

## EXECUTIVE SUMMARY

### E.S.1 INTRODUCTION

This Final Environmental Impact Report (EIR) has been prepared to evaluate and inform the general public about the potential environmental effects that may result from the proposed Devil's Gate Reservoir Sediment Removal and Management Project (Proposed Project). The goal of the Proposed Project is to restore and maintain flood capacity at Devil's Gate Reservoir to meet its intended level of flood protection for the communities downstream. The Proposed Project involves a comprehensive sediment removal plan which will restore flood capacity and establish a reservoir management system to maintain the flood control capacity of the reservoir. The Proposed Project is the project described in the IS/NOP and presented at the Scoping Meetings held on October 5 and October 15, 2011. In response to comments received during the public review period and in conformance with CEQA Guidelines, several alternatives were developed that meet most of the basic objectives of the project and lessen potentially significant effects of the project. Alternative 3, Configuration D is the Environmentally Superior Alternative. Alternative 3, Configuration D is discussed in Section E.S.6 of this Executive Summary and is described and analyzed in Section 4.6. This document has been prepared in accordance with the California Environmental Quality Act (CEQA) by the Los Angeles County Flood Control District (LACFCD) as the Lead Agency.

### E.S.2 PROJECT SUMMARY

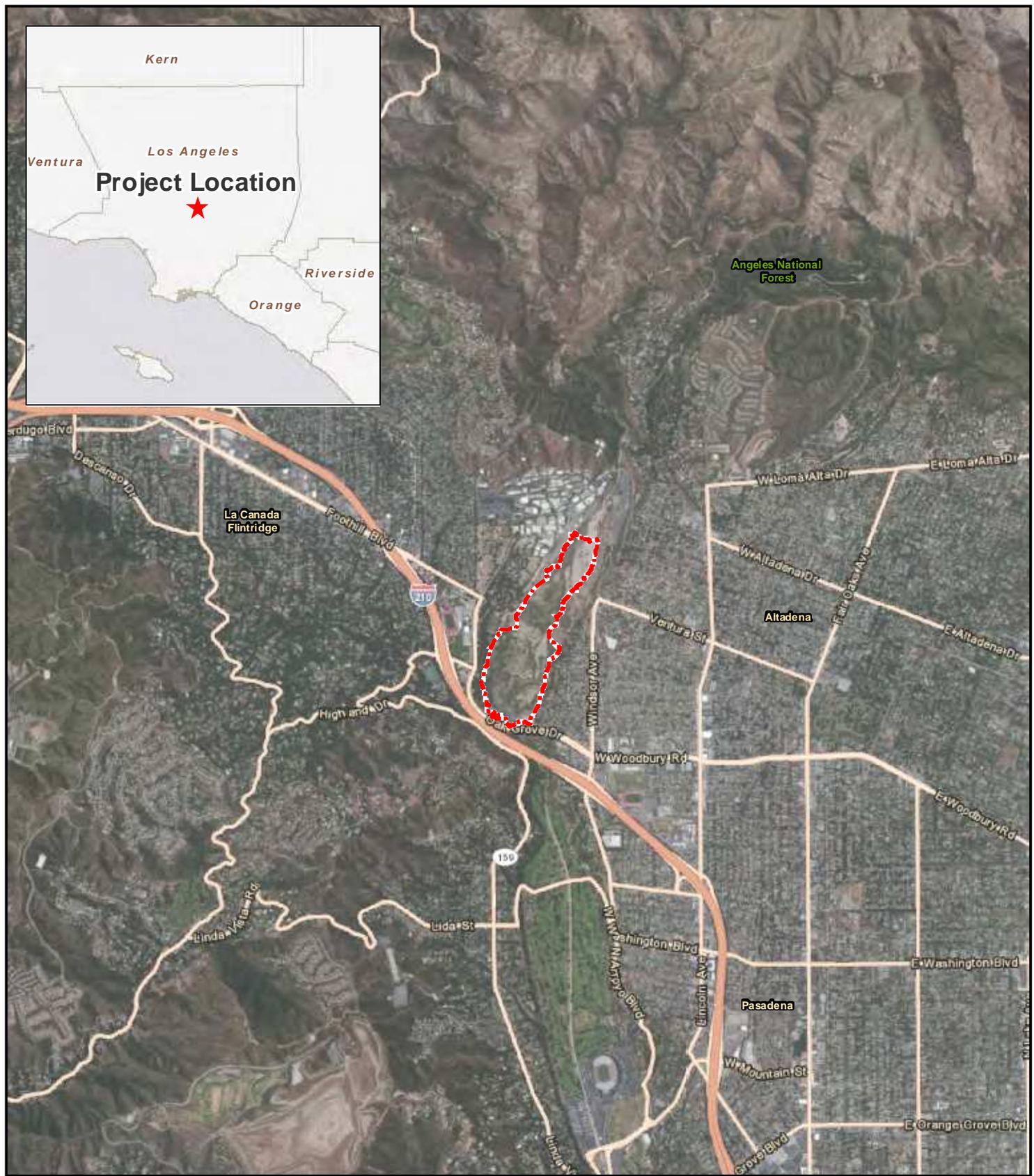
#### E.S.2.1 Proposed Project Location and Setting

The Proposed Project is located in the City of Pasadena, in Los Angeles County, (see Figure ES-1: Proposed Project Location and Vicinity Map). The City of La Cañada Flintridge lies west of the Proposed Project site, and the unincorporated community of Altadena lies east of the Proposed Project site. The Proposed Project site is located within Hahamongna Watershed Park. Hahamongna Watershed Park is owned and operated by the City of Pasadena and includes the Oak Grove area of Hahamongna Watershed Park. Southern California Edison, Southern California Gas Company, Pasadena Water and Power, and the LACFCD hold easements within Hahamongna Watershed Park. Other land uses directly adjacent to the project site include the California Institute of Technology (Caltech)/National Aeronautics and Space Administration (NASA) – Jet Propulsion Laboratory (JPL) to the northwest and east; La Cañada High School and Hillside School and Learning Center to the west; single-family residential uses to the north, east, and south; and the Interstate 210 Foothill Freeway (I-210) to the south.

#### E.S.2.2 Project Background

Devil's Gate Dam was built in 1920, the oldest dam constructed by the LACFCD, to provide flood protection to the Cities of Pasadena, South Pasadena, and Los Angeles and to promote water conservation efforts. Devil's Gate Dam and Reservoir had an original storage capacity of approximately 7.42 million cubic yards (cy).

The reservoir is designed to attenuate stormwater flows to prevent high flow rates from overtopping the downstream flood control channel. During this process sediment and debris are also trapped behind the dam in the reservoir. Excessive sediment accumulation in the reservoir affects the ability of the outlet works (valves, gates, and spillway) to function correctly and can reduce available reservoir capacity below



 Proposed Project Boundary



SCALE=1 inch equals 1 mile  
 0 0.5 1  
 Miles

**Figure ES-1**  
 Devil's Gate Reservoir Sediment Removal  
 and Management Project  
 Project Location and Vicinity Map

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that which is necessary for flood control storage or to safely contain future sediment inflow, including the Design Debris Event (DDE). The DDE is the estimated amount of sediment that could flow into the reservoir after the undeveloped portion of the tributary watershed is completely burned and a 50-year design storm event occurs after four years of watershed recovery. The 50-year design storm and the DDE are defined by the Los Angeles County Department of Public Works Hydrology and Sedimentation Manuals, respectively.

The Los Angeles County Flood Control Act (Act) was adopted by the State Legislature in 1915 after a disastrous regional flood took a heavy toll on lives and property. The Act established the LACFCD and empowered it to provide flood protection and water conservation within its boundaries.

A reservoir storage design capacity of two DDEs below the dam's lowest spillway was determined to be the standard acceptable level of risk at Devil's Gate Dam and Reservoir. The DDE volume of capacity is determined using the January 2006 County of Los Angeles Department of Public Works Hydrology Manual and the March 2006 County of Los Angeles Department of Public Works Sedimentation Manual.

LACFCD established the required design capacity at two DDEs to ensure that the reservoir always has sufficient capacity to maintain the level of downstream flood protection. By establishing the design capacity at two DDEs, the reservoir is likely to have sufficient capacity to experience a design level storm, or several smaller but significant debris events, and still maintain capacity of at least one DDE during the lengthy environmental and construction processes to remove the debris. Further, it should be noted that additional criteria in special circumstances related to dam safety may also dictate the need to remove sediment from a reservoir:

- Depending on the structural stability of the dam, the height of sediment against the dam may need to be limited (sediment weighs more than water and increases the forces on the dam during an earthquake).
- The volume of sediment accumulation may also be limited to prevent sediment from blocking valves/operations (if the debris blocks the outlet valves, they cannot be used to regulate storm flows or to empty the dam during an emergency).

Therefore, to minimize flood risk for Devil's Gate Dam and Reservoir, the required reservoir capacity is based on debris control and is 4.0 million cy (two DDEs) below the spillway elevation of 1,040.50 feet.

