 10/01/2008-02/27/2009	0.08	0.63	0.35	0.00	1.12	0.03	1.15	0.23	0.03	0.26	52.27
Mass Grading Dust	0.00	0.00	0.00	0.00	1.12	0.00	1.12	0.23	0.00	0.23	0.00
Mass Grading Off Road Diesel	0.07	0.63	0.32	0.00	0.00	0.03	0.03	0.00	0.03	0.03	49.19
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08
2009	1.56	12.85	7.14	0.00	35.23	0.66	35.90	7.36	0.61	7.97	1,151.65
Mass Grading 10/01/2008-02/27/2009	0.05	0.38	0.21	0.00	0.71	0.02	0.73	0.15	0.02	0.17	33.26
Mass Grading Dust	0.00	0.00	0.00	0.00	0.71	0.00	0.71	0.15	0.00	0.15	0.00
Mass Grading Off Road Diesel	0.05	0.38	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.30
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96
Mass Grading 02/25/2009-02/25/2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2009-07/10/2009	0.11	0.97	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.97	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.49	4.00	2.28	0.00	17.26	0.20	17.46	3.60	0.18	3.79	336.81
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.49	3.99	2.13	0.00	0.00	0.20	0.20	0.00	0.18	0.18	320.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.77
Mass Grading 06/01/2009-12/31/2009	0.92	7.50	4.28	0.00	17.26	0.41	17.67	3.61	0.37	3.98	680.37
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.86	6.84	3.75	0.00	0.00	0.38	0.38	0.00	0.35	0.35	569.76
Mass Grading On Road Diesel	0.05	0.64	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.03	79.47
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.14
2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19

Mass Grading 05/31/2009-01/01/2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	2.19
Mass Grading Dust	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.08
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11

Phase Assumptions

Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

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Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 243.51
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2.urb924

Project Name: Santa Anita Reservoir - Alternative 2

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2008	0.08	0.63	0.35	0.00	0.58	0.03	0.61	0.12	0.03	0.15	52.27
Mass Grading 10/01/2008-02/27/2009	0.08	0.63	0.35	0.00	0.58	0.03	0.61	0.12	0.03	0.15	52.27
Mass Grading Dust	0.00	0.00	0.00	0.00	0.58	0.00	0.58	0.12	0.00	0.12	0.00
Mass Grading Off Road Diesel	0.07	0.63	0.32	0.00	0.00	0.03	0.03	0.00	0.03	0.03	49.19
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08
2009	1.56	8.13	7.14	0.00	4.90	0.66	5.57	1.02	0.61	1.64	1,151.65
Mass Grading 10/01/2008-02/27/2009	0.05	0.38	0.21	0.00	0.37	0.02	0.39	0.08	0.02	0.09	33.26
Mass Grading Dust	0.00	0.00	0.00	0.00	0.37	0.00	0.37	0.08	0.00	0.08	0.00
Mass Grading Off Road Diesel	0.05	0.38	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.30
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96
Mass Grading 02/25/2009-02/25/2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 05/01/2009-07/10/2009	0.11	0.59	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.58	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.49	2.40	2.28	0.00	2.26	0.20	2.47	0.47	0.18	0.66	336.81
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.49	2.39	2.13	0.00	0.00	0.20	0.20	0.00	0.18	0.18	320.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.77
Mass Grading 06/01/2009-12/31/2009	0.92	4.76	4.28	0.00	2.27	0.41	2.67	0.47	0.37	0.85	680.37
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.86	4.10	3.75	0.00	0.00	0.38	0.38	0.00	0.35	0.35	569.76
Mass Grading On Road Diesel	0.05	0.64	0.25	0.00	0.00	0.03	0.03	0.00	0.02	0.03	79.47
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.14
2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19

Mass Grading 05/31/2009-01/01/2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	2.19
Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.08
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 10/1/2008 - 2/27/2009 - Vegetation Clearing and Grading of SPS
Total Acres Disturbed: 13.5
Maximum Daily Acreage Disturbed: 3.38
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 2/25/2009 - 2/25/2009 - Conveyor Delivery
Total Acres Disturbed: 0
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 80
Off-Road Equipment:

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35

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Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 243.51
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	17.31	141.25	81.37	0.02	448.33	7.40	455.72	93.64	6.80	100.44	13,209.95
2010 TOTALS (lbs/day mitigated)	17.31	87.90	81.37	0.02	58.87	7.40	66.27	12.30	6.80	19.11	13,209.95

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Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	1.34	10.90	6.28	0.00	34.63	0.57	35.20	7.23	0.52	7.76	1,019.35
2010 TOTALS (tons/year mitigated)	1.34	6.78	6.28	0.00	4.55	0.57	5.12	0.95	0.52	1.48	1,019.35
Percent Reduction	0.00	37.77	0.00	0.00	86.87	0.00	85.46	86.86	0.00	80.98	0.00

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading 05/31/2010-01/01/2011	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**17.31**	**141.25**	**81.37**	**0.02**	**448.33**	**7.40**	**455.72**	**93.64**	**6.80**	**100.44**	**13,209.95**
Mass Grading 05/31/2010-01/01/2011	6.07	49.42	28.13	0.00	224.14	2.48	226.62	46.81	2.28	49.09	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	6.01	49.32	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Mass Grading 06/01/2010-12/31/2010	11.24	91.82	53.24	0.01	224.19	4.91	229.10	46.83	4.52	51.35	8,835.82
Mass Grading Dust	0.00	0.00	0.00	0.00	224.13	0.00	224.13	46.81	0.00	46.81	0.00
Mass Grading Off Road Diesel	10.55	84.04	46.92	0.00	0.00	4.59	4.59	0.00	4.22	4.22	7,399.45
Mass Grading On Road Diesel	0.58	7.58	2.91	0.01	0.03	0.31	0.34	0.01	0.29	0.30	1,032.08
Mass Grading Worker Trips	0.11	0.20	3.41	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.28

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 243.51

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

4 1 2008 09:47:27 AM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading 05/31/2010-01/01/2011	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**17.31**	87.90	**81.37**	**0.02**	58.87	**7.40**	66.27	12.30	**6.80**	19.11	**13,209.95**
Mass Grading 05/31/2010-01/01/2011	6.07	29.70	28.13	0.00	29.42	2.48	31.90	6.14	2.28	8.43	4,374.14
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	6.01	29.59	26.30	0.00	0.00	2.48	2.48	0.00	2.28	2.28	4,156.44
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.06	0.11	1.83	0.00	0.01	0.01	0.02	0.00	0.00	0.01	217.69
Mass Grading 06/01/2010-12/31/2010	11.24	58.21	53.24	0.01	29.46	4.91	34.37	6.16	4.52	10.68	8,835.82
Mass Grading Dust	0.00	0.00	0.00	0.00	29.41	0.00	29.41	6.14	0.00	6.14	0.00
Mass Grading Off Road Diesel	10.55	50.42	46.92	0.00	0.00	4.59	4.59	0.00	4.22	4.22	7,399.45
Mass Grading On Road Diesel	0.58	7.58	2.91	0.01	0.03	0.31	0.34	0.01	0.29	0.30	1,032.08
Mass Grading Worker Trips	0.11	0.20	3.41	0.00	0.02	0.01	0.03	0.01	0.01	0.02	404.28

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 243.51

Off-Road Equipment:

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1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.34	6.78	6.28	0.00	4.55	0.57	5.12	0.95	0.52	1.48	1,019.35
Mass Grading 05/31/2010-01/01/2011	0.47	2.30	2.18	0.00	2.28	0.19	2.47	0.48	0.18	0.65	339.00
Mass Grading Dust	0.00	0.00	0.00	0.00	2.28	0.00	2.28	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.47	2.29	2.04	0.00	0.00	0.19	0.19	0.00	0.18	0.18	322.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.87
Mass Grading 06/01/2010-12/31/2010	0.87	4.48	4.10	0.00	2.27	0.38	2.65	0.47	0.35	0.82	680.36
Mass Grading Dust	0.00	0.00	0.00	0.00	2.26	0.00	2.26	0.47	0.00	0.47	0.00
Mass Grading Off Road Diesel	0.81	3.88	3.61	0.00	0.00	0.35	0.35	0.00	0.33	0.33	569.76
Mass Grading On Road Diesel	0.04	0.58	0.22	0.00	0.00	0.02	0.03	0.00	0.02	0.02	79.47
Mass Grading Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.13

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Graders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Rollers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

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For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 243.51
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita 033108\Santa Anita Alternative 2 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.34	10.90	6.28	0.00	34.63	0.57	35.20	7.23	0.52	7.76	1,019.35
Mass Grading 05/31/2010-01/01/2011	0.47	3.83	2.18	0.00	17.37	0.19	17.56	3.63	0.18	3.80	339.00
Mass Grading Dust	0.00	0.00	0.00	0.00	17.37	0.00	17.37	3.63	0.00	3.63	0.00
Mass Grading Off Road Diesel	0.47	3.82	2.04	0.00	0.00	0.19	0.19	0.00	0.18	0.18	322.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.87
Mass Grading 06/01/2010-12/31/2010	0.87	7.07	4.10	0.00	17.26	0.38	17.64	3.61	0.35	3.95	680.36
Mass Grading Dust	0.00	0.00	0.00	0.00	17.26	0.00	17.26	3.60	0.00	3.60	0.00
Mass Grading Off Road Diesel	0.81	6.47	3.61	0.00	0.00	0.35	0.35	0.00	0.33	0.33	569.76
Mass Grading On Road Diesel	0.04	0.58	0.22	0.00	0.00	0.02	0.03	0.00	0.02	0.02	79.47
Mass Grading Worker Trips	0.01	0.02	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.13

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1624 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

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On Road Truck Travel (VMT): 243.51

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

4 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 4 hours per day

ALTERNATIVE 3

11 15 2007 05:22:50 PM

Urbemis 2007 Version 9.2.2

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (lbs/day unmitigated)	26.68	239.98	118.54	0.07	454.76	11.67	466.43	95.00	10.74	105.74	23,516.13
2009 TOTALS (lbs/day mitigated)	26.68	165.29	118.54	0.07	59.97	11.67	71.65	12.56	10.74	23.30	23,516.13
2010 TOTALS (lbs/day unmitigated)	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
2010 TOTALS (lbs/day mitigated)	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27

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Urbemis 2007 Version 9.2.2

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (tons/year unmitigated)	1.84	16.51	8.38	0.01	35.01	0.82	35.83	7.31	0.75	8.07	1,606.69
2009 TOTALS (tons/year mitigated)	1.84	11.54	8.38	0.01	4.61	0.82	5.43	0.97	0.75	1.72	1,606.69
Percent Reduction	0.00	30.09	0.00	0.00	86.83	0.00	84.84	86.80	0.00	78.69	0.00
2010 TOTALS (tons/year unmitigated)	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
2010 TOTALS (tons/year mitigated)	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Percent Reduction	0.00	39.91	0.00	0.00	86.88	0.00	86.02	86.87	0.00	83.24	0.00

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	26.68	239.98	118.54	0.07	454.76	11.67	466.43	95.00	10.74	105.74	23,516.13
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	5.67	45.39	23.82	0.00	227.21	2.41	229.62	47.45	2.22	49.67	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.61	45.29	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-12/31/2009	16.89	156.40	80.22	0.07	227.44	7.72	235.16	47.53	7.10	54.63	15,575.60
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.80	103.43	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	3.96	52.73	20.24	0.06	0.22	2.20	2.42	0.07	2.03	2.10	6,536.49
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51
Time Slice 7/13/2009-12/31/2009 Active Days: 124	22.56	201.79	104.04	0.07	454.65	10.13	464.78	94.98	9.32	104.30	19,553.92
Mass Grading 05/31/2009-01/01/2010	5.67	45.39	23.82	0.00	227.21	2.41	229.62	47.45	2.22	49.67	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.61	45.29	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-12/31/2009	16.89	156.40	80.22	0.07	227.44	7.72	235.16	47.53	7.10	54.63	15,575.60
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.80	103.43	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	3.96	52.73	20.24	0.06	0.22	2.20	2.42	0.07	2.03	2.10	6,536.49
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51

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Time Slice 1/1/2010-1/1/2010 Active Days: 1	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading 05/31/2009-01/01/2010	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1542.21
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

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2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2009-5/29/2009 Active	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active	**26.68**	165.29	**118.54**	**0.07**	59.97	**11.67**	71.65	12.56	**10.74**	23.30	**23,516.13**
Mass Grading 05/01/2009-	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-	5.67	27.27	23.82	0.00	29.82	2.41	32.23	6.23	2.22	8.45	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.61	27.17	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-	16.89	115.03	80.22	0.07	30.05	7.72	37.77	6.30	7.10	13.40	15,575.60
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.80	62.06	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	3.96	52.73	20.24	0.06	0.22	2.20	2.42	0.07	2.03	2.10	6,536.49
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51
Time Slice 7/13/2009-12/31/2009 Active	22.56	142.30	104.04	0.07	59.86	10.13	69.99	12.53	9.32	21.85	19,553.92
Mass Grading 05/31/2009-	5.67	27.27	23.82	0.00	29.82	2.41	32.23	6.23	2.22	8.45	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.61	27.17	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-	16.89	115.03	80.22	0.07	30.05	7.72	37.77	6.30	7.10	13.40	15,575.60
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.80	62.06	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	3.96	52.73	20.24	0.06	0.22	2.20	2.42	0.07	2.03	2.10	6,536.49
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51

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Time Slice 1/1/2010-1/1/2010 Active	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading 05/31/2009-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low

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Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1542.21

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	1.84	16.51	8.38	0.01	35.01	0.82	35.83	7.31	0.75	8.07	1,606.69
Mass Grading 05/01/2009-07/10/2009	0.11	0.97	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.97	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.44	3.49	1.83	0.00	17.50	0.19	17.68	3.65	0.17	3.82	306.33
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.43	3.49	1.70	0.00	0.00	0.19	0.19	0.00	0.17	0.17	291.96
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.37
Mass Grading 06/01/2009-12/31/2009	1.30	12.04	6.18	0.01	17.51	0.59	18.11	3.66	0.55	4.21	1,199.32
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.99	7.96	4.31	0.00	0.00	0.42	0.42	0.00	0.39	0.39	662.48
Mass Grading On Road Diesel	0.30	4.06	1.56	0.00	0.02	0.17	0.19	0.01	0.16	0.16	503.31
Mass Grading Worker Trips	0.01	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.53
2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
Mass Grading 05/31/2009-01/01/2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
Mass Grading Dust	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

Total Acres Disturbed: 0.05

Maximum Daily Acreage Disturbed: 0.01

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 2.35

Off-Road Equipment:

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1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
  Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
  Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1542.21
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	1.84	11.54	8.38	0.01	4.61	0.82	5.43	0.97	0.75	1.72	1,606.69
Mass Grading 05/01/2009-	0.11	0.59	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.58	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-	0.44	2.10	1.83	0.00	2.30	0.19	2.48	0.48	0.17	0.65	306.33
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.43	2.09	1.70	0.00	0.00	0.19	0.19	0.00	0.17	0.17	291.96
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.37
Mass Grading 06/01/2009-	1.30	8.86	6.18	0.01	2.31	0.59	2.91	0.49	0.55	1.03	1,199.32
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.99	4.78	4.31	0.00	0.00	0.42	0.42	0.00	0.39	0.39	662.48
Mass Grading On Road Diesel	0.30	4.06	1.56	0.00	0.02	0.17	0.19	0.01	0.16	0.16	503.31
Mass Grading Worker Trips	0.01	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.53
2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Mass Grading 05/31/2009-	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

Total Acres Disturbed: 0.05

Maximum Daily Acreage Disturbed: 0.01

Fugitive Dust Level of Detail: Default

10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1542.21
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	21.24	189.02	98.53	0.07	454.65	9.39	464.04	94.98	8.64	103.62	19,553.74
2010 TOTALS (lbs/day mitigated)	21.24	132.75	98.53	0.07	59.86	9.39	69.25	12.53	8.64	21.17	19,553.74

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Urbemis 2007 Version 9.2.2

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	1.64	14.58	7.60	0.01	35.12	0.72	35.85	7.34	0.67	8.00	1,507.63
2010 TOTALS (tons/year mitigated)	1.64	10.23	7.60	0.01	4.62	0.72	5.35	0.97	0.67	1.63	1,507.63
Percent Reduction	0.00	29.78	0.00	0.00	86.83	0.00	85.08	86.81	0.00	79.58	0.00

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading 05/31/2010-01/01/2011	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**21.24**	**189.02**	**98.53**	**0.07**	**454.65**	**9.39**	**464.04**	**94.98**	**8.64**	**103.62**	**19,553.74**
Mass Grading 05/31/2010-01/01/2011	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Mass Grading 06/01/2010-12/31/2010	15.90	146.20	75.88	0.07	227.44	7.14	234.57	47.53	6.56	54.09	15,575.47
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.10	97.95	53.77	0.00	0.00	5.16	5.16	0.00	4.74	4.74	8,603.60
Mass Grading On Road Diesel	3.69	48.03	18.44	0.06	0.22	1.97	2.18	0.07	1.81	1.88	6,536.49
Mass Grading Worker Trips	0.12	0.22	3.67	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.38

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

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Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1542.21

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading 05/31/2010-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Time Slice 6/1/2010-12/31/2010 Active	**21.24**	132.75	**98.53**	**0.07**	59.86	**9.39**	69.25	12.53	**8.64**	21.17	**19,553.74**
Mass Grading 05/31/2010-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Mass Grading 06/01/2010-	15.90	107.02	75.88	0.07	30.05	7.14	37.18	6.30	6.56	12.87	15,575.47
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.10	58.77	53.77	0.00	0.00	5.16	5.16	0.00	4.74	4.74	8,603.60
Mass Grading On Road Diesel	3.69	48.03	18.44	0.06	0.22	1.97	2.18	0.07	1.81	1.88	6,536.49
Mass Grading Worker Trips	0.12	0.22	3.67	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1542.21

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

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5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.64	14.58	7.60	0.01	35.12	0.72	35.85	7.34	0.67	8.00	1,507.63
Mass Grading 05/31/2010-01/01/2011	0.41	3.32	1.76	0.00	17.61	0.17	17.78	3.68	0.16	3.84	308.32
Mass Grading Dust	0.00	0.00	0.00	0.00	17.61	0.00	17.61	3.68	0.00	3.68	0.00
Mass Grading Off Road Diesel	0.41	3.31	1.63	0.00	0.00	0.17	0.17	0.00	0.16	0.16	293.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.46
Mass Grading 06/01/2010-12/31/2010	1.22	11.26	5.84	0.01	17.51	0.55	18.06	3.66	0.51	4.16	1,199.31
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.93	7.54	4.14	0.00	0.00	0.40	0.40	0.00	0.37	0.37	662.48
Mass Grading On Road Diesel	0.28	3.70	1.42	0.00	0.02	0.15	0.17	0.01	0.14	0.14	503.31
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.52

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1542.21

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Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 3 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.64	10.23	7.60	0.01	4.62	0.72	5.35	0.97	0.67	1.63	1,507.63
Mass Grading 05/31/2010-	0.41	1.99	1.76	0.00	2.31	0.17	2.49	0.48	0.16	0.64	308.32
Mass Grading Dust	0.00	0.00	0.00	0.00	2.31	0.00	2.31	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.41	1.99	1.63	0.00	0.00	0.17	0.17	0.00	0.16	0.16	293.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.46
Mass Grading 06/01/2010-	1.22	8.24	5.84	0.01	2.31	0.55	2.86	0.49	0.51	0.99	1,199.31
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.93	4.53	4.14	0.00	0.00	0.40	0.40	0.00	0.37	0.37	662.48
Mass Grading On Road Diesel	0.28	3.70	1.42	0.00	0.02	0.15	0.17	0.01	0.14	0.14	503.31
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.52

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1542.21
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

ALTERNATIVE 4

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Urbemis 2007 Version 9.2.2

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (lbs/day unmitigated)	26.89	242.75	119.60	0.07	454.77	11.79	466.56	95.01	10.85	105.85	23,860.15
2009 TOTALS (lbs/day mitigated)	26.89	168.06	119.60	0.07	59.98	11.79	71.77	12.56	10.85	23.41	23,860.15
2010 TOTALS (lbs/day unmitigated)	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
2010 TOTALS (lbs/day mitigated)	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27

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Urbemis 2007 Version 9.2.2

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (tons/year unmitigated)	1.86	16.73	8.46	0.01	35.01	0.83	35.84	7.31	0.76	8.08	1,633.18
2009 TOTALS (tons/year mitigated)	1.86	11.76	8.46	0.01	4.61	0.83	5.44	0.97	0.76	1.73	1,633.18
Percent Reduction	0.00	29.71	0.00	0.00	86.82	0.00	84.82	86.79	0.00	78.61	0.00
2010 TOTALS (tons/year unmitigated)	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
2010 TOTALS (tons/year mitigated)	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Percent Reduction	0.00	39.91	0.00	0.00	86.88	0.00	86.02	86.87	0.00	83.24	0.00

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2009-5/29/2009 Active Days: 21	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active Days: 30	**26.89**	**242.75**	**119.60**	**0.07**	**454.77**	**11.79**	**466.56**	**95.01**	**10.85**	**105.85**	**23,860.15**
Mass Grading 05/01/2009-07/10/2009	4.12	38.19	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	38.01	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-01/01/2010	5.67	45.39	23.82	0.00	227.21	2.41	229.62	47.45	2.22	49.67	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.61	45.29	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-12/31/2009	17.10	159.17	81.28	0.07	227.45	7.84	235.28	47.53	7.21	54.74	15,919.62
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.80	103.43	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	4.17	55.51	21.30	0.06	0.23	2.32	2.55	0.08	2.13	2.21	6,880.52
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51
Time Slice 7/13/2009-12/31/2009 Active Days: 124	22.77	204.56	105.10	0.07	454.66	10.25	464.90	94.98	9.42	104.41	19,897.95
Mass Grading 05/31/2009-01/01/2010	5.67	45.39	23.82	0.00	227.21	2.41	229.62	47.45	2.22	49.67	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.61	45.29	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-12/31/2009	17.10	159.17	81.28	0.07	227.45	7.84	235.28	47.53	7.21	54.74	15,919.62
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.80	103.43	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	4.17	55.51	21.30	0.06	0.23	2.32	2.55	0.08	2.13	2.21	6,880.52
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51

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Time Slice 1/1/2010-1/1/2010 Active Days: 1	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading 05/31/2009-01/01/2010	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1623.38
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

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2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2009-5/29/2009 Active	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading 05/01/2009-	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Time Slice 6/1/2009-7/10/2009 Active	**26.89**	168.06	**119.60**	**0.07**	59.98	**11.79**	71.77	12.56	**10.85**	23.41	**23,860.15**
Mass Grading 05/01/2009-	4.12	22.99	14.50	0.00	0.11	1.55	1.65	0.02	1.42	1.45	3,962.20
Mass Grading Dust	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	4.06	22.81	12.78	0.00	0.00	1.54	1.54	0.00	1.41	1.41	3,765.58
Mass Grading On Road Diesel	0.01	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.97
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 05/31/2009-	5.67	27.27	23.82	0.00	29.82	2.41	32.23	6.23	2.22	8.45	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.61	27.17	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-	17.10	117.80	81.28	0.07	30.06	7.84	37.89	6.31	7.21	13.52	15,919.62
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.80	62.06	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	4.17	55.51	21.30	0.06	0.23	2.32	2.55	0.08	2.13	2.21	6,880.52
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51
Time Slice 7/13/2009-12/31/2009 Active	22.77	145.07	105.10	0.07	59.87	10.25	70.12	12.54	9.42	21.96	19,897.95
Mass Grading 05/31/2009-	5.67	27.27	23.82	0.00	29.82	2.41	32.23	6.23	2.22	8.45	3,978.33
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.61	27.17	22.13	0.00	0.00	2.40	2.40	0.00	2.21	2.21	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.10	1.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.65
Mass Grading 06/01/2009-	17.10	117.80	81.28	0.07	30.06	7.84	37.89	6.31	7.21	13.52	15,919.62
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.80	62.06	56.03	0.00	0.00	5.50	5.50	0.00	5.06	5.06	8,603.60
Mass Grading On Road Diesel	4.17	55.51	21.30	0.06	0.23	2.32	2.55	0.08	2.13	2.21	6,880.52
Mass Grading Worker Trips	0.13	0.24	3.95	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.51

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Time Slice 1/1/2010-1/1/2010 Active	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading 05/31/2009-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser
Total Acres Disturbed: 0.05
Maximum Daily Acreage Disturbed: 0.01
Fugitive Dust Level of Detail: Default
10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low

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Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1623.38

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	1.86	16.73	8.46	0.01	35.01	0.83	35.84	7.31	0.76	8.08	1,633.18
Mass Grading 05/01/2009-07/10/2009	0.11	0.97	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.97	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-01/01/2010	0.44	3.49	1.83	0.00	17.50	0.19	17.68	3.65	0.17	3.82	306.33
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.43	3.49	1.70	0.00	0.00	0.19	0.19	0.00	0.17	0.17	291.96
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.37
Mass Grading 06/01/2009-12/31/2009	1.32	12.26	6.26	0.01	17.51	0.60	18.12	3.66	0.55	4.21	1,225.81
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.99	7.96	4.31	0.00	0.00	0.42	0.42	0.00	0.39	0.39	662.48
Mass Grading On Road Diesel	0.32	4.27	1.64	0.00	0.02	0.18	0.20	0.01	0.16	0.17	529.80
Mass Grading Worker Trips	0.01	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.53
2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
Mass Grading 05/31/2009-01/01/2010	0.00	0.02	0.01	0.00	0.11	0.00	0.11	0.02	0.00	0.02	1.99
Mass Grading Dust	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

Total Acres Disturbed: 0.05

Maximum Daily Acreage Disturbed: 0.01

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 2.35

Off-Road Equipment:

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1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
  Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
  Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1623.38
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2009	1.86	11.76	8.46	0.01	4.61	0.83	5.44	0.97	0.76	1.73	1,633.18
Mass Grading 05/01/2009-	0.11	0.59	0.37	0.00	0.00	0.04	0.04	0.00	0.04	0.04	101.04
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.10	0.58	0.33	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.02
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.76
Mass Grading 05/31/2009-	0.44	2.10	1.83	0.00	2.30	0.19	2.48	0.48	0.17	0.65	306.33
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.43	2.09	1.70	0.00	0.00	0.19	0.19	0.00	0.17	0.17	291.96
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.37
Mass Grading 06/01/2009-	1.32	9.07	6.26	0.01	2.31	0.60	2.92	0.49	0.55	1.04	1,225.81
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.99	4.78	4.31	0.00	0.00	0.42	0.42	0.00	0.39	0.39	662.48
Mass Grading On Road Diesel	0.32	4.27	1.64	0.00	0.02	0.18	0.20	0.01	0.16	0.17	529.80
Mass Grading Worker Trips	0.01	0.02	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.53
2010	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Mass Grading 05/31/2009-	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	1.99
Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

For Pumps, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Generator Sets, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Cranes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Other Equipment, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Welders, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Off Highway Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/10/2009 - Construction of Dam Riser

Total Acres Disturbed: 0.05

Maximum Daily Acreage Disturbed: 0.01

Fugitive Dust Level of Detail: Default

10 lbs per acre-day
On Road Truck Travel (VMT): 2.35
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
1 Generator Sets (200 hp) operating at a 0.74 load factor for 8 hours per day
1 Off Highway Trucks (250 hp) operating at a 0.57 load factor for 8 hours per day
1 Other Equipment (190 hp) operating at a 0.62 load factor for 8 hours per day
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Mass Grading 5/31/2009 - 1/1/2010 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2009 - 12/31/2009 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1623.38
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Summary Report for Summer Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (lbs/day unmitigated)	21.43	191.54	99.50	0.07	454.66	9.49	464.15	94.98	8.73	103.72	19,897.77
2010 TOTALS (lbs/day mitigated)	21.43	135.27	99.50	0.07	59.87	9.49	69.37	12.54	8.73	21.27	19,897.77

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Urbemis 2007 Version 9.2.2

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	1.65	14.77	7.67	0.01	35.12	0.73	35.85	7.34	0.67	8.01	1,534.12
2010 TOTALS (tons/year mitigated)	1.65	10.43	7.67	0.01	4.63	0.73	5.36	0.97	0.67	1.64	1,534.12
Percent Reduction	0.00	29.39	0.00	0.00	86.83	0.00	85.06	86.80	0.00	79.50	0.00

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active Days: 1	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading 05/31/2010-01/01/2011	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Time Slice 6/1/2010-12/31/2010 Active Days: 154	**21.43**	**191.54**	**99.50**	**0.07**	**454.66**	**9.49**	**464.15**	**94.98**	**8.73**	**103.72**	**19,897.77**
Mass Grading 05/31/2010-01/01/2011	5.33	42.81	22.65	0.00	227.21	2.26	229.46	47.45	2.07	49.53	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	5.28	42.72	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Mass Grading 06/01/2010-12/31/2010	16.10	148.73	76.85	0.07	227.45	7.24	234.69	47.53	6.66	54.19	15,919.50
Mass Grading Dust	0.00	0.00	0.00	0.00	227.20	0.00	227.20	47.45	0.00	47.45	0.00
Mass Grading Off Road Diesel	12.10	97.95	53.77	0.00	0.00	5.16	5.16	0.00	4.74	4.74	8,603.60
Mass Grading On Road Diesel	3.88	50.56	19.41	0.06	0.23	2.07	2.30	0.08	1.90	1.98	6,880.52
Mass Grading Worker Trips	0.12	0.22	3.67	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.38

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

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Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1623.38

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/31/2010-5/31/2010 Active	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading 05/31/2010-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Time Slice 6/1/2010-12/31/2010 Active	**21.43**	135.27	**99.50**	**0.07**	59.87	**9.49**	69.37	12.54	**8.73**	21.27	**19,897.77**
Mass Grading 05/31/2010-	5.33	25.73	22.65	0.00	29.82	2.26	32.07	6.23	2.07	8.30	3,978.27
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	5.28	25.63	21.08	0.00	0.00	2.25	2.25	0.00	2.07	2.07	3,791.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.05	0.09	1.57	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.59
Mass Grading 06/01/2010-	16.10	109.55	76.85	0.07	30.06	7.24	37.30	6.31	6.66	12.97	15,919.50
Mass Grading Dust	0.00	0.00	0.00	0.00	29.81	0.00	29.81	6.23	0.00	6.23	0.00
Mass Grading Off Road Diesel	12.10	58.77	53.77	0.00	0.00	5.16	5.16	0.00	4.74	4.74	8,603.60
Mass Grading On Road Diesel	3.88	50.56	19.41	0.06	0.23	2.07	2.30	0.08	1.90	1.98	6,880.52
Mass Grading Worker Trips	0.12	0.22	3.67	0.00	0.02	0.01	0.03	0.01	0.01	0.02	435.38

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1623.38

Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

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5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.65	14.77	7.67	0.01	35.12	0.73	35.85	7.34	0.67	8.01	1,534.12
Mass Grading 05/31/2010-01/01/2011	0.41	3.32	1.76	0.00	17.61	0.17	17.78	3.68	0.16	3.84	308.32
Mass Grading Dust	0.00	0.00	0.00	0.00	17.61	0.00	17.61	3.68	0.00	3.68	0.00
Mass Grading Off Road Diesel	0.41	3.31	1.63	0.00	0.00	0.17	0.17	0.00	0.16	0.16	293.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.46
Mass Grading 06/01/2010-12/31/2010	1.24	11.45	5.92	0.01	17.51	0.56	18.07	3.66	0.51	4.17	1,225.80
Mass Grading Dust	0.00	0.00	0.00	0.00	17.49	0.00	17.49	3.65	0.00	3.65	0.00
Mass Grading Off Road Diesel	0.93	7.54	4.14	0.00	0.00	0.40	0.40	0.00	0.37	0.37	662.48
Mass Grading On Road Diesel	0.30	3.89	1.49	0.00	0.02	0.16	0.18	0.01	0.15	0.15	529.80
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.52

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day

2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

Total Acres Disturbed: 13

Maximum Daily Acreage Disturbed: 3.25

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 1623.38

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Off-Road Equipment:

1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day

2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.2

Detail Report for Annual Construction Mitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\boparaip\Desktop\Work\Santa Anita Reservoir\Santa Anita Alt 4 2010.urb9

Project Name: Santa Anita Reservoir

Project Location: South Coast AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2010	1.65	10.43	7.67	0.01	4.63	0.73	5.36	0.97	0.67	1.64	1,534.12
Mass Grading 05/31/2010-	0.41	1.99	1.76	0.00	2.31	0.17	2.49	0.48	0.16	0.64	308.32
Mass Grading Dust	0.00	0.00	0.00	0.00	2.31	0.00	2.31	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.41	1.99	1.63	0.00	0.00	0.17	0.17	0.00	0.16	0.16	293.86
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.46
Mass Grading 06/01/2010-	1.24	8.44	5.92	0.01	2.31	0.56	2.87	0.49	0.51	1.00	1,225.80
Mass Grading Dust	0.00	0.00	0.00	0.00	2.30	0.00	2.30	0.48	0.00	0.48	0.00
Mass Grading Off Road Diesel	0.93	4.53	4.14	0.00	0.00	0.40	0.40	0.00	0.37	0.37	662.48
Mass Grading On Road Diesel	0.30	3.89	1.49	0.00	0.02	0.16	0.18	0.01	0.15	0.15	529.80
Mass Grading Worker Trips	0.01	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.52

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

For Sweepers/Scrubbers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:

NOX: 40%

The following mitigation measures apply to Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation

For Soil Stablizing Measures, the Apply soil stabilizers to inactive areas mitigation reduces emissions by:

PM10: 84% PM25: 84%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Rubber Tired Dozers, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Tractors/Loaders/Backhoes, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Excavators, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Crushing/Processing Equip, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%
For Water Trucks, the Diesel Oxidation Catalyst 40% mitigation reduces emissions by:
NOX: 40%

Phase Assumptions

Phase: Mass Grading 5/31/2010 - 1/1/2011 - Sediment Deposit at SPS
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 6/1/2010 - 12/31/2010 - Dry Excavation
Total Acres Disturbed: 13
Maximum Daily Acreage Disturbed: 3.25
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 1650 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 1623.38
Off-Road Equipment:
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 8 hours per day
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
5 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

CALIFORNIA DEPARTMENT OF FISH AND GAME December 17, 2009

South Coast Region
4949 Viewridge Avenue
San Diego, California 92123

Notification No 1600-2008-0173-R5
Page 1 of 18

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and Los Angeles County Flood Control District (P O.C. Belinda Kwan) 900 South Fremont Avenue, Alhambra, California 91802 , Tel. No 626-458-6135, FAX No 626-979-5436, hereinafter called the Applicant, is as follows.

WHEREAS, pursuant to Section 1602 of the California Fish and Game Code, the Applicant, on the 14th day of May, 2008, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from the streambed(s) of the following water(s). Santa Anita Reservoir and Wash, tributary to Santa Anita Canyon and Wash, Los Angeles County, California. Lat./Long. N34/11/04/ W118/00/44 and Section, 10; Township, T1N; Range, R11W, USGS Map El Toro 7 5

WHEREAS, the Department (represented by Jamie Jackson) during a site visit conducted on August 05, 2008, and based on information received by the Applicant, has determined that such operations may substantially adversely affect those existing fish and wildlife resources within Santa Anita Reservoir and Wash, the project site, and the vicinity of the project site, tributary to Santa Anita Canyon and Wash, specifically identified as follows: **Amphibians:** California newt (*Taricha torosa)*, pacific treefrog (*Hyla regilla*), **Reptiles:** southwestern pond turtle (*Emys marmorata*), western fence lizard (*Sceloporus occidentalis*), side-botched lizard (*Uta stansburiana*), coastal western whiptail (*Cnemidophorus tigris*); **Birds:** California quail (*Callipepla californica*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), black phoebe (*Sayornis nigricans)*, killdeer (*Charadrius vociferous*), American kestrel (*Falco sparverius)*, mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis)*, wrentit (*Chamaea fasciata)*, bushtit (*Psaltriparus minimus)*, northern mockingbird (*Mimus polyglottos)* , Anna's hummingbird (*Calypte anna)*, black-headed grosbeak (*Pheucticus melanocephalus)*, Bullock's oriole (*Icterus bullockii)*, house finch (*Carpodacus mexicanus)*, western scrub-jay (*Aphelocoma californica*), lesser goldfinch (*Carduelis psaltria)*, American crow (*Corvus brachyrhynchos)*, common yellowthroat (*Geothlypis trichas)*, phainopepla (*Phainopepla nitens)*, spotted towhee (*Pipilo maculatus)*, Allen's hummingbird (*Selasphorus sasin)*, American robin (*Turdus migratorius)*, wrens (Troglodytidae), swallows (Hirundinidae), flycatchers (Tyrannidae), woodpeckers (Picidae), warblers (Parulidae), sparrows (Emberizidae), Mammals coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), gray squirrel (*Sciurus griseus)*, California ground squirrel (*Spermophilus beecheyi*), and **Native Plants:** including CNPS List 1B listed plants or plants protected under CESA such as southern California Dudleya, coast live oak, mulefat, and vegetation communities such as Riversidean alluvial fan sage scrub and coast live oak woodland, and all other aquatic and wildlife resources in the area, including the riparian vegetation which provides habitat for such species in the area

WHEREAS, the Department has determined that such operations may substantially adversely affect those existing fish and wildlife resources

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Applicant's work. The Applicant hereby agrees to accept the following measures/conditions as part of the proposed work.

If the Applicant's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5937, and 5948, may result in prosecution

Nothing in this Agreement authorizes the Applicant to trespass on any land or property, nor does it relieve the Applicant of responsibility for compliance with applicable Federal, State, or local laws or ordinances. A consummated Agreement does not constitute Department's endorsement of the proposed operation, or assure the Department's concurrence with permits required by other agencies.

This Agreement becomes effective the date of the Department's signature and terminates December 31, 2014, for project activities only. This Agreement shall remain in effect for that time necessary to satisfy the terms/conditions of this Agreement.

Pursuant to Section 1600 *et seq.*, the Applicant may request one extension of the Agreement; the Applicant shall request the extension of this Agreement prior to its termination. The one extension may be granted for up to five years from the date of termination of the Agreement and is subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Region office at the above address, Attn. Streambed, SAA No 1600-2008-0173-R5 If the Applicant fails to request the extension prior to the Agreement's termination, then the Applicant shall submit a new notification with fees and required information to the Department. Any construction/impacts conducted under an expired Agreement are a violation of Fish and Game Code Section 1600 *et seq.* For complete information see Fish and Game Code Section 1600 *et seq.*

All provisions of this Agreement remain in force throughout the term of the Agreement. Any provisions of the Agreement may be amended or the Agreement may be terminated at any time provided such amendment and/or termination is agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated provisions.

It is understood that the Department has entered into this Agreement for purposes of establishing protective provisions for fish and wildlife. The decision to proceed with the project is the sole responsibility of the Applicant, and is not required by this Agreement. It is further agreed that all liability and/or incurred cost related to or arising from the Applicant's project and the implementation of the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of the Applicant The Applicant agrees to hold harmless the State of California and the Department against any related claim made by any party or parties for personal injury or any other damages

The Department reserves the right to suspend or cancel this Agreement under one or more of, but not limited to, the following circumstances.

a. the Department determines that the information provided by the Applicant in support of the Notification/Agreement is incomplete or inaccurate,

b. the Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;

c. the project or project activities as described in the Notification/Agreement change; and

d the conditions affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

Before any suspension or cancellation of the Agreement, the Department will notify the Applicant in writing of the circumstances which the Department believes warrant suspension or cancellation. The Applicant will have seven (7) working days from the date of receipt of this notification to respond in writing to the circumstances described in the Department's notification. Upon receipt of the Department's notification, the Applicant shall cease all project activities specified in the notification until the Department informs the Applicant in writing that methods and/or measures have been identified, agreed upon, and shall be implemented to adequately address the reasons for the Department's notification

The Department reserves the right to enter the project site at any time to ensure compliance with terms/conditions of this Agreement.

Project Location

The proposed project is located at Santa Anita Dam and Reservoir at 2230 North Santa Anita Avenue, Monrovia, Los Angeles County More specifically, the Santa Anita Reservoir Dam Riser Modification and Sediment Removal Project (proposed project) is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles. The project area is located on both the City of Arcadia and U.S. Forest Service land, approximately 2 5 miles north of the 210 Foothill Freeway Land uses adjacent to the project area include the Angeles National Forest to the north, the City of Arcadia Wilderness Park on the north, single-family residential uses to the west and south, and the City of Monrovia open space to the east. The Wilderness Park is a 120-acre nature preserve located below Big Santa Anita Canyon, which is owned and managed by the City of Arcadia. The Wilderness Park consists of a passive recreation area on 8.5 acres and the balance of the preserve remains in its natural state The project area includes the Santa Anita Reservoir, the Santa Anita Dam, the tunnel from the reservoir to the downstream access road along the streambed, and Santa Anita Headworks, Santa Anita debris basin, and the Santa Anita Sediment Placement Site (SPS) These facilities are owned and operated by the Los Angeles County Flood Control District (LACFCD). The Santa Anita Reservoir, the streamside access road, and the Headworks are located in the Angeles National Forest above the City of Arcadia The Wilderness Park, debris basin, and SPS are all located below the reservoir in the City of Arcadia. The Santa Anita SPS is comprised of three sections (the Upper, Middle, and Lower SPS areas) The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area, but does not have sufficient capacity for the anticipated sediment to be removed

from the reservoir The Middle SPS area has always been planned for sediment storage use, apart from existing access roads it is relatively undisturbed and characterized by native vegetation because it has not been used for previous sediment storage activities. The Lower SPS area, located in the southerly end of the SPS areas, is a previously disturbed area that contains sediment from prior cleanouts of the reservoir, debris basin and other local flood protection facilities, it also does not have sufficient capacity to accommodate the expected volume of sediment from the reservoir, over 300,000 cubic yards. The proposed project would place approximately 250,000 cubic yards of excavated sediment in the Lower SPS and the remainder of sediment, up to 250,000 cubic yards, would be placed in the Middle SPS

Project Description

The Applicant (Los Angeles County Flood Control District, LACFCD) is proposing to alter the streambed and bank through the removal of approximately 500,000 cubic yards of sediment from the reservoir to minimize impacts to the valves and to ensure The California Department of Water Resources Division of Safety of Dams (DSOD) requirements are met. The Applicant proposes to remove the sediment in the late spring through early winter when inflow is limited. Concurrent with the sediment removal activities, LACFCD also proposes constructing a riser on the dam's lowest outlet gate to allow water above El 1,230 feet to freely pass through the dam, thus ensuring that DSOD's seismic requirements are met To make use of the impounded water below El. 1,230 feet, when conditions allow, LACFCD will install additional slide gates on the existing risers for the valves.

A structural analysis of Santa Anita Dam was conducted by the Applicant. Modeled stresses on the dam were compared to the assumed maximum allowable stresses of the existing concrete of the dam to determine if there would be potential for damage. The seismic structural analysis of the dam was modeled for the existing condition and post construction of the proposed project. In its current condition, the modeled dam stresses during a Maximum Credible Earthquake (MCE) event exceed the concrete strength, resulting in significant cracking of the dam This could compromise the dam's stability during a MCE

If this project is not completed, Applicant would still be required by the DSOD to maintain the reservoir water level no higher than El. 1,230 feet. At this level, Applicant would eventually lose the ability to control water releases and maintain the low water level because all outlet valves on the dam would be buried in sediment and would be non-operational The reservoir would be above the long-term maximum water level for long periods of time and spillway flows would occur more often In addition the following conditions would likely occur:

- The higher sediment levels would add additional loading on the dam, which could increase the amount of damage likely to occur to the dam during an earthquake; and
- Following an earthquake, LACFCD would not have the ability to lower the reservoir level due to plugging of the valves with sediment.

As discussed above, DSOD is lowering the maximum allowable water elevation behind the dam. The goal of the proposed project is to comply with DSOD's seismic safety requirements and ensure the ability to draw down the reservoir water levels to the elevation of 1,230 feet. The primary project objectives identified to support this goal include:

- Remove the sediment accumulated in the reservoir in a timely manner to avoid

plugging and damage to the dam's outlet works.

- Modify the riser on the dam's lowest gate to ensure that DSOD's water level restrictions and seismic safety requirements are met. Provide additional sediment storage capacity for future routine and emergency cleanout activities served by the Santa Anita SPS

PROJECT CHARACTERISTICS

The proposed project consists of draining the Santa Anita Reservoir, removing sediment and debris from the reservoir by dry excavation, transporting the sediment from the reservoir via conveyor belt, and placing it in the Santa Anita SPS The sediment transport route extends approximately 1.5 miles from the reservoir on the north to the sediment placement site on the south At the completion of the proposed project, no operational changes would occur at any of the areas that are used during the construction activities of the project, except the Lower SPS which will be closed out to future sediment placement activities after the project.

Dam Outlet Modification

The proposed project includes improvements to the Santa Anita Dam, which would involve modifications to the dam's inlet/outlet works, including the construction of a new riser In order to comply with DSOD's seismic stability standards, the riser modification would be done concurrently with the sediment removal project. The bottom elevation at the entrance to the low-level outlet is 1,179.5 feet. There is no existing riser on this outlet. The sediment elevation at the face of the dam is at approximately 1,212 feet. The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam to El 1,230 feet. The existing trash rack in front of this gate would be moved to the outside of the new riser and the existing gate would be removed A new gate would be installed on the outside of the new riser Additional slide gates will be installed on the new riser and the existing risers for Valve Nos. 2, 3, and 4, to allow for operations below the new restricted level. Installation of the new riser would allow water above El. 1,230 feet to freely pass through the dam, thus meeting DSOD's seismic safety requirements.

Construction of the dam riser would require about six to ten concrete mixer trucks for the approximately 60 cubic yards of concrete necessary for the modification. Additional construction equipment necessary for the dam modification would include one 10-ton truck for false works, drilling equipment for dowels, a pump unit with a generator, welding equipment for trash racks, and other miscellaneous equipment. One 8-ton lifting mobile crane would be required for lifting the lowest gate and installing the steel framing, trash racks, etc. The construction period for the dam modification is expected to last approximately three months or a total of 50 to 60 workings days. Applicant anticipates the outlet work to commence in May 2010 The dry excavation activities, described below, would clear sediment away from the work area.

Dry Excavation

The proposed project would remove approximately 500,000 cubic yards of sediment from Santa Anita Reservoir Prior to sediment removal, the reservoir would be drained and a dry-out period, which could last several weeks, would be required Sediment would be removed from the reservoir and transported on the conveyor belt system described below All sediment removal activities would occur below the El. 1,300 feet within the footprint.

Construction workers would access the reservoir via an existing access road on the east side of Santa Anita Canyon Road. Based on cleanout operations at LACFCD's other reservoirs, construction equipment at the reservoir during the dry excavation would likely consist of one crusher, three bulldozers, two excavators, and three loaders. The actual configuration may vary depending on the contractor chosen for the project. Sediment and debris from the reservoir would be loaded on to the conveyor belt using the bulldozers, excavators, and loaders. Equipment staging would occur within the reservoir area and along the existing access road. Best Management Practices (BMPs) would be implemented within the reservoir area to reduce downstream water quality impacts, as described in Section 2 7 below

Sediment Conveyance

The proposed project would transport sediment from the reservoir to the proposed SPS areas using an electric conveyor belt system. The conveyor belt would extend from the reservoir through an existing tunnel that connects the reservoir to an access road located below the dam on the east side of the streambed, continuing along the access road, past the Headworks, over the Wilderness Park parking lot (not obstructing traffic or emergency vehicles), south on the fire access roads, past the upper portion of the debris basin, and would terminate at the upper portion of the Lower SPS. LACFCD would require the construction contractor to use netting, shielding, or other conveyor belt designs over the Wilderness Park parking lot to ensure no sediment would fall over vehicle and pedestrian access areas The approximate dimensions of the electric conveyance system would be approximately 5 feet wide and up to 15 feet high. The existing access road north of the Headworks is about 12 to 15 feet wide, which would allow for maintenance vehicle access throughout the conveyance route. South of the Headworks, the conveyor belt system would follow the existing dirt maintenance road and LACFCD access road to the SPS areas.

As discussed above, sediment would be transported to the SPS using an electric powered conveyor belt system, likely 5 feet wide. The conveyor route may require some clearing, grubbing, and grading of various locations along existing access and maintenance roads. Some vegetation clearing may be required along the access road, including a stream crossing approximately 600 feet south of the Wilderness Park parking area. Minor tunnel improvements would be required to accommodate the conveyor belt and PVC bypass pipe.

Sediment Placement

Approximately 250,000 cubic yards of sediment would be placed in the approximately 5-acre already disturbed Lower SPS first. The Lower SPS would then be closed out to future sediment placement, the remainder of the excavated sediment, approximately 250,000 cubic yards, would be placed at the 13-acre area in the Middle SPS, located east of the Santa Anita Wash, south of the existing Upper SPS The base of the 13-acre Middle SPS area can be tiered in order to accommodate up to 710,000 cubic yards of material The proposed ultimate height of the Middle SPS would be 60 feet from the lowest elevation at the southern end of the SPS. This project would place approximately 250,000 cubic yards of sediment at the Middle SPS and increase the current height by approximately 30 feet. The western edge of the SPS would be landscaped to create a visual buffer for the residences to the west. The proposed project would require the removal of approximately 0 5 acres of vegetation in the Lower SPS The current elevation of the Lower SPS ranges from approximately 630 feet to 650 feet The proposed sediment height at the Lower SPS would increase up to 30 feet. The proposed project would require the removal of

approximately 11 acres of native vegetation in the undeveloped Middle SPS. The remaining two acres of the sediment placement footprint is comprised of existing access roads. In the proposed project, approximately 250,000 cubic yards of sediment would be conveyed to the already disturbed Lower SPS and up to 250,000 cubic yards of sediment would be conveyed to the Middle SPS. The remaining sediment capacity in the 13-acre footprint, approximately 500,000 cubic yards, would be used for future routine and emergency sediment removal activities of facilities served by the Santa Anita SPS This is necessary since the Lower SPS, which currently serves this purpose, would be closed out for future sediment placement. However, future clean-out activities are outside of the scope of this project and would be subject to additional environmental review and analysis.

Prior to the use of the proposed Lower SPS area, approximately 0.5 acres of previously landscaped native and nonnative vegetation would be cleared. Prior to the use of the proposed Middle SPS area, approximately 11 acres of native vegetation would be cleared, including oak and sycamore trees. It is anticipated that vegetation removal would occur after September and prior to March, outside the nesting season, to avoid impacts to nesting birds. Construction fencing would be installed along the southern boundary of the new fill area in the Middle SPS area to minimize impacts to the remaining vegetation in the Middle SPS area.

Construction Timing

Applicant would attempt to complete the sediment removal within the summer and fall of 2011, but sediment removal activities may last over two 6 to 8 -month periods of April through October (possibly to December, weather permitting) The removal of vegetation in a portion of the Middle SPS area is anticipated to occur after October 2010 and prior to March 2011 The riser construction would likely occur from August 2011 to December 2011, although the contractor may choose an alternate construction sequence, with the riser construction from May 2012 through October 2012. Dewatering of the reservoir would occur for approximately two weeks. The dry out of the reservoir would start at the end of the dewatering cycle, which is anticipated to be in early May 2010 and last up to three weeks, depending on the magnitude of recession flows and the weather. The construction activities associated with the various project components are described below

Equipment required

Construction equipment at the proposed Middle SPS area is expected to include three bulldozers, one grader, and two sheepfoot rollers. Up to three bulldozers, one grader, and two sheepfoot rollers may also be used at the Lower SPS. This construction scenario assumes the Lower SPS sediment placement would occur prior to the use of the Middle SPS The actual configuration may vary depending on the construction contractor chosen for the project. The equipment would be used for the clearing, grubbing, and any grading that is necessary to prepare the proposed SPS areas. The equipment would also be used during sediment placement activities to spread and compact sediment throughout the tiered placement area Disturbed sediments are more susceptible to erosion, however, excavation, grading, and sediment placement activities would be in accordance with LACFCD regulations for SPS sites, which establish protocols for proper grading and placement of sediment at SPS sites. The policy requires that the SPS site be cleared of vegetation and unsuitable topsoil to ensure proper interface between the sediment and the existing hillside. Clearing would also be completed with as little time between clearing and placement as possible to prevent erosion of exposed sediment. The sediment would be placed in horizontal layers not exceeding 5 feet in thickness

behind a 15-foot-wide layer of sediment compacted to at least 88 percent relative compaction Sediment would be continuously graded during placement and no rocks greater than twelve inches would be placed within the sediment. Following placement of sediment, surface drainage structures would be installed, including gutters, inlet structures, and surface drains, which would direct stormwater runoff to maximize surface water retention on plateau area of the Lower SPS and around some fill areas to the storm drain system

IMPACTS

The Applicant shall not impact stream channel and associated wetland/riparian habitat outside of the reservoir footprint, except as otherwise provided for in the Agreement and as necessary to complete authorized work, and shall not impact more than 6 7 acres of stream and associated habitat, including the removal of 119 Coast live oaks trees

MITIGATION

1 Compensation for permanent impacts to habitat associated with this project shall be mitigated through the following methods.

1) Purchase and permanently preserve 4.9 acres of mature oak woodland habitat in the watershed immediately tributary to the project site.

    1. A map with aerial photo showing the area is attached
    2. A conservation easement (CE) similar to the draft conservation easement attached shall be executed by the Applicant within one (1) year of the date of this Agreement.
    3. In the event the property is not purchased or the CE is not executed, the Applicant shall be required to create or permanently preserve an equivalent habitat approved by the Department.

2) Permanent protection of 6.9 acres of high quality mature sycamore woodland alluvial scrub habitat at the Big Tujunga Mitigation Bank site.

    1. An aerial photo delineating the area is attached.
    2. The Department and Applicant are currently coordinating to finalize a CE for the entire Big Tujunga Mitigation Bank. In the event that CE is not finalized, The Applicant shall be required to develop a separate CE for the 6.9 acres or create or permanently preserve an equivalent habitat approved by the Department. The Applicant shall submit the CE for finalization for BTMB to the Department no later than December 31, 2010 or mitigation shall not be allowed at BTMB for mitigation associated with aspects of this project.

3) On-site creation of oak woodland habitat at the current 8-acre site of the Santa Anita Lower Sediment Placement Site.

    1. Prior to project activities, the Applicant shall submit a Final Revegetation/Mitigation Plan for the Department's review and approval within 60 days of the effective date of this Agreement. The Final Revegetation/ Mitigation Plan shall include only the Department-approved uses within the mitigation areas Plans for restoration, enhancement/re-vegetation and/or creation should

be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. The plans should include at a minimum (a) the locations of the mitigation sites; (b) the plant species to be used; (c) schematics depicting the mitigation areas, (d) time of year that the planting will occur; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation within the mitigation areas; (g) success criteria; (h) a detailed monitoring program; and (i) contingency measures should the success criteria not be met.

1 The planting density and success criteria shall differentiate between the 5.5-acre plateau of the SPS and the 2.5-acre engineered slopes. The engineered slopes shall be permanently protected and will be required to be re-vegetated to adequately provide a buffer to the 5.5-acre oak woodland and to provide habitat corridor to adjacent habitat.

2. To the extent possible, all planting shall be done between October 1st and March 31st to take advantage of the rainy season. Otherwise, planting that may be watered with temporary irrigation, shall receive no irrigation for two years prior to the Department's sign-off of the planted mitigation areas.

3. The Applicant shall submit an annual report to the Department by January 1st of each year for 10 years after planting. The annual reports shall include: (a) an overview of the mitigation areas as described above, (b) pre-project photos of all the mitigation areas taken from photo points to be used for all subsequent photos, (c) photos of the year taken at each photo point established prior to project activities, (d) the survival, percentage cover, and height of the planted species, (e) the methods used to assess these parameters; and (f) the number by species of plants replaced.

4 If after 7 years of monitoring the mitigation meets the 10-year success criteria and the Department reviews and approves the mitigation status in writing, the Applicant may consider the sites to have been successful and may cease monitoring thereafter In the event the revegetation efforts do not meet the agreed upon success criteria and the end of 10 years, the Applicant shall be required to provide an equivalent mitigation area elsewhere to be approved by the Department. The required area will be prorated based upon the percent cover meeting the success criteria The Applicant shall initiate the installation of mitigation at this site no later than October 1, 2012 and complete the installation no later than March 31, 2013, if the project is completed in one year. The Applicant shall initiate the installation of mitigation at this site no later than October 1, 2013 and complete the installation no later than March 31, 2014, if the project is completed in two years.

CONDITIONS

The following conditions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Applicant is precluded from doing other activities at the site. However, activities subject to Fish and Game Code Section 1600 *et seq* and not specifically agreed to and resolved by this Agreement shall require separate notification.

GENERAL

1 If the Applicant or any of the individuals mentioned below violate any of the terms or conditions of this Agreement, all work shall terminate immediately and shall not proceed until the Department and Applicant determine what actions are necessary to address the violations.

2 The agreed work includes activities associated with Project Location and Project Description described above. Specific work areas and mitigation measures are described on/in the plans and documents submitted by the Applicant (i e., the 1602 Notification dated April 14, 2008, Attachment A, location maps includes pages A-1, A-2, A-3, A-4, and A-5, Attachment B, project description, Attachment C, Final design plans 21 pages, Attachment D, Dam outlet modification (cross section at Santa Anita Dam), Attachment E (cross section at Santa Anita SPS, Middle portion), Attachment F, Final EIR and Technical Appendices, Attachment K, USACE 404 permit application, SCH No. 2007061093 and comment letter from the Department of Fish and Game dated June 24, 2008 for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, and shall be implemented as proposed unless directed differently by this Agreement.

3. The Applicant shall provide a copy of this Agreement to the Applicant's project supervisors and to all contractors with direction that they provide it to all subcontractors. Copies of the Agreement shall be readily available at work sites at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand.

4. The Applicant shall notify the Department, in writing, at least five (5) days prior to initiation of project activities and at least five (5) days prior to completion of project activities. Notification shall be sent to the Department at the South Coast Region office, Attn: Streambed, SAA No 1600-2008-0173-R5

FISH AND WILDLIFE PROTECTION

5 Santa Anita reservoir needs to be properly evaluated for the presence/absence of Southwestern pond turtle, a Department species of special concern (SSC) The Applicant shall conduct pre-construction protocol trapping surveys for Southwestern pond turtle. There shall be no take of Southwestern pond turtle associated with the Applicant's project-related activities. If the Department becomes aware of any impacts to Southwestern pond turtle as a result of the Applicant's project-related activities, the Department may add or revise conditions in this Agreement based on new information to prevent impacts to Southwestern pond turtle

6 A relocation plan for entrained animals during drawdown shall be approved by the Department PRIOR to impacts. The Department recommends an upstream barrier that will

prevent the downstream migration of aquatic species during drawn down and dam construction All entrained native species shall be relocated above this barrier by a biologist with training in the capture, proper care and housing, and movement of aquatic species. The relocation plan shall be approved by the Department PRIOR to impacts.

7 To avoid impacts to nesting raptors, the Applicant shall not remove vegetation from the streambed or bank or associated riparian vegetation between February 15th and September 15th unless otherwise agreed to by the Department. However, work may occur during this time if a qualified biologist conducts a survey for nesting raptors within three days prior to the work in the area and ensures no nesting raptors or their nests shall be affected by the Project. If an active raptor nest is identified, a buffer shall be established between the construction activities and the nest so that nesting activities are not interrupted. The buffer shall be 500 feet, be delineated by temporary fencing, and be in effect as long as construction is occurring or until the nest is no longer active. The Department, depending upon construction activities and species, may approve a reduction of the buffer area, this approval shall be in writing.

8 To avoid impacts to nesting birds (other than nesting raptors), the Applicant shall not remove vegetation from the streambed or bank or associated riparian vegetation between March 15th and September 15th unless otherwise agreed to by the Department. However, work may occur during this time if a qualified biologist conducts a survey for nesting birds within three days prior to the work in the area and ensures no nesting birds or their nests shall be affected by the Project. If an active nest is identified, a buffer shall be established between the construction activities and the nest so that nesting activities are not interrupted. The buffer shall be 300 feet, shall be delineated by temporary fencing, and shall be in effect as long as construction is occurring or until the nest is no longer active. The Department, depending upon construction activities and species, may approve a reduction of the buffer area; this approval shall be in writing

9. If threatened or endangered species are found in the proposed work area, or are in a location which could be impacted by the work proposed, the Applicant shall submit a plan to the Department for review and approval to ensure this species is protected. If the work requires that the species or its habitat be removed, disturbed or otherwise impacted, the Applicant shall obtain the appropriate state and federal endangered species permits, before initiating any work. The Applicant shall contact the Department at (818) 360-8140, Scott Harris, Wildlife Biologist.

10 A biological monitor shall be on site prior to (surveys shall begin a minimum of two weeks prior to any activities) the operations and shall survey for sensitive species prior to activities. The need for the biologist during activities will be based upon the presence/absence of native and/or sensitive species identified during preconstruction surveys. Regardless of the results of preconstruction surveys, a biologist shall be present periodically throughout the reservoir dewatering and the SPS vegetation removal. If any species are found in the path of construction, the monitor shall relocate the species to a safe location in accordance with an approved Relocation Plan. The Applicant shall notify Maurice Cardenas at (805) 640-1852 for review and approval of the relocation plan. The Relocation Plan shall include the relocation areas and the Methodology, Equipment and Qualification of the Personnel involved in the relocation. Relocation areas shall be of suitable habitat and within the same drainage. Relocation areas shall be approved by the Department prior to project initiation. Relocation areas should be evaluated in regards to long-term sustainability An annual report shall be provided to the Department of all relocation activities. Exclusionary fencing shall be erected to prevent the migration into or the return of species into the work site.

11 Monitoring reports shall be submitted to the Department annually, by November 1st of each year, if clean out activities occur

12 Exotic species (such as bull frogs, goldfish, carp, etc.) shall be eliminated and disposed of properly

13. The Applicant shall notify Maurice Cardenas, Fisheries Biologist, at (805) 640-1852, of the Pre-Construction meeting and the start of work.

14 When work in a flowing stream is unavoidable, the entire stream flow shall be diverted around the work area by a barrier (e.g., cofferdam), temporary culvert, or other means approved by the Department. Barrier construction shall be adequate to prevent seepage into or out of the work area. The barrier shall be removed when the work is completed and removal shall normally proceed from downstream in an upstream direction.

15 Disturbance, removal, or trimming of vegetation for equipment access and construction shall not exceed the limits approved by the Department.

16 No direct or indirect impacts shall occur to any threatened or endangered species, as a result of implementing the project or the project's activities. If any threatened or endangered species could be impacted by the work proposed, U.S. Fish and Wildlife Service (USFWS) protocol surveys shall be conducted prior to implementing the project, or the project's mitigation activities. If necessary, the Applicant shall obtain the required state and federal threatened and endangered species permits. If there is no USFWS survey protocol for a particular listed species, the Department shall be consulted to determine appropriate survey procedures. The Department shall be provided copies of survey reports prior to project implementation, and prior to the implementation of mitigation activities. This agreement does not authorize the take of any federal or state threatened or endangered species.

FISH PASSAGE

17 A qualified biologist shall conduct a presence/absence survey (minimum of 2 weeks prior to activities) for sensitive species, native species or game fish If such fish are present, the Applicant shall notify the Departments fisheries biologist, Maurice Cardenas at (805) 640-1852

18. If flowing or ponded water is within the proposed work limits, the Applicant shall have a qualified fisheries biologist survey the proposed work area to verify presence/absence of the any sensitive fish species and any other species of special concern which may occur within the area. Survey methods shall conform to the current protocols of the Department. The results of the surveys shall be provided to the Department, along with copies of all field notes, prior to the completion of work or as otherwise specified. The researcher shall have the required State and federal permits. The survey techniques, if deviated from approved USFWS/Department protocol, shall be approved by the Department in writing.

19 The Applicant shall report all fish mortality immediately to the Departments Fisheries Biologist, Maurice Cardenas at (805)640-1852

20 Should reservoir fishery species, sensitive species or species of special concern be present, the Applicant shall develop a plan which outlines the specific collection and relocation

methodology for reservoir fisheries The above plan shall be developed in coordination with the Department's fisheries biologist. The plan shall be submitted to the Department prior to commencing the project activities Prior to reservoir drawdown, the Applicant shall relocate as many such fish as possible from the existing fish population. To discuss consultation regarding reservoir fisheries, in general, please contact Mr Maurice Cardenas at (805) 640-1852 For all issues related to trout (*Oncorhynchus* sp.) the Applicant shall contact Mr John O'Brien at (562) 342-7173 All consultations regarding reservoir fisheries and trout shall be completed prior drawdown of the reservoir and specific relocation strategies shall be devised for trout, or for any reservoir fish species of special concerns PRIOR to project related impacts.

WORK AREAS AND VEGETATION REMOVAL

21 Disturbance or removal of vegetation shall not exceed the limits approved by the Department. Any disturbed portions of any stream channel or lake margin outside of the project limits, within the high water mark of the stream or lake, shall be restored to their original condition under the direction of the Department.

22 Restoration shall include the revegetation/reseeding of stripped or exposed work areas (including but not limited to the earthen slopes of the reservoirs if activities occur above the "normal" elevation level, if additional access roads or ramps are created, activities beyond the normal sediment removal areas, etc.) with vegetation native to the area.

23. The work area shall be flagged/marked to identify its limits within the stream and reservoir Vegetation shall not be removed or intentionally damaged beyond these limits.

24 In areas of temporary disturbance, where vegetation must be removed, native trees and shrubs, with DBHs of 3 inches or less, shall be cut to ground level with hand-operated power tools rather than by grading.

25. Vegetation removed from the stream shall not be stockpiled in the stream bed or on its bank. The sites selected on which to push this material out of the stream should be selected in compliance with the other provisions of this Agreement.

26 No living native vegetation shall be removed from the channel, bed, or banks of the stream, except as otherwise provided for in this agreement and as necessary to complete aforementioned work.

27 No equipment shall be operated within the dripline of oaks. Protective fencing shall be placed around the dripline of oaks to prevent compaction of the root zone except as otherwise provided for in the Agreement and as necessary to complete authorized work.

28 The work area, as represented in plans, shall be identified to all workers. Native vegetation shall not be removed or intentionally damaged beyond the designated limits.

29. The removal of soil and vegetation, other than non-native vegetation from the Jurisdictional areas is prohibited, except where provided for within this agreement, without prior written approval from the Department.

30 The Applicant shall remove non-native vegetation from the work area and disposal sites and shall dispose of it in a legal manner, in all cases it shall be placed in a manner which

prevents its reestablishment in the Waters of the State, and in such a manner so that it does not negatively affect other sensitive native habitat communities If the Applicant determines that the treated non-native vegetation should be left in place, the Applicant shall provide the Department a written (letter, fax, E-mail) description of where and why the treated vegetation should not be removed. If the Applicant does not receive a written (letter, fax, E-mail) positive response from the Department, the treated exotic vegetation shall be removed.

31. No herbicides shall be used on native vegetation.

32 All herbicide use conditions for mixing, application and clean-up shall conform to all applicable federal, State, and local regulations, nothing in this Agreement represents a pesticide use recommendation that allows for an actions that conflict with pesticide use regulations.

33 Any application of herbicide shall be done by a licensed applicator in accordance with the applicable, federal, state, local laws, and County Park procedures and/or guidelines. No herbicides shall be used where Threatened or Endangered species occur No herbicides shall be used when wind velocities are above 5 miles per hour

34 No vehicles shall be operated within the stream outside of project footprint except as described as follows Vehicles may be used to carry equipment and transport cut vegetation; all vehicles shall use existing roads for access to the sites; small soft rubber-tired ATV's may be used where existing road access is not available, provided that such ATV's can access the central channel without entering wetland areas or damaging native vegetation Native vegetation shall not be impacted by any vehicle use.

35. Herbicide mixing sites shall only be located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or a stream, for example avoid mixing at a storm water-inlet.

36. Any herbicide used where there is the possibility that the herbicide could come into direct contact with water shall be approved for use in an aquatic environment (e.g. Rodeo). Great care shall be taken to avoid contact with any native vegetation, and it shall only be applied on calm days to prevent airborne transfer of the herbicide.

EQUIPMENT AND ACCESS

37 Staging/storage areas for equipment and materials shall be located outside of the stream/lake except as otherwise provided for in the Agreement and as necessary to complete authorized work.

38 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 Agreement and as necessary to complete authorized work.

39 Access to the work site shall be via existing roads and access ramps. If no ramps are available in the immediate area, the Applicant may construct a ramp in the footprint of the project Any ramp shall be removed upon completion of the project

40 All equipment shall be washed and free of weed seeds prior to delivery to the site.

41 Staging/storage areas for equipment and materials shall be located outside of the stream.

42 Access to the work site shall be via existing roads and access ramps.

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

44 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 Agreement and as necessary to complete authorized work.

45 If applicable, the Applicant shall mark/sign/stencil all storm drains warning that dumping is illegal and that all storm drains drain to creeks/rivers or ocean.

46 Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Flow-dissipation devices shall be placed on dirt roads, cat tracks, or other work trails to control erosion

FILL AND SPOIL

47 If temporary spoil piles will be within the stream/lake, these piles will be created to allow additional water to seep out of the soils prior to removal of the soils from the site. The water seepage shall be desilted before being allowed to leave the reservoir area.

48 Permanent spoil storage sites shall not be located within a stream/lake, where spoil can be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation

STRUCTURES

49 Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

POLLUTION, SEDIMENTATION, AND LITTER

50 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any logging, 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 or lake

51 The Applicant 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 Applicant to ensure compliance.

52 Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

53. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake shall be positioned over drip pans.

54 No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow

55 The clean-up of all spills shall begin immediately The Department shall be notified immediately by the Applicant of any spills and shall be consulted regarding clean-up procedures.

56. Equipment shall not be operated in wetted areas outside of project footprint (including but not limited to ponded, flowing, or wetland areas) without the prior written approval of the Department.

57 No equipment shall be operated within the flowing stream, except for the creation of the diversion

58 Raw cement/concrete or washings thereof, asphalt, paint, construction waste, or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter a stream or lake, by the Applicant or any party working under contract, or with the permission of the Applicant, shall be removed immediately

59 Precautions to minimize turbidity/siltation shall be in accordance with the attached approved Water Diversion Plan and shall be implemented/installed prior to sediment removal The method used to prevent siltation shall be monitored and cleaned/repaired weekly The placement of any structure or materials in the stream for this purpose, not included in the original project description, or Department approved water diversion plan shall be coordinated with the Department. Coordination shall include the negotiation of additional Agreement provisions. The Department will have up to 30 days to review all plans, plans may be submitted prior to execution of the streambed agreement.

60 Upon Department determination that turbidity/siltation levels (600 NTU) resulting from project-related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department-approved control devices are installed, or abatement procedures are initiated

61 Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion

62 Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.

63 If an off-stream siltation pond/s is/are used to control sediment, pond/s shall be constructed in a location, or shall be designed, such that potential spills into the stream/lake during periods of high water levels/flow are precluded.

64 Should a silt catchment basin be required, the following operational methods shall be employed:

a. A silt catchment basin or basins (number and location to be determined by the Department) shall be constructed across the stream immediately below the project site. This catchment basin(s) shall be constructed of silt-free gravel or other materials approved by the Department.
b. Upon completion of the project and after all flowing water in the area is clear of turbidity, the gravel along with the trapped sediment shall be removed from the stream

65 When operations require moving of equipment across a flowing stream, such operations shall be conducted without increasing stream turbidity For repeated crossings, the Applicant shall install a bridge, culvert, or rock-fill crossing, and approved by the Department prior to placement

66 If a stream's low flow channel, bed or banks/lake bed or banks have been altered, these shall be returned as nearly as possible to their original configuration and width, without creating future erosion problems.

67 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 this Agreement.

CONCURRENCE

County of Los Angeles
Department of Public Works Water Resources Division
Represented by Mr Steve Sheridan
900 S Fremont Avenue
Alhambra, California, 91803
(626) 458-6102

Steven Sheridan 12/21/09
Name (signature) Date

STEVEN SHERIDAN
Name (printed)

PRINCIPAL ENGINEER
Title

California Department of Fish and Game

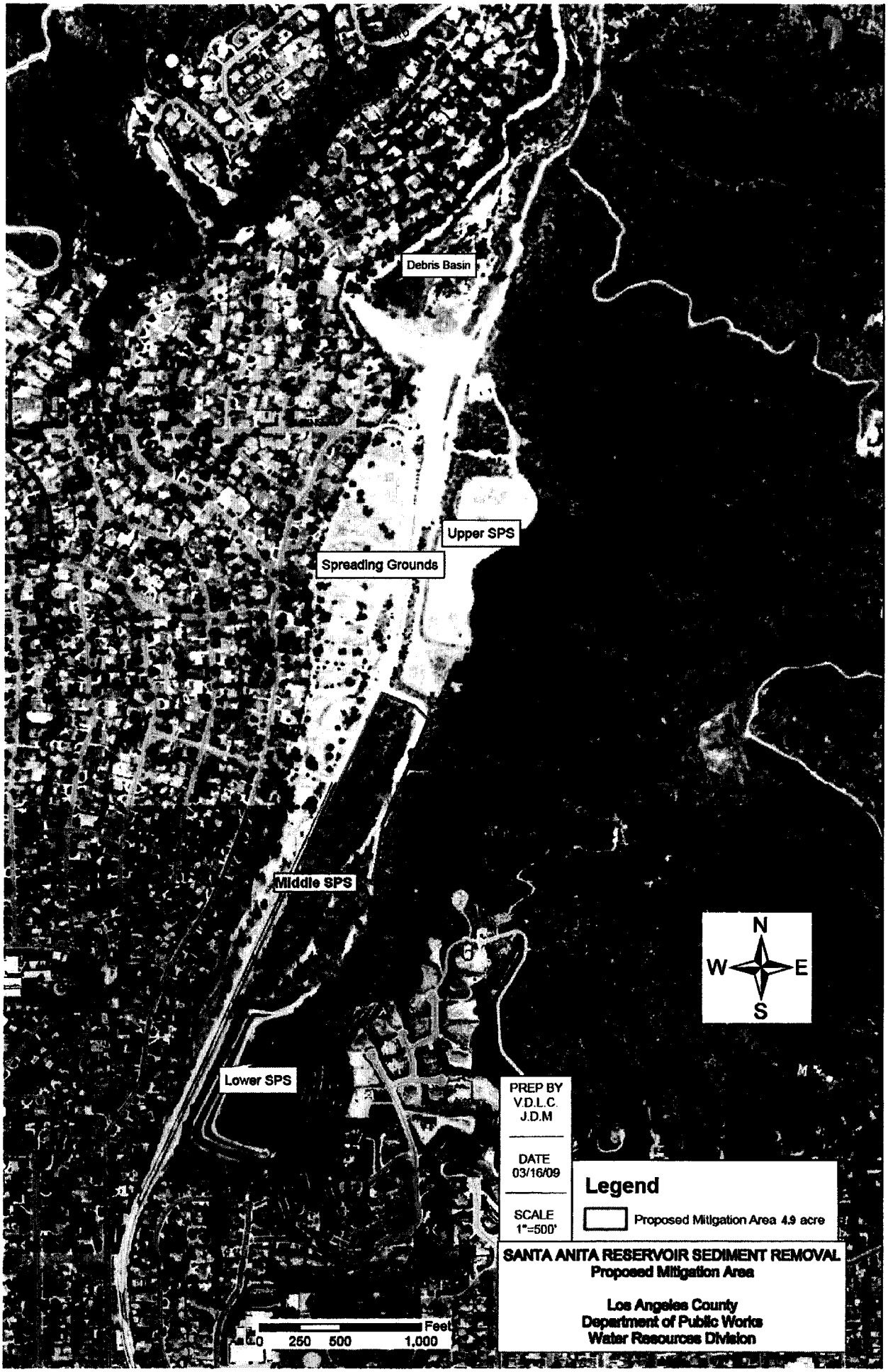
25 FEB 2010

Helen R. Birss Date
FOR Environmental Program Manager
South Coast Region

This Agreement was prepared by Jamie Jackson, Staff Environmental Scientist, South Coast Region.

Attachment

Aerial Photo showing approximate area of 4.9 acres of mature oak woodland habitat to be purchased and permanently preserved.


Debris Basin
Upper SPS
Spreading Grounds
Middle SPS
Lower SPS
N
W
E
S
0 250 500 1,000
Feet
PREP BY
V.D.L.C.
J.D.M
DATE
03/16/09
SCALE
1"=500'
Legend
Proposed Mitigation Area 4.9 acre
SANTA ANITA RESERVOIR SEDIMENT REMOVAL
Proposed Mitigation Area
Los Angeles County
Department of Public Works
Water Resources Division

Attachment

Aerial Photo delineating Big Tujunga Mitigation Bank site


BIG TUJUNGA MITIGATION BANK
Los Angeles County
Department of Public Works
Water Resources Division
Big Tujunga Mitigation Bank
Proposed Mitigation Area
6.9 Acres High Quality
Mature Sycamore Woodland

Attachment

Water Diversion Plan

Water Diversion Plan for
Santa Anita Reservoir Sediment Removal and
Dam Riser Modification Project

Lowering of the Reservoir by the Agency

Prior to dewatering activities, the Agency will lower the reservoir using the existing outlet works. Typical water conservation release rates will be used to lower the reservoir The existing sluice gate will not be used to lower the reservoir

Schedule of Work

The following surface water diversion and reservoir dewatering activities will be conducted during the non-rainy season (April 15 through October 14)

Surface Water Diversion

In order to contain and divert all surface water inflows from the upstream watershed, a cofferdam structure will be constructed upstream of the reservoir pool The cofferdam structure will be constructed of existing and native on-site alluvial material.

A surface water diversion bypass pipeline will be constructed and installed from the cofferdam to the existing dam face and discharged thru the existing dam outlet works. Another alignment option is to construct and install the surface water diversion bypass pipeline through the existing diversion tunnel that discharges downstream of the dam

The cofferdam and surface water diversion bypass pipeline shall be properly designed and maintained to capture and divert all anticipated inflows. The structure shall be equipped with a barrier, such as a 1/8 inch mesh screen, to prevent the downstream migration of aquatic species Velocity through the screen shall not exceed 0.4 feet per second. The cofferdam and surface water diversion bypass pipeline will be removed from service prior to the beginning of the rainy season (October 15)

Dewatering of Reservoir after lowering of reservoir by Agency

In order to completely dewater the reservoir to remove the accumulated sediment and construct the riser, any residual water will be pumped to a detention basin constructed upstream of the reservoir pool or other structure suitable to adequately desilt the water (detention structure) The detention basin will be constructed of existing and native on-site alluvial material Should a presence/absence survey (minimum of 2 weeks prior to activities) for sensitive species, native species or game fish determine such fish are present, Each pump used will include a screen with sufficient area to reduce velocities such that fish are not trapped as follows. pump intakes shall be fitted with 1/8 inch or smaller mesh screens, The velocities shall not increase as debris accumulates on the screen Velocities shall not exceed 33 feet per second for a non-self-cleaning screen Velocities shall not exceed 0.4 feet per second on a self-cleaning net/screen. The screen area shall be monitored at a minimum of every six hours for fish that may be trapped by the screen Details are provided on the attached drawings.

The detention structure will remove accumulated sediment from the water The water will be allowed to infiltrate and/or be pumped after treatment into the surface water diversion bypass pipeline to be discharged downstream of the dam

Nuisance Water

Miscellaneous nuisance water from dam and slope seepage, incidental storm water, and water from dewatering trenches/stockpiles will also be contained and pumped to the detention structure for treatment.

Water Quality Monitoring

Water Quality Monitoring (WQM) will be conducted to verify that the construction activity has not impacted water quality downstream of the reservoir The location of the WQM sites are shown on the attached drawings.

WQM will be conducted daily during the first week of dewatering activities and weekly thereafter WQM will be conducted as long as any surface water diversion operations are in-place.

The following WQM tests shall be conducted

pH (EPA 150 1)
Temperature
Dissolved Oxygen (EPA 360 1)
Turbidity (EPA 180 1)
Velocity
TSS (Total suspended solids)

All WQM tests will be conducted in the field except for TSS, which will be conducted in a State DHS Certified laboratory. The Contractor will be required to provide a testing laboratory that is certified to conduct the TSS tests.

Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 20% Where natural turbidity is greater than 50 NTU, increases shall not exceed 10% Turbidity of discharge shall be measured no more than 100 ft downstream of the dam tunnel outlet. If turbidity levels are exceeded, immediate corrective actions shall be implemented Corrective actions include a reduction of the discharge rate, improved implementation/maintenance of BMPs, implementation of additional BMPs, changing the location or repositioning of the dewatering pumps or other actions necessary to mitigate the increase in Turbidity

Attachment

Draft Conservation Easement for 4.9 acres of mature oak woodland habitat

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:)

Space Above Line for Recorder's Use Only

CONSERVATION EASEMENT DEED
(Including Third-Party Beneficiary)

THIS CONSERVATION EASEMENT DEED is made this _____ day of _____, 20____, by _Los Angeles County Flood Control District_____ ("Grantor"), in favor of _County of Los Angeles _____ ("Grantee") acting by and through its Public Works Department, with reference to the following facts:

RECITALS

A. Grantor is the sole owner in fee simple of certain real property containing approximately ____4.9__ acres, located in the City of Arcadia, County of _Los Angeles_____, State of California, designated Assessor's Parcel Number(s) ___ APN 5771-001-007_____ and more particularly described in Exhibit A attached hereto and incorporated herein by this reference (the "Property").

B. The Property possesses wildlife and habitat values (collectively, "conservation values") of great importance to Grantee, the California Department of Fish and Game ("CDFG"), and the people of the State of California.

C. The Property provides high quality Oak Woodland of which the wildlife and habitat values comprise the "Conservation Values" of the property .

D. Grantee is authorized to hold conservation easements pursuant to Civil Code Section 815.3. Specifically, Grantee is *a governmental entity identified in Civil Code Section 815.3(b) and otherwise authorized to acquire and hold title to real property*].

E. CDFG has jurisdiction, pursuant to Fish and Game Code Section 1802, over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary for biologically sustainable populations of those species, and CDFG is authorized to

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hold easements for these purposes pursuant to Civil Code Section 815.3, Fish and Game Code Section 1348, and other provisions of California law.

F. This Conservation Easement provides mitigation for certain impacts of The Santa Anita Dam Riser Modification and Sediment Removal Project located in the City of [__Arcadia_____], County of [____Los Angeles_____], State of California, pursuant to *the Agreement Regarding Proposed Stream or Lake Alteration (Notification No. 1600-2008-0173-R5) ("Section 1603 Agreement") executed by [Los Angeles County Flood Control District and CDFG, dated November 23, 2009*

COVENANTS, TERMS, CONDITIONS AND RESTRICTIONS

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and pursuant to California law, including Civil Code Section 815, *et seq.*, Grantor hereby voluntarily grants and conveys to Grantee a conservation easement in perpetuity over the Property.

1. Purposes. The purposes of this Conservation Easement are to ensure the Property will be retained forever in its natural condition and to prevent any use of the Property that will impair or interfere with the conservation values of the Property. Grantor intends that this Conservation Easement will confine the use of the Property to such activities that are consistent with those purposes, including, without limitation, those involving the preservation, restoration and enhancement of native species and their habitats.

2. Grantee's Rights. To accomplish the purposes of this Conservation Easement, Grantor hereby grants and conveys the following rights to Grantee and to CDFG as a third party beneficiary of this Conservation Easement:

(a) To preserve and protect the conservation values of the Property;

(b) To enter upon the Property at reasonable times in order to monitor compliance with and otherwise enforce the terms of this Conservation Easement, and for scientific research and interpretive purposes by Grantee or its designees and CDFG or its designees, provided that neither Grantee nor CDFG shall unreasonably interfere with Grantor's authorized use and quiet enjoyment of the Property;

(c) To prevent any activity on or use of the Property that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features of the Property that may be damaged by any act, failure to act, or any use that is inconsistent with the purposes of this Conservation Easement;

(d) All mineral, air and water rights of the Grantor associated with the property and necessary to protect and to sustain the biological resources of the Property; and

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(e) All present and future development rights allocated, implied, reserved or inherent in the Property; such rights are hereby terminated and extinguished, and may not be used on or transferred to any portion of the Property, nor any other property adjacent or otherwise.

3. Prohibited Uses. Any activity on or use of the Property inconsistent with the purposes of this Conservation Easement is prohibited. Without limiting the generality of the foregoing, the following uses and activities by Grantor, Grantor's agents, and third parties, are expressly prohibited:

(a) Unseasonal watering; use of fertilizers, pesticides, biocides, herbicides or other agricultural chemicals; weed abatement activities; incompatible fire protection activities; and any and all other activities and uses which may adversely affect the purposes of this Conservation Easement;

(b) Use of off-road vehicles and use of any other motorized vehicles except on existing roadways;

(c) Agricultural activity of any kind, except that grazing is permitted if done in accordance with a CDFG-approved grazing or management plan;

(d) Recreational activities including, but not limited to, horseback riding, biking, hunting or fishing, except as may be specifically permitted under this Conservation Easement;

(e) Commercial or industrial uses;

(f) Any legal or de facto division, subdivision or partitioning of the Property;

(g) Construction, reconstruction or placement of any building, billboard or sign, or any other structure or improvement of any kind;

(h) Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other materials;

(i) Planting, introduction or dispersal of non-native or exotic plant or animal species;

(j) Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, soil, sands, gravel, rocks or other material on or below the surface of the Property;

(k) Altering the surface or general topography of the Property, including building of roads;

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(l) Removing, destroying, or cutting of trees, shrubs or other vegetation, except as required by law for (1) fire breaks, (2) maintenance of existing foot trails or roads, or (3) prevention or treatment of disease; and

(m) Manipulating, impounding or altering any natural water course, body of water or water circulation on the Property, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters.

4. Grantor's Duties. Grantor shall undertake reasonable actions to prevent the unlawful entry and trespass by persons whose activities degrade or harm the conservation values of the Property. The Grantor shall transmit a letter report to CDFG triennially based on an inspection of the property to confirm no unlawful entry or trespass by persons has degraded or harmed the conservation values of the Property. The report shall also document any remedial measures taken to restore any such damage.

5. Reserved Rights. Grantor reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from its ownership of the Property, including the right to engage in or to permit or invite others to engage in all uses of the Property that are not expressly prohibited or limited by, and are consistent with the purposes of, this Conservation Easement.

6. Grantee's Remedies. CDFG, as a third party beneficiary of this Conservation Easement, shall have the same rights as Grantee under this section to enforce the terms of this Conservation Easement. If Grantee determines that a violation of the terms of this Conservation Easement has occurred or is threatened, Grantee shall give written notice to Grantor of such violation and demand in writing the cure of such violation. At the time of giving any such notice, Grantee shall give a copy of the notice to CDFG. If Grantor fails to cure the violation within fifteen (90) days after receipt of written notice and demand from Grantee, or if the cure reasonably requires more than fifteen (90) days to complete and Grantor fails to begin the cure within the fifteen (90)-day period or fails to continue diligently to complete the cure, Grantee may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Conservation Easement, to recover any damages to which Grantee may be entitled for violation of the terms of this Conservation Easement or for any injury to the conservation values of the Property, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies, or for other equitable relief, including, but not limited to, the restoration of the Property to the condition in which it existed prior to any such violation or injury. Without limiting Grantor's liability therefor, Grantee may apply any damages recovered to the cost of undertaking any corrective action on the Property.

6.1. Costs of Enforcement. Any costs incurred by Grantee or CDFG, where it is the prevailing party, in enforcing the terms of this Conservation Easement against Grantor, including, but not limited to, costs of suit and any costs of restoration necessitated by Grantor's negligence or breach of this Conservation Easement shall be borne by Grantor.

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6.2. Discretion of Grantee and CDFG. Enforcement of the terms of this Conservation Easement by Grantee or CDFG shall be at the discretion of the enforcing party, and any forbearance by Grantee or CDFG to exercise its rights under this Conservation Easement in the event of any breach of any term of this Conservation Easement shall not be deemed or construed to be a waiver by Grantee or CDFG of such term or of any subsequent breach of the same or any other term of this Conservation Easement or of any of Grantee's rights (or any rights of CDFG as a third party beneficiary) under this Conservation Easement. No delay or omission by Grantee or CDFG in the exercise of any right or remedy shall impair such right or remedy or be construed as a waiver.

6.3. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee or CDFG to bring any action against Grantor for any injury to or change in the Property resulting from (i) any natural cause beyond Grantor's control, including, without limitation, fire not caused by Grantor, flood, storm, or earth movement, or any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes; or (ii) acts by Grantee or its employees or CDFG or its employees.

6.4. Department of Fish and Game Right of Enforcement. All rights and remedies conveyed to Grantee under this Conservation Easement Deed shall extend to and are enforceable by CDFG. These rights are in addition to, and do not limit, the rights of enforcement under *Agreement Regarding Proposed Stream or Lake Alteration (Notification No.1600-2008-0173-R5) ("Section 1603 Agreement")*

8. Access. This Conservation Easement does not convey a general right of access to the public.

9. Costs and Liabilities. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Property. Grantor agrees that neither Grantee nor CDFG shall have any duty or responsibility for the operation, upkeep or maintenance of the Property, the monitoring of hazardous conditions thereon, or the protection of Grantor, the public or any third parties from risks relating to conditions on the Property. Grantor remains solely responsible for obtaining any applicable governmental permits and approvals for any activity or use permitted by this Conservation Easement Deed, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders and requirements.

9.1. Taxes; No Liens. Grantor shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Property by competent authority (collectively "taxes"), including any taxes imposed upon, or incurred as a result of, this Conservation Easement, and shall furnish Grantee and CDFG with satisfactory evidence of payment upon request. Grantor shall keep the Property free from any liens, including those arising out of any obligations incurred by

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Grantor for any labor or materials furnished or alleged to have been furnished to or for Grantor at or for use on the Property.

9.2. Hold Harmless. Grantor shall hold harmless, protect and indemnify Grantee and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "Grantee Indemnified Party" and, collectively, "Grantee's Indemnified Parties") and CDFG and its directors, officers, employees, agents, contractors, and representatives, and the heirs, personal representatives, successors and assigns of each of them (each a "CDFG Indemnified Party" and, collectively, "CDFG's Indemnified Parties") from and against any and all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, orders, liens or judgments (each a "Claim" and, collectively, "Claims"), arising from or in any way connected with: (1) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Property, regardless of cause, except that (a) this indemnification shall be inapplicable to Grantee's Indemnified Parties with respect to any Claim due to intentional acts and negligence of Grantee or any of its employees and (b) this indemnification shall be inapplicable to CDFG's Indemnified Parties with respect to any Claim due solely to the negligence of CDFG or any of its employees; (2) the obligations specified in Sections 4, 9, and 9.1; and (3) the existence or administration of this Conservation Easement. Grantee and CDFG shall hold harmless, protect and indemnify Grantor and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "Grantor Indemnified Party" and, collectively, "Grantor's Indemnified Parties") from and against any and all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, orders, liens or judgments (each a "Claim" and, collectively, "Claims"), arising from or in any way connected with: (1) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Property, regardless of cause, except that (a) this indemnification shall be inapplicable to Grantor's Indemnified Parties with respect to any Claim due to intentional acts and negligence of Grantor or any of its employees and; (2) the obligations specified in Sections 4, 9, and 9.1; and (3) the existence or administration of this Conservation Easement.

9.3. Extinguishment. If circumstances arise in the future that render the purposes of this Conservation Easement impossible to accomplish, this Conservation Easement can be terminated or extinguished, in whole or in part, by judicial proceedings in a court of competent jurisdiction. In the event the best alternative is to abandon the easement and substitute with equivalent creation/protection elsewhere, this agreement may be terminated upon mutual consent.