For more information on the DDE calculations, please review the Hydrology and Sedimentation Manuals at the following locations:

The Hydrology Manual (January 2006) can be viewed here:

[http://dpw.lacounty.gov/wrd/publication/engineering/2006\\_Hydrology\\_Manual/2006%20Hydrology%20Manual-Divided.pdf](http://dpw.lacounty.gov/wrd/publication/engineering/2006_Hydrology_Manual/2006%20Hydrology%20Manual-Divided.pdf)

The Sedimentation Manual (March 2006) can be viewed here:

[http://dpw.lacounty.gov/wrd/publication/engineering/2006\\_sedimentation\\_manual/Sedimentation%20Manual-Second%20Edition.pdf](http://dpw.lacounty.gov/wrd/publication/engineering/2006_sedimentation_manual/Sedimentation%20Manual-Second%20Edition.pdf)

The DDE for Devil's Gate Reservoir is approximately 2 million cubic yards (cy). Sediment removal is required to maintain flood control capacity behind the dam. Sediment accumulation has increased dramatically over the past several years as a result of the 2009 Station Fire, the largest fire in recorded

history of the Angeles National Forest (est. 1892) and the 12<sup>th</sup> largest fire in California since 1933. The Station Fire burned over 160,000 acres, leaving vast areas of the San Gabriel Mountains denuded and susceptible to sediment flows. The fire impacted five of the LACFCD's dams and reservoirs, one of which is Devil's Gate Dam and Reservoir. Approximately 68 percent of the watershed tributary to Devil's Gate Reservoir (approximately 100 percent of the undeveloped portion) was burned, making sediment deposition inevitable during subsequent storm seasons. The storms that occurred in the two wet seasons after the fire increased sediment accumulation in the reservoir by approximately 1,300,000 cy, reducing the available flood control capacity to less than one DDE. In October 2010, the California Division of Safety of Dams (DSOD) recommended removal of sediment buildup behind the dam as well as removal of associated vegetation and tree growth to restore flood control capacity.

LACFCD initiated project planning for a large-scale sediment removal project to remove sediment from the reservoir in 2010. In March 2011, in recognition of stakeholder and environmental concerns, the Los Angeles County Board of Supervisors directed LACFCD to complete an EIR to assess the impacts associated with removing sediment from the project site. Since the EIR would take considerable additional time to complete, LACFCD was also directed to implement interim measures to reduce downstream flood risk until the EIR is completed and a sediment removal project is implemented.

The Interim Measures Project (IMP) is currently underway to reduce downstream flood risk. The IMP includes minor dam modifications to help keep debris from plugging the outlet works and allow for removal of up to 25,000 cy of sediment per year from the dam face until the project associated with the EIR is started. In 2011, 13,000 cy was removed from the dam face and placed at Johnson Field, a nearby unused sports field. In 2012, approximately 1,525 cy of sediment and 419 cy of green waste were removed from the dam face and hauled to Johnson Field and Scholl Canyon Landfill, respectively. In 2013, 1,200 cy of sediment and 12 to 14 loads of green waste were removed from the dam face and hauled to Johnson Field and Scholl Canyon Landfill, respectively.

### **E.S.2.3 Project Goals and Objectives**

The Proposed Project will remove sediment from Devil's Gate Reservoir to restore the design capacity (volume for two DDEs below the spillway elevation of 1,040.5 feet) and establish a reservoir management system to maintain the flood control capacity of the reservoir.

Primary project objectives that were developed during the Initial Study/Notice of Preparation (IS/NOP) phase of CEQA include:

1. Reducing flood risk to the communities downstream of the reservoir adjacent to the Arroyo Seco by restoring reservoir capacity for flood control and future sediment inflow events;
2. Supporting sustainability by establishing a reservoir configuration more suitable for routine maintenance activities including reservoir management;
3. Removing sediment in front of the dam to facilitate an operational reservoir pool to reduce the possibility of plugging the outlet works with sediment or debris during subsequent storm events;
4. Removing sediment placed at Johnson Field during the Devil's Gate Reservoir IMP;

5. Supporting dam safety by removing sediment accumulated in the reservoir in a timely manner to ensure the ability to empty the reservoir in the event of a dam safety concern; and
6. Delivering the sediment to placement or reuse facilities that are already prepared and designated to accept such material without native vegetation and habitat removal.

#### **E.S.2.4 Proposed Project Description, Configuration A**

##### **Sediment Removal Phase**

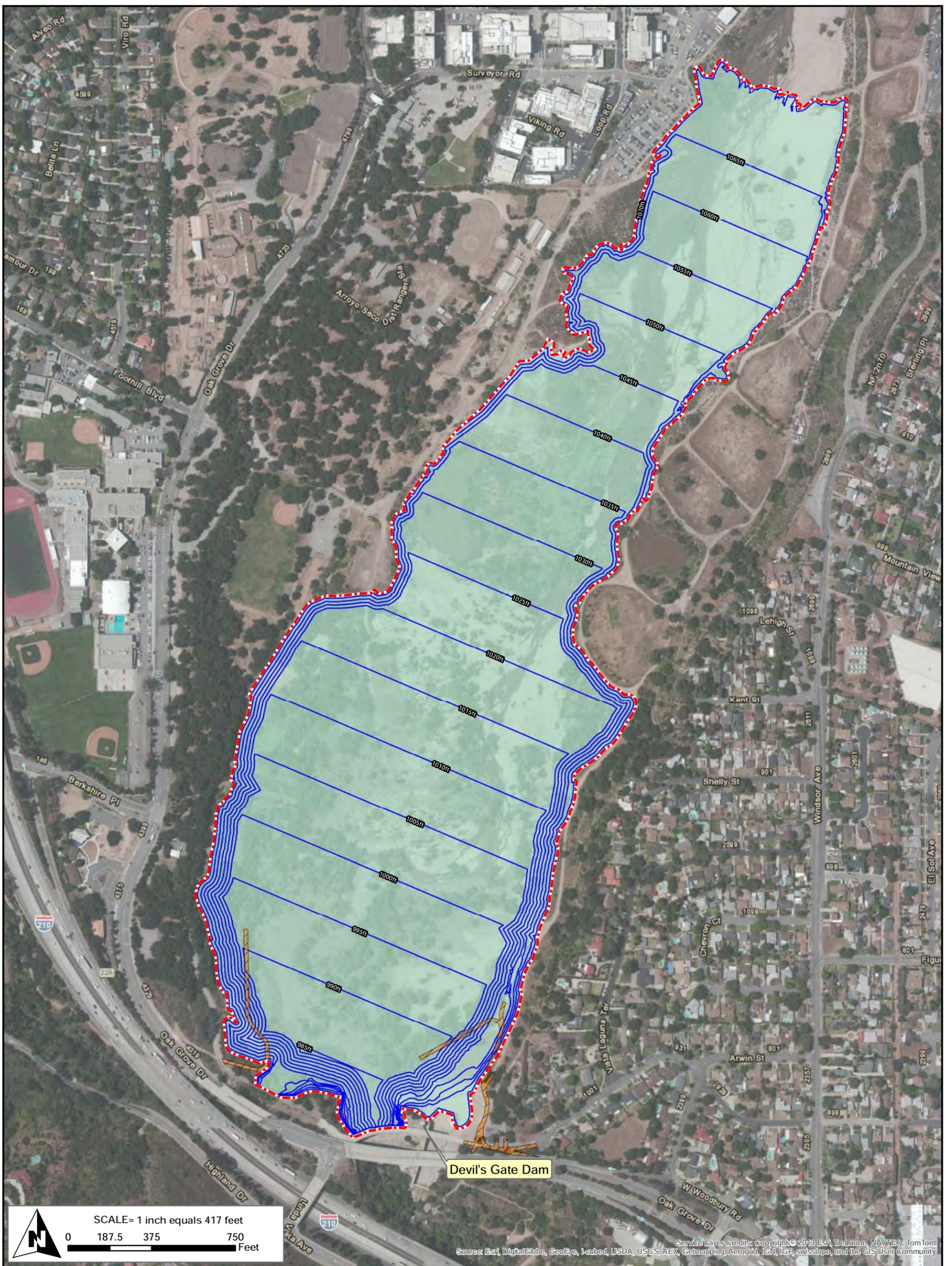
Proposed Project excavation activities will take place within the Proposed Project's excavation limit boundaries (see Figure ES-2, Proposed Project Excavation and Entire Configuration A Management Area, Option 1). The proposed excavation will remove approximately 2.9 million cy of the existing excess sediment in the reservoir in addition to any additional sediment that accumulates from storm flows throughout the duration of the project.

At the time the NOP was released, an area of 178 acres was considered for the Proposed Project; this has been refined to an area of approximately 120 acres. In addition to the sediment excavated as part of the Proposed Project, sediment stockpiled at Johnson Field from the IMP will also be removed. Excavation areas will not include the Oak Grove area of Hahamongna Watershed Park, the area of the reservoir above the northern end of excavation limits, or the City of Pasadena's spreading grounds on the east side of the reservoir.