9.4. Condemnation. The purposes of this Conservation Easement are presumed to be the best and most necessary public use as defined at Code of Civil

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Procedure Section 1240.680 notwithstanding Code of Civil Procedure Sections 1240.690 and 1240.700.

10. Transfer of Easement. This Conservation Easement is transferable by Grantee, but Grantee may assign this Conservation Easement only to CDFG or another entity or organization authorized to acquire and hold conservation easements pursuant to Civil Code Section 815.3 (or any successor provision then applicable) or the laws of the United States. Grantee shall require the assignee to record the assignment in the county where the Property is located.

11. Transfer of Property. Grantor agrees to incorporate the terms of this Conservation Easement by reference in any deed or other legal instrument by which Grantor divests itself of any interest in all or any portion of the Property, including, without limitation, a leasehold interest. Grantor further agrees to give written notice to Grantee and CDFG of the intent to transfer any interest at least thirty (30) days prior to the date of such transfer. Grantee or CDFG shall have the right to prevent subsequent transfers in which prospective subsequent claimants or transferees are not given notice of the covenants, terms, conditions and restrictions of this Conservation Easement. The failure of Grantor, Grantee or CDFG to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforceability in any way.

12. Notices. Any notice, demand, request, consent, approval, or communication that any party desires or is required to give to the other parties shall be in writing and be served personally or sent by recognized overnight courier that guarantees next-day delivery or by first class mail, postage fully prepaid, addressed as follows:

To Grantor: **Los Angeles County Flood Control District**

To Grantee: **County of Los Angeles**

To CDFG: **Department of Fish and Game**
[*Name of Region*]
[*Region's address*]
Attn: Regional Manager

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With a copy to: **Department of Fish and Game**
Office of the General Counsel
1416 Ninth Street, 12th Floor
Sacramento, California 95814-2090
Attn: General Counsel

or to such other address as Grantor, Grantee or CDFG may designate by written notice to the other parties. Notice shall be deemed effective upon delivery in the case of personal delivery or delivery by overnight courier or, in the case of delivery by first class mail, five (5) days after deposit into the United States mail.

13. Amendment. This Conservation Easement may be amended by Grantor and Grantee only by mutual written agreement and subject to the prior written approval of CDFG. Any such amendment shall be consistent with the purposes of this Conservation Easement and California law governing conservation easements and shall not affect the intent of its perpetual duration. Any such amendment shall be recorded in the official records of [_____] County, State of California.

14. General Provisions.

(a) Controlling Law. The interpretation and performance of this Conservation Easement shall be governed by the laws of the State of California, disregarding the conflicts of law principles of such state.

(b) Liberal Construction. Despite any general rule of construction to the contrary, this Conservation Easement shall be liberally construed to effect the purposes of this Conservation Easement and the policy and purpose of Civil Code Section 815, *et seq.* If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purposes of this Conservation Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

(c) Severability. If a court of competent jurisdiction voids or invalidates on its face any provision of this Conservation Easement Deed, such action shall not affect the remainder of this Conservation Easement Deed. If a court of competent jurisdiction voids or invalidates the application of any provision of this Conservation Easement Deed to a person or circumstance, such action shall not affect the application of the provision to other persons or circumstances.

(d) Entire Agreement. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions,

negotiations, understandings, or agreements relating to the Conservation Easement. No alteration or variation of this instrument shall be valid or binding unless contained in an amendment in accordance with Section 13.

(e) No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

(f) Successors. The covenants, terms, conditions, and restrictions of this Conservation Easement Deed shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall constitute a servitude running in perpetuity with the Property.

(g) Termination of Rights and Obligations. A party's rights and obligations under this Conservation Easement terminate upon transfer of the party's interest in the Conservation Easement or Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

(h) Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon its construction or interpretation.

(i) No Hazardous Materials Liability. Grantor represents and warrants that it has no knowledge or notice of any Hazardous Materials (defined below) or underground storage tanks existing, generated, treated, stored, used, released, disposed of, deposited or abandoned in, on, under, or from the Property, or transported to or from or affecting the Property. Without limiting the obligations of Grantor under Section 9.2, Grantor hereby releases and agrees to indemnify, protect and hold harmless the Grantee Indemnified Parties and the CDFG Indemnified Parties (each as defined in Section 9.2) from and against any and all Claims (as defined in Section 9.2) arising from or connected with any Hazardous Materials or underground storage tanks present, alleged to be present, or otherwise associated with the Property at any time, except that (I) this indemnification shall be inapplicable to the Grantee Indemnified Parties with respect to any Hazardous Materials placed, disposed or released by Grantee, its employees or agents and (II) this indemnification shall be inapplicable to the CDFG Indemnified Parties with respect to any Hazardous Materials placed, disposed or released by CDFG, its employees or agents. This release and indemnification includes, without limitation, Claims for (i) injury to or death of any person or physical damage to any property; and (ii) the violation or alleged violation of, or other failure to comply with, any Environmental Laws (defined below). If any action or proceeding is brought against any of the CDFG Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from CDFG, defend

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

such action or proceeding by counsel reasonably acceptable to the CDFG Indemnified Party or reimburse CDFG for all charges incurred for services of the California Attorney General in defending the action or proceeding.

Despite any contrary provision of this Conservation Easement Deed, the parties do not intend this Conservation Easement to be, and this Conservation Easement shall not be, construed such that it creates in or gives to Grantee or CDFG any of the following:

(1) The obligations or liability of an "owner" or "operator," as those terms are defined and used in Environmental Laws (defined below), including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Section 9601 *et seq.*; hereinafter, "CERCLA"); or

(2) The obligations or liabilities of a person described in 42 U.S.C. Section 9607(a)(3) or (4); or

(3) The obligations of a responsible person under any applicable Environmental Laws; or

(4) The right to investigate and remediate any Hazardous Materials associated with the Property; or

(5) Any control over Grantor's ability to investigate, remove, remediate or otherwise clean up any Hazardous Materials associated with the Property.

The term "Hazardous Materials" includes, without limitation, (a) material that is flammable, explosive or radioactive; (b) petroleum products, including by-products and fractions thereof; and (c) hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in CERCLA, the Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 *et seq.*; hereinafter "RCRA"); the Hazardous Materials Transportation Act (49 U.S.C. Section 6901 *et seq.*; hereinafter "HTA"); the Hazardous Waste Control Law (California Health & Safety Code Section 25100 *et seq.*; hereinafter "HCL"); the Carpenter-Presley-Tanner Hazardous Substance Account Act (California Health & Safety Code Section 25300 *et seq.*; hereinafter "HSA"), and in the regulations adopted and publications promulgated pursuant to them, or any other applicable Environmental Laws now in effect or enacted after the date of this Conservation Easement Deed.

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The term "Environmental Laws" includes, without limitation, CERCLA, RCRA, HTA, HCL, HSA, and any other federal, state, local or administrative agency statute, ordinance, rule, regulation, order or requirement relating to pollution, protection of human health or safety, the environment or Hazardous Materials. Grantor represents, warrants and covenants to Grantee and CDFG that activities upon and use of the Property by Grantor, its agents, employees, invitees and contractors will comply with all Environmental Laws.

(j) Warranty. Grantor represents and warrants that there are no outstanding mortgages, liens, encumbrances or other interests in the Property (including, without limitation, mineral interests) which have not been expressly subordinated to this Conservation Easement Deed, and that the Property is not subject to any other conservation easement.

(k) Additional Easements. Grantor shall not grant any additional easements, rights of way or other interests in the Property (other than a security interest that is subordinate to this Conservation Easement Deed), or grant or otherwise abandon or relinquish any water agreement relating to the Property, without first obtaining the written consent of Grantee and CDFG. Grantee or CDFG may withhold such consent if it determines that the proposed interest or transfer is inconsistent with the purposes of this Conservation Easement or will impair or interfere with the conservation values of the Property. This Section 14(k) shall not prohibit transfer of a fee or leasehold interest in the Property that is subject to this Conservation Easement Deed and complies with Section 11.

(l) Recording. Grantee shall record this Conservation Easement Deed in the Official Records of Los Angeles County, California, and may re-record it at any time as Grantee deems necessary to preserve its rights in this Conservation Easement.

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IN WITNESS WHEREOF Grantor and Grantee have executed this Conservation Easement Deed the day and year first above written.

GRANTOR:	**GRANTEE:**
BY: _____	**BY:** _____
NAME: _____	**NAME:** _____
TITLE: _____	**TITLE:** _____
DATE: _____	**DATE:** _____

Approved as to form:

General Counsel
State of California
Department of Fish and Game

BY: _____
Ann S. Malcolm
General Counsel

EXHIBIT A

SANTA ANITA WASH 260F
36-RW 12.1
A.P.N. 5771-001-007
T G. 567 (E2)
I.M. 159-277
S D. 5
H0300668

LEGAL DESCRIPTION

PARCEL NO. 260F (Fee for flood control purposes):

Lot 1 of Fractional Section 22, Township 1 North, Range 11 West, S.B.M. according to the official plat of said land filed in the District Land Office on October 25, 1873.

EXCEPTING therefrom that portion of land described as Parcel No. 2 in a Final Order of Condemnation, had in Superior Court Case No. 693970, a certified copy of which was recorded on June 14, 1961, as Document No. 3456, of Official Records, in the Office of the Registrar-Recorder/County Clerk of the County of Los Angeles.

ALSO EXCEPTING therefrom that portion of land described as Parcel 123 in a Final Order of Condemnation, had in Superior Court Case No. 578534, a certified copy of which was recorded on September 26, 1952, as Document No. 3961, of said Official Records.

Containing: 4.88± acres.

PROFESSIONAL LAND SURVEYOR
KEVIN A. BUGH
EXP. 12-31-09
LS 8056
STATE OF CALIFORNIA

APPROVED AS TO DESCRIPTION
AUGUST 13, 2009
COUNTY OF LOS ANGELES
By _____
LICENSED SURVEYOR
Survey/Mapping and Property Management Division

KB:psr
P5:\ld SANTA ANITA WASH3

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

GAIL FARBER, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

December 01, 2009

ADOPTED
BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES
39 December 1, 2009
Sachi A. Hamai
SACHI A. HAMAI
EXECUTIVE OFFICER

The Honorable Board of Supervisors
County of Los Angeles
383 Kenneth Hahn Hall of Administration
500 West Temple Street
Los Angeles, California 90012

Dear Supervisors:

ACQUISITION OF RIGHT OF WAY AND GRANT OF EASEMENT
IN THE CITY OF ARCADIA
SANTA ANITA WASH - PARCEL 260F
ASSESSOR'S IDENTIFICATION NO. 5771-001-007
(SUPERVISORIAL DISTRICT 5)
(3 VOTES)

SUBJECT

This action is to approve the acquisition of fee title in Santa Anita Wash, Parcel 260F, in the City of Arcadia for $150,000 and the grant of an easement for conservation purposes to the County of Los Angeles.

IT IS RECOMMENDED THAT YOUR BOARD ACTING AS THE GOVERNING BODY OF THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT:

1. Find the acquisition is categorically exempt from the California Environmental Quality Act.

2. Approve the acquisition of fee title to Assessor's Identification No. 5771-001-007, also referred to as Santa Anita Wash, Parcel 260F, in the City of Arcadia, from YMS Financial Services, Inc., for $150,000.

3. Find the grant of an easement for conservation purposes and subsequent use of said easement will not interfere with the use of Santa Anita Wash for any purposes of the Los Angeles County Flood Control District.

4. Approve the grant of an easement in Santa Anita Wash, Parcel 260F, from the Los Angeles County Flood Control District to the County of Los Angeles.

5. Instruct the Chairman to sign the Conservation Easement Deed on behalf of the Los Angeles County Flood Control District and the County of Los Angeles upon presentation by the Department of Public Works.

PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION

The purpose of the recommended action is to obtain your Boardõ approval for the acquisition of fee title to Assessorõ Identification No. 5771-001-007, also referred to as Santa Anita Wash, Parcel 260F, in the City of Arcadia, and subsequent grant of easement for conservation purposes to the County of Los Angeles. This 4.88 acre parcel of land has high-quality habitat and will be used for permanent preservation as part of a comprehensive mitigation plan to offset impacts from the pending Santa Anita Reservoir Dam Riser Modification and Reservoir Sediment Removal Project (Santa Anita Project). The California Department of Fish and Game (CDFG) requires the subject parcel be encumbered with a conservation easement to ensure the property will be retained as open space.

Implementation of Strategic Plan Goals

The Countywide Strategic Plan directs the provision of Community and Municipal Services (Goal 3). These transactions will permanently preserve oak woodland habitat, which will result in quality open space for residents of the County of Los Angeles.

FISCAL IMPACT/FINANCING

There will be no impact to the County General Fund.

The proposed purchase price of $150,000 is representative of the fair market value and was accepted by the property owner, YMS Financial Services, Inc. Funding for the acquisition is available in the Fiscal Year 2009-10 Flood Control District Budget.

FACTS AND PROVISIONS/LEGAL REQUIREMENTS

As determined by the final Environmental Impact Report approved by your Board on June 9, 2009, mitigation for the Santa Anita Project is required to reduce unavoidable significant impacts to biological resources to a less than significant level. The proposed purchase of the subject parcel is a component of the comprehensive mitigation plan for environmental impacts associated with the pending Santa Anita Project. The Santa Anita Project will include construction of a new reservoir outlet riser on Santa Anita Dam, clearing vegetation from the Santa Anita Sediment Placement Site (SPS), removing sediment and debris from the reservoir by dry excavation, and transporting the sediment from the reservoir via conveyor belt to the Santa Anita SPS for placement.

The parcel proposed for purchase is approximately 4.88 acres in total size located in the canyon directly adjacent to the Santa Anita SPS, within the City of Arcadia, approximately 1.1 miles north of the 210 Foothill Freeway. The parcel is fully vegetated with native upland habitat, which includes oaks and other native Californian vegetation, and is located within the Santa Anita watershed. Through coordination with the CDFG, permanent protection of this habitat has been approved as part of the mitigation plan for the Santa Anita Project. Other major components of the project mitigation plan include revegetation of the lower Santa Anita SPS and use of mitigation credits at the Big Tujunga Mitigation Bank.

YMS Financial Services, Inc., executed an Agreement to Convey and Claim for Payment and has signed a Grant Deed in favor of the Los Angeles County Flood Control District (LACFCD). Acquisitions in excess of $75,000 must be approved by your Board. After acquiring the parcel, LACFCD will pursue the conservation easement, which will be in substantially the same form as shown in the enclosure, with CDFG acting as the third party beneficiary.

ENVIRONMENTAL DOCUMENTATION

The proposed purchase is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15325 (a) of the CEQA guidelines and Class 25 of the Environmental Reporting Procedures and Guidelines adopted by your Board on November 17, 1987. These exemptions provide for the transfer of ownership of land to preserve existing natural conditions, including plant and animal habitats.

IMPACT ON CURRENT SERVICES (OR PROJECTS)

The recommended actions will result in the permanent preservation of oak woodland habitat in the Santa Anita Wash watershed which, in turn, improves the quality of life in the County.

CONCLUSION

Please return one adopted copy of this letter to the Department of Public Works, Survey/Mapping & Property Management Division.

Respectfully submitted,

Gail Farber

GAIL FARBER
Director

GF:SGS:psr

Enclosures

c: Auditor-Controller (Accounting Division - Asset Management)
Chief Executive Office (Lari Sheehan)
County Counsel
Executive Office

DRAFT

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:)

Space Above Line for Recorder's Use Only

CONSERVATION EASEMENT DEED
(Including Third-Party Beneficiary)

THIS CONSERVATION EASEMENT DEED is made this _____ day of _____, 20____, by _Los Angeles County Flood Control District_____ ("Grantor"), in favor of _County of Los Angeles _____ ("Grantee") acting by and through its Public Works Department, with reference to the following facts:

RECITALS

A. Grantor is the sole owner in fee simple of certain real property containing approximately ____4.9__ acres, located in the City of Arcadia, County of _Los Angeles_____, State of California, designated Assessor's Parcel Number(s) ___ APN 5771-001-007_____ and more particularly described in Exhibit A attached hereto and incorporated herein by this reference (the "Property").

B. The Property possesses wildlife and habitat values (collectively, "conservation values") of great importance to Grantee, the California Department of Fish and Game ("CDFG"), and the people of the State of California.

C. The Property provides high quality Oak Woodland of which the wildlife and habitat values comprise the "Conservation Values" of the property .

D. Grantee is authorized to hold conservation easements pursuant to Civil Code Section 815.3. Specifically, Grantee is *a governmental entity identified in Civil Code Section 815.3(b) and otherwise authorized to acquire and hold title to real property*].

E. CDFG has jurisdiction, pursuant to Fish and Game Code Section 1802, over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary for biologically sustainable populations of those species, and CDFG is authorized to

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hold easements for these purposes pursuant to Civil Code Section 815.3, Fish and Game Code Section 1348, and other provisions of California law.

F. This Conservation Easement provides mitigation for certain impacts of The Santa Anita Dam Riser Modification and Sediment Removal Project located in the City of [__Arcadia_____], County of [____Los Angeles_____], State of California, pursuant to *the Agreement Regarding Proposed Stream or Lake Alteration (Notification No. [_____]) ("Section 1603 Agreement") executed by [Los Angeles County Flood Control District _____] and CDFG, dated [_____]*

COVENANTS, TERMS, CONDITIONS AND RESTRICTIONS

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and pursuant to California law, including Civil Code Section 815, *et seq.*, Grantor hereby voluntarily grants and conveys to Grantee a conservation easement in perpetuity over the Property.

1. Purposes. The purposes of this Conservation Easement are to ensure the Property will be retained forever in its natural condition and to prevent any use of the Property that will impair or interfere with the conservation values of the Property. Grantor intends that this Conservation Easement will confine the use of the Property to such activities that are consistent with those purposes, including, without limitation, those involving the preservation, restoration and enhancement of native species and their habitats.

2. Grantee's Rights. To accomplish the purposes of this Conservation Easement, Grantor hereby grants and conveys the following rights to Grantee and to CDFG as a third party beneficiary of this Conservation Easement:

(a) To preserve and protect the conservation values of the Property;

(b) To enter upon the Property at reasonable times in order to monitor compliance with and otherwise enforce the terms of this Conservation Easement, and for scientific research and interpretive purposes by Grantee or its designees and CDFG or its designees, provided that neither Grantee nor CDFG shall unreasonably interfere with Grantor's authorized use and quiet enjoyment of the Property;

(c) To prevent any activity on or use of the Property that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features of the Property that may be damaged by any act, failure to act, or any use that is inconsistent with the purposes of this Conservation Easement;

(d) All mineral, air and water rights of the Grantor associated with the property and necessary to protect and to sustain the biological resources of the Property; and

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(e) All present and future development rights allocated, implied, reserved or inherent in the Property; such rights are hereby terminated and extinguished, and may not be used on or transferred to any portion of the Property, nor any other property adjacent or otherwise.

3. Prohibited Uses. Any activity on or use of the Property inconsistent with the purposes of this Conservation Easement is prohibited. Without limiting the generality of the foregoing, the following uses and activities by Grantor, Grantor's agents, and third parties, are expressly prohibited:

(a) Unseasonal watering; use of fertilizers, pesticides, biocides, herbicides or other agricultural chemicals; weed abatement activities; incompatible fire protection activities; and any and all other activities and uses which may adversely affect the purposes of this Conservation Easement;

(b) Use of off-road vehicles and use of any other motorized vehicles except on existing roadways;

(c) Agricultural activity of any kind, except that grazing is permitted if done in accordance with a CDFG-approved grazing or management plan;

(d) Recreational activities including, but not limited to, horseback riding, biking, hunting or fishing, except as may be specifically permitted under this Conservation Easement;

(e) Commercial or industrial uses;

(f) Any legal or de facto division, subdivision or partitioning of the Property;

(g) Construction, reconstruction or placement of any building, billboard or sign, or any other structure or improvement of any kind;

(h) Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other materials;

(i) Planting, introduction or dispersal of non-native or exotic plant or animal species;

(j) Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, soil, sands, gravel, rocks or other material on or below the surface of the Property;

(k) Altering the surface or general topography of the Property, including building of roads;

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(l) Removing, destroying, or cutting of trees, shrubs or other vegetation, except as required by law for (1) fire breaks, (2) maintenance of existing foot trails or roads, or (3) prevention or treatment of disease; and

(m) Manipulating, impounding or altering any natural water course, body of water or water circulation on the Property, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters.

4. Grantor's Duties. Grantor shall undertake reasonable actions to prevent the unlawful entry and trespass by persons whose activities degrade or harm the conservation values of the Property. The Grantor shall transmit a letter report to CDFG triennially based on an inspection of the property to confirm no unlawful entry or trespass by persons has degraded or harmed the conservation values of the Property. The report shall also document any remedial measures taken to restore any such damage.

5. Reserved Rights. Grantor reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from its ownership of the Property, including the right to engage in or to permit or invite others to engage in all uses of the Property that are not expressly prohibited or limited by, and are consistent with the purposes of, this Conservation Easement.

6. Grantee's Remedies. CDFG, as a third party beneficiary of this Conservation Easement, shall have the same rights as Grantee under this section to enforce the terms of this Conservation Easement. If Grantee determines that a violation of the terms of this Conservation Easement has occurred or is threatened, Grantee shall give written notice to Grantor of such violation and demand in writing the cure of such violation. At the time of giving any such notice, Grantee shall give a copy of the notice to CDFG. If Grantor fails to cure the violation within fifteen (90) days after receipt of written notice and demand from Grantee, or if the cure reasonably requires more than fifteen (90) days to complete and Grantor fails to begin the cure within the fifteen (90)-day period or fails to continue diligently to complete the cure, Grantee may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Conservation Easement, to recover any damages to which Grantee may be entitled for violation of the terms of this Conservation Easement or for any injury to the conservation values of the Property, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies, or for other equitable relief, including, but not limited to, the restoration of the Property to the condition in which it existed prior to any such violation or injury. Without limiting Grantor's liability therefor, Grantee may apply any damages recovered to the cost of undertaking any corrective action on the Property.

If Grantee, in its sole discretion, determines that circumstances require immediate action to prevent or mitigate damage to the conservation values of the Property, Grantee may pursue its remedies under this Section 6 without prior notice to Grantor or without waiting for the period provided for cure to expire. Grantee's rights under this section apply equally to actual or threatened violations of the terms of this Conservation Easement.

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Grantor agrees that Grantee's remedies at law for any violation of the terms of this Conservation Easement are inadequate and that Grantee shall be entitled to the injunctive relief described in this section, both prohibitive and mandatory, in addition to such other relief to which Grantee may be entitled, including specific performance of the terms of this Conservation Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. Grantee's remedies described in this section shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity, including but not limited to, the remedies set forth in Civil Code Section 815, *et seq.*, inclusive. The failure of Grantee to discover a violation or to take immediate legal action shall not bar Grantee from taking such action at a later time.

6.1. Costs of Enforcement. Any costs incurred by Grantee or CDFG, where it is the prevailing party, in enforcing the terms of this Conservation Easement against Grantor, including, but not limited to, costs of suit and any costs of restoration necessitated by Grantor's negligence or breach of this Conservation Easement shall be borne by Grantor.

6.2. Discretion of Grantee and CDFG. Enforcement of the terms of this Conservation Easement by Grantee or CDFG shall be at the discretion of the enforcing party, and any forbearance by Grantee or CDFG to exercise its rights under this Conservation Easement in the event of any breach of any term of this Conservation Easement shall not be deemed or construed to be a waiver by Grantee or CDFG of such term or of any subsequent breach of the same or any other term of this Conservation Easement or of any of Grantee's rights (or any rights of CDFG as a third party beneficiary) under this Conservation Easement. No delay or omission by Grantee or CDFG in the exercise of any right or remedy shall impair such right or remedy or be construed as a waiver.

6.3. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee or CDFG to bring any action against Grantor for any injury to or change in the Property resulting from (i) any natural cause beyond Grantor's control, including, without limitation, fire not caused by Grantor, flood, storm, or earth movement, or any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Property resulting from such causes; or (ii) acts by Grantee or its employees or CDFG or its employees.

6.4. Department of Fish and Game Right of Enforcement. All rights and remedies conveyed to Grantee under this Conservation Easement Deed shall extend to and are enforceable by CDFG. These rights are in addition to, and do not limit, the rights of enforcement under *Agreement Regarding Proposed Stream or Lake Alteration (Notification No. [_____]) ("Section 1603 Agreement")*

8. Access. This Conservation Easement does not convey a general right of access to the public.

9. Costs and Liabilities. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the

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Property. Grantor agrees that neither Grantee nor CDFG shall have any duty or responsibility for the operation, upkeep or maintenance of the Property, the monitoring of hazardous conditions thereon, or the protection of Grantor, the public or any third parties from risks relating to conditions on the Property. Grantor remains solely responsible for obtaining any applicable governmental permits and approvals for any activity or use permitted by this Conservation Easement Deed, and any activity or use shall be undertaken in accordance with all applicable federal, state, local and administrative agency statutes, ordinances, rules, regulations, orders and requirements.

9.1. Taxes; No Liens. Grantor shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Property by competent authority (collectively "taxes"), including any taxes imposed upon, or incurred as a result of, this Conservation Easement, and shall furnish Grantee and CDFG with satisfactory evidence of payment upon request. Grantor shall keep the Property free from any liens, including those arising out of any obligations incurred by Grantor for any labor or materials furnished or alleged to have been furnished to or for Grantor at or for use on the Property.

9.2. Hold Harmless. Grantor shall hold harmless, protect and indemnify Grantee and its directors, officers, employees, agents, contractors, and representatives and the heirs, personal representatives, successors and assigns of each of them (each a "Grantee Indemnified Party" and, collectively, "Grantee's Indemnified Parties") and CDFG and its directors, officers, employees, agents, contractors, and representatives, and the heirs, personal representatives, successors and assigns of each of them (each a "CDFG Indemnified Party" and, collectively, "CDFG's Indemnified Parties") from and against any and all liabilities, penalties, costs, losses, damages, expenses (including, without limitation, reasonable attorneys' fees and experts' fees), causes of action, claims, demands, orders, liens or judgments (each a "Claim" and, collectively, "Claims"), arising from or in any way connected with: (1) injury to or the death of any person, or physical damage to any property, resulting from any act, omission, condition, or other matter related to or occurring on or about the Property, regardless of cause, except that (a) this indemnification shall be inapplicable to Grantee's Indemnified Parties with respect to any Claim due solely to the negligence of Grantee or any of its employees and (b) this indemnification shall be inapplicable to CDFG's Indemnified Parties with respect to any Claim due solely to the negligence of CDFG or any of its employees; (2) the obligations specified in Sections 4, 9, and 9.1; and (3) the existence or administration of this Conservation Easement. If any action or proceeding is brought against any of the CDFG Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from CDFG, defend such action or proceeding by counsel reasonably acceptable to the CDFG Indemnified Party or reimburse CDFG for all charges incurred for services of the California Attorney General in defending the action or proceeding.

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9.3. Extinguishment. If circumstances arise in the future that render the purposes of this Conservation Easement impossible to accomplish, this Conservation Easement can only be terminated or extinguished, in whole or in part, by judicial proceedings in a court of competent jurisdiction.

9.4. Condemnation. The purposes of this Conservation Easement are presumed to be the best and most necessary public use as defined at Code of Civil Procedure Section 1240.680 notwithstanding Code of Civil Procedure Sections 1240.690 and 1240.700.

10. Transfer of Easement. This Conservation Easement is transferable by Grantee, but Grantee may assign this Conservation Easement only to CDFG or another entity or organization authorized to acquire and hold conservation easements pursuant to Civil Code Section 815.3 (or any successor provision then applicable) or the laws of the United States. Grantee shall require the assignee to record the assignment in the county where the Property is located.

11. Transfer of Property. Grantor agrees to incorporate the terms of this Conservation Easement by reference in any deed or other legal instrument by which Grantor divests itself of any interest in all or any portion of the Property, including, without limitation, a leasehold interest. Grantor further agrees to give written notice to Grantee and CDFG of the intent to transfer any interest at least thirty (30) days prior to the date of such transfer. Grantee or CDFG shall have the right to prevent subsequent transfers in which prospective subsequent claimants or transferees are not given notice of the covenants, terms, conditions and restrictions of this Conservation Easement. The failure of Grantor, Grantee or CDFG to perform any act provided in this section shall not impair the validity of this Conservation Easement or limit its enforceability in any way.

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12. Notices. **Any notice, demand, request, consent, approval, or communication that any party desires or is required to give to the other parties shall be in writing and be served personally or sent by recognized overnight courier that guarantees next-day delivery or by first class mail, postage fully prepaid, addressed as follows:**

To Grantor: Los Angeles County Flood Control District

To Grantee: County of Los Angeles

To CDFG: Department of Fish and Game
[*Name of Region*]
[*Region's address*]
Attn: Regional Manager

With a copy to: Department of Fish and Game
Office of the General Counsel
1416 Ninth Street, 12th Floor
Sacramento, California 95814-2090
Attn: General Counsel

or to such other address as Grantor, Grantee or CDFG may designate by written notice to the other parties. Notice shall be deemed effective upon delivery in the case of personal delivery or delivery by overnight courier or, in the case of delivery by first class mail, five (5) days after deposit into the United States mail.

13. Amendment. **This Conservation Easement may be amended by Grantor and Grantee only by mutual written agreement and subject to the prior written approval of CDFG. Any such amendment shall be consistent with the purposes of this Conservation Easement and California law governing conservation easements and shall not affect its perpetual duration. Any such amendment shall be recorded in the official records of [_____] County, State of California.**

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

14. General Provisions.

(a) Controlling Law. The interpretation and performance of this Conservation Easement shall be governed by the laws of the State of California, disregarding the conflicts of law principles of such state.

(b) Liberal Construction. Despite any general rule of construction to the contrary, this Conservation Easement shall be liberally construed to effect the purposes of this Conservation Easement and the policy and purpose of Civil Code Section 815, *et seq.* If any provision in this instrument is found to be ambiguous, an interpretation consistent with the purposes of this Conservation Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

(c) Severability. If a court of competent jurisdiction voids or invalidates on its face any provision of this Conservation Easement Deed, such action shall not affect the remainder of this Conservation Easement Deed. If a court of competent jurisdiction voids or invalidates the application of any provision of this Conservation Easement Deed to a person or circumstance, such action shall not affect the application of the provision to other persons or circumstances.

(d) Entire Agreement. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Conservation Easement. No alteration or variation of this instrument shall be valid or binding unless contained in an amendment in accordance with Section 13.

(e) No Forfeiture. Nothing contained herein will result in a forfeiture or reversion of Grantor's title in any respect.

(f) Successors. The covenants, terms, conditions, and restrictions of this Conservation Easement Deed shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall constitute a servitude running in perpetuity with the Property.

(g) Termination of Rights and Obligations. A party's rights and obligations under this Conservation Easement terminate upon transfer of the party's interest in the Conservation Easement or Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

(h) Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon its construction or interpretation.

(i) No Hazardous Materials Liability. Grantor represents and warrants that it has no knowledge or notice of any Hazardous Materials (defined below) or underground storage tanks existing, generated, treated, stored, used, released, disposed of, deposited or abandoned in, on, under, or from the Property, or transported to or from or affecting the Property. Without limiting the obligations of Grantor under Section 9.2, Grantor hereby releases and agrees to indemnify, protect and hold harmless the Grantee Indemnified Parties and the CDFG Indemnified Parties (each as defined in Section 9.2) from and against any and all Claims (as defined in Section 9.2) arising from or connected with any Hazardous Materials or underground storage tanks present, alleged to be present, or otherwise associated with the Property at any time, except that (I) this indemnification shall be inapplicable to the Grantee Indemnified Parties with respect to any Hazardous Materials placed, disposed or released by Grantee, its employees or agents and (II) this indemnification shall be inapplicable to the CDFG Indemnified Parties with respect to any Hazardous Materials placed, disposed or released by CDFG, its employees or agents. This release and indemnification includes, without limitation, Claims for (i) injury to or death of any person or physical damage to any property; and (ii) the violation or alleged violation of, or other failure to comply with, any Environmental Laws (defined below). If any action or proceeding is brought against any of the CDFG Indemnified Parties by reason of any such Claim, Grantor shall, at the election of and upon written notice from CDFG, defend such action or proceeding by counsel reasonably acceptable to the CDFG Indemnified Party or reimburse CDFG for all charges incurred for services of the California Attorney General in defending the action or proceeding.

Despite any contrary provision of this Conservation Easement Deed, the parties do not intend this Conservation Easement to be, and this Conservation Easement shall not be, construed such that it creates in or gives to Grantee or CDFG any of the following:

(1) The obligations or liability of an "owner" or "operator," as those terms are defined and used in Environmental Laws (defined below), including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. Section 9601 *et seq.*; hereinafter, "CERCLA"); or

(2) The obligations or liabilities of a person described in 42 U.S.C. Section 9607(a)(3) or (4); or

PLEASE NOTE: The following sample Conservation Easement Deed is provided for reference. The Department of Fish and Game updates this document as needed, and it does not necessarily contain all provisions appropriate for a given project.

(3) The obligations of a responsible person under any applicable Environmental Laws; or

(4) The right to investigate and remediate any Hazardous Materials associated with the Property; or

(5) Any control over Grantor's ability to investigate, remove, remediate or otherwise clean up any Hazardous Materials associated with the Property.

The term "Hazardous Materials" includes, without limitation, (a) material that is flammable, explosive or radioactive; (b) petroleum products, including by-products and fractions thereof; and (c) hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in CERCLA, the Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 *et seq.*; hereinafter "RCRA"); the Hazardous Materials Transportation Act (49 U.S.C. Section 6901 *et seq.*; hereinafter "HTA"); the Hazardous Waste Control Law (California Health & Safety Code Section 25100 *et seq.*; hereinafter "HCL"); the Carpenter-Presley-Tanner Hazardous Substance Account Act (California Health & Safety Code Section 25300 *et seq.*; hereinafter "HSA"), and in the regulations adopted and publications promulgated pursuant to them, or any other applicable Environmental Laws now in effect or enacted after the date of this Conservation Easement Deed.

The term "Environmental Laws" includes, without limitation, CERCLA, RCRA, HTA, HCL, HSA, and any other federal, state, local or administrative agency statute, ordinance, rule, regulation, order or requirement relating to pollution, protection of human health or safety, the environment or Hazardous Materials. Grantor represents, warrants and covenants to Grantee and CDFG that activities upon and use of the Property by Grantor, its agents, employees, invitees and contractors will comply with all Environmental Laws.

(j) Warranty. Grantor represents and warrants that there are no outstanding mortgages, liens, encumbrances or other interests in the Property (including, without limitation, mineral interests) which have not been expressly subordinated to this Conservation Easement Deed, and that the Property is not subject to any other conservation easement.

(k) Additional Easements. Grantor shall not grant any additional easements, rights of way or other interests in the Property (other than a security interest that is subordinate to this Conservation Easement Deed), or grant or otherwise abandon or

California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Agency Secretary

Arnold Schwarzenegger
Governor

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Ms. Belinda Kwan
Los Angeles County Dept. of Public Works
900 S. Freemont Avenue
Alhambra, California 91803

WATER QUALITY CERTIFICATION FOR PROPOSED SANTA ANITA DAM RISER MODIFICATION AND RESERVOIR SEDIMENT REMOVAL PROJECT (Corps' Project No. 2008-00370-VEN), SANTA ANITA WASH, CITY OF ARCADIA, LOS ANGELES COUNTY (File No. 08-088)

Dear Ms. Kwan:

Board staff has reviewed your request on behalf of the Los Angeles County Department of Public Works (Applicant) for a Clean Water Act Section 401 Water Quality Certification for the above-referenced project. Your application was deemed complete on June 10, 2009.

I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 - DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges that have received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification.

The Applicant shall be liable civilly for any violations of this Certification in accordance with the California Water Code. This Certification does not eliminate the Applicant's responsibility to comply with any other applicable laws, requirements and/or permits.

Should you have questions concerning this Certification action, please contact Valerie Carrillo, Lead, Section 401 Program, at (213) 576-6759.

Tracy J. Egoscue
Executive Officer

10/22/09
Date

DISTRIBUTION LIST

Bill Orme (by electronic copy)
State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

Jamie Jackson
(via electronic copy)
California Department of Fish and Game
Streambed Alteration Team
4949 View Ridge Avenue
San Diego, CA 92123

Valisa E. Nez
U.S. Army Corps of Engineers
Regulatory Branch, Los Angeles District
P.O. Box 532711
Los Angeles, CA 90053-2325

Eric Raffini (via electronic copy)
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Jim Bartel
U.S. Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, CA 92009

ATTACHMENT A

Project Information
File No. 08-088

1. Applicant:

Los Angeles County
Department of Public Works
900 S. Freemont Avenue
Alhambra, California 91803

Phone: (626) 458-6100 Fax: (626) 979-5436

2. Applicant's Agent:

Belinda Kwan
Los Angeles County
Department of Public Works
900 S. Freemont Avenue
Alhambra, California 91803

Phone: (626) 458-6100 Fax: (626) 979-5436

3. Project Name:

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

4. Project Location:

Arcadia, Los Angeles County

Longitude:	Latitude:
119.1561	34.2886
119.1592	34.2869
119.1597	34.2866
119.1600	34.2861
119.1588	34.2875
119.1580	34.2875
119.1572	34.2872
119.1569	34.2880

5. Type of Project:

Dam Riser Modification and Reservoir Sediment Removal

6. Project Purpose:

The purpose of this project is to remove the sediment that has accumulated behind the dam since the last clean out and to modify a riser on the low-level outlet of the dam. The riser modification is needed to comply with Division of Safety of Dams (DSOD) seismic stability standards. The sediment removal is to maintain the

operational function of the valves by preventing blockage from the sediment deposition and to increase the reservoir capacity for flood protection and water conservation.

7. Project Description:

The Santa Anita Reservoir Sediment Removal (proposed project) is located on the border of the City of Arcadia, in the western San Gabriel Valley in Los Angeles County, approximately 15 miles northeast of downtown Los Angeles.

The project area includes: Santa Anita Reservoir; the Santa Anita Dam; the tunnel from the reservoir to the downstream access road along the streambed; Santa Anita Headworks; Santa Anita Debris Basin (DB), and the Santa Anita Sediment Placement Site (SPS).

Approximately 500,000 cubic yards of sediment will be removed. The Santa Anita SPS is comprised of three sections (the Upper, Middle and Lower SPS areas). The Upper SPS area, located in the northerly end of the SPS, is an already disturbed area, but does not have sufficient capacity for the anticipated sediment to be removed from the reservoir. The Middle SPS area has capacity for sediment storage; apart from existing access roads it is relatively undisturbed and characterized by native vegetation. The Lower SPS area, located in the southerly end of the SPS, is an already disturbed area that contains sediment from previous cleanouts of the reservoir, debris basin, and other local flood protection facilities; it also does not have sufficient capacity to accommodate the expected volume of sediment from the reservoir. The proposed project will first place approximately 250,000 cubic yards of excavated sediment in the Lower SPS, which will then be landscaped for mitigation and aesthetics, and closed out to future sediment placement. The remainder of the sediment, approximately 250,000 cubic yards, will be placed in the Middle SPS.

The proposed project will also include improvements to the Santa Anita Dam, which will involve modifications to the dam's inlet and outlet works, including the construction of a new riser. In order to comply with DSOD's seismic stability standards, the riser modification will be performed concurrently with the sediment removal project.

The dam outlet modification component consists of constructing a concrete riser on the lowest outlet gate of the dam. The existing

	trash rack in front of the gate will be moved to the outside of the new riser and the existing gate will remain in place. An additional gate will be installed on the outside of the new riser. Additional slide gates may be installed on the new riser and/or the existing risers for Valves No. 2, 3, and 4, to allow operations below the restricted level.
8. Federal Agency/Permit:	U.S. Army Corps of Engineers NWP No. 404 (Permit No. 2008-00370-VEN)
9. Other Required Regulatory Approvals:	California Department of Fish and Game Streambed Alteration Agreement No. 1600-2008-0173-R5
10. California Environmental Quality Act Compliance:	A Notice of Determination was finalized on June 10, 2009 for the proposed project. An EIR was completed and a Statement of Overriding Considerations was adopted for this project.
11. Receiving Water:	Santa Anita Wash (Hydrologic Unit No. 405.33)
12. Designated Beneficial Uses:	MUN*, GWR, REC-1, REC-2, WARM, COLD, WILD *Conditional beneficial use
13. Impacted Waters of the United States:	Reservoir: 9.00 temporary acres in reservoir
14. Dredge Volume:	None
15. Related Projects Implemented/to be Implemented by the Applicant:	The Applicant has not identified any related projects carried out in the last 5 years or planned for implementation in the next 5 years.

16. Avoidance/ Minimization Activities:

The Applicant has proposed to implement several Best Management Practices, including, but not limited to, the following:

- Temporary soil stabilization through scheduling work outside of the wet season to the maximum extent possible (work in SPS may have to occur through February), preservation of existing vegetation when feasible, mulching, hydroseeding, soil binders (if permitted), erosion control blankets, earth dikes, drainage swales, and/or slope drains;
- Temporary sediment control through silt fencing, desilting basins, sediment traps, check dams, fiber rolls, barriers or berms, street sweeping, and/or stormdrain protection;
- Tracking control through stabilization of construction entrances/exits and roadways, and/or tirewashes;
- Non-storm water management through water conservation practices and during vehicle equipment cleaning, fueling, and maintenance, dewatering operations, or stream crossings; and
- Waste management and material pollution control including management of stockpiles, hazardous wastes, contaminated soil, concrete waste, sanitary waste, and liquid waste, spill prevention/control, and proper material delivery, use, storage, and disposal.

17. Proposed Compensatory Mitigation:

The Applicant has proposed to implement a combination of the following mitigation measures through consultation with CDFG:

Reservoir: As impacts will be temporary and no vegetation will be impacted, no mitigation is proposed for the reservoir.

Upland areas: CDFG and Applicant have agreed on a mitigation strategy.

Coastal or riversidean sage scrub in the SPS will be mitigated at the Big Tujunga Wash Mitigation Bank Site.

The 8 coastal live oak trees within the Middle SPS are to be removed. Woodland shall be mitigated with one or a combination

of the following measures:

-Oak woodland restoration shall occur within the Lower SPS, which includes approximately 8 acres available for restoration activities.
-Establishment of a conservation easement that shall permanently protect equivalent oak woodlands;
-Contribution of funds to the Oak Woodlands Conservation Fund or equivalent for the purpose of purchasing oak woodlands conservation easements; and
-Planting of an appropriate number of equivalent area of trees, including maintaining plantings and replacing dead or diseased trees for a period of up to seven years.

Mitigation may include salvage of seed or specimen from the impacted area for use in planting.

The size of a conservation easement, amount of funding for contribution to the Oak Woodlands Conservation Fund and/or the number of trees planted for mitigation shall be determined through consultation with CDFG, the City of Arcadia and the Regional Board. If feasible, an oak woodland conservation easement shall occur within the same Big Santa Anita watershed in which impacts occur. Any contributions to the Oak Woodlands Conservation Fund, or an acceptable alternative shall be allocated to specific localities approved by CDFG, Regional Board and the US Army Corps of Engineers. Contributed funds shall be sufficient to acquire and manage a conservation easement in perpetuity.

Details of planting for mitigation shall be described in both a conceptual restoration plan and a mitigation and monitoring plan for oak woodland, which shall be submitted and approved by CDFG prior to implementation of the project. The restoration plan shall include detailed methodology for how the site will be prepared, planted, and maintained and quantitative performance criteria such as minimum percent cover by native species, maximum percent cover by non-native species, and minimum species diversity levels.

18. Required Compensatory Mitigation:	As proposed in the previous section (No. 17), the Regional Board will require a submittal of the Restoration/Mitigation Plan within 30 days of project commencement. Per the CDFG Streambed Alteration Agreement, the mitigation ratio for the upland temporary impacts shall be at least a minimum of 2:1; no additional mitigation is assessed for temporary impacts in the reservoir. See *Attachment B, Conditions of Certifications, Additional Conditions* for modifications and additions to the above proposed compensatory mitigation.

ATTACHMENT B

Conditions of Certification
File No. 08-088

STANDARD CONDITIONS

Pursuant to §3860 of Title 23 of the California Code of Regulations (23 CCR), the following three standard conditions shall apply to this project:

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to §13330 of the California Water Code and Article 6 (commencing with 23 CCR §3867).

2. This Certification action is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to 23 CCR Subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. Certification is conditioned upon total payment of any fee required pursuant to 23 CCR Chapter 28 and owed by the Applicant.

ADDITIONAL CONDITIONS

Pursuant to 23 CCR §3859(a), the Applicant shall comply with the following additional conditions:

1. The Applicant shall submit to this Regional Board copies of any other final permits and agreements required for this project, including, but not limited to, the U.S. Army Corps of Engineers' (ACOE) Section 404 Permit and the California Department of Fish and Game's (CDFG) Streambed Alteration Agreement. **These documents shall be submitted prior to any discharge to waters of the State**.

2. The Applicant shall adhere to the most stringent conditions indicated with either this certification, the CDFG's Streambed Alteration Agreement, or the ACOE Section 404 Permit.

3. The Applicant shall comply with all water quality objectives, prohibitions, and policies set forth in the *Water Quality Control Plan, Los Angeles Region (1994)* as amended.

4. The Avoidance/Minimization activities proposed by the Applicant as described in Attachment A, No. 16, are incorporated as additional conditions herein.

5. The Applicant and all contractors employed by the Applicant shall have copies of this Certification, the approved maintenance plan, and all other regulatory approvals for this project on site at all times and shall be familiar with all conditions set forth.

6. Fueling, lubrication, maintenance, operation, and storage of vehicles and equipment shall not result in a discharge or a threatened discharge to waters of the State. At no time shall the Applicant use any vehicle or equipment which leaks any substance that may impact water quality. Staging and storage areas for vehicles and equipment shall be located outside of waters of the State.

7. All excavation, construction, or maintenance activities shall follow best management practices to minimize impacts to water quality and beneficial uses. Dust control activities shall be conducted in such a manner that will not produce downstream runoff.

8. No construction material, spoils, debris, or any other substances associated with this project that may adversely impact water quality standards, shall be located in a manner which may result in a discharge or a threatened discharge to waters of the State. Designated spoil and waste areas shall be visually marked prior to any excavation and/or construction activity, and storage of the materials shall be confined to these areas.

9. All waste and/or dredged material removed shall be relocated to a legal point of disposal if applicable. A legal point of disposal is defined as one for which Waste Discharge Requirements have been established by a California Regional Water Quality Control Board, and is in full compliance therewith. Please contact Rodney Nelson, Land Disposal Unit, at (213) 620-6119 for further information.

10. The Applicant shall implement all necessary control measures to prevent the degradation of water quality from the proposed project in order to maintain compliance with the Basin Plan. The discharge shall meet all effluent limitations and toxic and effluent standards established to comply with the applicable water quality standards and other appropriate requirements, including the provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act. This Certification does not authorize the discharge by the applicant for any other activity than specifically described in the 404 Permit.

11. The discharge shall not: a) degrade surface water communities and populations including vertebrate, invertebrate, and plant species; b) promote the breeding of mosquitoes, gnats, black flies, midges, or other pests; c) alter the color, create visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters; d) cause formation of sludge deposits; or e) adversely affect any designated beneficial uses.

12. The Applicant shall allow the Regional Board and its authorized representative entry to the premises, including all mitigation sites, to inspect and undertake any activity to determine compliance with this Certification, or as otherwise authorized by the California Water Code.

13. Application of pesticides must be supervised by a certified applicator and be in conformance with manufacturer's specifications for use. Compounds used must be appropriate to the target species and habitat. All pesticides directed toward aquatic species must be approved by the Regional Board. Pesticide utilization shall be in accordance with State Water Resources Control Board Water Quality Order Nos. 2004-0008-DWQ and 2004-0009-DWQ.

14. The Applicant shall not conduct any construction activities within waters of the State during a rainfall event. The Applicant shall maintain **a five-day (5-day) clear weather forecast** before conducting any operations within waters of the State.

15. If rain is predicted after operations have begun, grading activities must cease immediately and the site must be stabilized to prevent impacts to water quality, and minimize erosion and runoff from the site.

16. The Applicant shall utilize the services of a qualified biologist with expertise in riparian assessments during all construction activities involving vegetation clearing. The biologist shall be available on site during construction activities to ensure that all protected areas are marked properly and ensure that no vegetation outside the specified areas is removed. The biologist shall have the authority to stop the work, as necessary, if instructions are not followed. The biologist shall be available upon request from this Regional Board for consultation within 24 hours of request of consultation.

17. No activities shall involve wet excavations (i.e., no excavations shall occur below the seasonal high water table). A minimum **5-foot** buffer zone shall be maintained above the existing groundwater level. If construction or groundwater dewatering is proposed or anticipated, the Applicant shall file a **Report of Waste Discharge** to this Regional Board and obtain any necessary NPDES permits/Waste Discharge Requirements prior to discharging waste. Sufficient time should be allowed to obtain any such permits (generally 180 days). If groundwater is encountered without the benefit of appropriate permits, the Applicant shall cease all activities in the areas where groundwater is present, file a Report of Waste Discharge to this Regional Board, and obtain any necessary permits prior to discharging waste.

18. All project/maintenance activities not included in this Certification, and which may require a permit, must be reported to the Regional Board for appropriate permitting. Bank stabilization and grading, as well as any other ground disturbances, are subject to restoration and revegetation requirements, and may require additional Certification action.

19. All surface waters, including ponded waters, shall be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity which may result in a discharge to the receiving water. If surface water diversions are anticipated, the Applicant shall develop and submit a **Surface Water Diversion Plan** (plan) to this Regional Board. The plan shall include the proposed method and duration of diversion activities, structure configuration, construction materials, equipment, erosion and sediment controls, and a map or drawing indicating the locations of diversion and discharge points. Contingency measures shall be a part of this plan to address various flow discharge rates. The plan shall be submitted prior to any surface water diversions. If surface flows are present, then upstream and downstream monitoring for the following shall be implemented:
    - pH
    - temperature
    - dissolved oxygen
    - turbidity
    - total suspended solids(TSS)

    Analyses must be performed using approved US Environmental Protection Agency methods, where applicable. These constituents shall be measured at least once prior to diversion and then monitored for on a daily basis during the first week of diversion and/or dewatering activities, and then on a weekly basis, thereafter, until the in-stream work is complete.

    Results of the analyses shall be submitted to this Regional Board by the 15th day of each subsequent sampling month. A map or drawing indicating the locations of sampling points shall be included with each submittal. Diversion activities shall not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Downstream TSS shall be maintained at ambient levels. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases shall not exceed 20%. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%. Any such violations may result in corrective and/or enforcement actions, including increased monitoring and sample collection.

20. The Applicant shall restore **all areas** of TEMPORARY IMPACTS to waters of the United States and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the State. Where necessary, restoration shall include grading of disturbed areas to pre-project contours and revegetation with native species. Restored areas shall be monitored and maintained with native species as necessary for five years. The Applicant shall implement all necessary Best Management Practices to control erosion and runoff from areas associated with this project.

21. The Applicant shall provide COMPENSATORY MITIGATION to offset the proposed permanent impacts to 0.15 upland acres of habitat at a minimum **2:1** area replacement ratio

(0.30 acres). The boundary of the mitigation site shall be clearly identified on a map/plan of suitable quality and shall be defined by latitude and longitude. This information shall be submitted to this Regional Board for approval prior to any disturbance within waters of the United States and shall include copies of any agreements made between the Applicant and a third party organization regarding compensatory mitigation efforts.

22. The Applicant shall submit to this Regional Board **Annual Mitigation Monitoring Reports** (Annual Reports) by **May 1st** of each year for a minimum period of **five (5) years** following this issuance of 401 Certification or until mitigation success has been achieved and documented. The Annual Reports shall describe in detail all of the project/construction activities performed during the previous year and all restoration and mitigation efforts; including percent survival by plant species and percent cover. The Annual Reports shall describe the status of other agreements (e.g., mitigation banking). At a minimum the Annual Reports shall include the following documentation and answered appropriately whether or not mitigation has been performed:

    (a) Color photo documentation of the pre- and post-project and mitigation site conditions;

    (b) Geographical Positioning System (GPS) coordinates in decimal-degrees format outlining the boundary of the project and mitigation areas;

    (c) The overall status of project including a detailed schedule of work;

    (d) Copies of all permits revised as required in Additional Condition 1;

    (e) Water quality monitoring results for each reach (as required) compiled in an easy to interpret format;

    (f) A certified Statement of "no net loss" of wetlands associated with this project;

    (g) Discussion of any monitoring activities and exotic plant control efforts; and

    (h) A certified Statement from the permittee or his/her representative that all conditions of this Certification have been met.

23. All applications, reports, or information submitted to the Regional Board shall be signed:

    (a) For corporations, by a principal executive officer at least of the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which discharge originates.

    (b) For a partnership, by a general partner.

(c) For a sole proprietorship, by the proprietor.

(d) For a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

24. Each and any report submitted in accordance with this Certification shall contain the following completed declaration:

"I declare under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on the _____ day of _____ at _____.

_____ (Signature)
_____ (Title)"

25. All communications regarding this project and submitted to this Regional Board shall identify the Project File Number **08-088**. Submittals shall be sent to the attention of the 401 Certification Unit.

26. Any modifications of the proposed project may require submittal of a new Clean Water Act Section 401 Water Quality Certification application and appropriate filing fee.

27. Coverage under this Certification may be transferred to the extent the underlying federal permit may legally be transferred and further provided that the Applicant notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new Applicants containing a specific date of coverage, responsibility for compliance with this Certification, and liability between them.

28. The Applicant or their agents shall report any noncompliance. Any such information shall be provided verbally to the Executive Officer within 24 hours from the time the Applicant becomes aware of the circumstances. A written submission shall also be provided within five days of the time the Applicant becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to

reduce, eliminate and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

29. *Enforcement:*

    (a) In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under State law. For purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Certification.

    (b) In response to a suspected violation of any condition of this Certification, the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Board (RWQCB) may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the SWRCB deems appropriate, provided that the burden, including costs, of the reports shall be a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

    (c) In response to any violation of the conditions of this Certification, the SWRCB or RWQCB may add to or modify the conditions of this Certification as appropriate to ensure compliance.

30. This Certification shall expire **five (5) years** from date of this Certification. The Applicant shall submit a complete application prior to termination of this Certification if renewal is requested.

LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

DEPARTMENT OF THE ARMY PERMIT

Permittee: Steve Sheridan, Los Angeles County Dept. of Public Works

Permit Number: SPL-2008-00370-VEN

Issuing Office: Los Angeles District

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To discharge fill onto waters of the U.S. in association with the Santa Anita Dam Riser Modification and Reservoir Sediment Removal as shown on the attached drawings.

Specifically, you are authorized to:

1. Temporarily impact 9 acres of waters of the U.S. at the Santa Anita Reservoir through removal of 300,000- 500,000 cubic yards of sediment.
2. Permanently impact 0.12 acres of waters of the U.S. at the Middle Disposal Site through the disposal of excavated sediment from the Santa Anita Reservoir.

Project Location: Santa Anita Reservoir, in the City of Arcadia, Los Angeles County, California.

Permit Conditions:

General Conditions:

1. The time limit for completing the authorized activity ends on December 4, 2012. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification from this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of your permit.

Special Conditions:

1) Prior to initiating construction in waters of the U.S., and to mitigate for impacts to 0.12 acre(s) of non-wetland waters of the U.S., the Permittee shall provide documentation verifying purchase of 0.24 credits for the enhancement or restoration of waters of the U.S. from the Big Tujunga Corps-approved mitigation bank. The Permittee shall not initiate work in waters of the U.S. prior to receiving written confirmation (by letter or e-mail) from the Corps Regulatory Division as to compliance with this special condition. The permittee retains responsibility for providing the compensatory mitigation until the number and resource type of credits described above have been secured from a sponsor and the district engineer has received documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation. This documentation may consist of a letter or form signed by the sponsor, with the permit number and a statement indicating the number and resource type of credits that have been secured from the sponsor.

2) Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a post-project implementation memo indicating the date authorized impacts to waters of the U.S. ceased.

3) The Permittee shall limit construction activities to the hours between 7:00AM and 7:00PM from Monday through Friday. Additionally, to reduce noise impacts, the

applicant shall implement BMP's and mitigation measures. Documentation verifying implementation of these BMP's and mitigation measures shall be included in the post-project implementation memo (see special condition 2 above).

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Steve Sheridan — 12/24/09

Steve Sheridan
County of Los Angeles
Department of Public Works, Water Resources Division

DATE

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

12/30/09

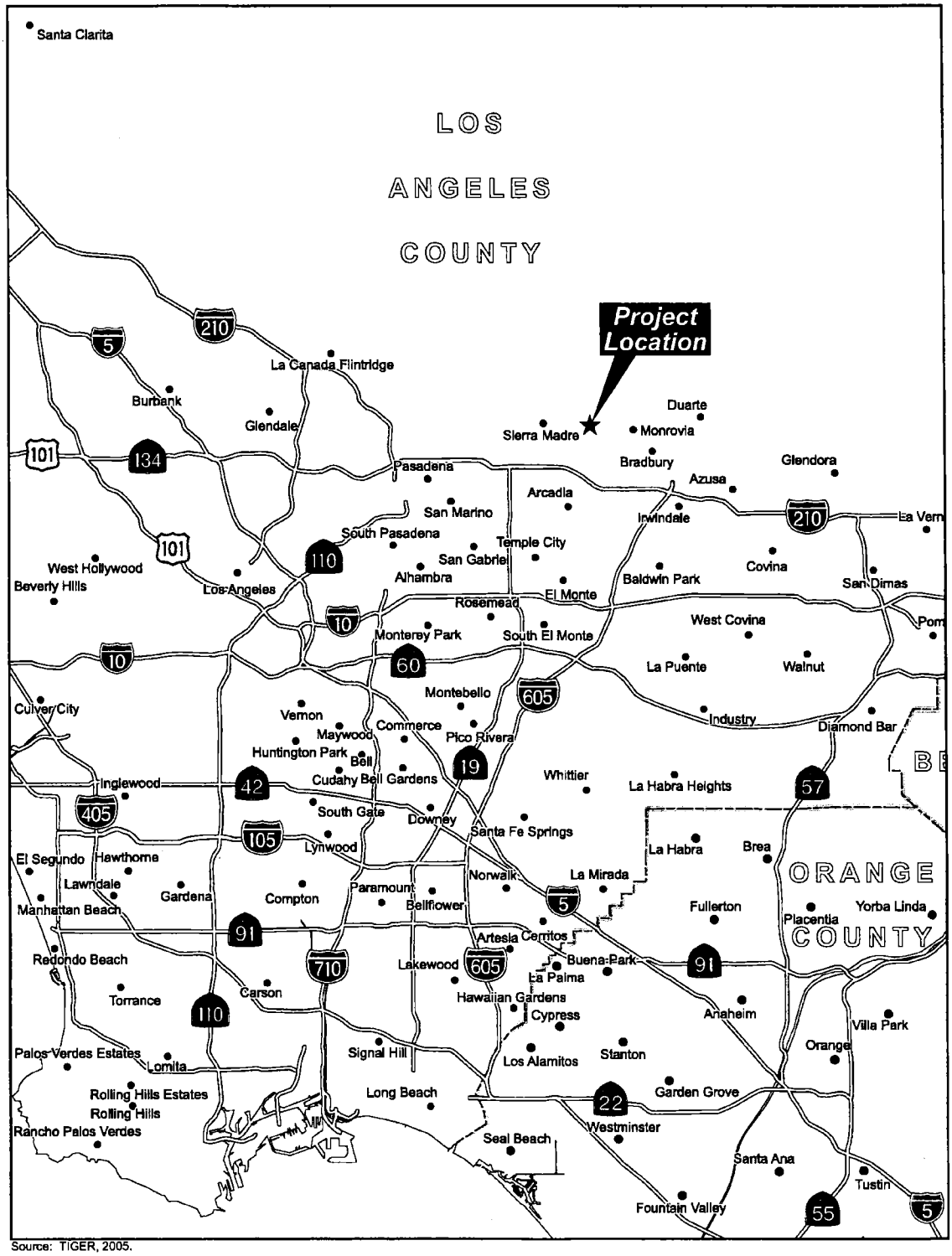
Daniel P. Swenson
Chief, Los Angeles Section
North Coast Branch
Regulatory Division

DATE

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below..

TRANSFEREE

DATE



Source: TIGER, 2005.

NORTH 0 2 4 8 12 Miles

Figure 2-1
Regional Location Map

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Draft EIR
Los Angeles County Department of Public Works

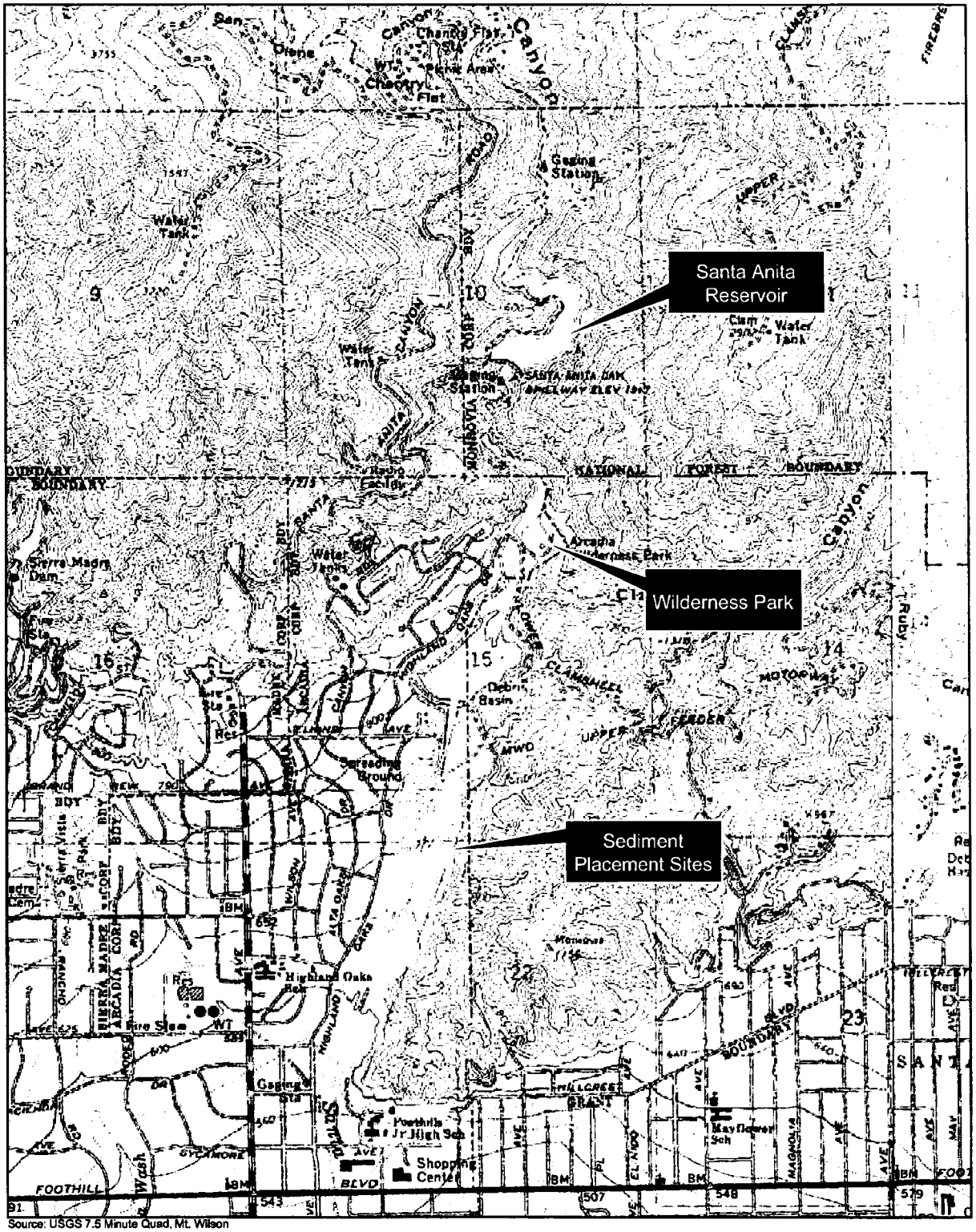
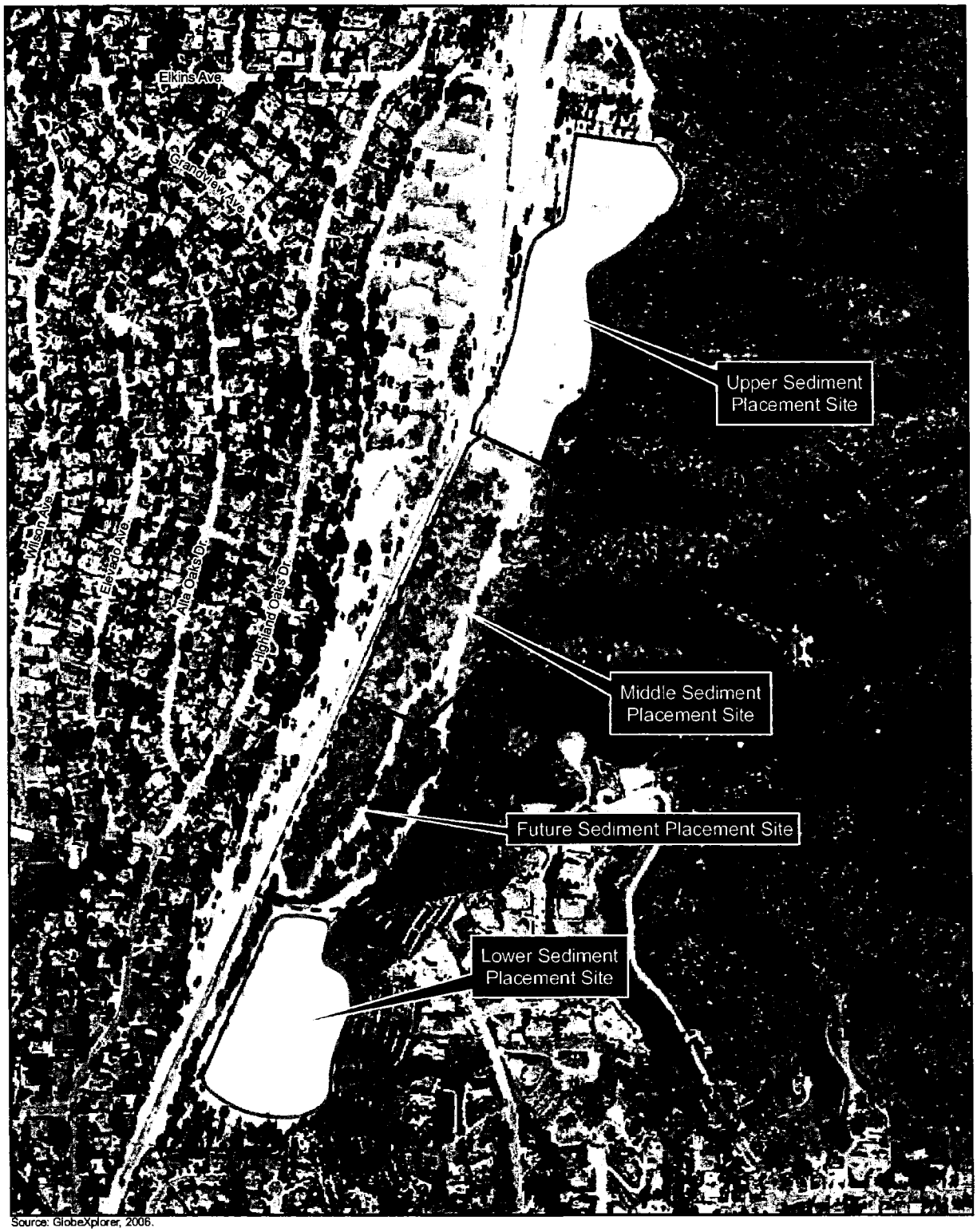


Figure 2-2
Vicinity Map



Source: GlobeXplorer, 2006.

NORTH 0 300 600 1,200 Feet

Figure 2-3
Sediment Placement Sites

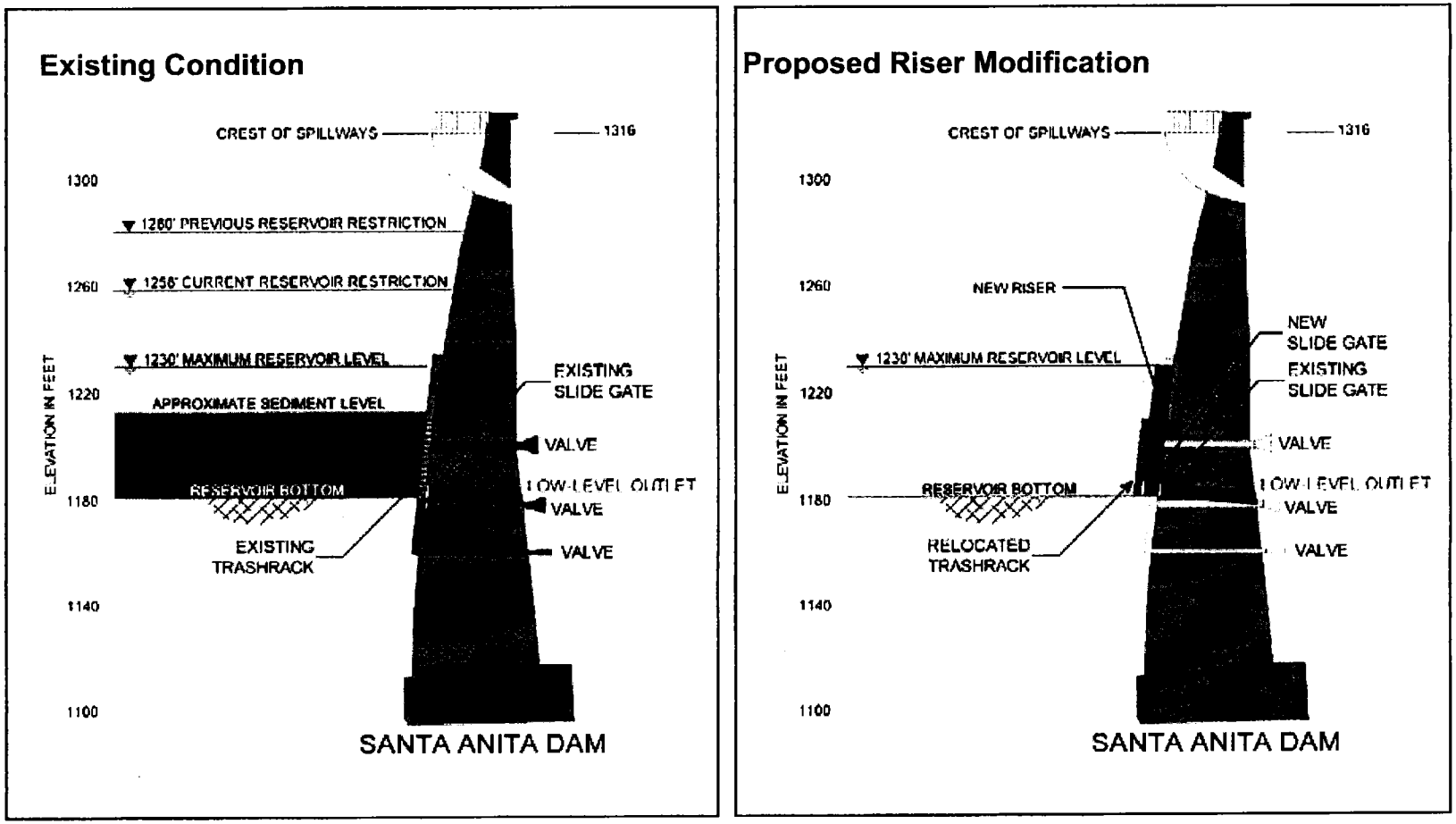


Figure 2-5

Not to Scale

Existing Conditions and Proposed Riser Modification

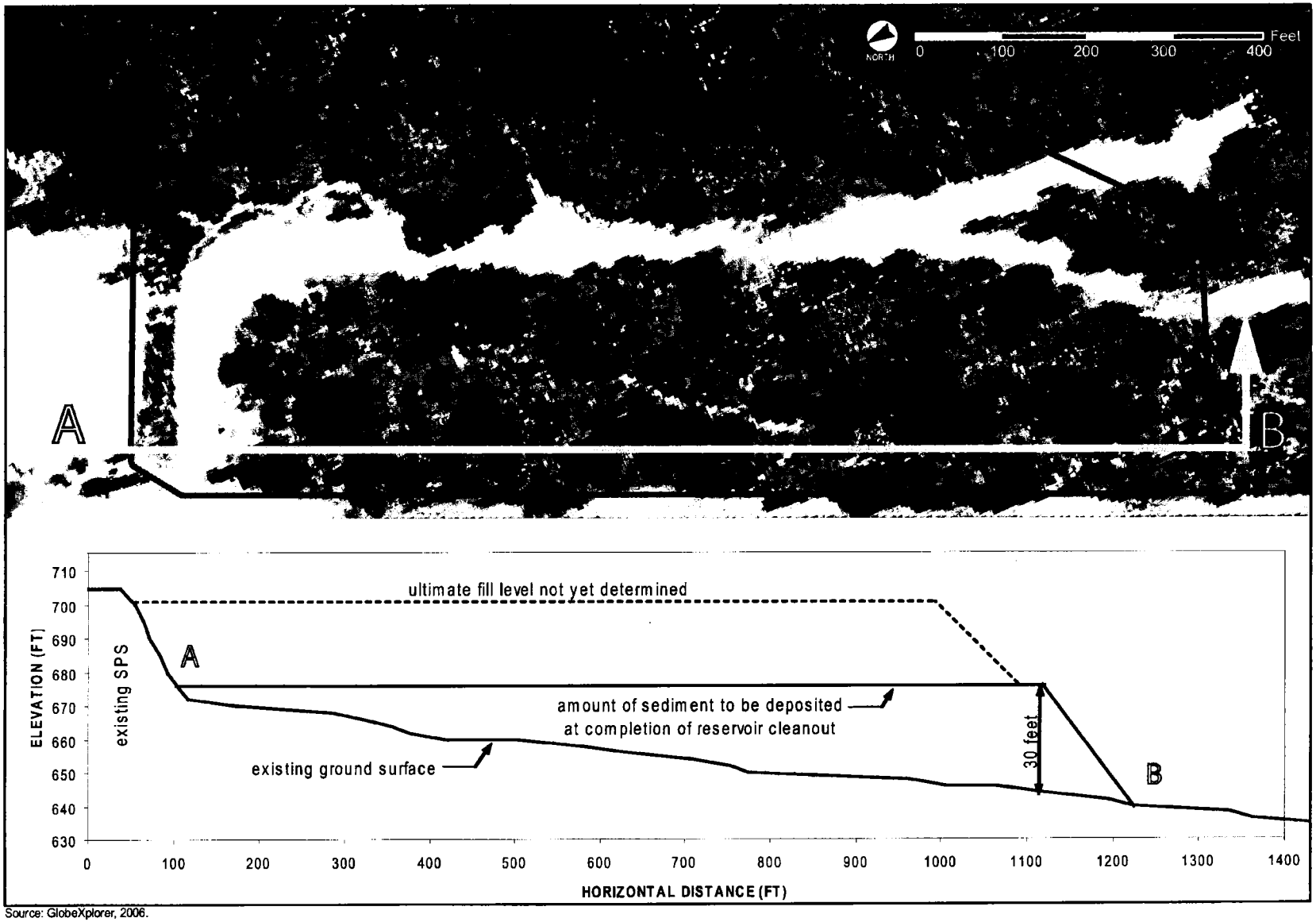


Source: GlobeXplorer, 2006.

NORTH 0 200 400 800 Feet

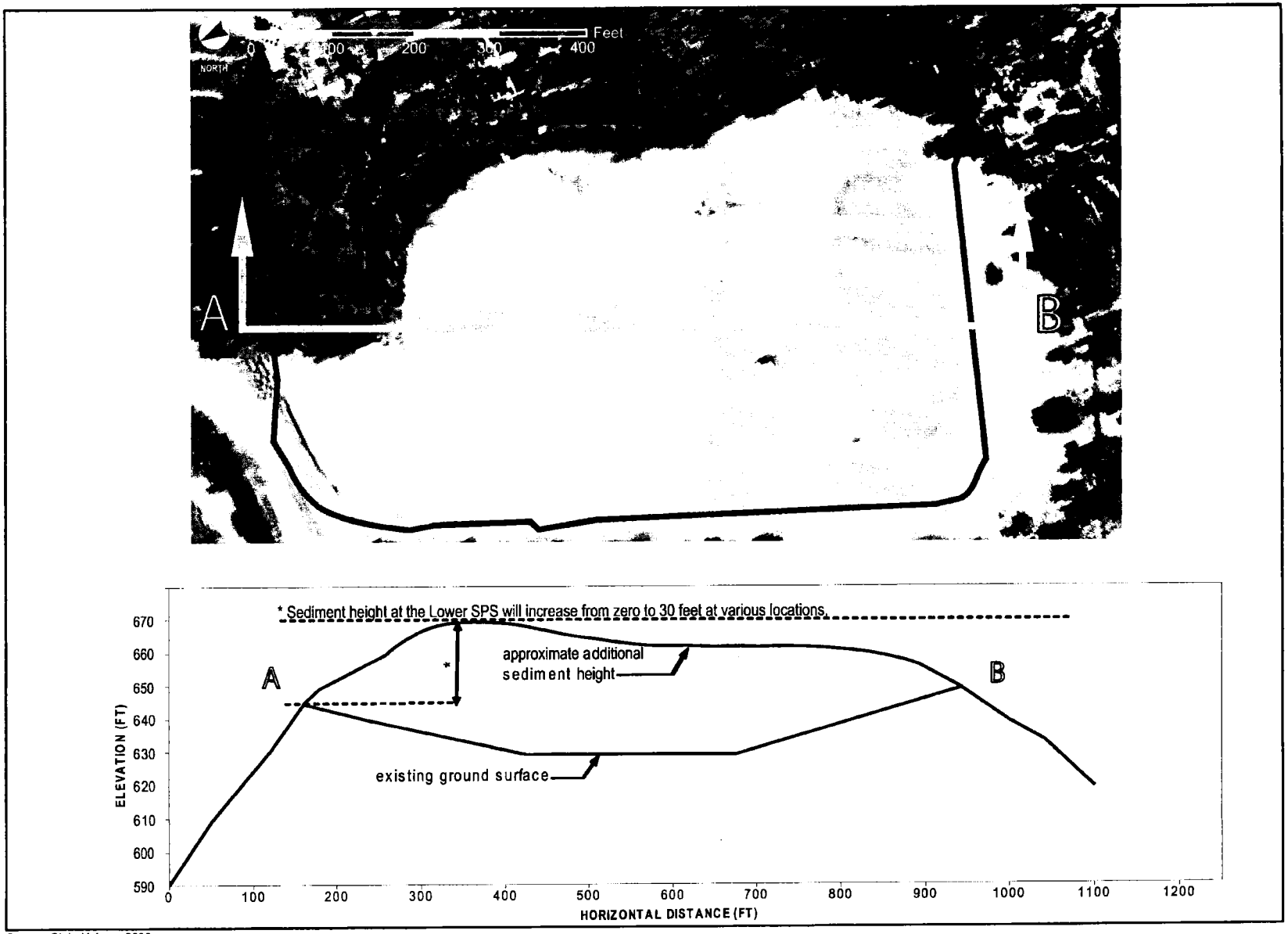
Figure 2-6
Excavation Area

Santa Anita Dam Riser Modification and Reservoir Sediment Removal Draft EIR
Los Angeles County Department of Public Works



Source: GlobeXplorer, 2006.

Figure 2-7
Middle SPS Cross Section



Source: GlobeXplorer, 2006

Figure 2-8
Lower SPS Cross Section

APPENDIX B

COMPACTION ANALYSIS AND CROSS-SECTION

SANTA ANITA DAM RISER MODIFICATION AND SEDIMENT REMOVAL PROJECT
COMPACTION ANALYSIS AT LOWER SEDIMENT PLACEMENT SITE

SANTA ANITA SEDIMENT PLACEMENT SITE AERIAL VIEW AND FILL CROSS SECTIONS

January 3, 2011

TO: Christopher Stone
Water Resources Division

Attention Keith Lilley

FROM: Greg Kelley Greg Kelley
Geotechnical and Materials Engineering Division

SANTA ANITA DAM RISER MODIFICATION AND SEDIMENT REMOVAL PROJECT COMPACTION ANALYSIS AT LOWER SEDIMENT PLACEMENT SITE PROJECT ID NO. WRD0000016

In response to your December 20, 2010, request, we conducted a geotechnical investigation for the subject project. Our findings are included in the attached report.

If you have any questions regarding this matter, please contact Erick Del Bosque or Brian Smith at Extension 4925. To provide feedback on our services, please access http://dpw.lacounty.gov/go/gmedsurvey to complete a Customer Service Survey.

EDB:ss
P:GMEPUB\SEC\SOILSINV\SANTA ANITA DAM SPS

Attach.

SANTA ANITA DAM RISER MODIFICATION AND SEDIMENT REMOVAL PROJECT

COMPACTION ANALYSIS AT LOWER SEDIMENT PLACEMENT SITE ARCADIA, CALIFORNIA

Prepared for

County of Los Angeles
Department of Public Works
Water Resources Division

Prepared by

County of Los Angeles
Department of Public Works
Geotechnical and Materials Engineering Division
Soils Investigation Unit

January 3, 2011

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Figure 2 - Boring and Nuclear Gage Tests Locations at Lower Sediment Placement Site

APPENDICES

Appendix A – Boring Log
Appendix B – Summary of Laboratory and Field Test Results
Appendix C – Relative Density Descriptors

INTRODUCTION

On December 20, 2010, Water Resources Division requested Geotechnical and Materials Engineering Division to determine the location of the groundwater table and perform a compaction analysis of subsurface soils at the Santa Anita Lower Sediment Placement Site. The project area is located in Arcadia, California (see Figure 1). This report presents our findings.

SUBSURFACE EXPLORATION

To evaluate the site and determine the onsite soil conditions, one exploratory boring was drilled to a maximum depth of 53 feet below ground surface with a hollow-stem rig using a 6.5-inch-outside-diameter auger. Selected soil samples were collected for classification and testing purposes. In addition, six nuclear gage tests were performed to determine the degree of relative compaction within a foot of the ground surface (see Figure 2 for boring and nuclear gage tests locations). The boring log is presented in Appendix A and a summary of laboratory and field test results is presented in Appendix B.

FINDINGS

1. The soil types encountered at the project site consist predominantly of silty sand in a loose condition, clayey sand in a medium dense condition, poorly graded sand with and without gravel in a medium dense condition, and poorly graded sand with clay and gravel in a medium dense condition.

2. The following table provides relative compaction and a relative density descriptor for the soils encountered in the boring during the subsurface exploration. The N_{60} blow counts include correction factor for the larger-diameter Modified California Sampler have been corrected from Standard Penetration Test to Modified California Sampler.

Soil Type	Depth (ft)	N_{60} Blow Counts	Relative Compaction (%)	Relative Density Descriptor
SM	0 - 8	11	78*	medium dense
SC	8 - 15	25	82	medium dense
SP	15 - 21	45 and 20	81 – 87	medium dense to dense
SC	21 - 25	20	81	medium dense
SP	25 - 32	36 and 32	85	dense
SP-SC	32 – 35.5	45	85	dense
SP	35.5 - 53	45	89 – 90	dense

* Relative compaction of sample may be low due to sample disturbance from gravel in sampler. For shallow relative compaction values use results of nuclear gage tests.

Relative compaction was obtained by comparing dry densities from ring samples at different depths to the laboratory maximum dry densities obtained from bulk samples at shallower depths. Relative density descriptor was obtained by N_{60} blow count ranges (see Appendix C).

3. Relative compaction of soils adjacent to the boring within a foot of the ground surface was found to be between 82 and 90 percent of the laboratory maximum density.

4. Bedrock was not encountered in the boring.

5. Groundwater was encountered at a depth of 50 feet below the ground surface.

LIMITATIONS

This report has been prepared for the exclusive use of Public Works for the specific site discussed herein and should not be considered transferable to other sites or projects. In the event that any modification to the configuration of the site is implemented, the findings contained in this report are no longer valid. This study was conducted according to generally accepted geotechnical engineering practice for projects of this magnitude.

The findings in this report are based on the field and laboratory investigations combined with an extrapolation of soil conditions beyond the boring location. Our findings are not meant to be a control of nature; therefore, no warranty is herein expressed or implied.

If you have questions regarding this matter, please contact Erick Del Bosque or Brian Smith at (626) 458-4925.

Prepared by:

FOR

Erick Del Bosque, P.E.
Senior Civil Engineering Assistant

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
BRIAN D. SMITH
No. 69541
Exp: 06/30/12
CIVIL
STATE OF CALIFORNIA

Brian Smith
Associate Civil Engineer

EDB:ss
P:GMEPUB\SEC\SOILSINV\SANTA ANITA DAM SPS

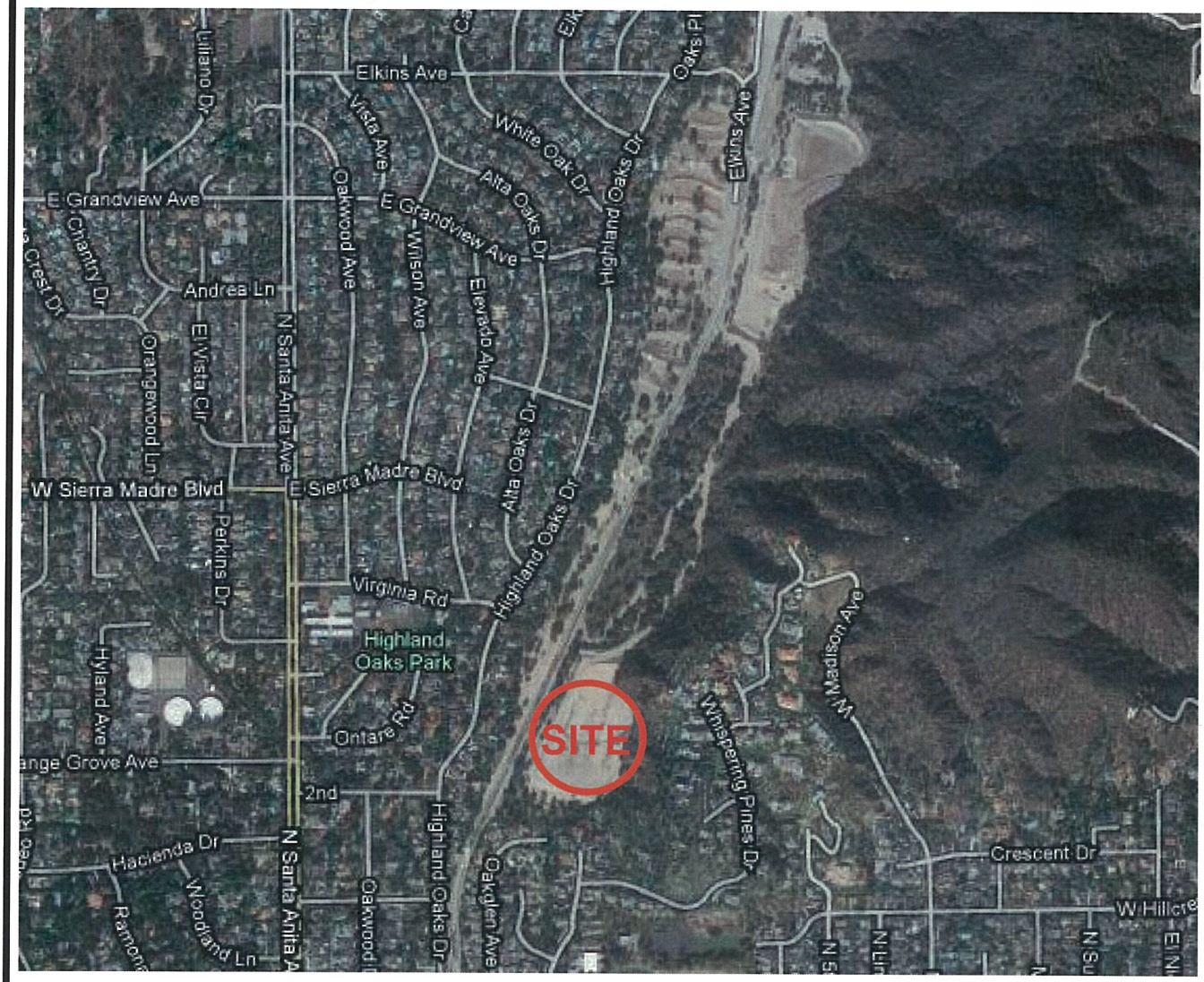
REFERENCES

1. Request for Services from Water Resources Division to Geotechnical and Materials Engineering Division, prepared by Michele Chimienti, December 30, 2010.

2. Annual Book of ASTM Standards (2005) Section 4 - Construction, Volume 04.08, Soil and Rock (I): D 420 – D 5611.

3. Soil Mechanics in Engineering Practice, Third Edition, by Karl Terzaghi et al., 1996.

FIGURES



NORTH

SCALE:
0 1000'

SOILS INVESTIGATIONS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Engineering Section

SANTA ANITA DAM RISER MODIFICATION AND SEDIMENT REMOVAL PROJECT

LOWER SEDIMENT PLACEMENT SITE
LOCATION MAP

DATE:	PREPARED BY:	
12-21-2010	Erick Del Bosque	**FIGURE 1**



NORTH

Boring location

Nuclear gage test location

SOILS INVESTIGATIONS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
Geotechnical and Materials Engineering Division

Geotechnical Engineering Section

SANTA ANITA DAM RISER MODIFICATION AND SEDIMENT REMOVAL PROJECT

BORING AND NUCLEAR GAGE TEST LOCATIONS

AT LOWER SEDIMENT PLACEMENT SITE

DATE:	PREPARED BY:	
12-27-2010	Erick Del Bosque	**FIGURE 2**

APPENDIX A
BORING LOG

SUMMARY LOG OF BORING B1

Geotechnical and Materials Engineering Division - Los Angeles County Department of Public Works

PROJECT Santa Anita Lower SPS | CLIENT Water Resources Division | PAGE 1 OF 3

PROJECT ID WRD0000016 | DRILLER LADPW | LOGGED BY Erick Del Bosque | TOTAL DEPTH 53 feet

TYPE/DIAMETER OF BORING 6.5" O.D. Hollow-Stem Auger | ELEVATION N/A

DATE(S) 12/27/10 | MONITORING WELL INSTALLED? No | HAMMER WEIGHT (LBS.) N/A | DROP HEIGHT (IN.) N/A

LOCATION Santa Anita Lower SPS 70' N of Inlet Tower

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Material descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

LABORATORY TESTING				DEPTH (feet)	FIELD DATA			USCS	Interpretations Attitudes Comments PID - PPM	Graphic Log	LITHOLOGIC DESCRIPTION
In-situ		Sieve % Passing			Drive/Bulk	Sample No.	Blow Count per ASTM 1586				
γ_d (pcf)	MC (%)	No. 4	No. 200								
	10.4			0		1B		SM	Max. Density Test		Silty Sand W/ Gravel, loose, moist, brown
				1							
				2							@2', No gravel.
				3							
				4							
103.7	14.8			5		2R	3 5 7				@5', Changes to very moist.
				6							
				7							
	12.1			8		3B		SC	Max. Density Test		Clayey Sand, medium dense, moist, grey, small amounts of quartz
				9							
110.5	12.4			10		4R	6 13 14				
				11							
				12							
				13							
				14							
116.8	6.9			15		5R	6 20 23	SP			Poorly Graded Sand, medium dense, moist, grey, small amounts of quartz
				16							
				17							
				18							
				19							
108.8	7.6			20		6R	7				@20', No quartz.
				21		7B	8 9				
				22				SC			Clayey Sand, medium dense, moist, grey
				23							
				24							
				25							

SUMMARY LOG OF BORING B1

Geotechnical and Materials Engineering Division - Los Angeles County Department of Public Works

PROJECT Santa Anita Lower SPS | CLIENT Water Resources Division | PAGE 2 OF 3

PROJECT ID WRD0000016 | DRILLER LADPW | LOGGED BY Erick Del Bosque | TOTAL DEPTH 53 feet

TYPE/DIAMETER OF BORING 6.5" O.D. Hollow-Stem Auger | ELEVATION N/A

DATE(S) 12/27/10 | MONITORING WELL INSTALLED? No | HAMMER WEIGHT (LBS.) N/A | DROP HEIGHT (IN.) N/A

LOCATION Santa Anita Lower SPS, 70' N of Inlet Tower

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Material descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

LABORATORY TESTING				DEPTH (feet)	FIELD DATA			USCS	Interpretations Attitudes Comments PID - PPM	Graphic Log	LITHOLOGIC DESCRIPTION
In-situ		Sieve % Passing			Drive / Bulk	Sample No.	Blow Count per ASTM 1586				
γ_d (pcf)	MC (%)	No. 4	No. 200								
114.2	9.9			25		8R	8 12 19	SP			Poorly Graded Sand, medium dense, moist, grey
				26							
				27							
				28							
				29							
95.8	19.4			30		9R	7 12 14				@ 30', Increase to very moist.
				31							
				32				SP-SC			Poorly Graded Sand W/ Clay, medium dense, moist, grey
				33							
				34							
120.8	3.3			35		11R	17				@35', Decrease to dry.
119.6	11.7			36			18 19	SP			Poorly Graded Sand W/ Gravel, medium dense, moist, light grey
				37							
				38							
				39							
121.9	3.5			40		13R	22 78-6"		Refusal after 12 inches.		@40', Changes to dry.
				41							
				42							
				43							
				44							
121.9	3.5			45		15R	25 65-6"		Refusal after 12 inches.		@45', Small amounts of quartz.
				46							
				47							
				48							
				49							
				50					▼		

SUMMARY LOG OF BORING B1

Geotechnical and Materials Engineering Division - Los Angeles County Department of Public Works

PROJECT Santa Anita Lower SPS | CLIENT Water Resources Division | PAGE 3 OF 3

PROJECT ID WRD0000016 | DRILLER LADPW | LOGGED BY Erick Del Bosque | TOTAL DEPTH 53 feet

TYPE/DIAMETER OF BORING 6.5" O.D. Hollow-Stem Auger | ELEVATION N/A

DATE(S) 12/27/10 | MONITORING WELL INSTALLED? No | HAMMER WEIGHT (LBS.) N/A | DROP HEIGHT (IN.) N/A

LOCATION Santa Anita Lower SPS, 70'N of Inlet Tower

Note: This log contains observations and interpretations that are valid only for the specific date and location of the boring. Subsurface conditions vary between borings and with time. Material descriptions are derived using visual classification methods and may vary from descriptions/classifications based on laboratory testing.