##### Sediment Disposal

Excavated sediment will be trucked offsite to existing disposal site locations which are currently available to accept the sediment. Trucks will travel and place sediment at one of the primary disposal site locations, the Waste Management Facility in Azusa, the Vulcan Materials Reliance Facility in Irwindale, or the Manning Pit Sediment Placement Site (SPS) in Irwindale. Secondary disposal sites are the facilities in Sun Valley (Sheldon Pit, Sun Valley Fill Site, Bradley Landfill, and Boulevard Pit). Over the life of the Proposed Project sediment removal phase, it is estimated that the eastern disposal sites will be used from 80 to 100 percent of the time. Use of the Sun Valley sites is estimated to occur from 0 to 20 percent of the time throughout the Proposed Project sediment removal phase. Removed vegetation and organic debris will be hauled to Scholl Canyon Landfill located in the City of Glendale.

The trucks expected to be used for sediment transport are double dump trucks which have an estimated capacity of 16 to 20 cy of sediment. The trucks are anticipated to haul an estimated 7,650cy per day. Removal of the sediment, vegetation, trees, and organic debris is expected to require an average of 50 truck round trips per hour, with an estimated maximum of 425 truck round trips per day during excavation activities.



Source: Esri, DigitalGlobe, GeoEye, iSat, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



-  Proposed Project Boundary
-  Access Road
-  Reservoir Management Area
-  Sediment Removal Excavation Limit

**Figure ES-2**  
**Excavation Area and Configuration A**  
**Management Area, Option 1**  
**Proposed Project - Configuration A**

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### Proposed Project Site and Access

Trucks will enter the reservoir via the upgraded reservoir access road at the east side of the reservoir. Trucks will exit the reservoir on the west side via an existing access road. Rehabilitation and minor improvements need to be completed to the existing west side reservoir access road prior to its use. As part of the Proposed Project, the existing western access road and the upgraded eastern access road will be improved with new ramps to allow for truck traffic in and out of the reservoir. The eastern access road will allow for one-way truck traffic, and the western access road will also allow for one-way truck traffic. The eastern access road will be upgraded to allow for traffic to enter the reservoir directly from Oak Grove Drive as opposed to using La Cañada Verdugo Road. The existing western access road is currently unpaved, and the portion of this access road from below the bike path to the reservoir will remain unpaved. The portion of this access road from Oak Grove Drive to the West Rim Trail bike path will need to be widened and paved. Empty trucks will be staged within the Proposed Project site. Trucks will access the Proposed Project site from I-210 by exiting at Windsor Avenue/Arroyo Boulevard, turning north at Windsor Avenue, turning left onto northbound Oak Grove Drive, then entering the reservoir utilizing an upgraded ramp on the east side of the reservoir.

Loaded trucks will exit the reservoir on the upgraded existing west side access road, turn right onto northbound Oak Grove Drive, then left onto westbound Berkshire Place, and then to I-210 eastbound to disposal sites in Azusa and Irwindale or to I-210 westbound to disposal sites in Sun Valley. For vegetation, tree, and organic material disposal at Scholl Canyon Landfill, the trucks will follow I-210 east to State Highway 134 (SR-134), and exiting on Scholl Canyon Road (see Figures 2.5-2 through 2.5-4).

### Project Schedule

Construction for the Proposed Project is expected to occur over the course of approximately 5 years beginning Summer 2015. Excavation and associated activities within the reservoir area are expected to take place during drier months, from April to December, Monday through Saturday (except on holidays), as weather permits. During dry years, work could potentially start earlier and/or continue later. Onsite excavation activities will take place Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. Standard Time and between 7:00 a.m. and 7:00 p.m. Daylight Savings Time and on Saturday between 8:00 a.m. and 5:00 p.m. Removal of sediment and organic materials offsite is also expected to take place during these hours.

### **Reservoir Management Phase**

Reservoir Management Phase is expected to start after the completion of the main Sediment Removal phase. The purpose of the proposed annual management activities, described below, is to reduce buildup of sediment in the reservoir management area and eliminate or substantially reduce the occurrence of another large-scale sediment removal project in the future. Reservoir management will take place under one of two management options. Both options involve the same management activities and methods described below but with different management areas.

## Option 1 – Entire Configuration A Management Area

### *Management Area*

The management area for Option 1 is shown in Figure ES-2 and involves the entire Proposed Project site, which includes an area of approximately 120 acres.

### *Management Activities*

The reservoir will be managed through a combination of: FASTing, vegetation maintenance, and sediment excavation/trucking offsite.

*Flow-Assisted Sediment Transport (FAST):* During rain events (during the winter), with the dam gate open, natural flows will pass finer grain size sediment through the reservoir and downstream of the dam. This is referred to as a FAST operation. FAST operations have been routinely used at Devil's Gate Reservoir and result in relatively small amounts of finer grained sediment passing through the reservoir. A FAST operation uses storm runoffs throughout the storm season to flush the sediment out of the reservoir. It is anticipated that the majority of these FAST operations will be similar to historic FAST operations and that similar volumes of sediment will pass through the reservoir and into the Arroyo Seco.

*Vegetation Maintenance:* Vegetation within the reservoir configuration will be mowed or removed and grubbed annually. These activities will occur Monday through Friday over an estimated three-week period in the late summer or early fall.

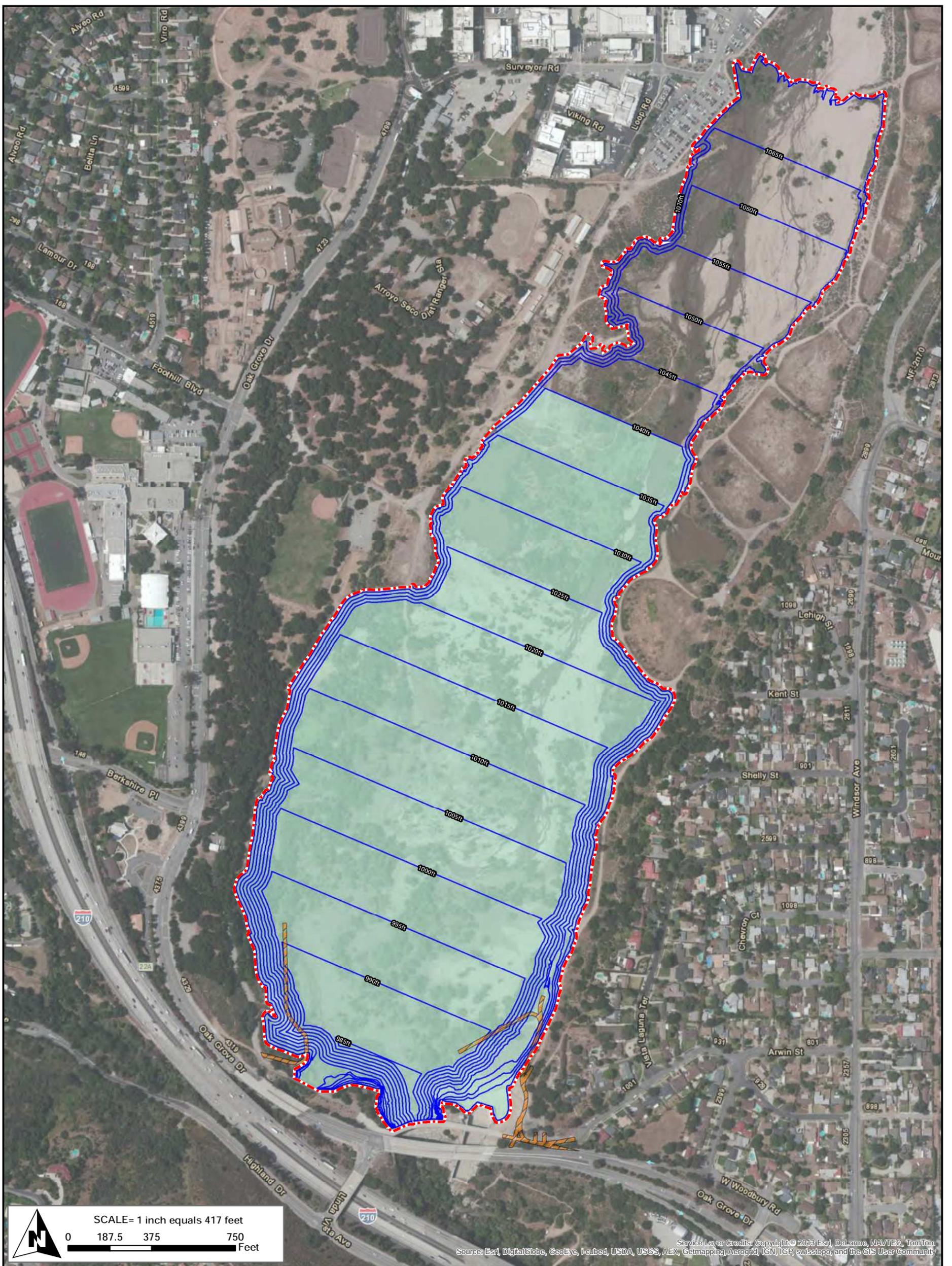
*Sediment Excavation/Trucking Offsite:* Depending on the efficiency of the FAST operations, some mechanical excavation and trucking offsite may be required for removal of accumulated sediment. Sediment excavation/trucking offsite will use the same methods and trucking routes as under the sediment removal phase. It is estimated, based on past storm events, that sediment excavation/trucking offsite will be required to typically remove 13,000 cy of sediment annually. Based on an estimated removal of 4,800 cy per day, it is expected this will occur over an estimated two-week period, Monday through Friday. This removal activity will take place during the late summer/early fall following vegetation maintenance.