LABORATORY TESTING				DEPTH (feet)	FIELD DATA			USCS	Interpretations Attitudes Comments PID - PPM	Graphic Log	LITHOLOGIC DESCRIPTION
In-situ		Sieve % Passing			Drive / Bulk	Sample No.	Blow Count per ASTM 1586				
γ_d (pcf)	MC (%)	No. 4	No. 200								
				50			35-6"	SP	Refusal after 6 inches, no sample recovery.		@ 50', Sampler is wet.
				51							
				52							
				53							@ 50', Groundwater @ 53', Boring terminated because of tough drilling conditions.
				54							
				55							
				56							
				57							
				58							
				59							
				60							
				61							
				62							
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				75							

APPENDIX B
SUMMARY OF LABORATORY AND FIELD TEST RESULTS

SUMMARY OF LABORATORY TEST RESULTS

Geotechnical Laboratory

PROJECT NAME: SANTA ANITA LOWER SPS
TECHNICIAN: SF, HA, EH
PCA: HO300668

ENGINEER: ERICK DEL BOSQUE
DATE: 12/29/2010
PAGE: 1 **OF** 1

BORING/ SAMPLE	DEPTH	UNIFIED SOIL CLASSIFICATION					MOISTURE AND DRY DENSITY				DIRECT SHEAR				CHEMICAL				Permeability
		Class.	ATTERBERG LIMITS		#4	#200	$\gamma_{d_{field}}$	$m.c._{field}$	$\gamma_{d_{maximum}}$	$m.c._{optimum}$	$\phi_{ultimate}$	$c_{ultimate}$	$\phi_{maximum}$	$c_{maximum}$	pH	Min. Resistivity	Cl	SO_4	
B - S	(ft)		LL	PI	% Pass	% Pass	pcf	%	pcf	%	Degree	psf	Degree	psf		(K ohm-cm)	(ppm)	(ppm)	(ft/day)
B1-1B	0-1'							10.4	133.5	7.2									
B1-2R	5-6.5'						103.7	14.8											
B1-3B	8-10'							12.1	134.3	8.1									
B1-4R	10-11.5'						110.5	12.4											
B1-5R	15-16.5'						116.8	6.9											
B1-6R	20-21.5'						108.8	7.6											
B1-8R	25-26.5'						114.2	9.9											
B1-9R	30-31.5'						95.8	19.4											
B1-11R	35-36.5'	Top	(1) Ring				120.8	3.3											
		Bottom	(4) Ring				119.6	11.7											
B1-13R	40-41'						121.9	3.5											
B1-15R	45-46'						121.9	3.5											

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
MATERIALS LABORATORY

FIELD DENSITY TEST SUMMARY

JOB NAME: SANTA ANITA DAM LOWER SPS JOB NO.: H0300668 INSPECTOR: ERICK DEL BOSQUE THOMAS GUIDE: 567 - D2 & D3

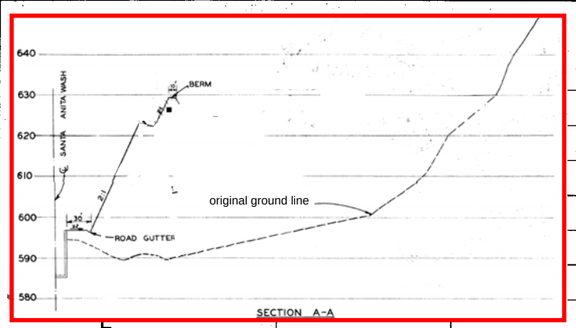
PROJECT TEST NO.	DATE TESTED	LOCATION	STATION	SOIL CLASS	LAB MAX DENSITY WET pcf	LAB MAX DENSITY DRY pcf	LAB MAX DENSITY OPT MOIST	FIELD DENSITY WET pcf	FIELD DENSITY DRY pcf	FIELD DENSITY MOIST %	REL COMP %	DEPTH ELEV ft	FIELD TEST NO.
1	12/27/10	SANTA ANITA, 71' N/E OF TOWER	—	Silty sand w/gravel	—	—	—	131.2	117.0	12.0	88	P=12" FG	101400GR
1B	"	SANTA ANITA, 71' N/E OF TOWER	—		DRY MAX	133.5	7.2	—	—	—	—	—	101401GR
2	"	SANTA ANITA, 27' N/E OF TOWER	—		—	—	—	132.2	116.5	13.5	87	P=12" FG	101402GR
3	"	SANTA ANITA, 65' S/O TOWER	—		—	—	—	126.2	110.5	14.2	83	P=12" FG	101403GR
4	"	SANTA ANITA, 102' S/W OF TOWER	—		—	—	—	127.7	117.3	8.8	88	P=12" FG	101404GR
5	"	SANTA ANITA, 88' W/O TOWER	—		—	—	—	120.2	109.5	9.7	82	P=12" FG	101405GR
6	"	SANTA ANITA, 115' N/W OF TOWER	—		—	—	—	128.2	120.8	6.1	90	P=12" FG	101406GR

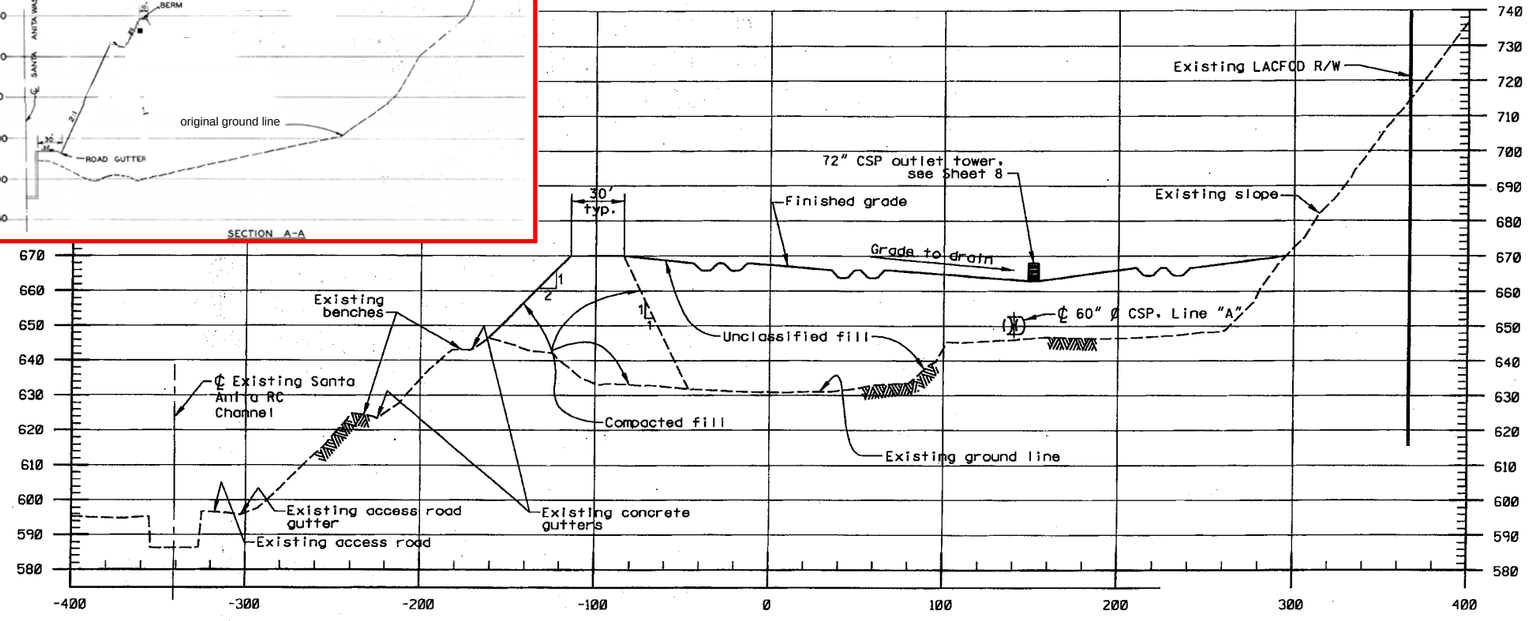
APPENDIX C
RELATIVE DENSITY DESCRIPTORS

Relative Density of Sands According to Results of Standard Penetration Test

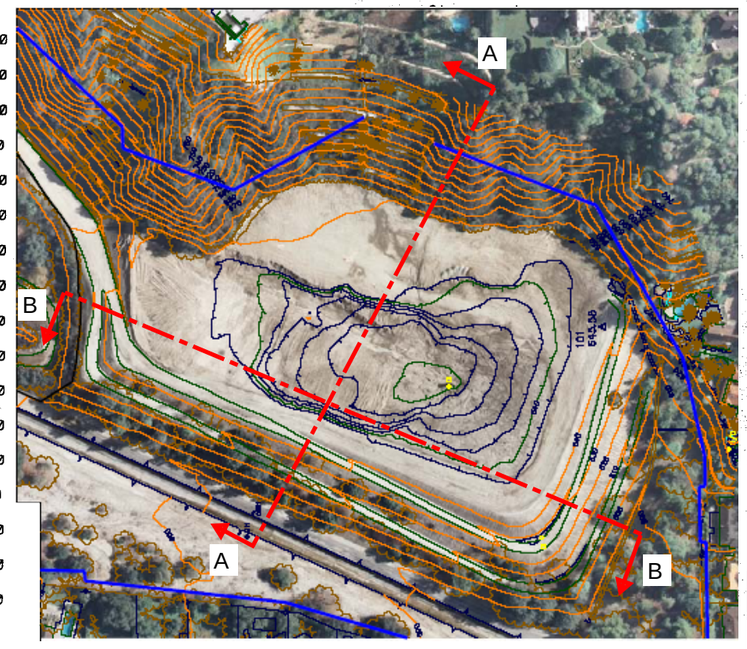
No. of Blows, N_{60}	Relative Density
0 – 4	Very Loose
4 – 10	Loose
10 – 30	Medium Dense
30 – 50	Dense
Over 50	Very Dense

Table 12.1 from Soil Mechanics in Engineering Practice, page 60

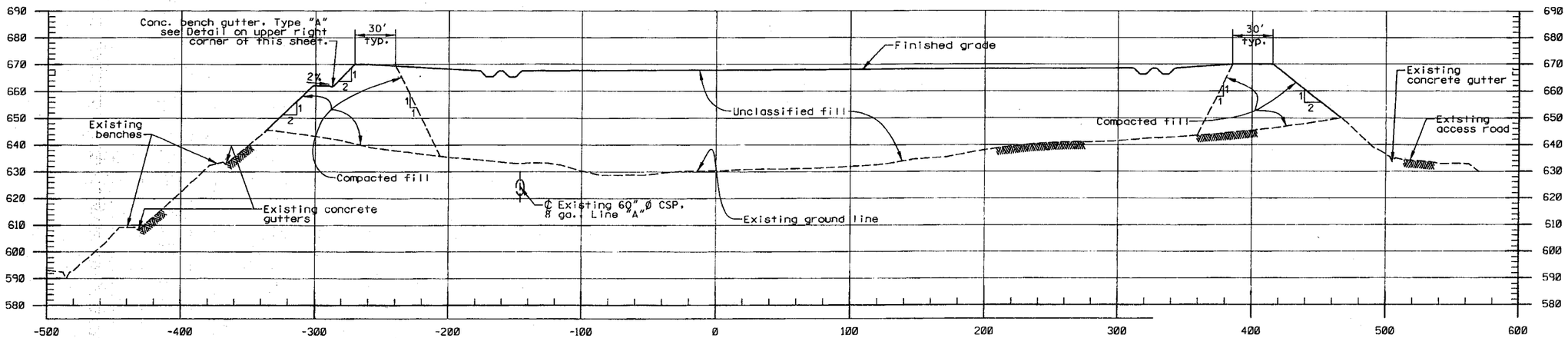




SECTION A-A



AERIAL VIEW



SECTION B-B

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

SANTA ANITA SEDIMENT PLACEMENT SITE

SEDIMENT PLACEMENT

AERIAL VIEW AND FILL CROSS SECTIONS

LOWER SEDIMENT PLACEMENT SITE

SHEET 8 OF 1

APPENDIX C

2009 AND 2010 FOCUSED PLANT SURVEYS

NOVEMBER 2009 RESULTS OF SPECIAL STATUS PLANT SURVEYS FOR THE SANTA ANITA RESERVOIR SEDIMENT PLACEMENT SITE

SEPTEMBER 2010 RESULTS OF SPECIAL STATUS PLANT SURVEYS FOR THE SANTA ANITA RESERVOIR SEDIMENT PLACEMENT SITE

BonTerra CONSULTING

COSTA MESA PASADENA

T: (626) 351-2000 F: (626) 351-2030
www.BonTerraConsulting.com

3452 E. Foothill Blvd., Suite 420
Pasadena, CA 91107

November 2, 2009

Ms. Valerie De La Cruz
Water Resources Division
Department of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, CA 91803

VIA EMAIL AND U.S. MAIL
vdelacruz@dpw.lacounty.gov

Subject: Results of Special Status Plant Surveys for the Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

Dear Ms. De La Cruz:

This letter report presents the findings of special status plant surveys conducted for the Santa Anita Reservoir Sediment Placement Site (SPS) located within the City of Arcadia, Los Angeles County, California (Exhibits 1 and 2). The site is located immediately east of Santa Anita wash (adjacent to the channel), and is bordered by residential development further to the west and by open space in all other directions. The 12-acre survey area is located on the Mount Wilson U.S. Geological Survey (USGS) 7.5-minute quadrangle map, with an elevation of about 660 feet above mean sea level (msl).

METHODS

Prior to the field surveys, a literature review was conducted to identify special status plants known from the general vicinity. This included a review of Mt. Wilson, Azusa, El Monte, and Baldwin Park USGS 7.5-minute quadrangles in the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CDFG 2009) and the California Native Plant Society's Inventory (CNPS 2009). Table 2 below lists all the special status plant species known to occur in the vicinity of the survey area. However, surveys were only conducted for those plant species shown in Table 2 below that have potential to occur within the survey area due to the presence of suitable habitat.

Reference populations were visited for the highest priority special status plant species with potential to occur within the survey area to confirm that they were blooming during the surveys (see Table 1 below).

TABLE 1
SPECIAL STATUS PLANT SPECIES REFERENCE POPULATIONS

Date Checked	Species	Vegetative Status	General Location
April 1 and 30, 2009	*Astragalus brauntonii* Braunton's milk-vetch	Flowering	West of San Fernando Valley
April 14, 2009	*Chorizanthe parryi* var. *fernandina* San Fernando Valley spineflower	Flowering	West of San Fernando Valley
April 17, 2009	*Imperata brevifolia* California satintail	Fruiting	Big Tujunga Canyon
April 25, 2009	*Dodecahema leptoceras* slender-horned spineflower	Flowering	Soledad Canyon
April 25, 2009	*Calochortus clavatus* var. *gracilis* slender mariposa lily	Flowering	Santa Clarita
May 19, 2009	*Calochortus plummerae* Plummer's mariposa lily	Flowering	Sylmar
July 9 and 13, 2009	*Centromadia parryi* ssp. *australis* southern tarplant	Flowering	Newport Beach and Carson
September 24, 2009	*Pseudognaphalium leucocephalum* white rabbit-tobacco	Flowering	San Juan Capistrano

According to the National Weather Service, Burbank (located about 18 miles south of the survey area) has received 10.6 inches of precipitation over the past year (since July 1, 2008), which is about 61 percent of the normal 17.5 inches based on 1971-2000 averages (National Weather Service 2009).

Special status plant surveys were conducted on May 4, 2009 by BonTerra Consulting Botanists Andrea Edwards and Jeff Crain; on May 21, 2009 by Ms. Edwards and BonTerra Consulting Biologist Kim Oldehoeft; on July 17, 2009 by Ms. Edwards and BonTerra Consulting Ecologist Dave Hughes; and on September 28, 2009 by Ms. Edwards. Meandering transects were used to search the survey area. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993) and Munz (1974). Taxonomy follows Hickman (1993) and current scientific data (e.g., scientific journals) for scientific and common names.

SITE DESCRIPTION

Vegetation types within the survey area include coastal sage scrub and California sycamore - coast live oak riparian forest (Exhibit 3). Disturbed areas include dirt roads and other mechanically disturbed areas that are generally devoid of vegetation. Soil types in and around the survey area generally consist of the Vista-Amargosa association, which occurs in steep mountainous areas, is well to excessively drained, and contains a coarse sandy loam surface layer and gravelly to coarse sandy loam subsoil above granitic rock (USDA 1969).

SURVEY RESULTS

No special status plant species were observed during the surveys. A list of all plants observed within the survey area during focused botanical surveys can be found in Attachment A.

TABLE 2
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR IN THE SURVEY AREA VICINITY

Species	Status			Habitat Suitability Within the Survey Area and Survey Results
	USFWS	CDFG	CNPS	
Astragalus brauntonii Braunton's milk-vetch	FE	—	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Calochortus clavatus var. *gracilis* slender mariposa lily	—	—	1B.2	Potentially suitable habitat present; not observed during focused surveys.
Calochortus plummerae Plummer's mariposa lily	—	—	1B.2	Potentially suitable habitat present; not observed during focused surveys.
Centromadia parryi ssp. *australis* southern tarplant	—	—	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Chorizanthe parryi var. *fernandina* San Fernando Valley spineflower	FC	SE	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Chorizanthe parryi var. *parryi* Parry's spineflower	—	—	1B.1	Limited marginally suitable habitat present; not observed during focused surveys.
Cladium californicum California saw-grass	—	—	2.2	No suitable habitat present; not observed during focused surveys.
Dodecahema leptoceras slender-horned spineflower	FE	SE	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Dudleya cymosa ssp. *crebrifolia* San Gabriel River dudleya	—	—	1B.2	No suitable habitat present; not observed during focused surveys.
Dudleya densiflora San Gabriel Mountains dudleya	—	—	1B.1	No suitable habitat present; not observed during focused surveys.
Dudleya multicaulis many-stemmed dudleya	—	—	1B.2	No suitable habitat present; not observed during focused surveys.
Galium grande San Gabriel bedstraw	—	—	1B.2	No suitable habitat present; not observed during focused surveys.
Hordeum intercedens vernal barley	—	—	3.2	Limited marginally suitable habitat present; not observed during focused surveys.
Horkelia cuneata ssp. *puberula* mesa horkelia	—	—	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Imperata brevifolia California satintail	—	—	2.1	Potentially suitable habitat present; not observed during focused surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	—	—	1B.1	No suitable habitat present; not observed during focused surveys.
Lepidium virginicum var. robinsonii Robinson's pepper-grass	—	—	1B.2	Limited marginally suitable habitat present; not observed during focused surveys.
Linanthus concinnus San Gabriel linanthus	—	—	1B.2	No suitable habitat present; not observed during focused surveys.
Linanthus orcuttii Orcutt's linanthus	—	—	1B.3	No suitable habitat present; not observed during focused surveys.
Muhlenbergia californica California muhly	—	—	4.3	Potentially suitable habitat present; not observed during focused surveys.
Phacelia stellaris Brand's star phacelia	FC	—	1B.1	Limited marginally suitable habitat present; not observed during focused surveys.
Pseudognaphalium leucocephalum white rabbit-tobacco	—	—	2.2	Potentially suitable habitat present; not observed during focused surveys.

TABLE 2 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR IN THE SURVEY AREA VICINITY

Species	Status			Habitat Suitability Within the Survey Area and Survey Results
	USFWS	CDFG	CNPS	
Ribes divaricatum var. *parishii* Parish's gooseberry	—	—	1A	Species presumed extinct; potentially suitable habitat present; not observed during focused surveys.
Scutellaria bolanderi ssp. austromontana southern mountains skullcap	—	—	1B.2	No suitable habitat present; not observed during focused surveys.
Symphyotrichum [*Aster*] *greatae* Greata's aster	—	—	1B.3	Potentially suitable habitat present; not observed during focused surveys.
Thelypteris puberula var. sonorensis Sonoran maiden fern	—	—	2.2	No suitable habitat present; not observed during focused surveys.

LEGEND:

Federal (USFWS)
FE Endangered
FC Candidate

State (CDFG)
SE Endangered

California Native Plant Society (CNPS) List Categories
List 1A Plants Presumed Extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2 Plants Rare, Threatened, or Endangered in California But More Common Elsewhere
List 3 Plants About Which We Need More Information - A Review List
List 4 Plants of Limited Distribution – A Watch List

California Native Plant Society (CNPS) Threat Rank Extensions
.1 Seriously threatened in California (high degree/immediacy of threat)
.2 Fairly threatened in California (moderate degree/immediacy of threat)
.3 Not very threatened in California (low degree/immediacy of threat or no current threats known)

If you have any comments or questions, please call Marc Blain at (626) 351-2000.

Sincerely,

BONTERRA CONSULTING

Marc T. Blain
Biological Resources Manager/Associate

Andrea D. Edwards
Botanist

Enclosures: Exhibit 1 – Regional Location
Exhibit 2 – Local Vicinity
Exhibit 3 – Vegetation Types
Attachment A – Plant Compendium

REFERENCES

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Regional Location

Exhibit 1

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

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BonTerra CONSULTING

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Local Vicinity

Exhibit 2

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

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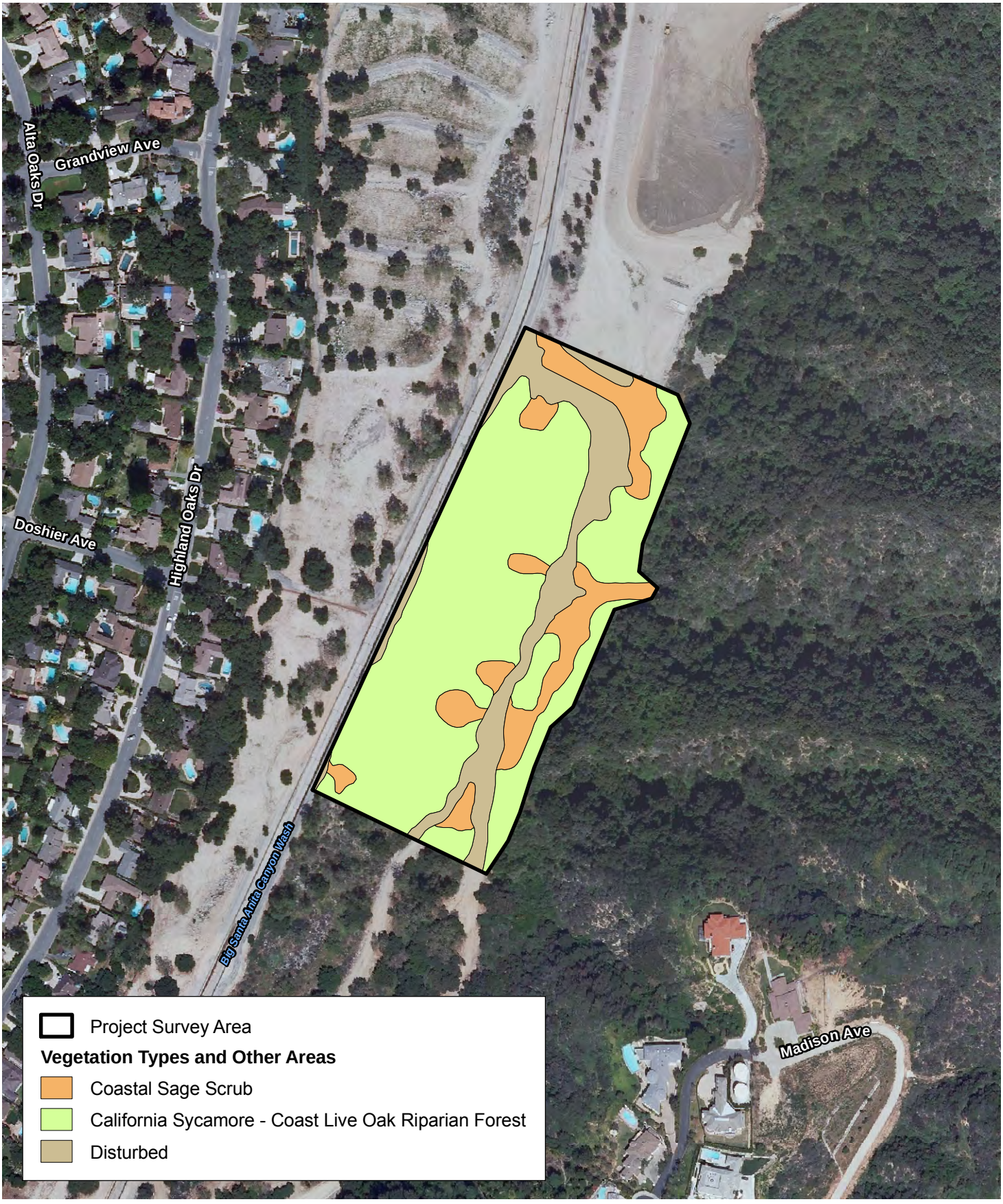
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Feet

BonTerra CONSULTING

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Vegetation Types

Exhibit 3

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

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Feet

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ATTACHMENT A
PLANT COMPENDIUM

Plant Species
FERNS AND FERN ALLIES
PTERIDACEAE - BRAKE FAMILY
Pellaea mucronata bird's foot fern
SELAGINELLACEAE - SPIKE-MOSS FAMILY
Selaginella bigelovii Bigelow's spike-moss / bushy spike-moss
GYMNOSPERMS
PINACEAE - PINE FAMILY
Pinus sp.* ornamental pine
FLOWERING PLANTS
CLASS DICOTYLEDONES (DICOTS)
ANACARDIACEAE - SUMAC FAMILY
Malosma laurina laurel sumac
Rhus ovata sugar bush
Rhus trilobata skunkbush
Toxicodendron diversilobum western poison oak
APIACEAE (UMBELLIFERAE) - CARROT FAMILY
*Anthriscus caucalis** bur-chervil
Daucus pusillus rattlesnake weed
ASCLEPIADACEAE - MILKWEED FAMILY
Asclepias fascicularis narrow-leaved milkweed
ASTERACEAE (COMPOSITAE) - SUNFLOWER FAMILY
Ambrosia acanthicarpa annual bursage
Artemisia californica California sagebrush
Artemisia douglasiana mugwort
Baccharis salicifolia mule fat
*Carduus pycnocephalus** Italian thistle
*Centaurea melitensis** tocalote
Chaenactis glabriuscula yellow pincushion
Conyza canadensis common horseweed

PLANT COMPENDIUM
(Continued)

Plant Species
Encelia farinosa brittlebush
Gnaphalium bicolor bicolored everlasting / Bioletti's cudweed
Gnaphalium californicum California everlasting
Gnaphalium canescens everlasting
*Gnaphalium luteo-album** weedy cudweed
Heterotheca grandiflora telegraph weed
*Hypochaeris glabra** smooth cat's ear
*Lactuca serriola** prickly lettuce
Lepidospartum squamatum scale-broom
Malacothrix saxatilis cliff malacothrix
*Senecio mikanioides** German ivy
*Senecio vulgaris** common groundsel
*Silybum marianum** milk thistle
*Sonchus oleraceus** common sow-thistle
BORAGINACEAE - BORAGE FAMILY
Cryptantha or *Plagiobothrys* sp. popcornflower
BRASSICACEAE (CRUCIFERAE) - MUSTARD FAMILY
*Hirschfeldia incana** shortpod mustard
*Raphanus sativus** wild radish
CACTACEAE - CACTUS FAMILY
Opuntia basilaris var. *basilaris* beavertail
Opuntia littoralis x vaseyi Mesa prickly pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY
Lonicera subspicata var. *denudata* southern honeysuckle
Sambucus mexicana blue elderberry
CARYOPHYLLACEAE - PINK FAMILY
*Silene gallica** windmill pink / common catchfly

PLANT COMPENDIUM
(Continued)

Plant Species
*Stellaria media**   common chickweed
CHENOPODIACEAE - GOOSEFOOT FAMILY
*Chenopodium album**   lamb's quarters
CONVOLVULACEAE - MORNING-GLORY FAMILY
Calystegia macrostegia   morning-glory
CUCURBITACEAE - GOURD FAMILY
Marah macrocarpus   wild cucumber / man-root
CUSCUTACEAE - DODDER FAMILY
Cuscuta californica   California dodder
EUPHORBIACEAE - SPURGE FAMILY
Chamaesyce sp.   spurge
Eremocarpus setigerus   doveweed / turkey mullein
*Euphorbia peplus**   petty spurge
*Ricinus communis**   castor bean
FABACEAE (LEGUMINOSAE) - LEGUME FAMILY
Lotus salsuginosus ssp. *salsuginosus*   alkali lotus
Lotus scoparius   deerweed / California broom
Lupinus truncatus   truncate lupine / collar lupine
*Melilotus indica**   sourclover
*Trifolium hirtum**   rose clover
FAGACEAE - OAK / BEECH FAMILY
Quercus agrifolia   coast live oak
GERANIACEAE - GERANIUM FAMILY
*Erodium cicutarium**   red-stemmed filaree
*Geranium molle**   dovefoot geranium
GROSSULARIACEAE - GOOSEBERRY FAMILY
Ribes aureum   golden currant
HYDROPHYLLACEAE - WATERLEAF FAMILY
Eucrypta chrysanthemifolia   common eucrypta

PLANT COMPENDIUM
(Continued)

Plant Species
Phacelia cicutaria caterpillar phacelia
Phacelia distans common phacelia
LAMIACEAE (LABIATAE) - MINT FAMILY
Salvia apiana white sage
Salvia columbariae chia
Salvia mellifera black sage
ONAGRACEAE - EVENING PRIMROSE FAMILY
Camissonia bistorta California sun cup
Camissonia californica mustard-like evening primrose
Camissonia intermedia intermediate primrose
Clarkia purpurea ssp. *quadrivulnera* four-spot clarkia
Epilobium ciliatum willow-herb
PLATANACEAE - SYCAMORE FAMILY
Platanus racemosa western sycamore
POLYGONACEAE - BUCKWHEAT FAMILY
Eriogonum fasciculatum California buckwheat
PORTULACACEAE - PURSLANE FAMILY
Claytonia sp. miner's-lettuce
PRIMULACEAE - PRIMROSE FAMILY
*Anagallis arvensis** scarlet pimpernel
RHAMNACEAE - BUCKTHORN FAMILY
Rhamnus californica California coffeeberry
ROSACEAE - ROSE FAMILY
Heteromeles arbutifolia toyon / christmas berry
Rubus ursinus California blackberry
RUBIACEAE - MADDER FAMILY
Galium aparine goosegrass
SALICACEAE - WILLOW FAMILY
Salix laevigata red willow

PLANT COMPENDIUM
(Continued)

Plant Species
SCROPHULARIACEAE - FIGWORT FAMILY
Keckiella cordifolia heart-leaved bush-penstemon
Mimulus aurantiacus bush monkeyflower
Penstemon spectabilis royal penstemon
SOLANACEAE - NIGHTSHADE FAMILY
Solanum douglasii Douglas' nightshade
CLASS MONOCOTYLEDONES (MONOCOTS)
LILIACEAE - LILY FAMILY
Yucca whipplei Our Lord's candle
POACEAE [GRAMINEAE] - GRASS FAMILY
*Avena barbata** slender wild oat
*Bromus diandrus** ripgut grass
*Bromus hordeaceus** soft chess
Bromus madritensis ssp. *rubens** foxtail chess
Leymus condensatus giant wild rye
Melica imperfecta small-flowered melic grass
*Pennisetum setaceum** African fountain grass
*Piptatherum miliaceum** smilo grass / millett ricegrass
Vulpia microstachys fescue
*Vulpia myuros** foxtail fescue
* *indicates non-native species*

BonTerra CONSULTING
COSTA MESA PASADENA
T: (626) 351-2000 F: (626) 351-2030 | 3452 E. Foothill Blvd., Suite 420
www.BonTerraConsulting.com | Pasadena, CA 91107

September 10, 2010 (Revised October 27, 2010)

Ms. Valerie De La Cruz
Water Resources Division
Department of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, California 91803

VIA EMAIL AND U.S. MAIL
vdelacruz dpw.lacounty.gov

Subject: Results of Special Status Plant Surveys for the Santa Anita Reservoir Middle Sediment Placement Site, Los Angeles County, California

Dear Ms. De La Cruz:

This Letter Report presents the findings of special status plant surveys conducted for the Santa Anita Reservoir Middle Sediment Placement Site (SPS) located within the City of Arcadia in Los Angeles County, California (Exhibits 1 and 2). The site is located immediately east of Santa Anita wash (adjacent to the channel), and is bordered by residential development farther to the west and by open space in all other directions. The 12-acre project survey area is located on the U.S. Geological Survey (USGS) Mount Wilson 7.5-minute quadrangle map, with an elevation of about 660 feet above mean sea level.

Land use history for the project survey area consists of open space and flood maintenance. The proposed project involves the removal of sediment from the Santa Anita Reservoir and the construction of a riser on the dam s lowest outlet. The dam and reservoir are located on U.S. Forest Service land (Angeles National Forest). The sediment removal and riser construction will be performed to ensure compliance with the seismic safety requirements of the California Department of Water Resources, Division of Safety of Dams. The sediment removed from the reservoir will be transported via conveyor belt downstream to the Middle (survey area) and Lower SPS locations. The Upper and Lower SPS locations are already disturbed, but the Middle SPS supports native vegetation, and therefore special status plant surveys were conducted for this area in 2009 and 2010. In 2009, no special status species were observed in the Middle SPS survey area (BonTerra Consulting 2009).

METHODS

Botanical surveys were floristic in nature and consistent with the current protocols created by the California Department of Fish and Game (CDFG) (CDFG 2009). Prior to the field survey, a literature review was conducted to identify special status plants known from the general vicinity. This included a review of the USGS Mt. Wilson, Azusa, El Monte, and Baldwin Park 7.5-minute quadrangles in the CDFG s California Natural Diversity Database (CDFG 2010) and the California Native Plant Society s (CNPS s) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2010).

According to the National Weather Service, downtown Los Angeles (located about 15 miles from the survey area) has received 16.3 inches of precipitation for Water Year 2010 (October 1, 2009 through Spring 2010), which is about 114 percent of the normal average (National Weather Service 2010). Where available, reference populations were monitored for annual and difficult-to-detect target species to ensure that the scheduled surveys were comprehensive, as shown in Table 1.

TABLE 1
SPECIAL STATUS PLANT SPECIES REFERENCE POPULATIONS

Date Checked	Species	Status	General Location
April 14, 2010	*Astragalus brauntonii* Braunton's milk-vetch	Flowering	Monrovia
April 15, 2010	*Chorizanthe parryi* var. *parryi* Parry's spineflower	Flowering	Fontana
April 22, 2010	*Chorizanthe parryi* var. *fernandina* San Fernando Valley spineflower	Flowering	West of San Fernando Valley
April 22, 2010	*Imperata brevifolia* California satintail	Fruiting	Big Tujunga Canyon
April 22, 2010	*Dodecahema leptoceras* slender-horned spineflower	Flowering	Soledad Canyon
May 2, 2010	*Calochortus clavatus* var. *gracilis* slender mariposa lily	Flowering	Bouquet Canyon
June 7, 2010	*Calochortus weedii* var. *intermedius* intermediate mariposa lily	Flowering	Corona
June 8, 2010	*Calochortus plummerae* Plummer's mariposa lily	Flowering	Monrovia
July 8, 2010	*Centromadia parryi* ssp. *australis* southern tarplant	Flowering	Newport Beach
August 17, 2010	*Pseudognaphalium leucocephalum* white rabbit-tobacco	Flowering	San Juan Capistrano
August 18, 2010	*Symphyotrichum* [*Aster*] *greatae* Greata's aster	Flowering	Angeles National Forest near Hidden Springs–Singing Springs

BonTerra Consulting Biologist Andrea Edwards and Restoration Ecologist David Hughes conducted special status plant surveys on April 15 and May 6, 2010, and Ms. Edwards conducted special status plant surveys on June 14, July 9, and August 24, 2010. Survey efforts included 15 total person-hours. The project survey area was systematically surveyed during the site visits. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993) and Munz (1974). Taxonomy follows Hickman (1993) and/or current scientific data (e.g., scientific journals) for scientific and common names.

SITE DESCRIPTION

Vegetation types within the project survey area include coastal sage scrub and California sycamore - coast live oak woodland (Exhibit 3). Disturbed areas include dirt roads and other mechanically disturbed areas that are generally devoid of vegetation. Soil types in and around the project survey area generally consist of the Vista-Amargosa association, which occurs in steep mountainous areas, is well to excessively drained, and contains a coarse sandy loam surface layer and gravelly to coarse sandy loam subsoil above granitic rock (USDA 1969). Exhibit 3 includes a map of vegetation types.

SURVEY RESULTS

No special status plant species were observed during the surveys. A list of all plants observed within the project survey area during focused surveys can be found in Attachment A. Table 2 lists the special status plant species known to occur in the vicinity of the project survey area, habitat suitability within the survey area, and survey results. Focused surveys were conducted for those plant species shown in Table 2 (below) that have potential to occur within the project survey area.

TABLE 2
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE SURVEY AREA VICINITY

Species	Status			Habitat Suitability Within the Survey Area and Survey Results
	USFWS	CDFG	CNPS	
Astragalus brauntonii Braunton's milk-vetch	FE	□	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Berberis nevinii Nevin's barberry	FE	SE	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Calochortus clavatus var. *gracilis* slender mariposa lily	□	□	1B.2	Potentially suitable habitat present; not observed during focused surveys.
Calochortus plummerae Plummer's mariposa lily	□	□	1B.2	Potentially suitable habitat present; not observed during focused surveys.
Calochortus weedii var. *intermedius* intermediate mariposa lily	□	□	1B.2	Potentially suitable habitat present; not observed during focused surveys.
Centromadia parryi ssp. *australis* southern tarplant	□	□	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Chorizanthe parryi var. *fernandina* San Fernando Valley spineflower	FC	SE	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Chorizanthe parryi var. *parryi* Parry's spineflower	□	□	1B.1	Marginally suitable habitat present; not observed during focused surveys.
Cladium californicum California saw-grass	□	□	2.2	No suitable habitat present; not observed during focused surveys.
Dodecahema leptoceras slender-horned spineflower	FE	SE	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Dudleya cymosa ssp. *crebrifolia* San Gabriel River dudleya	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Dudleya densiflora San Gabriel Mountains dudleya	□	□	1B.1	No suitable habitat present; not observed during focused surveys.
Dudleya multicaulis many-stemmed dudleya	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Galium grande San Gabriel bedstraw	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Hordeum intercedens vernal barley	□	□	3.2	Marginally suitable habitat present; not observed during focused surveys.
Horkelia cuneata ssp. *puberula* mesa horkelia	□	□	1B.1	Potentially suitable habitat present; not observed during focused surveys.
Imperata brevifolia California satintail	□	□	2.1	Potentially suitable habitat present; not observed during focused surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	□	□	1B.1	No suitable habitat present; not observed during focused surveys.

TABLE 2 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE SURVEY AREA VICINITY

Species	Status			Habitat Suitability Within the Survey Area and Survey Results
	USFWS	CDFG	CNPS	
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	□	□	1B.2	Marginally suitable habitat present; not observed during focused surveys.
Linanthus concinnus San Gabriel linanthus	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Linanthus orcuttii Orcutt's linanthus	□	□	1B.3	No suitable habitat present; not observed during focused surveys.
Muhlenbergia californica California muhly	□	□	4.3	Potentially suitable habitat present; not observed during focused surveys.
Phacelia stellaris Brand's star phacelia	FC	□	1B.1	Marginally suitable habitat present; not observed during focused surveys.
Pseudognaphalium leucocephalum white rabbit-tobacco	□	□	2.2	Potentially suitable habitat present; not observed during focused surveys.
Ribes divaricatum var. *parishii* Parish's gooseberry	□	□	1A	Species presumed extinct; potentially suitable habitat present; not observed during focused surveys.
Scutellaria bolanderi ssp. *austromontana* southern mountains skullcap	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Symphyotrichum defoliatum San Bernardino aster	□	□	1B.2	No suitable habitat present; not observed during focused surveys.
Symphyotrichum [*Aster*] *greatae* Greata's aster	□	□	1B.3	Potentially suitable habitat present; not observed during focused surveys.
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	□	□	2.2	No suitable habitat present; not observed during focused surveys.

LEGEND:

Federal (USFWS)
FE Endangered
FC Candidate

State (CDFG)
SE Endangered

California Native Plant Society (CNPS) List Categories
List 1A Plants Presumed Extinct in California
List 1B Plants Rare, Threatened, or Endangered in California and Elsewhere
List 2 Plants Rare, Threatened, or Endangered in California But More Common Elsewhere
List 3 Plants About Which We Need More Information - A Review List
List 4 Plants of Limited Distribution – A Watch List

California Native Plant Society (CNPS) Threat Rank Extensions
.1 Seriously threatened in California (high degree/immediacy of threat)
.2 Fairly threatened in California (moderate degree/immediacy of threat)
.3 Not very threatened in California (low degree/immediacy of threat or no current threats known)

Based on the negative survey findings, no potential threats or impacts to special status plant species are expected, and no avoidance or mitigation measures are recommended. Although reference populations and regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results as species could possibly be present on a site but may not be detectable at the time of survey.

If you have any comments or questions, please call Andrea Edwards at (626) 351-2000.

Sincerely,

BONTERRA CONSULTING

for Amber S. Oneal
Associate, Senior Project Manager

Andrea D. Edwards
Biologist

Enclosures: Exhibit 1 – Regional Location
Exhibit 2 – Local Vicinity
Exhibit 3 – Vegetation Types
Attachment A – Plant Species Observed in the Santa Anita Reservoir Middle Sediment Placement Site Survey Area (2009 – 2010)

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Regional Location

Exhibit 1

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

N
W E
S

10 5 0 10
Miles

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Local Vicinity

Exhibit 2

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

N
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S

2,000 1,000 0 2,000

Feet

BonTerra CONSULTING

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Vegetation Types

Exhibit 3

Santa Anita Reservoir Sediment Placement Site, Los Angeles County, California

N W E S

300 150 0 300

Feet

BonTerra CONSULTING

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ATTACHMENT A

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

PLANT COMPENDIUM

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
FERNS AND FERN ALLIES
PTERIDACEAE - BRAKE FAMILY
Pellaea andromedifolia coffee fern
*Pellaea mucronata*** bird's foot fern
SELAGINELLACEAE - SPIKE-MOSS FAMILY
Selaginella bigelovii Bigelow's spike-moss – bushy spike-moss
GYMNOSPERMS
PINACEAE - PINE FAMILY
Pinus sp.* ornamental pine
FLOWERING PLANTS
CLASS DICOTYLEDONES (DICOTS)
ANACARDIACEAE - SUMAC FAMILY
Malosma laurina laurel sumac
Rhus ovata sugar bush
Rhus trilobata skunkbush
Toxicodendron diversilobum western poison oak
APIACEAE (UMBELLIFERAE) - CARROT FAMILY
*Anthriscus caucalis** bur-chervil
*Conium maculatum** poison hemlock
Daucus pusillus rattlesnake weed
ASCLEPIADACEAE - MILKWEED FAMILY
*Asclepias fascicularis*** narrow-leaved milkweed
ASTERACEAE (COMPOSITAE) - SUNFLOWER FAMILY
*Ambrosia acanthicarpa*** annual bursage
Artemisia californica California sagebrush
Artemisia douglasiana mugwort
Baccharis salicifolia mule fat
*Carduus pycnocephalus** Italian thistle
*Centaurea melitensis** tocalote

PLANT COMPENDIUM (Continued)

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
Chaenactis glabriuscula yellow pincushion
Conyza canadensis common horseweed
Encelia farinosa brittlebush
Gnaphalium bicolor bicolored everlasting – Bioletti's cudweed
Gnaphalium californicum California everlasting
Gnaphalium canescens everlasting
*Gnaphalium luteo-album** weedy cudweed
Heterotheca grandiflora telegraph weed
*Hypochaeris glabra** smooth cat's ear
*Lactuca serriola** prickly lettuce
Lepidospartum squamatum scale-broom
Malacothrix saxatilis cliff malacothrix
*Senecio mikanioides** German ivy
*Senecio vulgaris** common groundsel
*Silybum marianum** milk thistle
*Sonchus oleraceus** common sow-thistle
BORAGINACEAE - BORAGE FAMILY
Cryptantha or *Plagiobothrys* sp. popcornflower
BRASSICACEAE (CRUCIFERAE) - MUSTARD FAMILY
*Hirschfeldia incana** shortpod mustard
Lepidium virginicum var. *virginicum** peppergrass
*Raphanus sativus** wild radish
*Sisymbrium orientale** hare's ear cabbage

PLANT COMPENDIUM (Continued)

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
CACTACEAE - CACTUS FAMILY
Opuntia basilaris var. *basilaris* beavertail
Opuntia littoralis x vaseyi Mesa prickly pear
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY
Lonicera subspicata var. *denudata* southern honeysuckle
Sambucus mexicana blue elderberry
CARYOPHYLLACEAE - PINK FAMILY
*Cerastium glomeratum** mouse ear chickweed
*Silene gallica** ** windmill pink – common catchfly
*Stellaria media** common chickweed
CHENOPODIACEAE - GOOSEFOOT FAMILY
*Chenopodium album** lamb's quarters
CONVOLVULACEAE - MORNING-GLORY FAMILY
Calystegia macrostegia morning-glory
CRASSULACEAE - STONECROP FAMILY
Dudleya lanceolata lance-leaved dudleya – coastal live-forever
CUCURBITACEAE - GOURD FAMILY
Marah macrocarpus wild cucumber – man-root
CUSCUTACEAE - DODDER FAMILY
Cuscuta californica California dodder
EUPHORBIACEAE - SPURGE FAMILY
Chamaesyce sp.** spurge
*Eremocarpus setigerus*** doveweed – turkey mullein
*Euphorbia peplus** petty spurge
*Ricinus communis** castor bean
FABACEAE (LEGUMINOSAE) - LEGUME FAMILY
Lathyrus vestitus ssp. *vestitus* chaparral sweet pea
Lotus salsuginosus ssp. *salsuginosus* alkali lotus

PLANT COMPENDIUM (Continued)

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
Lotus scoparius deerweed – California broom
Lupinus sparsiflorus Coulter's lupine
Lupinus truncatus truncate lupine – collar lupine
*Medicago polymorpha** California burclover
*Melilotus indica** sourclover
*Trifolium hirtum** rose clover
FAGACEAE - OAK – BEECH FAMILY
Quercus agrifolia coast live oak
Quercus berberidifolia scrub oak – California scrub oak
GERANIACEAE - GERANIUM FAMILY
*Erodium cicutarium** red-stemmed filaree
*Geranium molle** dovefoot geranium
GROSSULARIACEAE - GOOSEBERRY FAMILY
Ribes aureum golden currant
HYDROPHYLLACEAE - WATERLEAF FAMILY
Eucrypta chrysanthemifolia common eucrypta
Phacelia cicutaria caterpillar phacelia
Phacelia distans common phacelia
LAMIACEAE (LABIATAE) - MINT FAMILY
Salvia apiana white sage
Salvia columbariae chia
Salvia mellifera black sage
ONAGRACEAE - EVENING PRIMROSE FAMILY
Camissonia bistorta California sun cup
Camissonia californica mustard-like evening primrose
Camissonia intermedia intermediate primrose

PLANT COMPENDIUM (Continued)

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
Clarkia purpurea ssp. *quadrivulnera* four-spot clarkia
Epilobium ciliatum willow-herb
PLATANACEAE - SYCAMORE FAMILY
Platanus racemosa western sycamore
POLEMONIACEAE - PHLOX FAMILY
Allophyllum divaricatum pink false-gilia
POLYGONACEAE - BUCKWHEAT FAMILY
Eriogonum fasciculatum California buckwheat
Pterostegia drymarioides pterostegia – notch leaf
PORTULACACEAE - PURSLANE FAMILY
Claytonia sp. miner's-lettuce
PRIMULACEAE - PRIMROSE FAMILY
*Anagallis arvensis** ** scarlet pimpernel
RHAMNACEAE - BUCKTHORN FAMILY
Rhamnus californica California coffeeberry
Rhamnus crocea spiny redberry
ROSACEAE - ROSE FAMILY
Cercocarpus betuloides mountain mahogany
Heteromeles arbutifolia toyon – christmas berry
*Rubus ursinus*** California blackberry
RUBIACEAE - MADDER FAMILY
Galium aparine goosegrass
SALICACEAE - WILLOW FAMILY
Salix laevigata red willow
SCROPHULARIACEAE - FIGWORT FAMILY
Keckiella cordifolia heart-leaved bush-penstemon
Mimulus aurantiacus bush monkeyflower
Penstemon spectabilis royal penstemon

PLANT COMPENDIUM (Continued)

PLANT SPECIES OBSERVED IN THE SANTA ANITA RESERVOIR MIDDLE SEDIMENT PLACEMENT SITE SURVEY AREA (2009 – 2010)

Species
SOLANACEAE - NIGHTSHADE FAMILY
*Nicotiana glauca**   tree tobacco
Solanum douglasii   Douglas' nightshade
URTICACEAE - NETTLE FAMILY
*Urtica urens**   dwarf nettle
CLASS MONOCOTYLEDONES (MONOCOTS)
ARECACEAE (PALMAE) - PALM FAMILY
*Washingtonia robusta**   Mexican fan palm
LILIACEAE - LILY FAMILY
Chlorogalum parviflorum   miniature soap plant
Yucca whipplei   Our Lord's candle
POACEAE [GRAMINEAE] - GRASS FAMILY
*Avena barbata**   slender wild oat
*Avena fatua**   wild oat
Brachypodium distachyon   purple false brome
*Bromus diandrus**   ripgut grass
*Bromus hordeaceus**   soft chess
Bromus madritensis ssp. *rubens**   foxtail chess
Leymus condensatus   giant wild rye
Melica imperfecta   small-flowered melic grass
*Pennisetum setaceum** **   African fountain grass
*Piptatherum miliaceum**   smilo grass – millett ricegrass
Vulpia microstachys   fescue
*Vulpia myuros**   foxtail fescue
* indicates non-native species   ** denotes species observed in 2009 but not in 2010

APPENDIX D

INSTALLED PLANT PALETTES TO-DATE (JANUARY – MARCH, 2014)

APPENDIX D-1

CONTAINER PLANT SPECIES INSTALLED TO-DATE

(JANUARY–MARCH 2014)

TABLE D-1

CONTAINER PLANT SPECIES INSTALLED TO-DATE

Container Plant Species (2014)	Size[1]	Habitat Type/Quantity Installed in 2014				Total Qty 2014	Notes
		CSS[2]	OW[2]	Total: January to March	Fall (Projected)		
Asclepias fascicularis	1g	0	0	0	300	300	To be propagated if local seed is available in 2014.
Acmispon glaber	RP	0	335	335	0	335	
	1g	65	0	65	0	65	
Artemisia californica	1g	750	300	1,050	0	1,050	
Artemisia douglasiana	1g	0	0	0	100	100	
Ceanothus leucodermis	1g	0	0	0	50	50	
Cercocarpus betuloides	1g	0	0	0	50	50	
Clematis lasiantha	1g	0	0	0	50	50	
Elymus condensatus	1g	0	0	0	125	125	
Eriogonum fasciculatum	1g	450	300	750	0	750	
Frangula californica	1g	0	0	0	100	100	
Hesperoyucca whipplei	1g	125	25	150	275	425	
Heteromeles arbutifolia	1g	0	55	55	0	55	
Keckiella cordifolia	1g	0	0	0	275	275	
Lonicera subspicata	1g	0	0	0	175	175	
Malosma laurina	1g	25	15	40	0	40	
Melica imperfecta	RP	0	150	150	0	150	
	1g	0	0	0	275	275	
Mimulus aurantiacus	1g	75	288	363	0	363	
Nassella lepida	1g	0	0	0	400	400	To be propagated if local seed is available in 2014.
Opuntia x vaseyi	1g	125	75	200	0	200	
Penstemon spectabilis	RP	0	75	75	0	75	
	1g	0	0	0	350	350	
Prunus ilicifolia	1g	0	0	0	50	50	
Pseudognaphalium californicum	1g	235	225	460	0	460	
Quercus agrifolia	RP	200	175	375	0	375	
	T4	0	0	0	537	537	
Rhamnus ilicifolia	1g	0	0	0	150	150	
Rhus aromatica	1g	0	0	0	100	100	To be propagated if local seed is available in 2014.
Rhus ovata	1g	25	30	55	0	55	
Ribes aureum	RP	0	100	100	0	100	
	1g	0	0	0	275	275	
Salvia apiana	RP	250		250	0	250	
	1g	0	0	0	125	125	
Salvia mellifera	1g	125	275	400	0	400	
Sambucus nigra ssp. caerulea	1g	0	0	0	55	55	
Total		**2,450**	**2,423**	**4,873**	**3,817**	**8,690**	

[1] RP = rose pots; 1g = one gallon; T4 = deep one gallon
[2] CSS = coastal sage scrub; OW = oak woodland

APPENDIX D-2

SEED MIX AND CUTTINGS PLANT SPECIES INSTALLED TO-DATE

(JANUARY–MARCH 2014)

TABLE D-2

SEED MIX AND CUTTINGS PLANT SPECIES INSTALLED TO-DATE

Scientific Name	Common Name	Lbs Collected	Seed Quantities				Total Lbs
			CSS Seed Mixes/Aspect		Hand Seeding		
			South/West (2.0 ac)	North (0.54 ac)	Oak Woodland	CSS	
Initial/Conceptual OWHRMP Seed Species Collected by S&S Seeds in Santa Anita Wash - Rio Hondo Sub-Watershed and Used for Initial Hydroseeding and Hand Seeding in January 2014.							
Acmispon glaber	deerweed	43.82	12.00	2.00	8.00	2.40	24.40
Artemisia californica	California sagebrush	81.78	8.00	2.00			10.00
Camissonia hirtella	hairy sun cups	0.20		0.10	0.05	0.05	0.20
Eriogonum fasciculatum	California buckwheat	81.30	20.00	5.00			25.00
Hesperoyucca whipplei	chaparral yucca	42.34	1.00			2.00	3.00
Mimulus aurantiacus	bush monkey flower	19.88	0.50	2.00	2.00	1.00	5.50
Phacelia cicutaria	caterpillar phacelia	0.56	0.26	0.10	0.10	0.10	0.56
Pseudognaphalium californicum	ladies' tobacco	5.34	1.00	1.00	2.00	1.34	5.34
Quercus agrifolia	coast live oak	16.92			1.92		1.92
Salvia mellifera	black sage	12.89	1.00	1.00	1.00		3.00
Sambucus nigra ssp. caerulea [S. mexicana]	blue elderberry	6.07			1.00	0.50	1.50
Other Seed Species Collected To-Date by S&S Seeds in Santa Anita Wash - Rio Hondo Sub-Watershed:							
Acer macrophyllum	big leaf maple						
Artemisia douglasiana	mugwort	8.64			3.00		3.00
Ceanothus leucodermis	chaparral whitethorn	0.52	0.20	0.10			0.30
Cercocarpus betuloides	birch-leaf mountain-mahogany	4.92	1.00	0.50			1.50
Chaenactis glabruiscula	yellow pincushion	0.92	0.25	0.10	0.10	0.47	0.92
Clarkia purpurea	purple clarkia	0.20	0.05	0.05	0.05	0.05	0.20
Clematis lasiantha	chaparral clematis	4.30	0.80	0.20	1.00		2.00
Datura wrightii	jimson weed	0.56	0.20	0.16	0.10	0.10	0.56
Lepidospartum squamatum	scale broom	14.56			1.00		1.00
Oenothera elata hookeri	Hooker's evening primrose	0.04			0.04		0.04
Phacelia ramosissima	branching phacelia	2.40			2.40		2.40
Prunus ilicifolia	hollyleaf cherry	9.20			3.00		3.00
Rhamnus ilicifolia	hollyleaf redberry	2.64			1.50	0.50	2.00
Pseudognaphalium stramineum	cottonbatting plant	3.20	1.00	0.20	1.00	1.00	3.20
Solanum douglasii	white nightshade	0.02			0.02		0.02
Stachys bullata	California hedgenettle	0.01			0.01		0.01
Umbellularia californica	California laurel bay	4.44			2.00		2.00
Subtotal		**367.67**	**47.26**	**14.51**	**31.29**	**9.51**	**102.57**
Seed/cuttings Species Collected To-Date by BonTerra Psomas in Santa Anita Wash - Rio Hondo Sub-Watershed (Small quantities, <1.0 lb collected; Used for Hand Seeding [Only] or as Indicated):							
Acer macrophyllum	big leaf maple						
Artemisia douglasiana	mugwort	Rooted cuttings (direct planting) and hand seeding.					
Acourtia microcephala	sacapellote						
Adenostoma fasciculatum	chamise						
Brickellia californica	California brickellbush						
Ceanothus leucodermis	chaparral whitethorn						
Cercocarpus betuloides	birch-leaf mountain-mahogany						

TABLE D-2

SEED MIX AND CUTTINGS PLANT SPECIES INSTALLED TO-DATE

Scientific Name	Common Name	Lbs Collected	Seed Quantities				Total Lbs
			CSS Seed Mixes/Aspect		Hand Seeding		
			South/West (2.0 ac)	North (0.54 ac)	Oak Woodland	CSS	
Seed/cuttings Species Collected To-Date by BonTerra Psomas in Santa Anita Wash - Rio Hondo Sub-Watershed (Small quantities, <1.0 lb collected; Used for Hand Seeding [Only] or as Indicated):							
Clematis lasiantha	chaparral clematis						
Corethrogyne filaginifolia [Lessingia f.]	common sandaster						
Datura wrightii	jimson weed						
Delphinium cardinale	scarlet larkspur						
Dudleya lanceolata	lanceleaf liveforever						
Elymus condensatus [Leymus c.]	giant wild rye	Container plant propagation (only).					
Eriodictyon crassifolium	thick-leaf yerba santa						
Eriogonum elongatum	longstem buckwheat						
Eriophyllum confertiflorum	golden yarrow						
Frangula californica [Rhamnus californica]	California coffeeberry	Container plant propagation (only).					
Galium angustifolium	narrow leaved bedstraw						
Hesperoyucca whipplei [Yucca w.]	chaparral yucca						
Heteromeles arbutifolia	toyon	Container plant propagation (only).					
Heterotheca grandiflora	telegraph weed						
Juncus rugulosus	wrinkled rush						
Juncus textilis	basket rush						
Keckiella cordifolia	heart-leaved keckiella						
Lathyrus vestitus	chaparral sweet pea						
Lepidospartum squamatum	scale broom						
Lonicera subspicata	southern honeysuckle	Container plant propagation (only).					
Lupinus truncatus	blunt leaved lupine						
Marah macrocarpus	wild cucumber						
Melica imperfecta	California melic	Container plant propagation (only).					
Mimulus aurantiacus	bush monkeyflower						
Opuntia x vaseyi	Vasey's prickly pear	Cuttings (pads).					
Paeonia californica	California peony						
Pellaea andromedifolia	coffee fern	Rhizome cuttings (direct planting).					
Penstemon spectabilis	showy penstemon	Container plant propagation (only).					
Phacelia cicutaria	caterpillar phacelia						
Phacelia ramosissima	branching phacelia						
Polypodium californicum	California polypody	Rhizome cuttings (direct planting).					
Pseudognaphalium bioletti [Gnaphalium bicolor]	two-color rabbit tobacco						
Pseudognaphalium californicum [Gnaphalium c.]	ladies' tobacco						
Pseudognaphalium canescens [Gnaphalium c.]	Wright's cudweed						
Quercus agrifolia	coast live oak						
Quercus chrysolepis	canyon live oak						
Rhus aromatica	fragrant sumac	Rooted cuttings (direct planting).					
Rhus ovata	sugar bush						
Ribes aureum	golden currant						

TABLE D-2

SEED MIX AND CUTTINGS PLANT SPECIES INSTALLED TO-DATE

Scientific Name	Common Name	Lbs Collected	Seed Quantities				Total Lbs
			CSS Seed Mixes/Aspect		Hand Seeding		
			South/West (2.0 ac)	North (0.54 ac)	Oak Woodland	CSS	
Rubus ursinus	California blackberry	Rooted cuttings (direct planting).					
Salvia apiana	white sage						
Salvia mellifera	black sage						
Selaginella bigelovii	Bigelow's moss fern	Rooted cuttings (direct planting).					
Senecio flaccidus var. douglasii	Douglas' threadleaf ragwort						
Seed/cuttings Species Collected To-Date by BonTerra Psomas in Santa Anita Wash - Rio Hondo Sub-Watershed (Small quantities, <1.0 lb collected; Used for Hand Seeding [Only] or as Indicated):							
Stipa coronata [Achnatherum coronatum]	giant needlegrass						
Umbellularia californica	California laurel bay						
Seed/Cuttings Species Collected To-Date by Rancho Santa Ana Botanic Garden in Santa Anita Wash - Rio Hondo Sub-Watershed (for Container Plant Propagation):							
Dryopteris arguta	California wood fern	Rhizome cuttings for container plant propagation (only).					
Pellaea andromedifolia	coffee fern	Rhizome cuttings for container plant propagation (only).					
Pellaea mucronata	birdfoot cliffbrake	Rhizome cuttings for container plant propagation (only).					
Polypodium californicum	California polypody	Rhizome cuttings for container plant propagation (only).					
Quercus durata var. gabrielensis	San Gabriel Mountains leather oak	Container plant propagation (only).					
Quercus engelmannii	Engelmann oak	Container plant propagation (only).					

APPENDIX E

REFERENCE SITE SURVEY REPORT
(BONTERRA 2013, AS REVISED IN SEPTEMBER 2016)

BonTerra CONSULTING
225 South Lake Avenue, Suite 1000 Pasadena, CA 91101
T: (626) 351-2000 F: (626) 351-2030 | www.BonTerraConsulting.com

October 10, 2013
Revised September 13, 2016

Ms. Grace Yu. P.E., LEED AP
Water Resources Division
Department of Public Works
County of Los Angeles
900 South Fremont Avenue
Alhambra, California 91803

VIA EMAIL
gyu@dpw.lacounty.gov

Subject: 2013 Reference Site Survey Report – Oak Woodland Habitat Revegetation/Mitigation Program for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project, Los Angeles County, California

Dear Ms. Yu:

Note: This report was revised to reflect the recomputation of the Shannon Diversity Index (only) as described on pages 12, 13 and 18, and in the appendices. All other information in the 2013 report (e.g., species names) remains unchanged.

This Report presents the results of the initial reference site survey (prior to mitigation implementation) that was performed on the Middle Sediment Placement Site (SPS) in association with the County of Los Angeles Department of Public Works' (LACDPW) Amended Final Oak Woodland Habitat Mitigation Program for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project (OWHMP)(BonTerra Consulting, December 2012).

The reference site consists of 7.81 acres of natural habitat areas (California sycamore/coast live oak riparian forest [CS/CLORF] and coastal sage scrub [CSS]) located to the north of the Lower SPS (mitigation site)(Exhibits 1 through 3). The reference site is similar in vegetation composition, soils, hydrology, topography, elevation, aspect, etc., to the northern portion of the Middle SPS that was cleared for sediment placement in January 2011; therefore, the reference site provides a useful model for comparative mitigation site performance toward replacement of the lost functions/values of the cleared habitat area. The purpose of the reference site analysis is to establish specific, numerical performance standards for the pending revegetation/mitigation of the Lower SPS. It is important to note that all Southern California oak woodland and sage scrub habitats exhibit some degree of invasion by exotic plant species, and the reference site exhibits a degree of invasion that is within a typical range for regional habitat areas.

The reference site is bordered on the north by the cleared portion of the Middle SPS, on the west by Santa Anita Wash (concrete box channel), on the south by the Lower SPS, and on the east by slopes with natural vegetation and—at the top of the eastern slope—residential properties.

SURVEY METHODOLOGY

The reference site survey methodology was prepared in coordination with the California Department of Fish and Wildlife (CDFW) and is described in detail in the OWHMP; e.g., the quadrat sampling area constitutes at least 2.0 areal percent of the combined CSLORF/CSS-vegetated habitat areas on the reference site (future quadrats on the mitigation site must also comprise a minimum of 2.0 percent areal sampling)..

Vegetation Mapping

BonTerra Consulting Senior Botanist Dr. Kai Palenscar performed vegetation mapping of the reference site on July 1, 2013. The reference site includes a total of 4.38 acres of CS/CLORF habitat and 3.43 acres of CSS habitat, associated with 0.33 acre of ruderal vegetation, and 0.73 acre of disturbed ground (Exhibit 3). A compendium of the plant species that were observed on the reference site on July 1, 2013, is provided in Appendix A. It is important to note that the vegetation surveys were performed in a year of marked drought (i.e., 2012–2013), and in early summer following the typical blooming/growth season of several plant species; therefore, it is assumed that additional plant species are present on the reference site (e.g., desiccated herbs, unexpressed seed bank, dormant bulbs, etc.) that were not observed on July 1, 2013.

Quantitative Vegetation Surveys

Based on the results of the vegetation mapping, a Geographic Information System (GIS) was used to generate random, point-intercept transect locations, and random vegetation quadrat locations, for the measurement of native vegetation conditions (foliar coverage, and species diversity [richness] in CS/CLORF and CSS habitat). Dr. Palenscar, assisted by BonTerra Consulting Biologists Trevor Bristle and Jonas Winbolt, performed the quantitative surveys July 15 and July 18, 2013. Mr. Bristle and Mr. Winbolt are qualified to perform nesting bird surveys, as described in the OWHMP; i.e., individual transects or quadrats would be moved to alternate random locations as needed to avoid impacts to nesting birds (quantitative surveys were performed during the nesting bird season which is February 15 to September 15). Global Positioning System (GPS) equipment was used to locate transect and quadrat positions in the field. The collected survey data are discussed in the Results section, below.

Transects

A total of six 100-foot point intercept transects (1.0-foot intercepts) were performed in CS/CLORF-vegetated portions of the reference site, and a total of six 50-foot point-intercept transects (1.0-foot intercepts) were performed in the CSS-vegetated portions of the reference site. Species incidence was recorded at each transect intercept as either native or non-native species, “both”, or “no plant”, and ground cover was recorded at each intercept as either bare soil, rock/cobble, leaf litter, fine woody debris, coarse woody debris, or living trunk. The transect data were compiled to yield the percent native and non-native class coverage, and ground cover percent coverage (by category).

Quadrats

A total of 9 20x40-foot quadrats were performed to assess plant species density and diversity: this included 6 locations in CS/CLORF-vegetated portions of the reference site and 3 locations in the CSS-vegetated portions of the reference site. The total quadrat sampling areas were 4,800 square feet (sf) in the CS/CLORF areas, and 2,400 sf in the CSS areas, for a total quadrat

sampling area of 7,200 sf. The quadrats were created using measuring tapes, wire flags, and flagging tape. The location of all transects and quadrats are shown on Exhibit 3. Reference site photographs are provided in Appendix B. Vegetation characteristics were independently evaluated via quadrats for the two native habitat types present on site (i.e., CS/CLORF, CSS) using the following characteristics (metrics): plant species richness (number of species present), density of native trees (all spp.); density of native shrubs (all spp.); density, relative density, coverage, relative coverage, frequency, and relative frequency, of each plant species; and the Shannon Diversity Index (see Appendix H, References) was computed to yield the species diversity for each habitat type. This index accounts for both species abundance and evenness in a habitat area. The metrics, equations, and variables used to derive these values are provided in Table 1.

The vegetation diversity values are discussed in the Results section, below.

TABLE 1
VEGETATION DIVERSITY METRICS

Metric	Equation	Variables
Density of Species 'i' (D_i)	$D_i = n_i / A$	n_i = total individuals of species 'i'
		A = total area sampled
Relative Density for Species 'i' (RD_i)	$RD_i = N_i / \Sigma n$	n_i = number of individuals of species 'i'
		Σn = total number of individuals of all species (plots)
Coverage for Species 'i' (C_i)	$C_i = a_i / A$	a_i = total area covered for species 'i'
		A = total area sampled
Relative Coverage of Species 'i' (RC_i)	$RC_i = C_i / \Sigma C$	C_i = coverage for species 'i'
		ΣC = sum of coverage for all species
Frequency of Species 'i' (f_i)	$f_i = j_i / k$	j_i = number of plots containing species 'i'
		k = total number of plots
Relative Frequency of Species 'i' (RF_i)	$RF_i = f_i / \Sigma f$	f_i = frequency of species 'i'
		Σf = sum of frequencies of all species
Shannon Diversity Index (H')	R	R = total number of species encountered
	$H = -\sum_{i=1} p_i \log p_i$	p_i = species 'i' as a proportion of R

Oak Tree Assessment

BonTerra Consulting Certified Arborist David Hughes (International Society of Arboriculture Certificate Number WE-7752A) and Mr. Bristle surveyed the project site on July 3 and 5, 2013, to determine the quantity of oak trees (*Quercus* sp.) present and to characterize their general health. All oak trees within the project site boundaries with a trunk diameter at breast height (dbh) of at least 2 inches were mapped in the field on a 125-scale (1 inch = 125 feet) aerial photograph. The minimum size threshold of two inches for the tree survey was used to ensure that all trees potentially regulated by the City of Arcadia municipal code and the *California Fish and Game Code* were included in this study. Several tree locations were also recorded using a hand-held global positioning system (GPS) device to refine the field mapping (trees in dense groups were not mapped with the GPS as a reliable signal could not be attained). During the survey, each tree was marked with a pre-numbered metal tag and the following data were collected: dbh, tree height, and canopy width. The overall health of each tree was rated on a scale of 1 to 5 as described in Table 2 (per the OWHMP).

The tree assessment ratings are discussed in the Results section, below.

TABLE 2
TREE HEALTH RATING CRITERIA

Rating	Criteria
5	Tree in excellent health with abundant foliage, new leaf growth, and shoot elongation; no signs of herbivory, insect infestation, disease, fungus growth, or limb/trunk damage.
4	Tree in very good health with ample green foliage and new leaf growth; minor signs of drought stress, herbivory, insect infestation, decreased shoot growth, or loss of vigor.
3	Tree in moderate health with limited or uneven new leaf growth; moderate signs of drought stress; noticeable insect activity; decay on branches; noticeable herbivory damage.
2	Tree in poor health with existing leaves yellowing; limited/stunted new leaf growth; decreased shoot growth from previous year; dark-colored cracks or abnormalities on trunk; presence of fungus; observable decay on trunk or major limbs; sap bleeding from trunk; significant insect infestation; extensive herbivory; thinning canopy.
1	Tree in obvious decline with existing leaves yellowing and no new leaf growth; extensive limb or trunk damage; large cracks or other decay on trunk; bleeding sap; dieback of more than 30% of the canopy; a general lack of vigor.

General Wildlife Survey

BonTerra Consulting Senior Biologist Marc Blain and Biologist Nathan Moffett, performed general wildlife surveys on the reference site on June 12 and June 13, 2013 (Mr. Blain) and on August 15, 2013. (Mr. Moffett). Wildlife species observed by Mr. Bristle, Mr. Hughes, and Mr. Winbolt, during the vegetation mapping, quantitative vegetation surveys, and oak tree assessments (June/July/August 2013), are also included in the wildlife compendium which is provided in Appendix C.

RESULTS

Vegetation Percent Coverage

A total of 76 native plant species and 34 non-native plant species, were observed on the site during the initial reference site surveys, including two special status plant species: Fish's milkwort (*Polygala cornuta* var. *fishiae*), California Rare Plant Rank (CRPR) List 4.3 – "Plants of Limited Distribution"; and Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*), CNPR List 1B.2 – "Rare or Endangered in California and Elsewhere". The preceding name for this plant species is no longer recognized; the new name is *Lepidium virginicum* ssp. *menziesii*, and it is no longer categorized as rare. However, CRPR and the California Natural Diversity Database (CNDDB) still track the species by the previous name. Therefore, the species is included as rare for the current assessment, to indicate that this occurrence would be relevant for California Environmental Quality Act (CEQA) purposes. Coast live oak (*Quercus agrifolia*) is protected under the Los Angeles County Oak Tree Ordinance and the City of Arcadia Oak Tree Regulations.

Transect Results

A summary of transect results is provided in Table 3, and a spreadsheet containing all transect data is provided in Appendix D. Photos of all transect locations are provided in Appendix C.

A total of 20 native plant species, and 10 non-native plant species, were sampled by transects performed within CS/CLORF and CSS habitat areas. The mean native class coverage is 85.33 percent in the CS/CLORF areas and 74.67 percent in the CSS areas. The mean non--native class coverage is 61.00 percent in the CS/CLORF areas and 61.33 percent in the CSS areas. A high degree of leaf litter, fine woody debris, and coarse woody debris (combined) was observed in the CS/CLORF areas (97.00 percent) and in the CSS areas (84.67 percent).

A high degree of absolute native species coverage (164.17 percent) was measured in the CS/CLORF areas; this value reflects the extensive and inter-grown canopies of mature coast live oak and Western sycamore (*Platanus racemosa*) trees, which constitute a combined total of 115.33 percent absolute coverage. Blue elderberry (*Sambucus nigra* ssp. *caerulea*) a native tree (or large shrub) species, was measured at 3.50 percent coverage in the CS/CLORF areas. The measured absolute native species coverage in the CSS areas is 68.67 percent.

The measured absolute coverage of native shrub species (12 species, combined) is 33.68 in the CS/CLORF areas and 53.33 percent in the CSS areas. The shrubs category above includes large evergreen species such as laurel sumac (*Malosma laurina*); moderate-sized species such as golden currant (*Ribes aureum*); ground cover or sub-shrubs such as snowberry (*Symphoricarpos mollis*); and vining shrubs such as California blackberry (*Rubus ursinus*) and poison oak (*Toxicodendron diversilobum*). The measured absolute coverage of native succulent species (combined) is 3.17 percent in the CS/CLORF areas and 2.00 percent in the CSS areas. The succulent category above includes Vasey's prickly pear (*Opuntia x vaseyi*) and chaparral yucca (*Hesperoyucca whipplei*).

The measured absolute coverage of native herbaceous species (forbs and grasses combined) is 8.50 percent in the CS/CLORF areas and 1.00 percent in the CSS areas. The native herbaceous category above includes a total of 3 species: deerweed (*Acmispon glaber* var. *glaber*), wild cucumber (*Marah macrocarpus*), and coast range melic grass (*Melica imperfecta*).

The measured absolute coverage of non-native plant species (all herbaceous) is 68.67 percent in the CS/CLORF areas and 79.33 percent in the CSS areas. Ripgut brome [*Bromus diandrus*] constitutes a substantial percentage of the herbaceous understory in both the CS/CLORF areas (59.83 percent) and CSS areas (60.33 percent). It is typical for southern California oak woodland and savanna habitats to exhibit primarily non-native understory vegetation due to long-term human impacts (especially post-European-settlement) including ground disturbance, grazing by domestic livestock, clearing, altered fire frequency, introduced invasive plant species, or other factors. Therefore, the reference site exhibits a degree of exotic plant species invasion that is within a typical range for regional habitat areas.

TABLE 3
TRANSECT DATA SUMMARY

Plant Species	Percent Vegetation Coverage (Mean)	
	CS/CLORF[a]	CSS[b]
	(6 x 100-ft)[c]	(6 x 50-ft)[c]
Native Trees		
Platanus racemosa	49.33	12.33
Quercus agrifolia	66.00	0.00
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	3.50	0.00
Absolute Coverage: Native Trees (All)	118.83	12.33
Native Shrubs		
Baccharis salicifolia ssp. salicifolia [*B. salicifolia*]	0.00	6.33
Clematis lasiantha	1.17	0.00
Eriogonum fasciculatum	0.00	21.33
Lepidospartum squamatum	0.67	0.00
Lonicera subspicata var. *denudata*	1.33	0.00
Malosma laurina	1.83	23.67
Rhamnus crocea	2.67	0.00
Ribes aureum	1.67	2.00
Rubus ursinus	2.17	0.00
Salvia mellifera	0.67	0.00
Symphoricarpos mollis	1.17	0.00
Toxicodendron diversilobum	20.33	0.00
Absolute Coverage: Native Shrubs (All)	33.68	53.33
Native Succulents (Cactus, Yucca, etc.)		
Hesperoyucca whipplei [*Yucca w.*]	1.17	0.00
Opuntia x vaseyi	2.00	2.00
Absolute Coverage: Native Succulents (All)	3.17	2.00
Native Herbs/Grasses		
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	0.00	1.00
Marah macrocarpus	6.83	0.00
Melica imperfecta	1.67	0.00
Absolute Coverage: Native Herbs/Grasses (All)	8.50	1.00
Non-native		
Avena barbata	1.17	0.00
Bromus diandrus	59.83	60.33
Bromus madritensis ssp. *rubens*	0.00	14.67
Carduus pycnocephalus ssp. *pycnocephalus*	3.33	0.00
Centaurea melitensis	0.00	0.67
Conium maculatum	0.17	1.33
Festuca myuros [*Vulpia m.* var. *myuros*]	0.00	0.67
Nicotiana glauca	0.00	1.67
Silybum marianum	3.50	0.00
Stipa miliacea [*Piptatherum miliacea*]	0.67	0.00

TABLE 3
TRANSECT DATA SUMMARY

Plant Species	Percent Vegetation Coverage (Mean)	
	CS/CLORF[a] (6 x 100-ft)[c]	CSS[b] (6 x 50-ft)[c]
Absolute Percent Coverage		
Total Absolute Native Species Coverage	164.17	68.67
Total Absolute Non-Native Species Coverage	68.67	79.33
Total Absolute Coverage (All)	232.83	148.00
Class Percent Coverage		
Native	38.83	38.67
Non-Native	14.50	25.33
Both	46.50	36.00
No Plant	0.17	0.00
Summary		
Total Native Class Coverage	85.33	74.67
Total Non-Native Class Coverage	61.00	61.33
Total Unvegetated	0.17	0.00
Ground Cover		
Bare Soil	0.67	8.00
Rock/Cobble	0.67	7.33
Leaf Litter	87.17	66.33
Fine Woody Debris	7.33	17.67
Coarse Woody Debris	2.50	0.67
Living Trunk	1.67	0.00

[a] CS/CLORF = California Sycamore/Coast Live Oak Riparian Forest
[b] CSS = Coastal Sage Scrub
[c] Point-intercept transect dimensions

Quadrat Results

A summary of quadrat results is provided in Table 4, and spreadsheets containing all quadrat results are provided in Appendix E. Photos of all quadrat locations are provided in Appendix C.

A total of 27 native plant species and 14 non-native plant species, were sampled by quadrats performed within CS/CLORF and CSS habitat areas (combined); the native plant species "richness" value (i.e., number of species) for the quadrats is higher than the transect results (20 native species). This result is expected for areal versus linear sampling because areal sampling allows the capture of rare plant species that occur sparsely in the landscape. A high degree of leaf litter, fine woody debris, and coarse woody debris (combined) was estimated to occur in the CS/CLORF quadrat areas (94.63 percent) and in the CSS quadrat areas (90.31 percent); these estimated values are consistent with the transect results.

An absolute native species coverage of 116.69 percent was estimated to occur in the CS/CLORF areas and 51.74 percent in the CSS areas; the CS/CLORF quadrat value is substantially lower than the transect results (164.17 percent), primarily due to the lower incidence of western sycamore trees (21.33 percent coverage) inter-growing with coast live oaks in the quadrats,

relative to the transects (49.33 percent coverage) based on randomized locations. Coast live oak coverage was estimated to be 60.50 percent in the CS/CLORF quadrats, which is fairly consistent with the transect results (66.00 percent). The CSS absolute native species coverage value (51.74 percent) is substantially lower than the transect results (68.67 percent), primarily due to the higher incidence of California buckwheat (*Eriogonum fasciculatum*) and laurel sumac on project transects (21.33 percent and 23.67 percent, respectively) relative to the quadrats (5.00 percent and 10.00 percent, respectively).

An absolute native shrub coverage (mean) of 24.44 percent was estimated to occur in the CS/CLORF areas (10 species) and 38.67 percent in the CSS areas (7 species). The CS/CLORF value is substantially lower than the transect results (33.67 percent), primarily due to the lower incidence of poison oak in the quadrats (7.50 percent) relative to the transects (20.33 percent). Two of the CS/CLORF quadrats did not contain any poison oak, whereas this shrub species was intercepted by each of the six CS/CLORF transects, based on randomized locations. The CSS quadrat absolute native shrub coverage value (38.67 percent) is substantially lower than the transect results (53.33 percent) primarily due to the higher incidence of California buckwheat and laurel sumac on the transects, as described above. No non-native shrub species were sampled on the quadrats. An absolute native succulent species coverage (one species) of 0.25 percent was estimated to occur in the CS/CLORF areas and 1.00 percent in the CSS areas. The succulent category above includes chaparral yucca (*Hesperoyucca whipplei*). The quadrats did not contain Vasey's prickly pear (*Opuntia x vaseyi*).

An absolute coverage of native herbaceous species (forbs and grasses, combined) of 7.49 percent (mean) was estimated to occur in the CS/CLORF areas (4 species) and 6.73 percent in the CSS areas (7 species); the CS/CLORF value is fairly consistent with the transect results (8.50 percent). The CSS value is substantially higher than the transect results (1.00 percent), primarily due to the occurrence of 12 percent coverage of mugwort (Artemisia douglasiana) in one of the 3 CSS quadrats. A larger number of native herbaceous species occurred in the quadrats (8) relative to the transects (3 species), including deerweed, mugwort, *Clarkia* sp., giant wild rye (*Elymus condensatus*), California everlasting (*Pseudognaphalium californicum*), *Lupinus* sp., wild cucumber, and caterpillar phacelia (*Phacelia cicutaria*). Native herbaceous coverage is low due to the dominance of invasive herbs and grasses, as described below.

An absolute coverage of non-native plant species (all herbaceous except for one tree species) of 67.72 percent was estimated to occur in the CS/CLORF areas and 55.60 percent in the CSS areas; the CS/CLORF quadrat value is consistent with the transect results (68.67 percent). The CSS value is substantially lower than the transect results (79.33 percent) primarily due to the low incidence of ripgut brome in 2 of the 3 CSS quadrats (relative to the third quadrat), and relative to the transect results for this non-native species. Red brome (*Bromus madritensis* ssp. *rubens*) did not occur in any CSS quadrat, whereas it constituted 14.7 percent of CSS transect coverage. Conversely, short podded mustard (*Hirschfeldia incana*) did not occur on any CSS transect, whereas it constituted 18.33 percent of estimated quadrat coverage. These results reflect the sometimes patchy occurrence of non-native species in a natural habitat area that exhibits human impacts. As noted above, the reference site exhibits a degree of exotic plant species invasion that is within a typical range for regional habitat areas.

TABLE 4
QUADRAT DATA SUMMARY

Plant Species	Percent Vegetation Coverage (Mean)[a]	
	CS/CLORF[b] (6 x 800-sf)	CSS[c] (3 x 800-sf)
Native Trees		
Platanus racemosa	21.33	2.00
Quercus agrifolia	60.50	0.00
Salix lasiolepis	0.00	0.67
Sambucus nigra ssp. c*aerulea* [*S. mexicana*]	2.67	1.67
Umbellularia californica	0.00	1.00
Absolute Coverage: Native Trees (All)	84.50	5.33
Native Shrubs		
Baccharis salicifolia ssp*. salicifolia* [*B. salicifolia*]	7.50	1.67
Ceanothus leucodermis	0.00	3.33
Eriogonum fasciculatum	0.50	5.00
Lepidospartum squamatum	0.00	0.33
Polygala cornuta ssp*. fishiae*	0.67	0.00
Malosma laurina	4.17	10.00
Rhamnus crocea	0.20	0.00
Rhus aromatica [*R. trilobata*]	1.33	0.00
Rhus ovata	0.03	0.00
Ribes aureum	1.37	16.67
Rubus ursinus	1.17	0.00
Salvia mellifera	0.00	1.67
Toxicodendron diversilobum	7.50	0.00
Absolute Coverage: Native Shrubs (All)	24.44	38.67
Native Succulents (Cactus, Yucca, etc.)		
Hesperoyucca whipplei [Yucca w.]	0.25	1.00
Absolute Coverage: Native Succulents (All)	0.25	1.00
Native Herbs/Grasses		
Acmispon glaber var. *glaber [Lotus scoparius* var. *scoparius]*	0.00	0.33
Artemisia douglasiana	0.83	4.00
Clarkia sp.	0.00	0.07
Elymus condensatus [Leymus c.]	5.83	0.00
Lupinus sp.	0.00	0.17
Marah macrocarpus	0.83	1.17
Phacelia cicutaria	0.00	1.00
Solanum douglasii	0.002	0.00
Absolute Coverage: Native Herbs/Grasses (All)	7.49	6.73

TABLE 4
QUADRAT DATA SUMMARY

Plant Species	Percent Vegetation Coverage (Mean)[a]	
	CS/CLORF[b] (6 x 800-sf)	CSS[c] (3 x 800-sf)
Non-Native		
Araujia sericifera	0.002	0.00
Avena barbata	0.02	0.00
Bromus diandrus	63.83	31.93
Carduus pycnocephalus ssp. pycnocephalus	0.42	0.00
Ceratonia siliqua	0.17	0.00
Conium maculatum	1.03	1.00
Dysaphania pumilio {Chenopodium pumilio]	0.002	0.00
Erodium cicutarium	0.002	0.00
Hirschfeldia incana	0.50	18.33
Nicotiana glauca	0.00	4.00
Pseudognaphalium luteoalbum [*Gnaphalium l.*]	0.17	0.003
Silybum marianum	1.59	0.00
Sonchus oleraceus	0.00	0.003
Stipa miliacea [Piptatherum miliacea]	0.00	0.33
Absolute Percent Coverage		
Total Absolute Native Species Coverage	116.68	51.74
Total Absolute Non-Native Species Coverage	67.72	55.61
Total Absolute Coverage (All)	184.41	107.34
Ground Cover		
Bare Soil	2.50	4.00
Rock/Cobble/Gravel	2.00	5.67
Leaf Litter	85.30	63.97
Fine Woody Debris	7.33	12.67
Coarse Woody Debris	2.00	13.67
Living Trunk	0.83	0.03
Trash	0.03	0.00

[a] Quadrat values represent visual estimates of plant species coverage
[b] CS/CLORF = California Sycamore/Coast Live Oak Riparian Forest
[c] CSS = Coastal Sage Scrub

Vegetation Density and Diversity

The plant species density and diversity results (e.g., richness, abundance) based on survey quadrats are discussed below, and a detailed table of density and diversity data and computations is provided in Appendix F.

Density of Native Shrubs

A total of 10 native shrub species were sampled on quadrats in the CS/CLORF areas (4,800 sf, total), and 7 native shrub species were sampled on quadrats in the CSS areas (2,400

sf, total). The computations of density (all species, and individual species) and relative density (individual species) of native shrubs per Table 1 are provided in Appendix E. A simplified computation of shrub density, expressed in terms of the number of individual shrubs per 1.0 acre (via extrapolation), is provided below. The overall density of native herbs and grasses is very low due to the dominance of invasive herbs and grasses, as described above.

Density of all native shrubs in the CS/CLORF areas:

- 47 native shrub individuals / 4,800 sf = 1 individual per 102 sf; or,
- 426 individuals per 1.0 acre.

Density of all native shrubs in the CSS areas:

- 33 native shrub individuals / 2,400 sf = 1 individual per 73 sf; or,
- 599 individuals per 1.0 acre.

Southern California oak woodland habitats can exhibit a mosaic of understory vegetation types including shrubs and herbs/grasses, and unvegetated ground cover (e.g., boulders, coarse woody debris, creek beds/alluvium, among others). The reference site CS-CLORF habitat exhibits such a mosaic, with a moderate density of shrubs; however, the herb/grass patches are dominated by invasive species. The reference site CSS habitat exhibits a higher density of shrubs than the CS/CLORF habitat, but the shrub understory and the gaps in shrub patches are similarly weedy.

Coverage/Relative Coverage of Plant Species

The computations of plant species coverage and relative coverage (individual species) per Table 1 are provided in Appendix E, and a discussion of plant species coverage results is provided in the Quadrat Results section above.

Frequency/Relative Frequency of Plant Species

The computations of plant species frequency and relative frequency (individual species) per Table 1 are provided in Appendix E, and a summary of simplified native plant species frequency results is provided below. For example, a frequency [f_i] value of 0.67 indicates that a plant species occurred in two-thirds of the quadrats for a habitat type.

Species occurring in CS/CLORF quadrats:

- 6 of 6 quadrats (frequency [fi] = 1): coast live oak.
- 4 of 6 quadrats (frequency [fi] = 0.67): Western sycamore, poison oak.
- 2 of 6 quadrats (frequency [fi] = 0.33): redberry (*Rhamnus crocea*), golden currant, blue elderberry.
- 1 of 6 quadrats (frequency [fi] = 0.17): mugwort, mule fat (*Baccharis salicifolia*), giant wild rye (*Elymus condensatus*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca, laurel sumac, wild cucumber, Fish's milkwort, fragrant sumac (*Rhus aromatica*), sugarbush (*Rhus ovata*), California blackberry (*Rubus ursinus*), and white nightshade (*Solanum douglasii*).