Moderately large sediment deposits have the potential to occur during a storm season, but it is anticipated that even with this type of event the newly deposited sediment could be removed in one season. A moderately large sediment removal event, anticipated to involve around 170,000 cy, could take place over an estimated 12-week period during the late summer/early fall following the vegetation maintenance.

## Option 2 – Reduced Management Area

### *Management Area*

The management area for Option 2 is shown in Figure ES-3, Proposed Project, Configuration A Excavation Area and Reduced Management Area, Option 2. This management option will involve a total reservoir management area of approximately 91 acres.



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- Proposed Project Boundary
- Access Road
- Reservoir Management Area
- Sediment Removal Excavation Limit

**Figure ES-3**  
**Excavation Area and Reduced Management Area, Option 2**  
**Proposed Project - Configuration A**

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### *Management Activities*

Under Option 2, the reservoir will involve the same management activities using the same methods described above for Option 1.

### **Proposed Project Management Duration**

The proposed annual management routine to remove all sediment within the reservoir management footprint will help reduce sediment buildup in the reservoir management area. A large-scale sediment removal project will be required if a significant amount of sediment accumulates in the reservoir despite the reservoir management activities. This is not anticipated for a period of over two decades unless significant major fires and storms occur within the watershed. If future reservoir conditions threaten dam operations, LACFCD will initiate the planning process for a new large-scale sediment removal project. Part of this planning will involve utilizing the CEQA process to evaluate and determine the appropriate level of environmental document required for the future project.

### **E.S.3 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED**

Section 15123 (b)(2) of the *CEQA Guidelines* requires that an EIR Executive Summary identify areas of controversy known to the lead agency, including issues raised by other agencies and the public.

Community input was gathered from project stakeholders, and comment was invited on the scope and content of the EIR. Issues and concerns raised included haul routes, water conservation, protection of habitat, compatibility with Hahamongna Watershed Park Master Plan elements, the creation of soccer fields, minimizing traffic impacts, allowing regular and sustainable removal of sediment, sensitivity to La Cañada High School and adjacent land uses, coordination with agencies and organizations, and potential job opportunities.

A Notice of Preparation (NOP) and Initial Study (IS) was released on September 28, 2011 (Appendix A); and two Public Scoping meetings were held on October 5 and October 15, 2011. Comments received during a 45-day comment period were considered and incorporated into this document. The scoping meetings introduced the Proposed Project, outlined the environmental review process for the EIR, and invited the public to submit comments on the scope and content of the EIR. Approximately 50 members of the public attended each meeting. Issues and concerns raised at the public scoping meetings included disruption to neighbors, destruction of biodiversity and habitat, restoring natural processes in the reservoir, sluicing sediment as an alternative, sensitivity to surrounding land uses including the high school, and coordination with agencies and affected users. The key issues and areas of controversy are detailed in Section 1.0 – Introduction, subsection 1.4. In addition to the comments provided at the interviews and scoping meetings, several comments were received in response to the Notice of Preparation (NOP)/Initial Study (IS) for this EIR. The primary areas of controversy identified by the public and agencies include impacts to traffic, air quality, noise in the surrounding areas, land use issues, and impacts to recreation.

### **E.S.4 POTENTIAL IMPACTS FOUND NOT TO BE SIGNIFICANT**

In the analysis undertaken for the IS, the public scoping, and the NOP, the LACFCD determined several issue areas pursuant to CEQA that are not expected to have significant impacts resulting from implementation of the Proposed Project: Agricultural and Forest Resources, Population and Housing, and Public Services (fire protection, police protection, schools, and other public facilities).

The analysis undertaken for the Draft EIR has determined that impacts to Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Public Services, Recreation, and Utilities and Service Systems were less than significant.

#### **E.S.5 SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES**

The analysis undertaken for this Final EIR has determined that impacts to Air Quality, Biological Resources, Cultural Resources, Land Use and Planning, and Noise could be mitigated to a level of less than significant. Unmitigable significant impacts include significant impacts to Aesthetics and temporary significant impacts to Traffic/Transportation.

Table ES-1 summarizes the potential significant impacts for the Proposed Project. Impacts found to be potentially significant are listed along with the proposed mitigation measures. The residual impact after application of mitigation is also indicated for each significant impact. Potentially significant cumulative impacts, if any, are also identified.

**Table ES-0-1: Summary of Potential Significant Impacts and Mitigation Measures**

Potential Impacts	Mitigation Measures	Level of significance after mitigation
<b>Aesthetics</b>		
Aesthetics-1: Potentially significant impact to scenic vistas will occur from sediment removal activities during the sediment removal phase.	No feasible mitigation available. The less than significant impacts during reservoir management will be further reduced through the implementation of Mitigation Measures MM BIO-6, MM BIO-7, and MM BIO-8.	Impact remains significant and unavoidable.
Aesthetics-3: Potentially significant impact to visual characteristics will occur from sediment removal activities during the sediment removal phase.	No feasible mitigation available. The less than significant impacts during reservoir management will be further reduced through the implementation of Mitigation Measures MM BIO-6, MM BIO-7, and MM BIO-8	Impact remains significant and unavoidable.
<b>Air Quality</b>		
Air Quality-1: Conflict with the implementation of SCAQMD air quality management plan due to sediment removal emissions of NO <sub>x</sub> exceeding the Daily Regional Threshold will result in a significant impact.	<b>MM AQ-1:</b> LACFCD shall require all construction contractors during the sediment removal phase of the Proposed Project to use only sediment removal dump trucks that meet the EPA's emission standards for Model Year 2007 or later. <b>MM AQ-2:</b> LACFCD shall require all construction contractors during the sediment removal phase of the Proposed Project to use off-road equipment that meets, at a minimum, EPA's emission standards for Tier 3 equipment.	Less than Significant
Air Quality-2 and Air Quality-3: Sediment removal emissions of NO <sub>x</sub> will exceed the SCAQMD Daily Regional Threshold, resulting in a significant impact to an air quality standard.	See MM AQ-1 and MM AQ-2.	Less than Significant
Air Quality 6: Sediment removal emissions of NO <sub>x</sub> will exceed the SCAQMD Daily Regional Threshold, resulting in a cumulatively significant impact.	See MM AQ-1 and MM AQ-2.	Less than Significant
<b>Biological Resources</b>		
Biology-1: Removal of habitat during sediment removal will result in a potentially significant impact to five special status wildlife species (least Bell's vireo, yellow warbler, southwestern pond turtle, coast range newt, and two-striped garter	<b>MM BIO – 1:</b> A qualified biological monitor shall be present during initial ground- or vegetation-disturbing project-related activities to provide measures and monitor for wildlife in harm's way. This includes initial ground- or vegetation-disturbing project-related activities at the annual start of each year of sediment removal or maintenance activities. Following initial project-related activities, a qualified monitoring biologist shall be present as necessary to	Less than significant

Potential Impacts	Mitigation Measures	Level of significance after mitigation
<p>snake) and nesting native birds and roosting bats.</p>	<p>maintain the implemented protection measures and monitor for additional species in harm's way. These protection measures shall include, as appropriate: redirecting wildlife, identifying areas that may require exclusionary devices (e.g., fencing), or capturing and relocating wildlife outside the work area. Any captured species shall be relocated to adjacent appropriate habitat that is contiguous to adjacent habitat and not impacted by project-related disturbance activities.</p> <p><b>MM BIO – 2:</b> Within 90 days prior to ground-disturbing activities, a sensitive species educational briefing shall be conducted by a qualified biologist for construction personnel. The biologist will identify all sensitive resources that may be encountered onsite, and construction personnel will be instructed to avoid and report any sightings of sensitive species to LACFCD or the monitoring biologist. Educational briefings shall be repeated annually for the duration of the sediment removal.</p> <p><b>MM BIO – 3:</b> Within 90 days prior to ground-disturbing activities, a preconstruction survey shall be conducted by a qualified biologist for the presence of any sensitive species in harm's way, including coast range newt, the southwestern pond turtle, and the two-striped garter snake. If sensitive species are observed in harm's way, the qualified biologist will develop and implement appropriate protection measures for that species. These protection measures shall include, as appropriate: redirecting the species, constructing exclusionary devices (e.g., fencing), or capturing and relocating wildlife outside the work area. Preconstruction surveys shall be repeated annually for the duration of the sediment removal. Observations of special status species made during these surveys shall be recorded onto a CNDDDB field data sheet and submitted to CDFW for inclusion into the CNDDDB.</p> <p><b>MM BIO – 4:</b> LACFCD, in consultation with a qualified biologist, will employ bird exclusionary measures (e.g., mylar flagging) prior to the start of bird breeding season to prevent birds nesting within established boundaries of the project. Prior to commencement of sediment removal activities within bird breeding season (March 1-August 31), a preconstruction bird nesting survey shall be conducted by a qualified biologist for the presence of any nesting bird within 300 feet of the construction work area. 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</p>	

Potential Impacts	Mitigation Measures	Level of significance after mitigation
	<p>the initiation of clearance/construction work. Preconstruction surveys shall be repeated annually for the duration of the sediment removal.</p> <p>If an active nest is found, the qualified biologist will develop and implement appropriate protection measures for that nest. These protection measures shall include, as appropriate, construction of exclusionary devices (e.g., netting) or avoidance buffers. The biologist shall have the discretion to adjust the buffer area as appropriate based on the proposed construction activity, the bird species involved, and the status of the nest and nesting activity; but shall be no less than 30 feet. Work in the buffer area can resume once the nest is determined to be inactive by the monitoring biologist.</p> <p><b>MM BIO – 5:</b> Within 30 days prior to commencement of vegetation or structure removal activities, a preconstruction bat survey shall be conducted by a qualified biologist for the presence of any roosting bats. Acoustic recognition technology shall be used if feasible and appropriate. If either a bat maternity roost or hibernacula (structures used by bats for hibernation) are present, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula. These protection measures shall include, as appropriate: safely evicting non-breeding bat hibernacula, establishment of avoidance buffers, or replacement of roosts at a suitable location. These measures shall also include as appropriate:</p> <ul style="list-style-type: none"> <li>▪ To the extent feasible, trees that have been identified as roosting sites shall be removed or relocated between October 1 and February 28.</li> <li>▪ When trees must be removed during the maternity roost season (March 1 to September 30), a qualified bat specialist shall conduct a preconstruction survey to identify those trees proposed for disturbance that could provide hibernacula or nursery colony roosting habitat for bats.</li> <li>▪ Trees identified as potentially supporting an active nursery roost shall be inspected by a qualified biologist no greater than 7 days prior to tree disturbance to determine presence or absence of roosting bats.</li> <li>▪ Trees determined to support active maternity roosts will be left in place until the end of the maternity season (September 30).</li> <li>▪ If bats are not detected in a tree, but the qualified biologist determined that roosting bats may still be present, trees shall be removed as follows:                         <ul style="list-style-type: none"> <li>○ Pushing the tree down with heavy machinery instead of</li> </ul> </li> </ul>	

Potential Impacts	Mitigation Measures	Level of significance after mitigation
	<p>falling the tree with a chainsaw</p> <ul style="list-style-type: none"> <li>○ First pushing the tree lightly 2 to 3 times with a pause of 30 seconds in between each nudge to allow bats to become active, then pushing the tree to the ground slowly</li> <li>○ Allowing the tree to remain in place for 24 to 48 hours until inspected by the qualified biologist for presence or absence of roosting bats</li> </ul> <ul style="list-style-type: none"> <li>▪ The qualified biologist shall document all bat survey, monitoring, and protection measure activities and prepare a summary report for LACFCD.</li> </ul>	
<p>Biology-2: A significant impact will occur to riparian habitats and sensitive habitats.</p>	<p><b>MM BIO – 6:</b> Riversidean Alluvial Fan Sage Scrub habitat shall be restored and/or enhanced at a 1:1 ratio by acreage. Areas shall be mapped using aerial photographs.</p> <p><b>MM BIO – 7:</b> Within 90 days prior to ground-disturbing activities, a qualified biologist shall conduct a tree survey within the project footprint, to identify trees that will be removed or potentially affected by the Proposed Project and trees that can be avoided. LACFCD will replace trees that cannot be avoided. The replacement is expected to be up to 1:1 by acreage. The biological monitor shall implement measures to protect the root zone of oak trees that may be impacted immediately adjacent to the project site and along access roads.</p> <p><b>MM BIO – 8:</b> A combination of onsite and offsite habitat restoration, enhancement, and exotic removal shall be implemented by LACFCD at a 1:1 ratio for impacted sensitive habitat and jurisdictional waters. Habitat restoration/enhancement shall include use of willow cuttings and exotic species removal. Non-native, weedy habitats within the basin shall be utilized whenever possible as mitigation sites. This mitigation measure shall be monitored for success for five years following implementation. A report of the monitoring results shall be submitted annually, during the five years following implementation, to resource agencies as required by the Section 401 Certification, Section 404 permit, and a Streambed Alteration Agreement.</p>	<p>Less than significant</p>
<p>Biology-3: A significant impact will occur to wetlands.</p>	<p>See MM BIO-8, above.</p>	<p>Less than significant</p>

Potential Impacts	Mitigation Measures	Level of significance after mitigation
Biology-4: A significant impact will occur to wildlife nursery sites.	See MM BIO-1 through MM BIO-8, above.	Less than significant
Biology-5: A significant impact will occur due to removal of native trees from the Proposed Project site.	See MM BIO-7, above.	Less than significant
<b>Cultural Resources</b>		
Cultural-2: A significant impact will occur if sediment removal or reservoir management activities uncover unknown archaeological resources.	<b>MM CUL-1:</b> If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native sediments, these activities will be monitored by a qualified archaeologist. In the event this occurs and historic or archaeological materials are observed, the excavation in the proximity of the discovery should be diverted until a qualified archaeologist and/or paleontologist evaluates the discovery.	Less than significant
Cultural-3: A significant impact will occur if sediment removal or reservoir management activities uncover unknown paleontological resources.	<b>MM CUL-2:</b> If sediment removal or reservoir management activities exceed the depth of the historic flood deposits and encounter native sediments, these activities will be monitored by a qualified paleontologist. In the event that this occurs and paleontological materials are observed, the excavation in the proximity of the discovery should be diverted until a qualified paleontologist evaluates the discovery.	Less than significant
Cultural-4: A significant impact will occur if sediment removal or reservoir management activities uncover human remains.	<b>MM CUL-3:</b> In the event human remains are discovered, all work in the area must be halted until the County Coroner identifies the remains and makes recommendations regarding their appropriate treatment pursuant to PRC Section 5097.98.	Less than significant
<b>Land Use and Planning</b>		
Land Use-1: A significant impact will be associated with recreational activities coexisting with flood management and water conservation, as implementation of sediment removal and reservoir management under both management options will result in temporarily restricted access to portions of designated trails and indirect impacts to existing recreation uses associated with construction activities.	<b>MM LAN-1:</b> Temporary impacts to designated recreational facilities and trails shall be minimized through advance communication and redirection to the nearest facility in the vicinity of the Proposed Project. Prior to completion of final plans and specifications, the LACFCD shall review the plans and specifications to ensure that they contain proper language requiring that signs be posted at the nearby parking lots and trailheads at least one month in advance of sediment removal activities.	Less than significant

Potential Impacts	Mitigation Measures	Level of significance after mitigation
<b>Noise/Vibration</b>		
Noise-2: Onsite construction equipment vibration impacts to nearby sensitive receptors will be significant.	<b>MM N-1:</b> The LACFCD shall restrict the operation of any off-road construction equipment that is powered by a greater than 200-horsepower engine from operating within 180 feet of any offsite residential structure. Equipment that is not performing any earth-moving activities and is solely operating for entering or leaving the site via the access roads to the reservoir is exempted from this requirement.	Less than significant
Noise-4: Cumulative onsite construction equipment vibration impacts to nearby sensitive receptors could be significant.	See MM N-1.	Less than significant
<b>Transportation and Traffic</b>		
Transportation-1: Temporary significant impacts to haul route intersections could cause a substantial increase in traffic which would affect the efficiency of the circulation system.	<b>MM TRA-1:</b> Proposed Project haul trucks will not deliver to the Vulcan Material Reliance Facility during the PM peak period. <b>MM TRA-2:</b> Proposed Project haul trucks will not deliver to the Boulevard Pit during the PM peak period.	Implementation of the mitigation measures would reduce impacts but not to a level of less than significant. Other potential impact reduction measures could reduce impacts to less than significant; however, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this temporary impact could remain potentially significant.

Potential Impacts	Mitigation Measures	Level of significance after mitigation
<p>Transportation-2: Proposed Project traffic associated with sediment removal could adversely affect traffic level of service at the following intersections, resulting in a temporary significant impact: Berkshire Place and I-210 Eastbound Ramps intersection during the AM peak period; Figueroa St/Scholl Canyon Road and SR-134 Westbound Ramps during the AM and PM peak periods; Irwindale Avenue/Foothill Boulevard intersection during the PM peak hour; Glenoaks Boulevard and Osborne Street intersection during the AM and PM peak periods; Sheldon Street and San Fernando Road intersection during the PM peak period; and Branford Street and San Fernando Road intersection during the PM peak period.</p>	<p>See MM TRA-1 and MM TRA-2.</p>	<p>Implementation of the mitigation measures would reduce impacts but not to a level of less than significant. Other potential impact reduction measures could reduce impacts to less than significant; however, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this temporary impact could remain potentially significant.</p>
<p>Transportation-5: Reduction of LOS at intersections could affect buses using the existing roadway network, resulting in a temporary significant impact.</p>	<p>See MM TRA-1 and MM TRA-2.</p>	<p>Implementation of the mitigation measures would reduce impacts but not to a level of less than significant. Other potential impact reduction measures could reduce impacts to less than significant; however, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be</p>

Potential Impacts	Mitigation Measures	Level of significance after mitigation
		made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this temporary impact could remain potentially significant.
<p>Transportation-6: During sediment removal the Proposed Project will result in significant delays at the following intersections, resulting in significant cumulative impacts. These intersections include:</p> <p>Berkshire Place and I-210 Eastbound Ramps intersection during the AM peak period; Irwindale Avenue/Foothill Boulevard intersection during the PM peak hour;</p> <p>Figueroa St/Scholl Canyon Road and SR-134 Westbound Ramps during the AM and PM peak periods;</p> <p>Glenoaks Boulevard and Osborne Street intersection during the AM and PM peak periods;</p> <p>Sheldon Street and San Fernando Road intersection during the PM peak period; and</p> <p>Branford Street and San Fernando Road intersection during the PM peak period.</p>	See MM TRA-1 and MM TRA-2.	Implementation of the mitigation measures would reduce impacts but not to a level of less than significant. Other potential impact reduction measures could reduce impacts to less than significant; however, these measures cannot be legally imposed by the LACFCD, since the locations are under the jurisdiction of other agencies. Every reasonable effort will be made to coordinate with and receive approval from the jurisdictional agencies to implement the impact reduction measures but LACFCD cannot guarantee that the measures will be implemented. Therefore, this temporary impact could remain potentially significant.