Species occurring in CSS quadrats:

- 2 of 3 quadrats (frequency [f_i] = 0.67): laurel sumac
- 1 of 3 quadrats (frequency [f_i] = 0.33): deerweed, mugwort, mule fat, chaparral whitethorn (*Ceanothus leucodermis*), clarkia (*Clarkia* sp.), California buckwheat, chaparral yucca, scale broom (*Lepidospartum squamatum*), lupine (*Lupinus* sp.), wild cucumber, caterpillar phacelia (*Phacelia cicutaria*), Western sycamore, California everlasting (*Pseudognaphalium californicum*), golden currant, arroyo willow (*Salix lasiolepis*), black sage (*Salvia mellifera*), blue elderberry, and California bay (*Umbellularia californica*).

Most of the native plant species have low frequency values, indicating that they are rare or occur as patches in the sampling areas, potentially related to the dominance of invasive herbs and grasses in the woodland/scrub understory layer. Many of the 76 plant species that were observed during the reference site surveys were not captured by either transects or quadrats, and a qualitative assessment indicated that these plant species are relatively rare on the site; e.g., only one individual of hillside gooseberry (*Ribes californicum*), a shrub species, was observed on the reference site.

Shannon Diversity Index

A diversity index provides a more comprehensive indication of the vegetative composition beyond 'richness', which is simply the number of plant species observed to be present (either via quantitative surveys [transects, quadrats, etc.] or qualitative observation) in a habitat area. As stated above, the Shannon Diversity Index accounts for plant species' relative abundance (i.e., commonness or scarcity) and 'evenness' (i.e., how evenly the individuals in the plant community are distributed over the landscape) in a habitat area, as expressed in the following equation (H = the Shannon Diversity Index).

$$H = -\sum_{i=1}^{R} (p_i \log p_i)$$

For the present application, p_i = the proportion of individuals of species 'i' relative to the total number of all individual plants (all species); 'R' = the numbers of plant species encountered; and $\sum$ = the sum from species 1 to species R. The highest potential value of 'H' (for a particular study area with 'R' number of species) occurs when all species are equally abundant in the sampling area; (e.g., Species 1: 10 individuals; Species 2: 10 individuals…Species R: 10 individuals).

Higher values of 'H' represent more diverse biological communities. To illustrate: a weed-free orange grove with no other types of fruit trees present would have an 'H' value of zero, as 'p_i' would equal one (one type of fruit tree) and would be multiplied by 'log 1' which equals zero. Whatever method of sampling/counting the grove's composition, whatever numbers of samples are obtained, or in whatever locations, the same value (zero) of 'H' would result due to the singularity of fruit tree type throughout the grove. By contrast, if there are numerous different kinds of fruit trees—evenly distributed throughout the grove—then the 'H' value would be high, because each sample (in every location) would contain a diversity of fruit tree types, and the sum of the '$p_i \log p_i$' values would increase with each new species of fruit tree uniformly added to the grove's mix of trees.

The values of 'H' (CS/CLORF habitat: H = 0.01; CSS habitat: H = 0.03) were computed based on quadrat results, as summarized in Table 5. Because these computations of 'H' include both native and non-native plant species on the reference site, this measure of species diversity does not reflect the ecological quality of the reference site vegetation in terms of non-native plant species establishment. Under the terms of the OWHMP, the mitigation site cannot have more than five percent coverage of non-native vegetation. The OWHMP also includes the establishment of a diverse, native understory/mosaic on the proposed mitigation site that will have a substantially higher functional value than the weedy understory of the reference site. The values of 'H' to be determined on an annual basis on the reference site will be useful for interpretive comparison with the annual 'H' values obtained for the proposed mitigation sites (e.g., impacts of annual precipitation volume/frequency/timing on plant growth, annual temperature patterns, among others), but should not be used as numerical performance criteria for the mitigation program.

As described above, ripgut brome constitutes a substantial percentage of the herbaceous understory on the reference site (percent coverage and number of individual plants), and ripgut brome was sampled in disproportionate quantities relative to other plant species in the quadrats. If ripgut brome is removed from the Shannon Diversity Index computations, the values would be H = 2.47 for the CS/CLORF habitat, and H = 0.77 for the CSS habitat. These computations suggest that this invasive grass species is suppressing the statistical vegetative diversity of the reference site.

TABLE 5
SHANNON DIVERSITY INDEX

Habitat Type	*Bromus diandrus*[a] Included in Computation	Number of Plant Species		Shannon Diversity Index = H	
		Native	Non-Native	Result	Potential[b]
CS/CLORF[c]	Yes	18	11	0.01	3.37
	No	18	10	2.47	3.33
CSS[d]	Yes	19	6	0.03	3.22
	No	19	5	0.77	3.18

[a] *Bromus diandrus* (a non-native grass species) is disproportionately represented on the CSS and CS/CLORF reference sites in numbers of individual plants. For example, on Quadrat No. C-05 (CSS) the estimated number of individual *Bromus diandrus* plants is 100,000, whereas 24 individual plants of all other species combined were counted on Quadrat No. C-05.
[b] Based on the number of plant species (native + non-native) sampled.
[c] CS/CLORF = California Sycamore/Coast Live Oak Riparian Forest
[d] CSS = Coastal Sage Scrub

Wildlife Survey Results

No special status wildlife species, and no nesting birds, were detected on site during the June/July/August 2013 reference site surveys. A total of 7 reptile species, 37 bird species (native), and 5 mammal species (or sign) were detected on site.

Although the reference site is constrained by surrounding residential development and a flood control channel, the connectivity with the open space of the National Forest to the northeast is sufficient in allowing the site to remain utilized by a diverse group of wildlife species. The ability for a site to support a diverse suite of wildlife species is related to various factors including food and water availability, native habitat for nesting locations, and connectivity to natural open space. The study area is comprised primarily of native habitats and provides suitable habitat for many wildlife species. The species observed during field surveys are typically expected to be encountered in nearby open spaces, and are representative of a site with a fairly high utilization.

Connectivity to natural open space in the northeastern portion of the reference site is vital to the site's utilization. While the site does have some prior disturbances (e.g., dirt roads) and non-native vegetation (i.e. exotic grasses), it appears to support a high enough proportion of native vegetation types and cover that wildlife coming down from the slopes are moving into the site and foraging and/or nesting. Wildlife species observed or expected to occur on site are discussed below.

Due to the dominant non-native herbaceous understory on the reference site, the density and diversity of arthropods (e.g., insects) and other wildlife species that depend on native herbs and grasses for food, nectar, and host plants (e.g., caterpillars), and other species that prey upon these animals, is substantially lower than would occur in a "pristine" upland woodland/scrub habitat area with predominantly native herbaceous understory vegetation (remnants of such habitats are rare in southern California). The reference site supports an abundance and diversity of arthropods and other wildlife species that is similar to the adjacent impacted portion of the Middle SPS. The reference site contains coarse woody debris (CWD, e.g., dead/fallen trees, branches, brush piles) and boulder/cobble piles. The rock and dead vegetative materials provide important niche habitats for wildlife species, and the CWD undergoes decay processes that support detritovores/decomposers (e.g., fungi) that enhance the ecological functions of the site.

Fish and amphibians are dependent on water for at least part of their lifetime. Due to the lack of natural water sources on site or in the immediate vicinity, neither is expected to occur. Reptilian diversity and abundance typically vary with vegetation type. Some species prefer only one or two vegetation types, while others forage in a variety of habitats. Most reptile species that occur in open areas use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions. Reptile species observed or expected to occur in the study area include western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Cnemidophorus tigris*), southern alligator lizard (*Elgaria multicarinata*), gopher snake (*Pituophis catenifer*), and southern pacific rattlesnake (*Crotalus oreganus* [*helleri*]).

Scrub vegetation types in the reference site support bird species adapted to the dense, low vegetation that typifies these areas. Common residents of this habitat observed or expected to occur on site include California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), spotted towhee *(Pipilo maculatus),* California towhee (*Pipilo crissalis*), and house finch (*Carpodacus mexicanus*). Hermit thrush (*Catharus guttatus*) and white-crowned sparrow (*Zonotrichia leucophrys*) are also expected to be common winter residents in this vegetation in the reference site. Mature oak woodlands are extremely important to wildlife for their high food value in acorns and abundant insect populations. They also offer cavities (either created by woodpeckers or naturally occurring) and dense foliage for nesting locations. Oak woodlands in the reference site provide potential resources for a wide variety of resident and migratory birds including raptors. Resident species observed or expected to occur include the red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), western scrub-jay (*Aphelocoma californica*), Nuttall's woodpecker (*Picoides nuttallii*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), ash-throated flycatcher (*Myiarchus cinerascens*), black-headed grosbeak (*Pheucticus melanocephalus*), oak titmouse (*Baeolophus inornatus*), and bushtit (*Psaltriparus minimus*). In March, migratory birds such as warblers and vireos returning from wintering grounds begin to appear in region and may utilize both vegetation types.

Mammals are expected to utilize the site for breeding and foraging and are expected to be fairly diverse. Small mammals observed or expected to occur include the deer mouse (*Peromyscus maniculatus*), California ground squirrel (*Spermophilus beecheyi*), and woodrats (*Neotoma* sp.). Carnivores were observed on the reference site and include predatory and omnivorous species. Coyote (*Canis latrans*) sign was observed. The bobcat (*Felis rufus*) and gray fox (*Urocyon cinereoargenteus*) may occur in the vicinity of the site. Other carnivores that are expected to occur include the raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*). Sign of larger mammals such as the mule deer (*Odocoileus hemionus*) and black bear (*Ursus americanus*), was observed. Mountain lions (*Felis concolor*) frequent the foothills above the site and are expected to occasionally forage at lower elevations, possibly within the reference site, during the winter months. Several tree trunks on the reference site exhibit characteristic scratch marks made by American black bear (*Ursus americanus*). BonTerra Consulting Biologists observed black bears (e.g., mature males; a mother and two cubs) on multiple occasions in nearby portions of Santa Anita Wash in May/June 2013. The understory of scrub and woodland vegetation types provide foraging opportunities for herbivorous mammals. Common herbivores expected to occur include the desert cottontail (*Sylvilagus audubonii*) and mule deer. Bats occur throughout most of southern California and may use portions of the site to forage. Common bat species that may forage or roost on the site include the big brown bat (*Eptesicus fuscus*), Mexican free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), western pipistrelle (*Pipistrellus hesperus*), and hoary bat (*Lasiurus cinereus*).

Oak Tree Assessment Results

The only oak species present on the reference site is coast live oak (*Quercus agrifolia*). A total of 129 trees (tag numbers 101 through 229) are present in the survey area with a dbh of at least two inches. A summary of the size distribution of the assessed oak species on the reference site is provided in Table 6. BonTerra Consulting's Biologists observed very few oak seedlings, saplings, or oak trees smaller than 2 inches dbh, on the reference site. A summary of all collected tree data is provided in Appendix F.

TABLE 6
SUMMARY OF OAK SIZE DISTRIBUTION

Species		Tree Size (dbh)					Total
Common Name	**Scientific Name**	**2″–8″**	**8″–12″**	**12″–24″**	**24″–36″**	**>36″**	
Coast live oak	*Quercus agrifolia*	33	16	40	24	16	129
dbh: diameter at breast height							

The survey area is located in an historic alluvial floodplain. In addition to the coast live oaks, western sycamore trees are common on the site. The sycamore trees on the reference site were not counted/tagged/evaluated because sycamore is not a component of the OWHMP and this plant species is not relevant for comparative mitigation site performance. The western half of the survey area contains scattered oaks and sycamores, while the eastern half of the site contains a more dense population of oak trees. Common understory species in the western portion of the survey area include California buckwheat, chaparral yucca, mule fat, sugar bush, and extensive coverage of non-native herbs and grasses. Common understory species in the eastern portion of the survey area include poison oak and non-native grasses.

The hydrology on the reference site has been markedly altered by concrete channelization to the immediate west, which has removed the influence of flooding from Santa Anita Wash, and dirt service roads border portions of the woodland habitat area. Nevertheless, the health of almost all oak trees is excellent. The oaks are growing in soils that do not exhibit any recent marked disturbance, and any vehicle activity on service roads largely avoids the root zones of the on-site oak trees. Abundant new growth was observed on most oak trees; new shoots on the branches range from 2 to 6 inches in length. A few trees received health ratings that were less than the maximum due to minor to moderate decay on their trunks. However, it appeared that trunk decay was not damaging the overall functioning of any of the trees, as all tree canopies were dense with no yellowing leaves observed.

MITIGATION PERFORMANCE CRITERIA

Based on the results of the reference site surveys, a summary of recommended mitigation performance criteria is provided in Table 7. These criteria are discussed below.

TABLE 7
RECOMMENDED MITIGATION PERFORMANCE CRITERIA

Year/Habitat Type	Vegetation Percent Coverage					Native Vegetation Diversity (Richness): No. of Plant Species	Oak Tree Survival (Percent)
	Native (Minimum)				Non-Native[c]		
	Trees[a,b]	Shrubs/Succulents[a]	Herbs/Grasses[a]	Total[c]			
Oak Woodland							
1				25	< 5		80
2				40	< 5		80
3	0.50	20.0	25.0	55	< 5	15	80
4				65	< 5		80
5	1.00	25.0	30.0	75	< 5	18	80
6				75	< 5		80
7	1.50	30.0	30.0	75	< 5	20	80
8				75	< 5		80
9				75	< 5		80
10	**2.00**	**30.0**	**30.0**	**75**	**< 5**	**24**	**80**
Sage Scrub							
1				25	< 5		80
2				40	< 5		80
3		30.0	8.0	55	< 5	10	80
4				65	< 5		80
5		35.0	10.0	75	< 5	12	80
6				75	< 5		80
7		45.0	15.0	75	< 5	15	80
8				75	< 5		80
9				75	< 5		80
10		**60.0**	**15.0**	**75**	**< 5**	**18**	**80**

[a] Absolute Coverage
[b] Dependent on precipitation amounts during the 10-year maintenance and monitoring period.
[c] Class Coverage

Native Vegetation Percent Coverage

The recommended overall native class coverage performance criterion is 75 percent for both mitigation habitat types (CS/CLORF and CSS) at the 10-year mark, based on the reference site transect results of 85.33 percent for the CS/CLORF areas, and 74.67 percent for the CSS areas. As noted above, the extensive canopy of mature oak and sycamore trees constitutes a large portion of the native coverage on the CS/CLORF portions of the reference site; therefore, an overall native coverage of 75 percent—comprised primarily of a mosaic of shrub and herbaceous habitat in which young oak trees are becoming established—is a suitable 10-year criterion for both mitigation habitat types.

Tree Species (Oak Woodland Mitigation)

The CS/CLORF portion of the reference site contains numerous mature trees, and it exhibits a high percent coverage of tree species. The mitigation site will not approach this percent coverage of tree species within the 10-year maintenance and monitoring period (or, indeed, for many decades) due to the slow growth of coast live oak trees; therefore, the reference site does not provide a useful comparison for setting tree coverage criteria. However, it is reasonable to expect that planted coast live oak trees could constitute 2.0 percent vegetation coverage at the 10-year mark, based on a mean canopy diameter of approximately 4.5 feet for 290 oak trees onsite (assuming 80 percent survival of the initial planting quantity of 363 oak trees). In the event that precipitation amounts during the 10-year period are lower than average for the region, a reduced final percent coverage criterion for oak trees should be used (combined with the certified arborist's assessment of the health of all individual oak trees).

Shrub and Succulent Species (Oak Woodland and Sage Scrub Mitigation)

The CS/CLORF portion of the reference site contains patchy native shrub and succulent coverage in the overall range of approximately 25 to 35 percent. The mitigation site will include several designated sub-areas to be maintained long-term as herbaceous/grasses understory (only) sans shrub species. It is therefore recommended that native shrub coverage constitute a minimum of 30 percent at the 10-year mark, as listed in Table 6, to provide similar understory structural diversity to the reference site.

The CSS portion of the reference site exhibits patchy shrub coverage (approximately 38 to 53 percent), and is a disturbed mosaic of shrubs and weedy grasses. The OWHMP calls for native vegetation coverage of 75 percent (all species) for the CSS mitigation site; of this total, it is recommended that native shrubs constitute a minimum of 60 percent coverage at the 10-year mark, to provide similar shrub coverage to the reference site.

Herbaceous and Grass Species (Oak Woodland and Sage Scrub Mitigation)

As stated above, coverage of native herbaceous and grass species is low (less than 10 percent) in both the CS/CLORF and CSS portions of the reference site, due to the high percent coverage of weedy herbs and grasses (approximately 55 to 80 percent) that must constitute less than five percent coverage on the mitigation sites.

Because of the herbaceous-only sub-areas to be created on the oak woodland mitigation site, it is recommended that native herbs and grasses constitute a minimum of 30 percent coverage at the 10-year mark on the CS/CLORF mitigation site.

The CSS mitigation site will be a shrub-dominated habitat with patches of herbaceous cover in gaps in the shrub canopy; therefore, it is recommended that native herbs and grasses constitute a minimum of 15 percent coverage at the 10-year mark on the CSS mitigation site.

Native Vegetation Diversity

The reference site includes a minimum of 76 native plant species, based on a qualitative botanical assessment performed in July 2013. A total of 33 native plant species were sampled on the survey transects and quadrats (combined, CS/CLORF and CSS areas), which is approximately 43 percent of all native plant species qualitatively observed on the site. As discussed above, most of the native plant species have low frequency values and many species were not captured by either quadrats or transects, presumably related to the dominance of invasive herbs and grasses in the woodland/scrub understory layer.

A total of 24 native plant species were sampled in the CS/CLORF areas (transects and quadrats combined), and this is the recommended minimum diversity (richness) criterion for the CS/CLORF mitigation site at the 10-year mark.

A total of 18 native plant species were sampled in the CSS areas (transects and quadrats combined), and this is the recommended minimum diversity (richness) criterion for the CS/CLORF mitigation site at the 10-year mark.

The Shannon Diversity Index values ('H') are very low for the CS/CLORF (H = 0.01) and CSS (H = 0.03) portions of the reference site. It is recommended that the reference site be quantitatively sampled (quadrats and transects) at the 3, 5, 7, and 10-year marks (only) for comparison to mitigation site performance. If the values of 'H' for the mitigation site are found to be outside the range of values of 'H' found on the reference sites (CS/CLORF and CSS) in a given survey year, it is recommended that the LACDPW implement enhancement measures to improve mitigation site vegetative diversity (e.g., supplemental native plant and seed installation) to achieve values of 'H' that equal or exceed the values of 'H' on the reference site.

A summary of the results of the reference site surveys, including the recommended performance criteria, will be included in the final OWHMP.

If you have any questions or need any additional information, please contact Tom Smith or Richard Lewis at (626) 351-2000.

Respectfully submitted,

BONTERRA CONSULTING

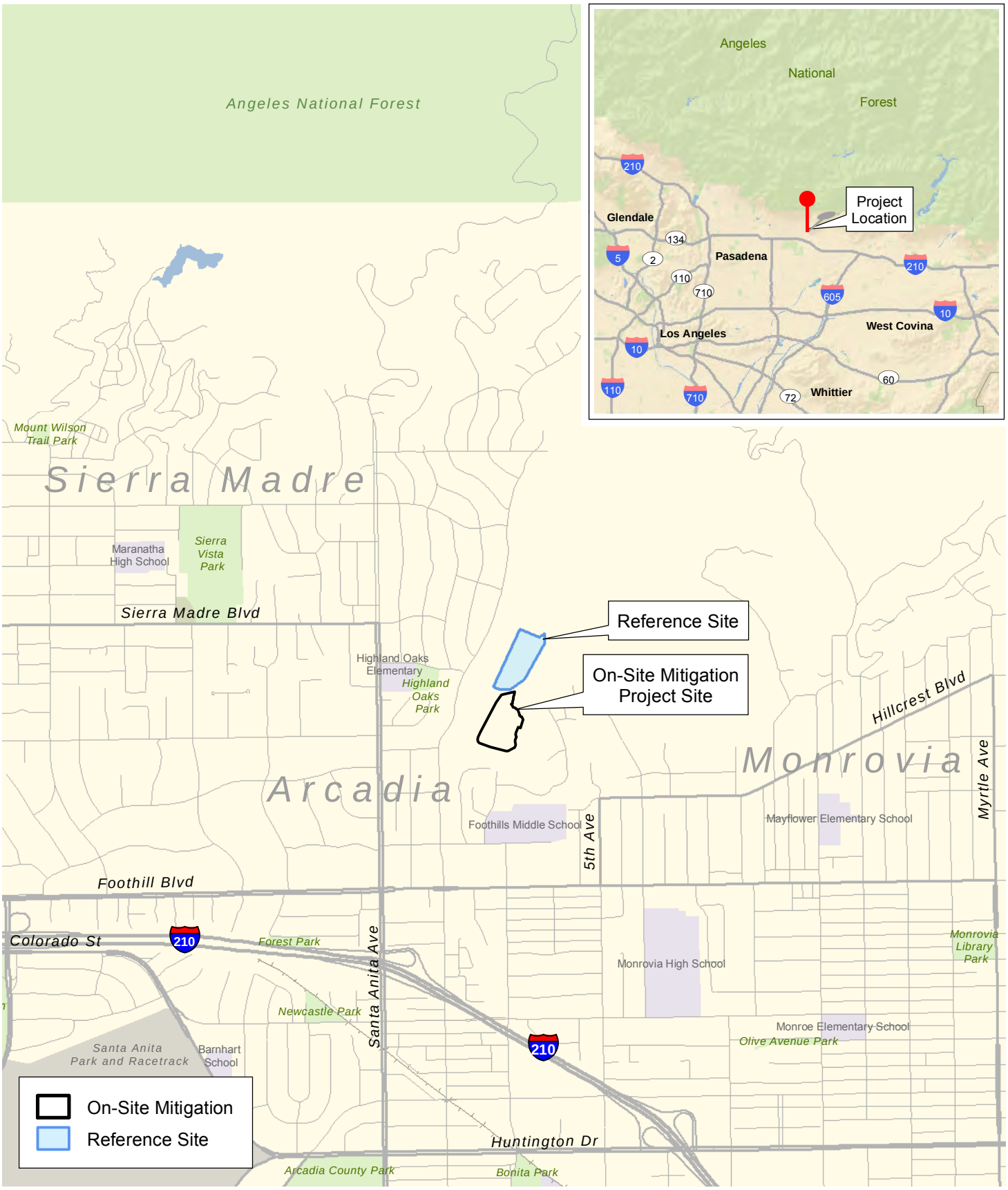
Melissa A. Howe
Vice President/Resource Management

Richard B. Lewis, III
Senior Project Manager

Enclosures: Exhibits 1–3
A – Floral Compendium
B – Site Photographs
C – Faunal Compendium
D – Transect Data and Computations
E – Quadrat Data and Computations
F – Oak Tree Assessment Data
G – References

cc: Pat Wood, (PWood@dpw.lacounty.gov)
Kenneth Rickard, (KRickard@dpw.lacounty.gov)

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Project Vicinity

Exhibit 1

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

N W E S

2,000 1,000 0 2,000 Feet

BonTerra CONSULTING

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Sediment Placement Site Locations

Exhibit 2

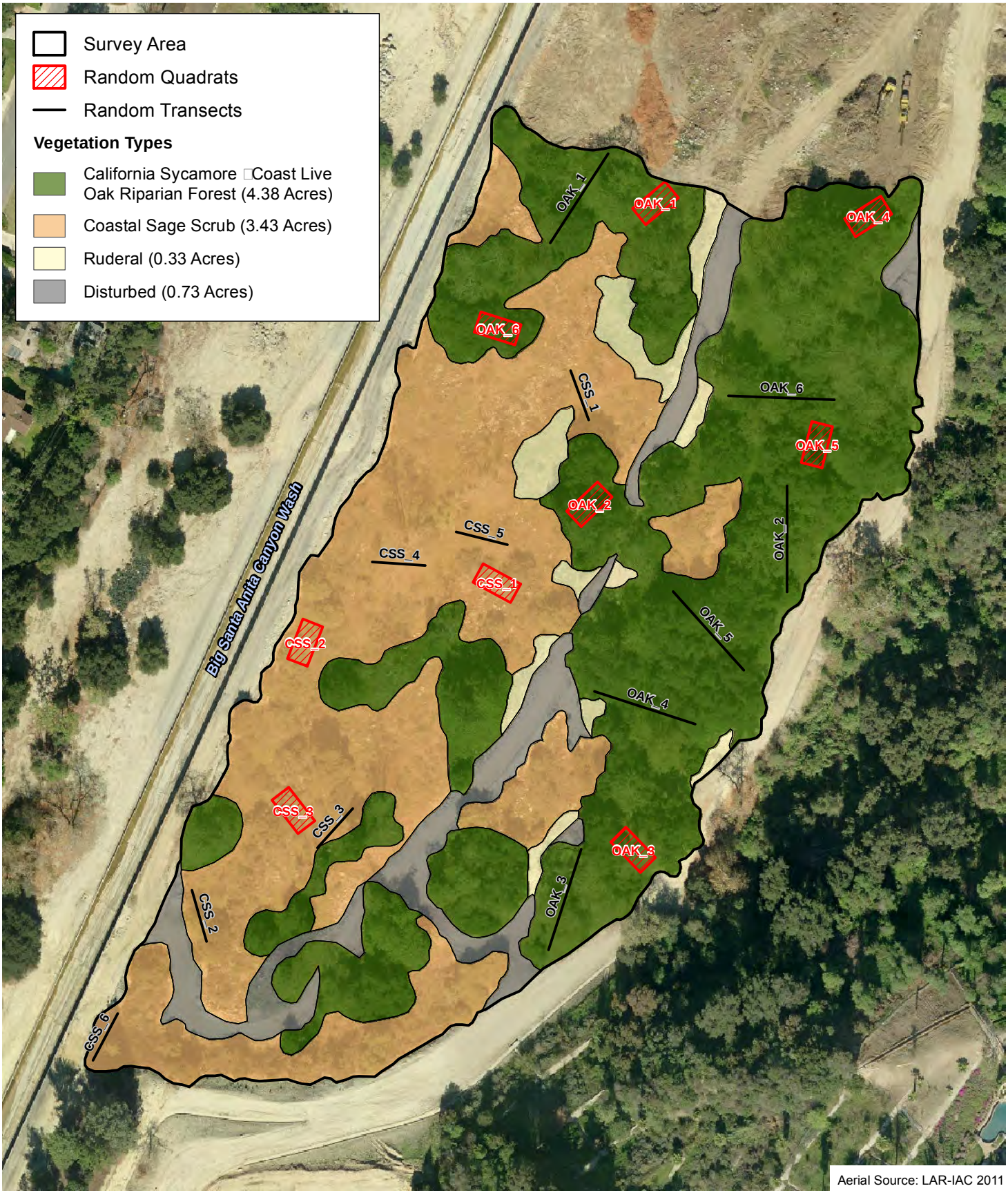
2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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Reference Site Vegetation Types and Sampling Locations

Exhibit 3

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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125 62.5 0 125
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APPENDIX A

FLORAL COMPENDIUM

APPENDIX A

FLORAL COMPENDIUM

Species	
***PTERIDOPHYTES* – FERNS AND ALLIES**	
SELAGINELLACEAE – SPIKE-MOSS FAMILY	
Selaginella bigelovii	Bigelow's or bushy spike-moss
***ANGIOSPERMAE* – FLOWERING PLANTS**	
MAGNOLIIDS	
LAURACEAE – LAUREL FAMILY	
Umbellularia californica	California bay
EUDICOTS	
ADOXACEAE – MUSKROOT FAMILY	
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	blue elderberry
ANACARDIACEAE – SUMAC FAMILY	
Malosma laurina	laurel sumac
Rhus aromatica [*R. trilobata*]	skunk bush
Rhus ovata	sugar bush
Toxicodendron diversilobum	western poison oak
APIACEAE – CARROT FAMILY	
*Conium maculatum**	poison hemlock
Daucus pusillus	rattlesnake weed
ASTERACEAE – SUNFLOWER FAMILY	
Ambrosia acanthicarpa	annual bur-sage
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Baccharis salicifolia ssp. *salicifolia* [*B. salicifolia*]	mule fat
Carduus pycnocephalus ssp. *pycnocephalus**	Italian thistle
*Centaurea melitensis**	tocalote, Malta star-thistle
Chaenactis glabriuscula	yellow pincushion
Deinandra fasciculata [*Hemizonia f.*]	fascicled tarweed
Erigeron canadensis [*Conyza c.*]	common horseweed
Helianthus annuus	western sunflower
Heterotheca grandiflora	telegraph weed
*Lactuca serriola**	prickly lettuce
Lepidospartum squamatum	scale-broom
Pseudognaphalium biolettii [*Gnaphalium bicolor*]	bicolored everlasting, Bioletti's cudweed
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*	weedy cudweed
Rafinesquia californica	California chicory
*Senecio vulgaris**	common groundsel
*Silybum marianum**	milk thistle
*Sonchus oleraceus**	common sow thistle

APPENDIX A

FLORAL COMPENDIUM

Species	
BORAGINACEAE – BORAGE FAMILY	
Amsinckia intermedia [*Amsinckia menziesii* var. *i.*]	common fiddleneck
Cryptantha sp.	cryptantha
Eucrypta chrysanthemifolia	common eucrypta
Phacelia cicutaria	caterpillar phacelia
Phacelia grandiflora	large-flowered phacelia
Phacelia ramosissima	branching phacelia
Plagiobothrys sp.	popcornflower
BRASSICACEAE – MUSTARD FAMILY	
*Hirschfeldia incana**	shortpod mustard
Lepidium virginicum ssp. *menziesii* *[L.v.* var*. robinsonii]*	Robinson's peppergrass**
CACTACEAE – CACTUS FAMILY	
Opuntia littoralis	coastal prickly-pear
Opuntia x vaseyi	mesa prickly-pear
CAPRIFOLIACEAE – HONEYSUCKLE FAMILY	
Lonicera subspicata var. *denudata*	southern honeysuckle
Symphoricarpos mollis	creeping snowberry
CARYOPHYLLACEAE – PINK FAMILY	
Polycarpon tetraphyllum ssp*. tetraphyllum**	four-leaved allseed
CHENOPODIACEAE – GOOSEFOOT FAMILY	
*Chenopodium album**	lamb's quarters
Chenopodium berlandieri	pitseed goosefoot
Dysphania ambrosioides [*Chenopodium a.*]*	Mexican tea
Dysphania botrys [*Chenopodium b.*]*	Jerusalum oak
Dysphania pumilio [*Chenopodium p.*] *	Tasmanian goosefoot
CONVOLVULACEAE – MORNING-GLORY FAMILY	
Calystegia macrostegia	large-bracted morning-glory
Cuscuta californica	chaparral dodder
CUCURBITACEAE – GOURD FAMILY	
Marah macrocarpus	wild cucumber / chilicothe
EUPHORBIACEAE – SPURGE FAMILY	
Croton californicus	California croton
Croton setigerus [*Eremocarpus s.*]	doveweed / turkey mullein
*Euphorbia peplus**	petty spurge
*Ricinus communis**	castor bean
FABACEAE – LEGUME FAMILY	
Acmispon americanus [*Lotus purshianus*]	American lotus
Acmispon glaber var. *glaber* *[Lotus scoparius* var. *scoparius]*	coastal deerweed
*Ceratonia siliqua**	carob tree
Lathyrus vestitus ssp. *vestitus*	chaparral sweet pea
Lupinus sp.	lupine
*Melilotus indicus**	sourclover

APPENDIX A

FLORAL COMPENDIUM

Species	
FAGACEAE – OAK / BEECH FAMILY	
Quercus agrifolia	coast live oak
GERANIACEAE – GERANIUM FAMILY	
*Erodium botrys**	long-beaked filaree
*Erodium cicutarium**	red-stemmed filaree
GROSSULARIACEAE – GOOSEBERRY FAMILY	
Ribes aureum	golden currant
Ribes californicum	hillside gooseberry
LAMIACEAE – MINT FAMILY	
*Marrubium vulgare**	common horehound
Salvia columbariae	chia
Salvia mellifera	black sage
MYRSINACEAE – MYRSINE FAMILY	
*Anagallis arvensis**	scarlet pimpernel
ONAGRACEAE – EVENING-PRIMROSE FAMILY	
Camissoniopsis bistorta [*Camissonia b.*]	California sun cup
Clarkia sp.	clarkia
Clarkia purpurea	winecup clarkia
Epilobium canum	California fuchsia
Eulobus californicus [*Camissonia californica*]	mustard-like evening primrose
PHRYMACEAE – LOPSEED FAMILY	
Mimulus aurantiacus	bush monkeyflower
PLANTAGINACEAE – PLANTAIN FAMILY	
Keckiella cordifolia	heart-leaved bush-penstemon
Penstemon spectabilis	royal penstemon
PLATANACEAE – SYCAMORE FAMILY	
Platanus racemosa	western sycamore
POLYGALACEAE – MILKWORT FAMILY	
Polygala cornuta var. *fishiae*	Fish's milkwort ***
POLYGONACEAE – BUCKWHEAT FAMILY	
Eriogonum fasciculatum var. *fasciculatum*	coastal California buckwheat
RANUNCULACEAE – CROWFOOT FAMILY	
Clematis lasiantha	chaparral clematis, pipestem clematis
RHAMNACEAE – BUCKTHORN FAMILY	
Ceanothus leucodermis	chaparral whitethorn
Frangula californica [Rhamnus c.]	California coffee berry
Rhamnus crocea	spiny redberry
Rhamnus ilicifolia	hollyleaf redberry
ROSACEAE – ROSE FAMILY	
Cercocarpus betuloides var. *betuloides*	birch-leaf mountain-mahogany
Heteromeles arbutifolia	toyon / Christmas berry
Prunus ilicifolia	holly-leaved cherry
Rubus ursinus	California blackberry

APPENDIX A

FLORAL COMPENDIUM

Species	
RUBIACEAE – MADDER FAMILY	
Galium angustifolium	narrowly leaved bedstraw
SOLANACEAE – NIGHTSHADE FAMILY	
*Cestrum nocturnum**	night jessamine
Datura wrightii	jimson weed
*Lantana montevidensis**	trailing lantana
*Nicotiana glauca**	tree tobacco
Solanum douglasii	Douglas' nightshade
ZYGOPHYLLACEAE – CALTROP FAMILY	
*Tribulus terrestris**	puncture vine
***MONOCOTYLEDONES* – MONOCOTS**	
AGAVACEAE – CENTURY PLANT FAMILY	
Hesperoyucca whipplei [*Yucca w.*]	chaparral yucca
ARECACEAE – PALM FAMILY	
*Washingtonia robusta**	Mexican fan palm
ASPARAGACEAE – ASPARAGUS FAMILY	
Asparagus officinalis ssp. *officinalis**	garden asparagus
JUNCACEAE – RUSH FAMILY	
Juncus textilis	basket rush
POACEAE – GRASS FAMILY	
*Avena barbata**	slender wild oat
Bromus carinatus	California brome
*Bromus diandrus**	ripgut grass
Bromus madritensis ssp. *rubens**	red brome
Elymus condensatus [*Leymus c.*]	giant wild rye
Festuca myuros [*Vulpia m.* var. *myuros*]*	rattail fescue
Hordeum murinum var. *leporinum**	hare barley
Melica imperfecta	little California melic grass
Stipa miliacea [*Piptatherum miliacea*]*	smilo grass

* non-native to the region in which it was found
** California Rare Plant Rank (CRPR) List 1B.2 – "Rare or Endangered in California and Elsewhere"
*** CRPR 4.3 – Plants of Limited Distribution

APPENDIX B

SITE PHOTOGRAPHS



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 1.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 2.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 3.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 4.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 5.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 6.

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Transect Photographs - California Sycamore/Coast Live Oak Riparian Forest

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra CONSULTING



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Quadrat No. 1.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Quadrat No. 2.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Quadrat No. 3.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Quadrat No. 4.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Quadrat No. 5.



July 2013. California Sycamore-Coast Live Oak Riparian Forest - Transect No. 6.

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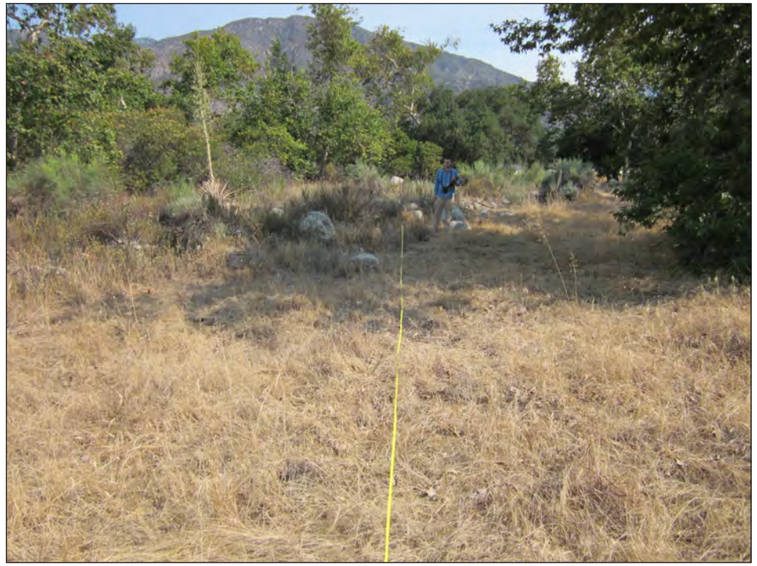
Quadrat Photographs - California Sycamore/Coast Live Oak Riparian Forest

Appendix B-2

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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July 2013. Coastal Sage Scrub - Transect No. 1.



July 2013. Coastal Sage Scrub - Transect No. 2.



July 2013. Coastal Sage Scrub - Transect No. 3.



July 2013. Coastal Sage Scrub - Transect No. 4.



July 2013. Coastal Sage Scrub - Transect No. 5.



July 2013. Coastal Sage Scrub - Transect No. 6.

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Transect Photographs - Coastal Sage Scrub

Appendix B-3

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra CONSULTING

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July 2013. Coastal Sage Scrub - Quadrat No. 1.



July 2013. Coastal Sage Scrub - Quadrat No. 2.



July 2013. Coastal Sage Scrub - Quadrat No. 3.

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Quadrat Photographs – Coastal Sage Scrub

2013 Reference Site Survey Report - Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra CONSULTING

(08\21\2013 KFD) PAS R:\Projects\CoLADPW\J212\Graphics\Reference Site\2013SurveyReport\exAppB4_quadratphotosCSS.pdf

APPENDIX C

FAUNAL COMPENDIUM

APPENDIX C

FAUNAL COMPENDIUM

Species	
REPTILES	
***LEPIDOSAURIA* – LIZARDS AND SNAKES**	
PHRYNOSOMATIDAE – ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS	
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard
TEIIDAE – WHIPTAIL LIZARDS	
Aspidoscelis [*Cnemidophorus*] *tigris stejnegeri*	coastal western whiptail
COLUBRIDAE – COLUBRID SNAKES	
Pituophis catenifer	gopher snake
Coluber [*Masticophis*] *flagellum piceus*	red coachwhip [red racer]
Coluber [*Masticophis*] *lateralis lateralis*	California striped racer
VIPERIDAE – VIPERS	
Crotalus oreganus (helleri)	southern Pacific rattlesnake
BIRDS	
***AVES* – BIRDS**	
ODONTOPHORIDAE – QUAILS	
Callipepla californica	California quail
CATHARTIDAE – NEW WORLD VULTURES	
Cathartes aura	turkey vulture
ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES	
Buteo jamaicensis	red-tailed hawk
CHARADRIIDAE – PLOVERS	
Charadrius vociferus	killdeer
COLUMBIDAE – PIGEONS AND DOVES	
Patagioenas fasciata	band-tailed pigeon
Zenaida macroura	mourning dove
PSITTACIDEA – TRUE PARROTS	
Amazona sp*	
APODIDAE – SWIFTS	
Aeronautes saxatalis	white-throated swift
TROCHILIDAE – HUMMINGBIRDS	
Calypte anna	Anna’s hummingbird
Selasphorus sasin	Allen’s hummingbird
Selasphorus rufus	Rufous hummingbird
Calypte costae	Costa’s hummingbird
PICIDAE – WOODPECKERS	
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall’s woodpecker

APPENDIX C

FAUNAL COMPENDIUM

Species	
TYRANNIDAE – TYRANT FLYCATCHERS	
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	black phoebe
Myiarchus cinerascens	ash-throated flycatcher
CORVIDAE – CROWS AND JAYS	
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
HIRUNDINIDAE – SWALLOWS	
Stelgidopteryx serripennis	northern rough-winged swallow
AEGITHALIDAE – BUSHTITS	
Psaltriparus minimus	bushtit
TROGLODYTIDAE – WRENS	
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
SYLVIIDAE – SYLVIID WARBLERS	
Chamaea fasciata	wrentit
MIMIDAE – THRASHERS	
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
STURNIDAE – STARLINGS	
Sturnus vulgaris *	European starling
PTILOGONATIDAE – SILKY-FLYCATCHERS	
Phainopepla nitens	phainopepla
EMBERIZIDAE – SPARROWS AND JUNCOS	
Pipilo maculatus	spotted towhee
Melozone [*Pipilo*] *crissalis*	California towhee
Melospiza melodia	song sparrow
Junco hyemalis	dark-eyed junco
CARDINALIDAE – CARDINALS AND ALLIES	
Pheucticus melanocephalus	black-headed grosbeak
Piranga ludoviciana	western tanager
ICTERIDAE – BLACKBIRDS	
Icterus bullockii	Bullock's oriole
PARIDAE – CHICKADEES AND TITMICE	
Baeolophus inornatus	oak titmouse
FRINGILLIDAE – FINCHES	
Carpodacus mexicanus	house finch
Spinus [*Carduelis*] *psaltria*	lesser goldfinch
PASSERIDAE – OLD WORLD SPARROWS	
Passer domesticus *	house sparrow

APPENDIX C

FAUNAL COMPENDIUM

Species	
MAMMALS	
***MAMMALIA* – MAMMALS**	
SCIURIDAE – SQUIRRELS	
Spermophilus beecheyi	California ground squirrel
MURIDAE – MICE, RATS, AND VOLES	
Neotoma sp.	woodrat
CANIDAE – WOLVES AND FOXES	
Canis latrans	coyote
URSIDAE – BEARS	
Ursus americanus	American black bear
CERVIDAE – DEER	
Odocoileus hemionus	mule deer

* introduced species

Note: This species compendium is composed of the cumulative observations from multiple field surveys. Surveys were conducted by BonTerra Consulting Biologists Marc Blain on June 18, 2013, and June 19, 2013; Trevor Bristle on July 3, 2013, July 5, 2013, and July 18, 2013; Jonas Winbolt on July 15, 2013; and Nathan Moffett on August 5, 2013.