## E.S.6 PROJECT ALTERNATIVES

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 and would avoid or substantially lessen any of the significant effects of the project. Four alternatives — the Conveyor Belt Alternative, the Slurry Pipeline Alternative, the Dam Removal Alternative, and the Upstream Sediment Management Alternative— were considered but rejected from consideration in this EIR as infeasible (see further discussion in Section 4.10). Five feasible alternatives plus the CEQA required No Project Alternative are reviewed in Chapter 4.0 of this document and briefly summarized in Table ES-2, below, and shown in Figure ES-4: Alternative Configurations, Alternatives 1 through 3 and Figure ES-5: Alternative Configurations, Alternatives 4 through 6.

Alternative 3, Configuration D, which was found to be the Environmentally Superior Alternative in the Draft EIR, was based on the City of Pasadena's Hahamongna Watershed Park Master Plan (HWPMP). Alternative 3, Configuration D, Option 2 drastically reduces the project's footprint of 120 acres down to 71 acres. Additionally, the limited maintenance area for Alternative 3 further reduces the permanent habitat impacts down to approximately 51 acres by allowing for site replanting and mitigation to take place within the reservoir footprint. This reduction in project acreages will greatly lessen environmental impacts of the Proposed Project.

As shown in the Draft EIR, Section 4.6, Alternative 3 receives an in-depth analysis which presents the potential impacts of each of the alternative and compares the impacts of the alternative to the Proposed Project and each of the other alternatives; providing ample information as to why this alternative was found to be the Environmentally Superior Alternative. Section 4.11 is a summary of these findings. The Draft EIR does not determine and has not designated any of the alternatives, including the Proposed Project, as the "Recommended Alternative." With the completion of the Final EIR, an alternative will be chosen and be presented to the Board of Supervisors as the Recommended Alternative. Any of the alternatives analyzed in the Draft EIR can be chosen as the Recommended Alternative.

Of the alternatives, Alternative 3, Configuration D is considered to be the Environmentally Superior Alternative. Alternative 3, Configuration D substantially attains all of the project objectives and would lessen significant effects associated with the Proposed Project. When compared to the other alternatives, Alternative 3, Configuration D would result in the fewest environmental impacts. A summary comparison of the alternatives is provided in Table ES-3.

Table ES-2: Proposed Project Alternatives and the Proposed Project

Item	Proposed Project Configuration A	Alternative								
		1 Configuration B	2 Configuration C	3 Configuration D (Environmentally Superior Alternative)	4 Sluicing	5 Haul Route	6 No Project			
Alternative Description	Closest to the original reservoir configuration	Retains the original capacity while reducing footprint and allowing for restoration of trails	Back basin provides management area that can only be maintained through mechanical excavation.	Limits excavation to two deeply excavated channels to provide more natural sediment movement and impact a smaller footprint	Requires mechanical agitation of the sediment in the reservoir to move sediment downstream.	Alternative Haul Routes for Several of the Haul Route Segments	No large-scale excavation would be completed. Sediment would continue to accumulate in reservoir.			
Sediment Removal	Flood Control Volume	4,153,000 cy	3,963,000 cy	3,615,000 cy	3,588,000 cy		4,153,000 cy	4,153,000 cy	1,245,000 cy	
	Flood Protection	2 DDEs	2 DDEs	Approximately 2 DDEs	Approximately 2 DDEs		Up to 2 DDEs	2 DDEs	<1 DDE	
	Total Removal Volume*	2,946,000 cy	2,784,000 cy	4,000,000 cy	2,425,000 cy		2,946,000 cy	2,946,000 cy	0 cy	
	Reservoir Footprint	120.42 ac	83.08 ac	83.96 ac	Option 1 75.99 ac	Option 2 70.81 ac	120.42 ac	120.42 ac	Existing	
	Project Duration	5 years	Indeterminate	5 years	N/A					
Reservoir Management	Acreage (in green)	Option 1 120.42 ac	Option 2 91.28ac	54.56 ac	47.10 ac	50.78 ac	52.57 ac	120.42 ac	120.42 ac	N/A
	Max Elevation	1070'	1040'	1020'	1010'	1040'	1040'	1040'	1040'	N/A
	Vegetation and Trees	Vegetation maintenance of whole site	Allow to regrow above 1040'	Allow to regrow above 1020' and plant on side slopes above 1020'	Allow to regrow above 1010' and plant on side slopes above 1020'	Allow to regrow above 1040' and in the west leg. Keep invert of the east leg clear	Allow to regrow above 1040'. Replant above 1020' on the side slopes but keep invert clear	Vegetation maintenance of whole site	Vegetation maintenance of whole site	Allow all vegetation and tree growth
	Frequency	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	Sluicing and mechanical agitation year round.	FAST during rain events. Vegetation maintenance for three weeks, sediment excavation for two weeks, annually during dry weather.	N/A
Project Objectives**	1	Met	Met	Met	Met	Met	Met	Met	No	
	2	Met	Met	Met	Met	Met	Met	Met	No	
	3	Met	Met	Met	Met	Met	Met	Met	No	
	4	Met	Met	Met	Met	Met	Met	Not Fully	Met	No
	5	Met	Met	Met	Met	Met	Met	Not Fully	Met	No
	6	Met	Met	Met	Met	Met	Met	No	Met	N/A

\* Plus any additional sediment received during the project sediment removal phase

\*\* Project Goal is to restore the design capacity (volume for two DDEs below the spillway elevation of 1,040.5 feet) and establish a reservoir management system to maintain the flood control capacity of the reservoir.

**Table ES-3: Summary Comparison of Potentially Significant Impacts of Proposed Project and Alternatives**

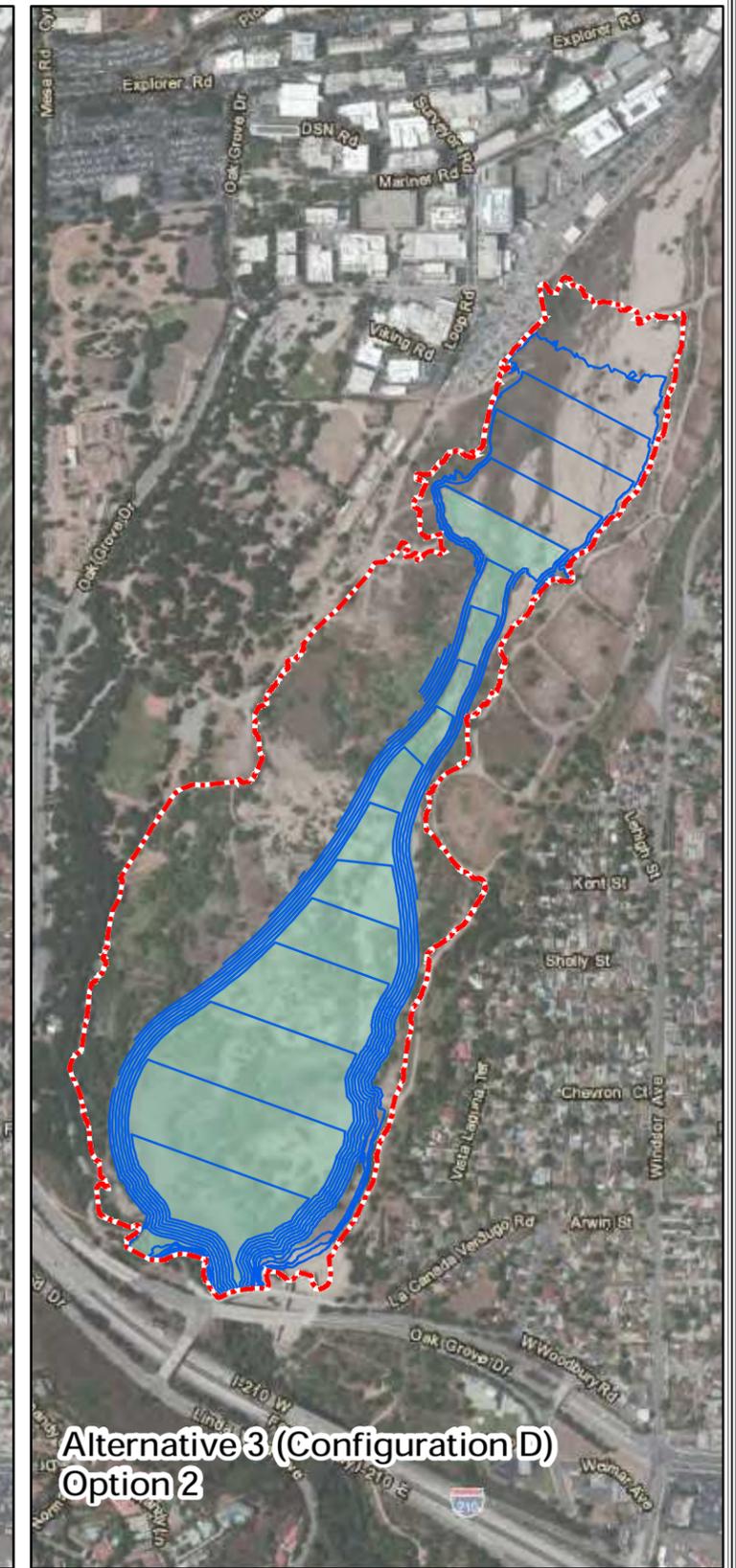
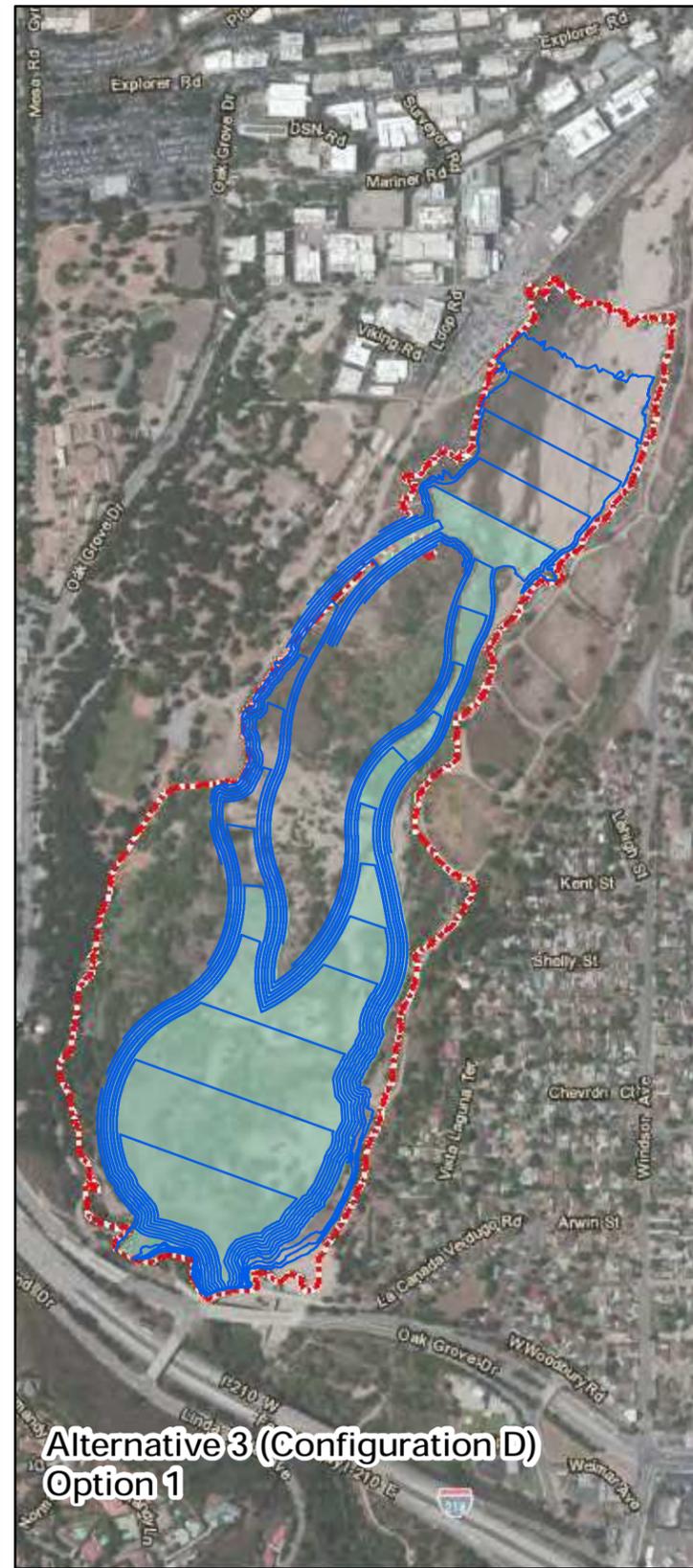
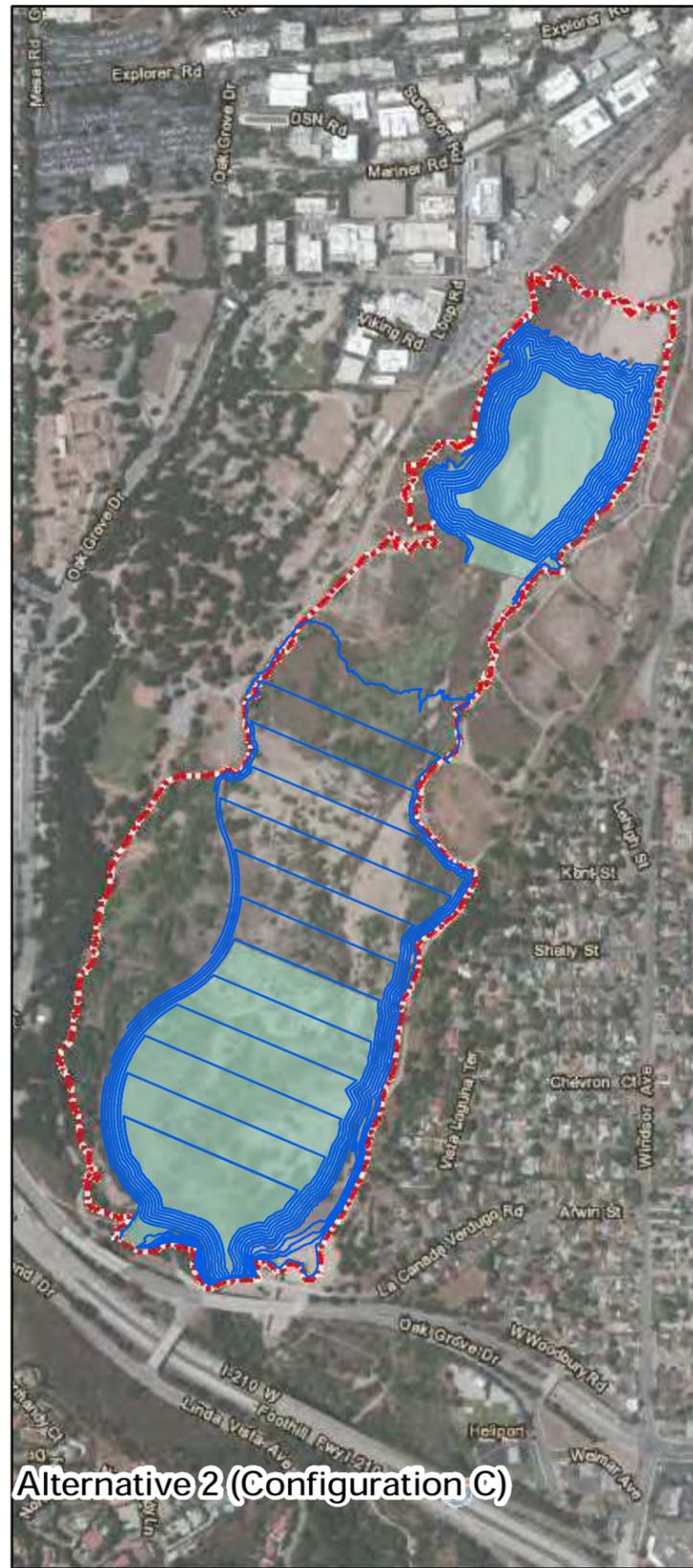
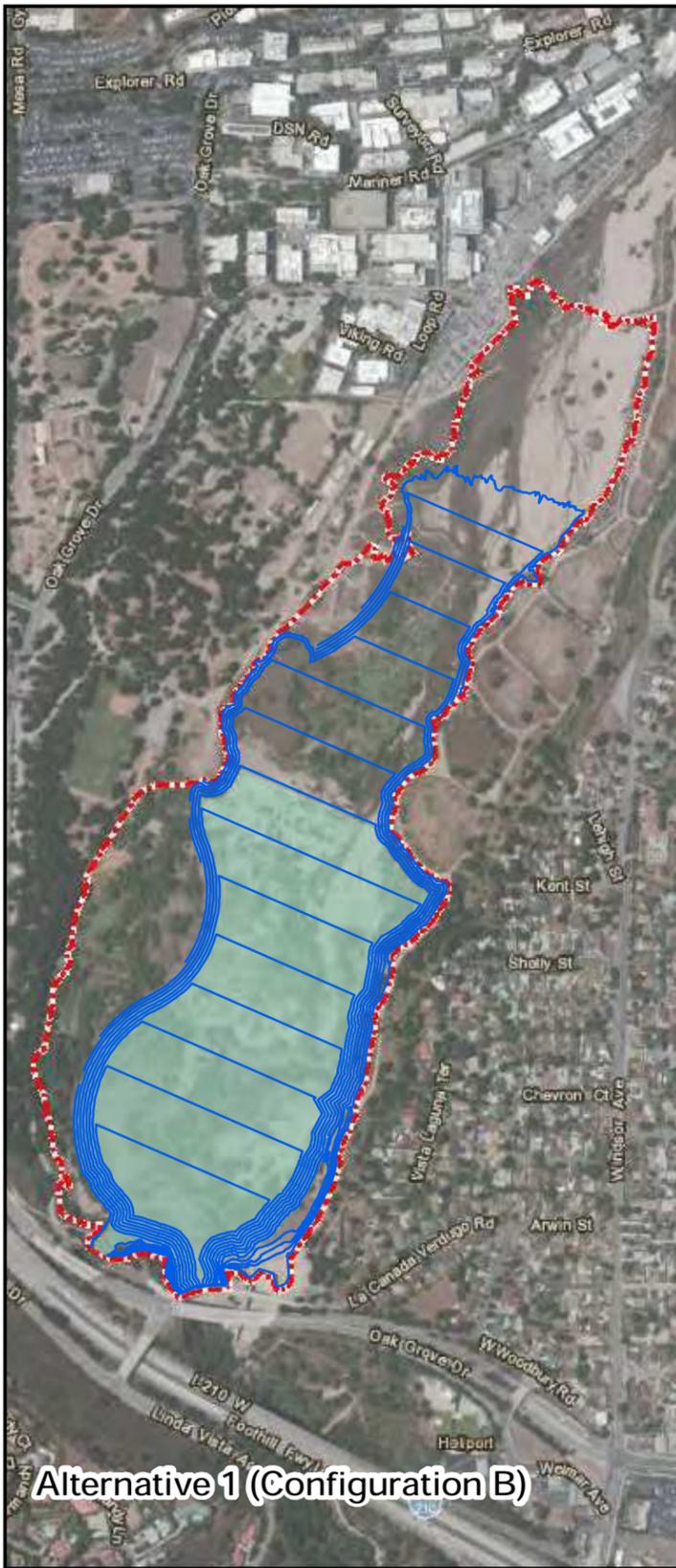
Impact Area	Proposed Project Configuration A	Alternative 1 Configuration B	Alternative 2 Configuration C	Alternative 3 Configuration D*	Alternative 4 Sluicing	Alternative 5 Haul Route Alternative	Alternative 6 No Project
Aesthetics	Significant and Unavoidable	Reduced	Reduced	Reduced	Increased	Similar	Potentially Increased
Air Quality	Less than Significant with Mitigation	Reduced	Increased	Reduced	Potentially Increased	Similar	Reduced
Biological Resources	Less than Significant with Mitigation	Reduced	Reduced	Reduced	Potentially Increased	Similar	Potentially Increased
Cultural Resources	Less than Significant with Mitigation	Reduced	Similar	Reduced	Similar	Similar	Reduced
Land Use and Planning	Less than Significant with Mitigation	Reduced	Reduced	Reduced	Increased	Similar	Potentially Increased
Noise/Vibration	Less than Significant with Mitigation	Reduced	Increased	Reduced	Potentially Increased	Similar	Reduced
Transportation and Traffic	Temporary, Significant and Unavoidable	Reduced	Increased	Reduced	Potentially Increased	Reduced	Reduced

Reduced= reduced impact compared to the Proposed Project

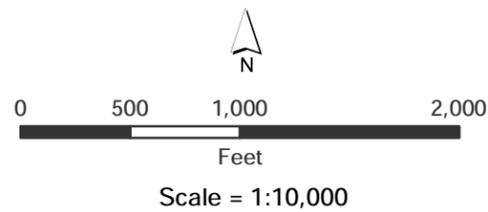
Similar = similar impact compared to the Proposed Project

Increased = increased impact compared to the Proposed Project

\*Alternative 3, Configuration D is the Environmentally Superior Alternative



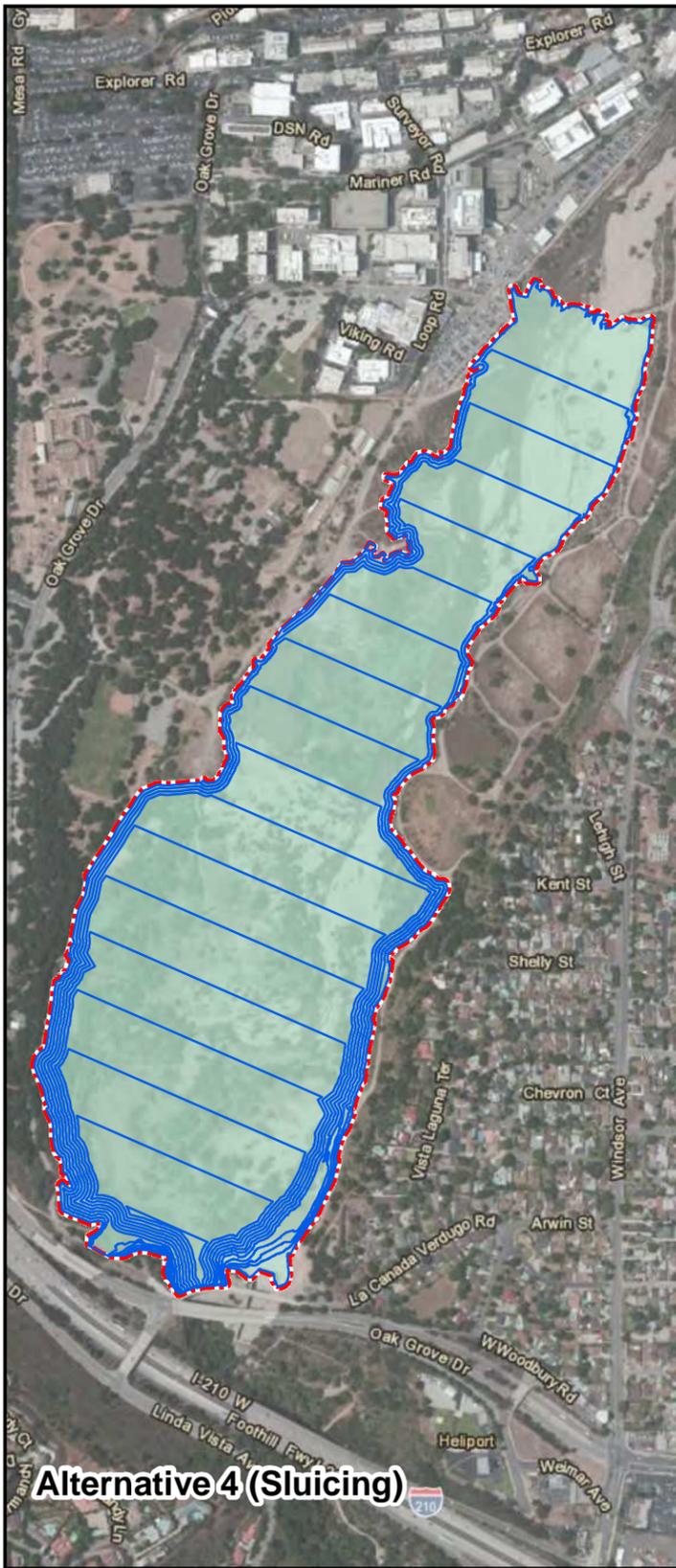
- Legend**
- Proposed Project Boundary
  - Sediment Removal Excavation Limit
  - Reservoir Management Area



**Figure ES-4**  
Alternative Configurations  
Alternatives 1 through 3

Version Date: 9/18/2014





**Alternative 4 (Sluicing)**



**Alternative 5 (Haul Route Alternative, Site Access Option 1)**



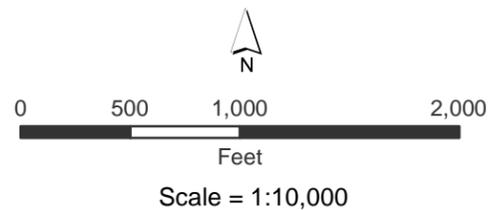
**Alternative 5 (Haul Route Alternative, Site Access Option 2)**



**Alternative 6 (No Project)**

**Legend**

- Proposed Project Boundary
- Reservoir Management Area
- Access Road
- Sediment Removal Excavation Limit
- Haul Routes**
- Inbound Haul Route
- Outbound Haul Route



**Figure ES-5**  
Alternative Configurations  
Alternatives 4 through 6

Version Date: 10/13/2014