APPENDIX D

TRANSECT DATA AND COMPUTATIONS

APPENDIX D-1

TRANSECT DATA AND COMPUTATIONS
CALIFORNIA SYCAMORE/COAST LIVE OAK RIPARIAN FOREST (CS/CLORF)

Plant Species[1]	Transect Number (100-ft Transects; Hits = Percent Coverage)							C_i	RC_i
	T-O1	T-O2	T-O3	T-O4	T-O5	T-O6	Mean % Covg		
Native									
Acmispon glaber var. glaber [Lotus scoparius var. *scoparius]*	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Artemisia douglasiana	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Baccharis salicifolia ssp. salicifolia [*B. salicifolia*][1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Ceanothus leucodermis[1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Clarkia sp.	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Clematis lasiantha[1]	0.00	7.00	0.00	0.00	0.00	0.00	**1.17**	0.011667	0.005011
Elymus condensatus [Leymus c.]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Eriogonum fasciculatum[1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Hesperoyucca whipplei [Yucca w.]	7.00	0.00	0.00	0.00	0.00	0.00	**1.17**	0.011667	0.005011
Lepidospartum squamatum[1]	4.00	0.00	0.00	0.00	0.00	0.00	**0.67**	0.006667	0.002863
Lonicera subspicata var. *denudata*[1]	0.00	0.00	0.00	8.00	0.00	0.00	**1.33**	0.013333	0.005727
Lupinus sp.	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Malosma laurina[1]	0.00	0.00	0.00	9.00	2.00	0.00	**1.83**	0.018333	0.007874
Marah macrocarpus	0.00	12.00	9.00	0.00	3.00	17.00	**6.83**	0.068333	0.029349
Melica imperfecta	0.00	0.00	0.00	10.00	0.00	0.00	**1.67**	0.016667	0.007158
Opuntia x vaseyi	0.00	11.00	0.00	0.00	0.00	1.00	**2.00**	0.020000	0.008590
Phacelia cicutaria	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Platanus racemosa	52.00	81.00	85.00	31.00	6.00	41.00	**49.33**	0.493333	0.211883
Polygala cornuta ssp. *fishiae*[1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Pseudognaphalium californicum [*Gnaphalium c.*]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Quercus agrifolia	0.00	95.00	71.00	73.00	81.00	76.00	**66.00**	0.660000	0.283465
Rhamnus crocea[1]	0.00	14.00	0.00	2.00	0.00	0.00	**2.67**	0.026667	0.011453
Rhus aromatica [*R. trilobata*][1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Rhus ovata[1]	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Ribes aureum[1]	0.00	0.00	2.00	2.00	1.00	5.00	**1.67**	0.016667	0.007158

APPENDIX D-1

TRANSECT DATA AND COMPUTATIONS
CALIFORNIA SYCAMORE/COAST LIVE OAK RIPARIAN FOREST (CS/CLORF)

Plant Species[1]	Transect Number (100-ft Transects; Hits = Percent Coverage)							C_i	RC_i
	T-O1		T-O2	T-O3	T-O4	T-O5	T-O6	Mean % Covg		
Rubus ursinus[1]	0.00	0.00		12.00	1.00	0.00	0.00	**2.17**	0.021667	0.009306
Salix lasiolepis	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Salvia mellifera[1]	0.00	0.00		0.00	4.00	0.00	0.00	**0.67**	0.006667	0.002863
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	0.00	0.00		10.00	11.00	0.00	0.00	**3.50**	0.035000	0.015032
Solanum douglasii	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Symphoricarpos mollis[1]	0.00	0.00		0.00	7.00	0.00	0.00	**1.17**	0.011667	0.005011
Toxicodendron diversilobum[1]	30.00	23.00		13.00	6.00	11.00	39.00	**20.33**	0.203333	0.087330
Umbellularia californica	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Non-Native										
Araujia sericifera	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Avena barbata	7.00	0.00		0.00	0.00	0.00	0.00	**1.17**	0.011667	0.005011
Bromus diandrus	68.00	40.00		10.00	87.00	97.00	57.00	**59.83**	0.598333	0.256979
Bromus madritensis ssp. *rubens*	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Carduus pycnocephalus ssp. pycnocephalus	3.00	0.00		0.00	3.00	9.00	5.00	**3.33**	0.033333	0.014316
Centaurea melitensis	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Ceratonia siliqua	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Conium maculatum	1.00	0.00		0.00	0.00	0.00	0.00	**0.17**	0.001667	0.000716
Dysphania pumilio [Chenopodium pumilio]	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Erodium cicutarium	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Festuca myuros [Vulpia m. var. *myuros]*	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Hirschfeldia incana	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Nicotiana glauca	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Pseudognaphalium luteoalbum [*Gnaphalium l.*]	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Silybum marianum	20.00	0.00		0.00	0.00	0.00	1.00	**3.50**	0.035000	0.015032
Sonchus oleraceus	0.00	0.00		0.00	0.00	0.00	0.00	**0.00**	0.000000	0.000000
Stipa miliacea [Piptatherum miliacea]	0.00	0.00		0.00	4.00	0.00	0.00	**0.67**	0.006667	0.002863

APPENDIX D-1

TRANSECT DATA AND COMPUTATIONS
CALIFORNIA SYCAMORE/COAST LIVE OAK RIPARIAN FOREST (CS/CLORF)

Plant Species[1]	Transect Number (100-ft Transects; Hits = Percent Coverage)							C_i	RC_i
	T-O1	T-O2	T-O3	T-O4	T-O5	T-O6	Mean % Covg		
Absolute Percent Coverage									
Total Absolute Native Species Coverage	93.00	243.00	202.00	164.00	104.00	179.00	**164.17**		
Total Absolute Non-Native Species Coverage	99.00	40.00	10.00	94.00	106.00	63.00	**68.67**		
Total Absolute Coverage (All)	192.00	283.00	212.00	258.00	210.00	242.00	**232.83**		
Class Percent Coverage									
Native	25.00	47.00	90.00	24.00	5.00	42.00	**38.83**		
Non-Native	32.00	16.00	0.00	0.00	19.00	20.00	**14.50**		
Both	42.00	37.00	10.00	76.00	76.00	38.00	**46.50**		
No Plant	1.00	0.00	0.00	0.00	0.00	0.00	**0.17**		
Summary									
Total Native Class Coverage	67.00	84.00	100.00	100.00	81.00	80.00	**85.33**		
Total Non-Native Class Coverage	74.00	53.00	10.00	76.00	95.00	58.00	**61.00**		
Total Unvegetated	1.00	0.00	0.00	0.00	0.00	0.00	**0.17**		
Ground Cover									
Bare Soil	2.00	0.00	2.00	0.00	0.00	0.00	**0.67**		
Rock/Cobble	2.00	0.00	0.00	1.00	1.00	0.00	**0.67**		
Leaf Litter	67.00	92.00	83.00	82.00	99.00	100.00	**87.17**		
Fine Woody Debris	24.00		12.00	8.00	0.00	0.00	**7.33**		
Coarse Woody Debris	5.00	4.00	1.00	5.00	0.00	0.00	**2.50**		
Living Trunk	0.00	4.00	2.00	4.00	0.00	0.00	**1.67**		
1 Native shrub species (excluding succulent spp.)									

APPENDIX D-2

TRANSECT DATA AND COMPUTATIONS
COASTAL SAGE SCRUB (CSS)

Plant Species[1]	Transect Number (50-ft Transects; Percent Coverage = Hits x 2)														
	T-C1		T-C2		T-C3		T-C4		T-C5		T-C6		Mean %C	C_i	RC_i
	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg			
Native															
Acmispon glaber var. glaber [Lotus scoparius var. *scoparius]*		0.00		0.00		0.00		0.00		0.00	3	6.00	**1.00**	0.010000	0.006757
Artemisia douglasiana		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Baccharis salicifolia ssp. salicifolia [*B. salicifolia*][1]		0.00	17	34.00		0.00	2	4.00		0.00		0.00	**6.33**	0.063333	0.042793
Ceanothus leucodermis[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Clarkia sp.		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Clematis lasiantha[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Elymus condensatus [Leymus c.]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Eriogonum fasciculatum[1]	6	12.00		0.00	10	20.00	9	18.00		0.00	39	78.00	**21.33**	0.213333	0.144144
Hesperoyucca whipplei [Yucca w.]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Lepidospartum squamatum[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Lonicera subspicata var. *denudata*[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Lupinus sp.		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Malosma laurina[1]		0.00	20	40.00	12	24.00		0.00	39	78.00		0.00	**23.67**	0.236667	0.159910
Marah macrocarpus		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Melica imperfecta		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Opuntia x vaseyi		0.00		0.00	6	12.00		0.00		0.00		0.00	**2.00**	0.020000	0.013514
Phacelia cicutaria		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Platanus racemosa		0.00		0.00	1	2.00	36	72.00		0.00		0.00	**12.33**	0.123333	0.083333
Polygala cornuta ssp. *fishiae*[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Pseudognaphalium californicum [*Gnaphalium c.*]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Quercus agrifolia		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Rhamnus crocea[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Rhus aromatica [*R. trilobata*][1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Rhus ovata[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Ribes aureum[1]		0.00		0.00	6	12.00		0.00		0.00		0.00	**2.00**	0.020000	0.013514
Rubus ursinus[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Salix lasiolepis		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Salvia mellifera[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Sambucus nigra ssp. *caerulea* [*S. mexicana*]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Solanum douglasii		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Symphoricarpos mollis[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Toxicodendron diversilobum[1]		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Umbellularia californica		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Non-Native															
*Araujia sericifera**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Avena barbata**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Bromus diandrus**	50	100.00	13	26.00	50	100.00	48	96.00	20	40.00	0	0.00	**60.33**	0.603333	0.407658
Bromus madritensis ssp. *rubens**		0.00	20	40.00		0.00		0.00		0.00	24	48.00	**14.67**	0.146667	0.099099
*Carduus pycnocephalus ssp. pycnocephalus**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000

APPENDIX D-2

TRANSECT DATA AND COMPUTATIONS
COASTAL SAGE SCRUB (CSS)

Plant Species[1]	Transect Number (50-ft Transects; Percent Coverage = Hits x 2)												Mean %C	C_i	RC_i
	T-C1		T-C2		T-C3		T-C4		T-C5		T-C6				
	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg	Hits	% Covg			
*Centaurea melitensis**	2	4.00		0.00		0.00		0.00		0.00		0.00	**0.67**	0.006667	0.004505
*Ceratonia siliqua**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Conium maculatum**		0.00	4	8.00		0.00		0.00		0.00		0.00	**1.33**	0.013333	0.009009
*Dysphania pumilio [Chenopodium pumilio] **		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Erodium cicutarium**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Festuca myuros [Vulpia m. var. *myuros]**		0.00		0.00		0.00		0.00		0.00	2	4.00	**0.67**	0.006667	0.004505
*Hirschfeldia incana**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Nicotiana glauca**		0.00		0.00		0.00		0.00		0.00	5	10.00	**1.67**	0.016667	0.011261
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Silybum marianum**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Sonchus oleraceus**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
*Stipa miliacea [Piptatherum miliacea]**		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**	0.000000	0.000000
Absolute Percent Coverage															
Total Absolute Native Species Coverage	6	12.00	37	74.00	35	70.00	47	94.00	39	78.00	42	84.00	**68.67**		
Total Absolute Non-Native Species Coverage	52	104.00	37	74.00	50	100.00	48	96.00	20	40.00	31	62.00	**79.33**		
Total Absolute Coverage (All)	58	116.00	74	148.00	85	170.00	95	190.00	59	118.00	73	146.00	**148.00**		
Class Percent Coverage															
Native	44	88.00	17	34.00		0.00	2	4.00	29	58.00	24	48.00	**38.67**		
Non-Native	6	12.00	13	26.00	25	50.00	14	28.00	10	20.00	8	16.00	**25.33**		
Both		0.00	20	40.00	25	50.00	34	68.00	11	22.00	18	36.00	**36.00**		
No Plant		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**		
Summary															
Total Native Class Coverage		88.00		74.00		50.00		72.00		80.00		84.00	**74.67**		
Total Non-Native Class Coverage		12.00		66.00		100.00		96.00		42.00		52.00	**61.33**		
Total Unvegetated		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**		
Ground Cover															
Bare Soil	4	8.00		0.00	10	20.00		0.00	5	10.00	5	10.00	**8.00**		
Rock/Cobble		0.00		0.00		0.00		0.00	22	44.00		0.00	**7.33**		
Leaf Litter	46	92.00	40	80.00	38	76.00	43	86.00	9	18.00	23	46.00	**66.33**		
Fine Woody Debris		0.00	8	16.00	2	4.00	7	14.00	14	28.00	22	44.00	**17.67**		
Coarse Woody Debris		0.00	2	4.00		0.00		0.00		0.00		0.00	**0.67**		
Living Trunk		0.00		0.00		0.00		0.00		0.00		0.00	**0.00**		

1 Native shrub species (excluding succulent spp.)

APPENDIX E

QUADRAT DATA AND COMPUTATIONS

APPENDIX E-1

QUADRAT DATA AND COMPUTATIONS
CALIFORNIA SYCAMORE/COAST LIVE OAK RIPARIAN FOREST (CS/CLORF)

California Sycamore-Coast Live Oak Forest Quadrat Data and Statistics

Plant Species[1]	Coverage							No. of Individual Plants														
	Q-O1	Q-O2	Q-O3	Q-O4	Q-O5	Q-O6	Mean	Q-O1	Q-O2	Q-O3	Q-O4	Q-O5	Q-O6	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Native																							
Acmispon glaber var. glaber [Lotus scoparius var. *scoparius]*	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	**0.01**	**3.33**
Artemisia douglasiana	0.00	0.00	0.00	0.00	0.00	5.00	0.833						1	0.000208	0.000004	0.008333	0.004519	0.166667	0.019608	0.000004	-0.000047		
Baccharis salicifolia ssp. salicifolia [*B. salicifolia*][1]	45.00	0.00	0.00	0.00	0.00	0.00	7.500	14						0.002917	0.000052	0.075000	0.040671	0.166667	0.019608	0.000052	-0.000517		
Ceanothus leucodermis[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Clarkia sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Clematis lasiantha[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Elymus condensatus [Leymus c.]	0.00	0.00	0.00	35.00	0.00	0.00	5.833				4			0.000833	0.000015	0.058333	0.031633	0.166667	0.019608	0.000015	-0.000167		
Eriogonum fasciculatum[1]	0.00	3.00	0.00	0.00	0.00	0.00	0.500		3					0.000625	0.000011	0.005000	0.002711	0.166667	0.019608	0.000011	-0.000128		
Hesperoyucca whipplei [Yucca w.]	1.50	0.00	0.00	0.00	0.00	0.00	0.250	2						0.000417	0.000007	0.002500	0.001356	0.166667	0.019608	0.000007	-0.000088		
Lepidospartum squamatum[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Lonicera subspicata var. *denudata*[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Lupinus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Malosma laurina[1]	0.00	25.00	0.00	0.00	0.00	0.00	4.167		1					0.000208	0.000004	0.041667	0.022595	0.166667	0.019608	0.000004	-0.000047		
Marah macrocarpus	0.00	0.00	5.00	0.00	0.00	0.00	0.833			1				0.000208	0.000004	0.008333	0.004519	0.166667	0.019608	0.000004	-0.000047		
Melica imperfecta	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Opuntia x vaseyi	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Phacelia cicutaria	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Platanus racemosa	65.00	0.00	60.00	2.00	1.00	0.00	21.333	1		2	1	1		0.001042	0.000019	0.213333	0.115685	0.666667	0.078431	0.000019	-0.000204		
Polygala cornuta ssp. *fishiae*[1]	0.00	0.00	0.00	4.00	0.00	0.00	0.667				1			0.000208	0.000004	0.006667	0.003615	0.166667	0.019608	0.000004	-0.000047		
Pseudognaphalium californicum [*Gnaphalium c.*]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Quercus agrifolia	8.00	65.00	85.00	30.00	85.00	90.00	60.500	1	1	2	3	2	2	0.002292	0.000041	0.605000	0.328076	1.000000	0.117647	0.000041	-0.000416		
Rhamnus crocea[1]	0.00	0.00	0.00	0.00	1.00	0.20	0.200					1	1	0.000417	0.000007	0.002000	0.001085	0.333333	0.039216	0.000007	-0.000088		
Rhus aromatica [*R. trilobata*][1]	0.00	0.00	0.00	8.00	0.00	0.00	1.333				3			0.000625	0.000011	0.013333	0.007230	0.166667	0.019608	0.000011	-0.000128		
Rhus ovata[1]	0.00	0.00	0.20	0.00	0.00	0.00	0.033			1				0.000208	0.000004	0.000333	0.000181	0.166667	0.019608	0.000004	-0.000047		
Ribes aureum[1]	0.00	8.00	0.00	0.00	0.00	0.20	1.367		5				1	0.001250	0.000022	0.013667	0.007411	0.333333	0.039216	0.000022	-0.000241		
Rubus ursinus[1]	0.00	0.00	0.00	7.00	0.00	0.00	1.167				1			0.000208	0.000004	0.011667	0.006327	0.166667	0.019608	0.000004	-0.000047		
Salix lasiolepis	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Salvia mellifera[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	0.00	4.00	12.00	0.00	0.00	0.00	2.667		1	2				0.000625	0.000011	0.026667	0.014461	0.333333	0.039216	0.000011	-0.000128		
Solanum douglasii	0.00	0.01	0.00	0.00	0.00	0.00	0.002		1					0.000208	0.000004	0.000017	0.000009	0.166667	0.019608	0.000004	-0.000047		
Symphoricarpos mollis[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Toxicodendron diversilobum[1]	5.00	0.00	0.00	12.00	3.00	25.00	7.500	1			3	2	4	0.002083	0.000037	0.075000	0.040671	0.666667	0.078431	0.000037	-0.000382		
Umbellularia californica	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		

APPENDIX E-1

QUADRAT DATA AND COMPUTATIONS
CALIFORNIA SYCAMORE/COAST LIVE OAK RIPARIAN FOREST (CS/CLORF)

California Sycamore-Coast Live Oak Forest Quadrat Data and Statistics

Plant Species[1]	Coverage							No. of Individual Plants														
	Q-O1	Q-O2	Q-O3	Q-O4	Q-O5	Q-O6	Mean	Q-O1	Q-O2	Q-O3	Q-O4	Q-O5	Q-O6	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Non-native																							
Araujia sericifera	0.00	0.00	0.00	0.00	0.01	0.00	0.002					1		0.000208	0.000004	0.000017	0.000009	0.166667	0.019608	0.000004	-0.000047		
Avena barbata	0.00	0.10	0.00	0.00	0.00	0.00	0.017		1					0.000208	0.000004	0.000167	0.000090	0.166667	0.019608	0.000004	-0.000047		
Bromus diandrus	60.00	70.00	13.00	45.00	100.00	95.00	63.833	5000	50000	1500	10000	100000	100000	55.52083	0.999183	0.638333	0.346152	1.000000	0.117647	0.999183	-0.000817		
Bromus madritensis ssp. *rubens*	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Carduus pycnocephalus ssp. pycnocephalus	2.00	0.00	0.00	0.00	0.50	0.00	0.417	10				2		0.002500	0.000045	0.004167	0.002259	0.333333	0.039216	0.000045	-0.000450		
Centaurea melitensis	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Ceratonia siliqua	0.00	0.00	0.00	0.00	1.00	0.00	0.167					1		0.000208	0.000004	0.001667	0.000904	0.166667	0.019608	0.000004	-0.000047		
Conium maculatum	6.00	0.00	0.00	0.00	0.00	0.20	1.033	20					2	0.004583	0.000082	0.010333	0.005604	0.333333	0.039216	0.000082	-0.000776		
Dysphania pumilio [Chenopodium pumilio]	0.00	0.01	0.00	0.00	0.00	0.00	0.002		2					0.000417	0.000007	0.000017	0.000009	0.166667	0.019608	0.000007	-0.000088		
Erodium cicutarium	0.00	0.01	0.00	0.00	0.00	0.00	0.002		2					0.000417	0.000007	0.000017	0.000009	0.166667	0.019608	0.000007	-0.000088		
Festuca myuros [Vulpia m. var. *myuros]*	0.00	0.00	0.00	0.00	0.00	0.00	0.000		2					0.000417	0.000007	0.000000	0.000000	0.166667	0.019608	0.000007	0.000000		
Hirschfeldia incana	0.00	3.00	0.00	0.00	0.00	0.00	0.500							0.000000	0.000000	0.005000	0.002711	0.000000	0.000000	0.000000	0.000000		
Nicotiana glauca	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Pseudognaphalium luteoalbum [*Gnaphalium l.*]	0.00	0.00	1.00	0.00	0.00	0.00	0.167			50				0.010417	0.000187	0.001667	0.000904	0.166667	0.019608	0.000187	-0.001609		
Silybum marianum	8.00	0.00	0.01	0.00	1.50	0.00	1.585	40				15		0.011458	0.000206	0.015850	0.008595	0.333333	0.039216	0.000206	-0.001750		
Sonchus oleraceus	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Stipa miliacea [Piptatherum miliacea]	0.00	0.00	0.00	0.00	0.00	0.00	0.000							0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Absolute Coverage																							
Total Absolute Native Species Coverage	124.50	105.01	162.20	98.00	90.00	120.40	116.685																
Total Absolute Non-Native Species Coverage	76.00	73.12	14.01	45.00	103.01	95.20	67.723																
Total Absolute Coverage (All)	200.50	178.13	176.21	143.00	193.01	215.60	184.408																
Ground Cover																							
Bare Soil	2.00	3.00	10.00	0.00	0.00	0.00	2.500																
Rock/Cobble/Gravel	2.00	2.00	0.00	0.00	0.00	8.00	2.000																
Leaf Litter	84.00	87.00	81.80	86.00	96.00	77.00	85.300																
Fine Woody Debris	10.00	6.00	7.00	7.00	2.00	12.00	7.333																
Coarse Woody Debris	2.00	2.00	1.00	2.00	2.00	3.00	2.000																
Living Trunk	0.00	0.00	0.00	5.00	0.00	0.00	0.833																
Other (Trash)	0.00	0.00	0.20	0.00	0.00	0.00	0.033																

1 Native shrub species (excluding succulent spp.)

APPENDIX E-2

QUADRAT DATA AND COMPUTATIONS
COASTAL SAGE SCRUB (CSS)

Coastal Sage Scrub Quadrat Data and Statistics																	
	Q-C1	Q-C2	Q-C3		No. of Individual Plants												
Plant Species	**Covg**	**Covg**	**Covg**	**Mean**	**Q-C1**	**Q-C2**	**Q-C3**	**D_i**	**RD_i**	**C_i**	**RC_i**	**f_i**	**Rf_i**	**p_i**	**$p_i \log p_i$**	**H'**	**Potential H'**
Native																	
Acmispon glaber var. glaber [Lotus scoparius var. *scoparius]*	1.00	0.00	0.00	0.333	1			0.000417	0.000006	0.003333	0.003105	0.333333	0.033333	0.000006	-0.000077	**0.03**	**3.22**
Artemisia douglasiana	0.00	12.00	0.00	4.000		1		0.000417	0.000006	0.040000	0.037264	0.333333	0.033333	0.000006	-0.000077		
Baccharis salicifolia ssp. salicifolia [*B. salicifolia*][1]	5.00	0.00	0.00	1.667	3			0.001250	0.000019	0.016667	0.015527	0.333333	0.033333	0.000019	-0.000209		
Ceanothus leucodermis[1]	10.00	0.00	0.00	3.333	1			0.000417	0.000006	0.033333	0.031053	0.333333	0.033333	0.000006	-0.000077		
Clarkia sp.	0.20	0.00	0.00	0.067	5			0.002083	0.000032	0.000667	0.000621	0.333333	0.033333	0.000032	-0.000332		
Clematis lasiantha[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Elymus condensatus [Leymus c.]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Eriogonum fasciculatum[1]	15.00	0.00	0.00	5.000	7			0.002917	0.000045	0.050000	0.046580	0.333333	0.033333	0.000045	-0.000450		
Hesperoyucca whipplei [Yucca w.]	0.00	0.00	3.00	1.000	2			0.000833	0.000013	0.010000	0.009316	0.333333	0.033333	0.000013	-0.000145		
Lepidospartum squamatum[1]	1.00	0.00	0.00	0.333	1			0.000417	0.000006	0.003333	0.003105	0.333333	0.033333	0.000006	-0.000077		
Lonicera subspicata var. *denudata*[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Lupinus sp.	0.00	0.00	0.50	0.167			2	0.000833	0.000013	0.001667	0.001553	0.333333	0.033333	0.000013	-0.000145		
Malosma laurina[1]	15.00	0.00	15.00	10.000	1		3	0.001667	0.000026	0.100000	0.093159	0.666667	0.066667	0.000026	-0.000272		
Marah macrocarpus	0.00	0.00	3.50	1.167			1	0.000417	0.000006	0.011667	0.010869	0.333333	0.033333	0.000006	-0.000077		
Melica imperfecta	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Opuntia x vaseyi	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Phacelia cicutaria	0.00	3.00	0.00	1.000		10		0.004167	0.000064	0.010000	0.009316	0.333333	0.033333	0.000064	-0.000620		
Platanus racemosa	0.00	0.00	6.00	2.000			1	0.000417	0.000006	0.020000	0.018632	0.333333	0.033333	0.000006	-0.000077		
Polygala cornuta ssp. *fishiae*[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Pseudognaphalium californicum [*Gnaphalium c.*]	0.00	0.00	0.01	0.003			2	0.000833	0.000013	0.000033	0.000031	0.333333	0.033333	0.000013	-0.000145		
Quercus agrifolia	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Rhamnus crocea[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Rhus aromatica [*R. trilobata*][1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Rhus ovata[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Ribes aureum[1]	0.00	50.00	0.00	16.667		15		0.006250	0.000096	0.166667	0.155265	0.333333	0.033333	0.000096	-0.000891		
Rubus ursinus[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Salix lasiolepis	0.00	2.00	0.00	0.667		2		0.000833	0.000013	0.006667	0.006211	0.333333	0.033333	0.000013	-0.000145		
Salvia mellifera[1]	0.00	0.00	5.00	1.667			2	0.000833	0.000013	0.016667	0.015527	0.333333	0.033333	0.000013	-0.000145		
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	0.00	5.00	0.00	1.667		1		0.000417	0.000006	0.016667	0.015527	0.333333	0.033333	0.000006	-0.000077		
Solanum douglasii	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Symphoricarpos mollis[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Toxicodendron diversilobum[1]	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Umbellularia californica	3.00	0.00	0.00	1.000	1			0.000417	0.000006	0.010000	0.009316	0.333333	0.033333	0.000006	-0.000077		

APPENDIX E-2

QUADRAT DATA AND COMPUTATIONS
COASTAL SAGE SCRUB (CSS)

Coastal Sage Scrub Quadrat Data and Statistics

Plant Species	Q-C1 Covg	Q-C2 Covg	Q-C3 Covg	Mean	No. of Individual Plants Q-C1	Q-C2	Q-C3	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Non-native																	
*Araujia sericifera**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Avena barbata**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Bromus diandrus**	75.00	20.00	0.80	31.933	100000	5000	50000	64.583333	0.996234	0.319333	0.297488	1.000000	0.100000	0.996234	-0.003759		
Bromus madritensis ssp. *rubens**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Carduus pycnocephalus ssp. pycnocephalus**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Centaurea melitensis**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Ceratonia siliqua**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Conium maculatum**	0.00	3.00	0.01	1.003		10	4	0.005833	0.000090	0.010033	0.009347	0.666667	0.066667	0.000090	-0.000838		
*Dysphania pumilio [Chenopodium pumilio] **	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Erodium cicutarium**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
Festuca myuros [Vulpia m. var. *myuros]**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Hirschfeldia incana**	20.00	35.00	0.00	18.333	5	500		0.210417	0.003246	0.183333	0.170792	0.666667	0.066667	0.003246	-0.018600		
*Nicotiana glauca**	0.00	0.00	12.00	4.000			3	0.001250	0.000019	0.040000	0.037264	0.333333	0.033333	0.000019	-0.000209		
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Silybum marianum**	0.00	0.00	0.00	0.000				0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
*Sonchus oleraceus**	0.01	0.00	0.00	0.003	1			0.000417	0.000006	0.000033	0.000031	0.333333	0.033333	0.000006	-0.000077		
*Stipa miliacea [Piptatherum miliacea]**	1.00	0.00	0.00	0.333	1			0.000417	0.000006	0.003333	0.003105	0.333333	0.033333	0.000006	-0.000077		
Absolute Coverage																	
Total Absolute Native Species Coverage	50.20	72.00	33.01	51.737													
Total Absolute Non-Native Species Coverage	96.01	58.00	12.81	55.607													
Total Absolute Coverage (All)	146.21	130.00	45.82	107.343													
Ground Cover																	
Bare Soil	0.0	7.00	5.0	4.000													
Rock/Cobble/Gravel	6.0	1.00	10.0	5.667													
Leaf Litter	81.0	70.90	40.0	63.967													
Fine Woody Debris	10.0	13.00	15.0	12.667													
Coarse Woody Debris	3.0	8.00	30.0	13.667													
Living Trunk	0.0	0.100	0.0	0.033													

1 Native shrub species (excluding succulent spp.)

APPENDIX F

OAK TREE ASSESSMENT DATA

APPENDIX F

OAK TREE ASSESSMENT DATA

Tree Tag #	Tree Species		# Main Trunks	dbh (in)			Height[a] (ft)	Canopy Diameter[a] (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				
101	coast live oak	Quercus agrifolia	1	13.2	0.0	13.2	30	30	5	4
102	coast live oak	*Quercus agrifolia*	1	2.0	0.0	2.0	20	12	4	3
103	coast live oak	*Quercus agrifolia*	1	20.0	0.0	20.0	30	30	4	2
104	coast live oak	*Quercus agrifolia*	1	8.1	0.0	8.1	20	15	5	2
105	coast live oak	*Quercus agrifolia*	1	9.6	0.0	9.6	20	20	5	2
106	coast live oak	*Quercus agrifolia*	2	22.9	24.2	47.1	40	40	2	4
107	coast live oak	*Quercus agrifolia*	2	22.3	0.0	22.3	45	30	5	–
108	coast live oak	*Quercus agrifolia*	3	16.2	23.6	39.8	35	30	2	2–3
109	coast live oak	*Quercus agrifolia*	1	11.5	0.0	11.5	15	20	5	2
110	coast live oak	*Quercus agrifolia*	3	17.0	18.0	35.0	15	40	5	2
111	coast live oak	*Quercus agrifolia*	1	16.0	0.0	16.0	25	35	5	5
112	coast live oak	*Quercus agrifolia*	1	23.9	0.0	23.9	35	40	5	3
113	coast live oak	*Quercus agrifolia*	1	11.6	0.0	11.6	20	15	5	2
114	coast live oak	*Quercus agrifolia*	1	29.3	0.0	29.3	40	40	5	2
115	coast live oak	*Quercus agrifolia*	3	15.0	16.4	31.4	25	25	5	3
116	coast live oak	*Quercus agrifolia*	5	31.2	8.8	40.0	60	50	5	3
117	coast live oak	*Quercus agrifolia*	2	30.3	27.1	57.4	60	40	4	2
118	coast live oak	*Quercus agrifolia*	1	18.0	0.0	18.0	35	20	5	3–4
119	coast live oak	*Quercus agrifolia*	2	9.7	13.4	23.1	20	20	5	3
120	coast live oak	*Quercus agrifolia*	1	13.0	0.0	13.0	20	15	5	5
121	coast live oak	*Quercus agrifolia*	5	13.4	17.4	30.8	30	45	5	3
122	coast live oak	*Quercus agrifolia*	1	25.0	0.0	25.0	40	20	5	3–4
123	coast live oak	*Quercus agrifolia*	1	17.2	0.0	17.2	15	20	5	2
124	coast live oak	*Quercus agrifolia*	1	18.2	0.0	18.2	30	20	5	2–3
125	coast live oak	*Quercus agrifolia*	1	17.2	0.0	17.2	25	25	3	5
126	coast live oak	*Quercus agrifolia*	1	5.4	0.0	5.4	15	10	5	4–5
127	coast live oak	*Quercus agrifolia*	2	9.7	8.0	17.7	25	20	5	2–3
128	coast live oak	*Quercus agrifolia*	1	5.6	0.0	5.6	15	15	5	5–6

APPENDIX F

OAK TREE ASSESSMENT DATA

Tree Tag #	Tree Species		# Main Trunks	dbh (in)			Height[a] (ft)	Canopy Diameter[a] (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				
129	coast live oak	*Quercus agrifolia*	1	10.5	0.0	10.5	15	10	5	1–2
130	coast live oak	*Quercus agrifolia*	2	2.2	4.0	6.2	10	10	5	4–5
131	coast live oak	*Quercus agrifolia*	1	4.9	0.0	4.9	18	12	5	4–5
132	coast live oak	*Quercus agrifolia*	1	12.6	0.0	12.6	30	15	5	4–5
133	coast live oak	*Quercus agrifolia*	1	10.0	0.0	10.0	20	15	5	3–4
134	coast live oak	*Quercus agrifolia*	1	7.2	0.0	7.2	20	15	5	3–4
135	coast live oak	*Quercus agrifolia*	1	32.8	0.0	32.8	50	35	5	–
136	coast live oak	*Quercus agrifolia*	1	3.5	0.0	3.5	12	10	5	3–4
137	coast live oak	*Quercus agrifolia*	1	3.7	0.0	3.7	10	8	5	1
138	coast live oak	*Quercus agrifolia*	1	2.4	3.2	5.6	10	8	5	1
139	coast live oak	*Quercus agrifolia*	1	3.8	0.0	3.8	12	10	5	4
140	coast live oak	*Quercus agrifolia*	1	3.7	0.0	3.7	12	10	5	2
141	coast live oak	*Quercus agrifolia*	1	5.3	0.0	5.3	10	10	5	2
142	coast live oak	*Quercus agrifolia*	7	13.5	12.3	25.8	25	40	5	4–5
143	coast live oak	*Quercus agrifolia*	1	8.6	0.0	8.6	25	10	5	3
144	coast live oak	*Quercus agrifolia*	1	5.6	0.0	5.6	15	10	4	1
145	coast live oak	*Quercus agrifolia*	3	10.8	15.4	26.2	25	35	5	5
146	coast live oak	*Quercus agrifolia*	2	17.0	18.9	35.9	35	30	5	3
147	coast live oak	*Quercus agrifolia*	1	15.9	0.0	15.9	30	20	5	4–5
148	coast live oak	*Quercus agrifolia*	1	7.6	0.0	7.6	20	15	5	5–6
149	coast live oak	*Quercus agrifolia*	2	11.8	11.0	22.8	25	20	5	2
150	coast live oak	*Quercus agrifolia*	3	19.7	19.1	38.9	40	40	5	2–4
151	coast live oak	*Quercus agrifolia*	1	16.6	0.0	16.6	35	25	5	2
152	coast live oak	*Quercus agrifolia*	2	18.0	10.0	28.0	30	35	5	3–5
153	coast live oak	*Quercus agrifolia*	1	18.8	0.0	18.8	35	35	5	2–3
154	coast live oak	*Quercus agrifolia*	1	12.1	0.0	12.1	25	20	5	2–3
155	coast live oak	*Quercus agrifolia*	1	12.7	0.0	12.7	25	20	5	3–4
156	coast live oak	*Quercus agrifolia*	2	3.7	3.5	7.2	12	10	5	4–5

APPENDIX F

OAK TREE ASSESSMENT DATA

Tree Tag #	Tree Species		# Main Trunks	dbh (in)			Height[a] (ft)	Canopy Diameter[a] (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				
157	coast live oak	*Quercus agrifolia*	1	20.7	0.0	20.7	45	30	5	2–3
158	coast live oak	*Quercus agrifolia*	1	24.2	0.0	24.2	40	40	5	4–5
159	coast live oak	*Quercus agrifolia*	1	9.7	0.0	9.7	20	20	5	4–6
160	coast live oak	*Quercus agrifolia*	2	20.7	9.4	30.1	30	30	5	2–3
161	coast live oak	*Quercus agrifolia*	1	33.4	0.0	33.4	40	40	1	–
162	coast live oak	*Quercus agrifolia*	4	19.4	18.0	37.4	25	40	2	2–3
163	coast live oak	*Quercus agrifolia*	1	19.4	0.0	19.4	25	20	4	3–4
164	coast live oak	*Quercus agrifolia*	1	4.5	0.0	4.5	18	10	5	4–5
165	coast live oak	*Quercus agrifolia*	1	20.4	0.0	20.4	40	30	5	4
166	coast live oak	*Quercus agrifolia*	1	16.1	0.0	16.1	25	20	5	–
167	coast live oak	*Quercus agrifolia*	1	39.8	0.0	39.8	60	40	5	–
168	coast live oak	*Quercus agrifolia*	1	15.6	0.0	15.6	30	30	5	–
169	coast live oak	*Quercus agrifolia*	4	20.4	19.4	39.8	25	40	3	–
170	coast live oak	*Quercus agrifolia*	1	18.2	0.0	18.2	30	20	5	–
171	coast live oak	*Quercus agrifolia*	2	14.0	22.0	36.0	45	30	3	–
172	coast live oak	*Quercus agrifolia*	2	6.2	1.9	8.1	15	10	1	–
173	coast live oak	*Quercus agrifolia*	1	4.3	0.0	4.3	15	8	5	1–3
174	coast live oak	*Quercus agrifolia*	1	3.5	0.0	3.5	15	10	5	4–5
175	coast live oak	*Quercus agrifolia*	1	4.1	0.0	4.1	15	8	5	6–7
176	coast live oak	*Quercus agrifolia*	1	5.1	0.0	5.1	15	10	5	3–4
177	coast live oak	*Quercus agrifolia*	1	14.0	0.0	14.0	30	20	5	1–3
178	coast live oak	*Quercus agrifolia*	2	29.9	23.9	53.8	50	40	5	–
179	coast live oak	*Quercus agrifolia*	1	27.7	0.0	27.7	45	35	5	2
180	coast live oak	*Quercus agrifolia*	1	25.2	0.0	25.2	40	30	3	–
181	coast live oak	*Quercus agrifolia*	1	20.7	0.0	20.7	40	30	5	–
182	coast live oak	*Quercus agrifolia*	1	4.3	0.0	4.3	15	15	5	–
183	coast live oak	*Quercus agrifolia*	4	21.7	17.2	38.9	50	40	5	–
184	coast live oak	*Quercus agrifolia*	1	3.5	0.0	3.5	10	8	4	–

APPENDIX F

OAK TREE ASSESSMENT DATA

Tree Tag #	Tree Species		# Main Trunks	dbh (in)			Height[a] (ft)	Canopy Diameter[a] (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				
185	coast live oak	*Quercus agrifolia*	1	24.8	0.0	24.8	40	30	4	–
186	coast live oak	*Quercus agrifolia*	2	22.0	12.6	34.6	30	30	5	–
187	coast live oak	*Quercus agrifolia*	2	13.4	10.0	23.4	25	25	5	–
188	coast live oak	*Quercus agrifolia*	3	11.6	10.5	22.1	25	20	5	–
189	coast live oak	*Quercus agrifolia*	1	20.7	0.0	20.7	45	35	5	2–3
190	coast live oak	*Quercus agrifolia*	2	21.2	8.3	29.5	40	20	2	1
191	coast live oak	*Quercus agrifolia*	1	19.1	0.0	19.1	30	35	5	2–3
192	coast live oak	*Quercus agrifolia*	1	16.9	0.0	16.9	25	25	5	3–4
193	coast live oak	*Quercus agrifolia*	1	36.0	0.0	36.0	40	40	5	2
194	coast live oak	*Quercus agrifolia*	4	31.4	19.4	50.8	45	50	5	–
195	coast live oak	*Quercus agrifolia*	1	19.3	0.0	19.3	30	30	4	–
196	coast live oak	*Quercus agrifolia*	1	4.5	0.0	4.5	10	8	5	3
197	coast live oak	*Quercus agrifolia*	1	21.2	0.0	21.2	30	30	4	–
198	coast live oak	*Quercus agrifolia*	1	25.8	0.0	25.8	45	25	5	2–3
199	coast live oak	*Quercus agrifolia*	2	27.4	23.2	50.6	40	35	4	–
200	coast live oak	*Quercus agrifolia*	1	10.5	0.0	10.5	25	20	2	1
201	coast live oak	*Quercus agrifolia*	1	8.1	0.0	8.1	20	20	5	–
202	coast live oak	*Quercus agrifolia*	1	11.0	0.0	11.0	30	15	5	–
203	coast live oak	*Quercus agrifolia*	1	4.8	0.0	4.8	20	15	5	2
204	coast live oak	*Quercus agrifolia*	1	11.5	0.0	11.5	25	25	5	–
205	coast live oak	*Quercus agrifolia*	1	5.7	0.0	5.7	15	15	5	–
206	coast live oak	*Quercus agrifolia*	1	9.2	0.0	9.2	20	15	5	3
207	coast live oak	*Quercus agrifolia*	1	7.6	0.0	7.6	20	15	5	–
208	coast live oak	*Quercus agrifolia*	1	7.0	0.0	7.0	20	15	5	2
209	coast live oak	*Quercus agrifolia*	1	6.7	0.0	6.7	15	15	5	2–3
210	coast live oak	*Quercus agrifolia*	2	23.7	11.6	35.3	50	40	5	–
211	coast live oak	*Quercus agrifolia*	2	16.2	0.0	16.2	40	30	4	–
212	coast live oak	*Quercus agrifolia*	1	9.9	0.0	9.9	30	20	5	–

APPENDIX F

OAK TREE ASSESSMENT DATA

Tree Tag #	Tree Species		# Main Trunks	dbh (in)			Height[a] (ft)	Canopy Diameter[a] (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				
213	coast live oak	*Quercus agrifolia*	1	11.8	0.0	11.8	20	30	5	–
214	coast live oak	*Quercus agrifolia*	1	16.6	0.0	16.6	35	35	5	–
215	coast live oak	*Quercus agrifolia*	3	26.0	7.2	33.2	50	40	5	–
216	coast live oak	*Quercus agrifolia*	1	8.0	0.0	8.0	20	15	5	4
217	coast live oak	*Quercus agrifolia*	1	7.3	0.0	7.3	20	10	5	–
218	coast live oak	*Quercus agrifolia*	1	4.8	0.0	4.8	12	10	5	–
219	coast live oak	*Quercus agrifolia*	2	20.0	20.0	40.0	25	20	5	4
220	coast live oak	*Quercus agrifolia*	1	30.0	0.0	30.0	20	30	5	–
221	coast live oak	*Quercus agrifolia*	1	45.0	0.0	45.0	20	35	2	–
222	coast live oak	*Quercus agrifolia*	1	3.5	0.0	3.5	10	12	5	2–3
223	coast live oak	*Quercus agrifolia*	1	13.5	0.0	13.5	25	20	5	2–4
224	coast live oak	*Quercus agrifolia*	1	19.0	0.0	19.0	40	30	5	4
225	coast live oak	*Quercus agrifolia*	1	6.1	0.0	6.1	15	15	5	2
226	coast live oak	*Quercus agrifolia*	1	15.9	0.0	15.9	20	25	5	3
227	coast live oak	*Quercus agrifolia*	1	15.1	0.0	15.1	40	30	5	–
228	coast live oak	*Quercus agrifolia*	1	40.0	0.0	40.0	35	40	5	–
229	coast live oak	*Quercus agrifolia*	2	20.7	22.0	42.7	35	30	2	–

in: inches; dbh: diameter at breast height; ft: feet

a dbh is calculated at 4.5 feet
b Height and canopy diameter values are based on visual estimates

APPENDIX G

REFERENCES

REFERENCES

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APPENDIX F

DATA SHEETS AND DATA CALCULATIONS

APPENDIX F-1

POINT INTERCEPT TRANSECT DATA SHEET

Point Intercept Transect Data Sheet

Project Name: _____ Date: _____ Surveyor(s): _____ No. of Intercepts: ____
TRANSECT #____of____

Plant spp. (6-ltr code, or *Genus* sp.)	Hits - tally marks; or numbers (not '1' or '11') sep. by commas	Total
e.g., GENSPE	**e.g., 𝍸, 23, 𝍸𝍸𝍸, 7, 14, 𝍸, etc.**	
Total	**May Exceed No. of Intercepts**	

Native (only)		
Non-native (only)		
Both		
No Plant		
	Check Total (= No. of Intercepts)	

Bare Ground		
Rock/Cobble		
Leaf Litter		
Fine Woody Debris (<1" diameter)		
Coarse Woody Debris (>1" diameter)		
Other: _____		
	Check Total (= No. of Intercepts)	

Notes:

APPENDIX F-2

20x40-FOOT QUADRAT DATA SHEET

20x40-Foot Quadrat Data Sheet

Project Name: _____ Date: _____ Surveyors: _____
QUADRAT #____of____

Vegetation		**Ground Cover**	
*Estimate number of native tree individuals (all spp./age classes)		Estimate percent coverage of leaf litter (leaves, ultra-fine twigs, etc.)	%
*Count number of native tree species (all age classes)		Estimate percent coverage of fine woody debris (<1" diameter)	%
*Estimate number of native shrub individuals (all spp./age classes)		Estimate percent coverage of snags and coarse woody debris (≥1" diameter)	%
*Count number of native shrub species (all age classes)		Estimate percent coverage of boulders/rock/cobble/gravel (no litter/debris)	%
*Count number of native herbaceous species		Estimate percent coverage of bare ground	%
*Estimate percent coverage of native tree species (all)	%	Estimate percent coverage: Other (e.g., PVC pipe) _____	%
Estimate percent coverage of native shrub species (all)	%	Estimate percent coverage: Other _____	%
Estimate percent coverage of native herbaceous species (all)	%	Estimate percent coverage: Other _____	%
Estimate percent coverage of non-native species (all)	%	Estimate percent coverage: Other _____	%
*** Cross-check with 'List All Species…' information below.**		Estimate percent coverage: Other _____	%
		Check total = 100	

List All Species (6-ltr Code, or *Genus species*), and Estimate Number of Individuals and Percent Coverage of Each Species in Quadrat

Species	**#**	**% cvg**	**Species**	**#**	**% cvg**	**Species**	**#**	**% cvg**	**Species**	**#**	**% cvg**
GENSPE; or *Genus Species*	#	XX %			%			%			%
		%			%			%			%
		%			%			%			%
		%			%			%			%
		%			%			%			%
		%			%			%			%
		%			%			%			%
		%			%			%			%

Directions: All random quadrat locations shall be pre-determined using GIS to eliminate surveyor bias. Locations shall consist of a single Universal Transverse Mercator Grid (UTM) point identified in the field using a Global Positioning System (GPS) unit, from which the quadrat shall be extended from corner to opposite corner at magnetic south using a compass/measuring tape. Quadrats shall be reoriented at successive, 90-degree intervals, as needed to remain within the mitigation sub-area (or if the GIS-defined point location is near a mitigation site boundary). Quadrats may be delineated using flagging tape, wire flags, or other method, as appropriate for field conditions. The 2-person survey team shall perform an initial calibration quadrat and prepare separate data sheets, then compare results and discuss any substantially divergent counts or estimates, prior to performing the formal sampling tasks. Each surveyor shall independently complete a data sheet for each quadrat and the preliminary results shall be compared in preparing one final data sheet. Unknown plant species shall be recorded as 'Unknown #1, #2…', etc., and samples placed in plastic bags labeled with these names ('Unknown #3', etc.) for later identification. Each unknown plant species shall also be photographed with its identity label legible in the photo. 'Unknown' ID# shall be consistent for all quadrats in which the same species is encountered. Each quadrat area shall be photographed northward from its southern vertex. Data sheets shall be digitally scanned, and hard copies archived at the Biological Monitor's office, within 24-hours of the completion of data collection.

APPENDIX F-3

QUADRAT DATA CALCULATIONS

Quadrat Data Calculations

Metric	Equation	Variables
Density of Native Shrubs (all spp.)(D_s)	$D_s = n_s / A$	n_s = total native shrubs; A = total area sampled
Density of Species i (D_i)	$D_i = n_i / A$	n_i = total individuals for species 'i'; A = total area sampled
Relative Density for Species i (RD_i)	$RD_i = N_i / \Sigma n$	n_i = number of individuals of species 'i'; Σn = total number of individuals of all species in sampled plots
Coverage for Species i (C_i)	$C_i = a_i / A$	a_i = total area covered for species 'i'; A = total area sampled
Relative Coverage of Species i (RC_i)	$RC_i = C_i / \Sigma C$	C_i = coverage for species 'i'; ΣC = sum of coverage for all species
Frequency of Species i (f_i)	$f_i = j_i / k$	j_i = number of plots containing species 'i'; k = total number of plots
Relative Frequency of Species i (RF_i)	$RF_i = f / \Sigma f$	f_i = frequency of species i; Σf = sum of frequencies of all species
Shannon Diversity Index (H')	$H = -\sum_{i=1}^{R} p_i \log p_i$	R = total number of species encountered; p_i = species 'i' as a proportion of R.

APPENDIX G

OAK TREE ASSESSMENT FORM

Oak Tree Assessment Form

Project Name: _____ **Date:** _____ **Surveyors:** _____

Tree Tag #	Tree Species		# Main Trunks	Diameter at Breast Height (DBH)(in)			Height (ft)	Canopy Diameter (ft)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks				