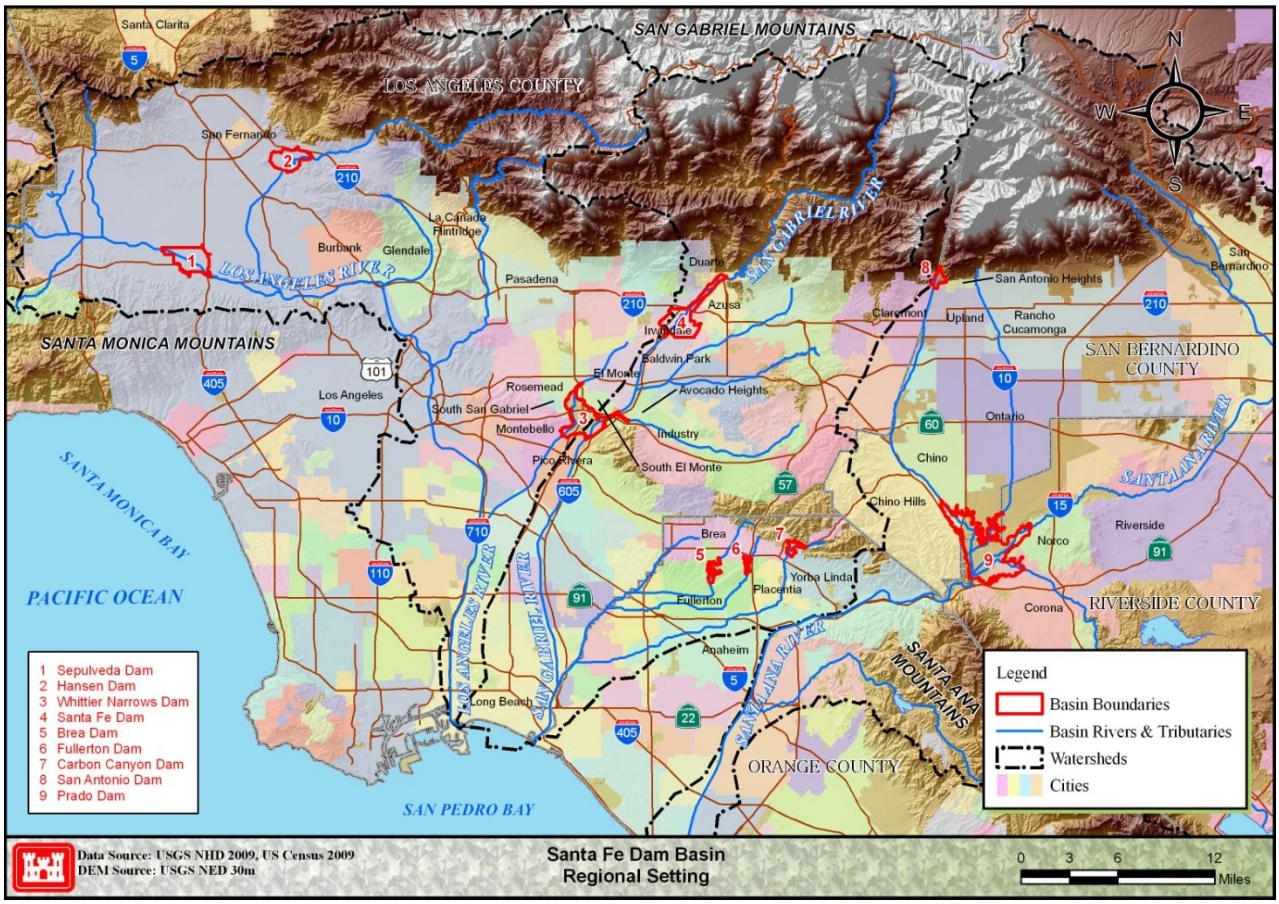


NOTICE OF PREPARATION
DRAFT ENVIRONMENTAL ASSESSMENT

This is to inform the general public that the United States Army Corps of Engineers Los Angeles District (Corps) has preliminarily determined that the following project proposal could be adequately evaluated under the National Environmental Policy Act (NEPA) through conducting an Environmental Assessment (EA).

Proposal Title	**Sediment Stockpile Management at Santa Fe Basin**
Proposed Implementation Date	**2013**
Proposed Federal Action	**Corps of Engineers would remove a sediment mound at Santa Fe Basin**

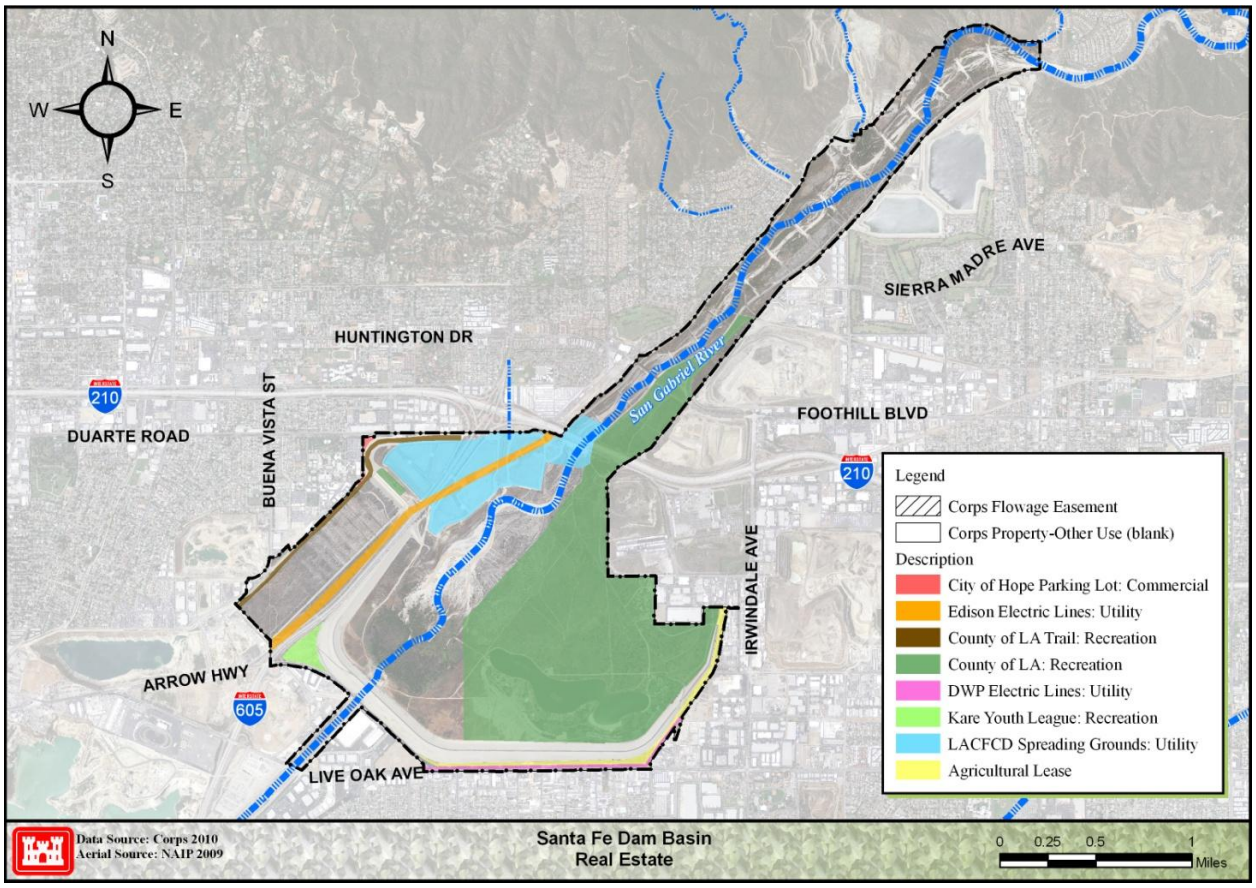
The Corps, Operations Branch, would remove an accumulated sediment mound, approximately 500,000 cubic yards in size, from within the Santa Fe Flood Control Basin, Irwindale, CA and located west of the San Gabriel Riverbed and east of the 605 Freeway. A draft Environmental Assessment has been prepared to analyze effects of the proposed sediment removal, which would involve haul trucks traversing from the sediment location to a location outside the Basin.

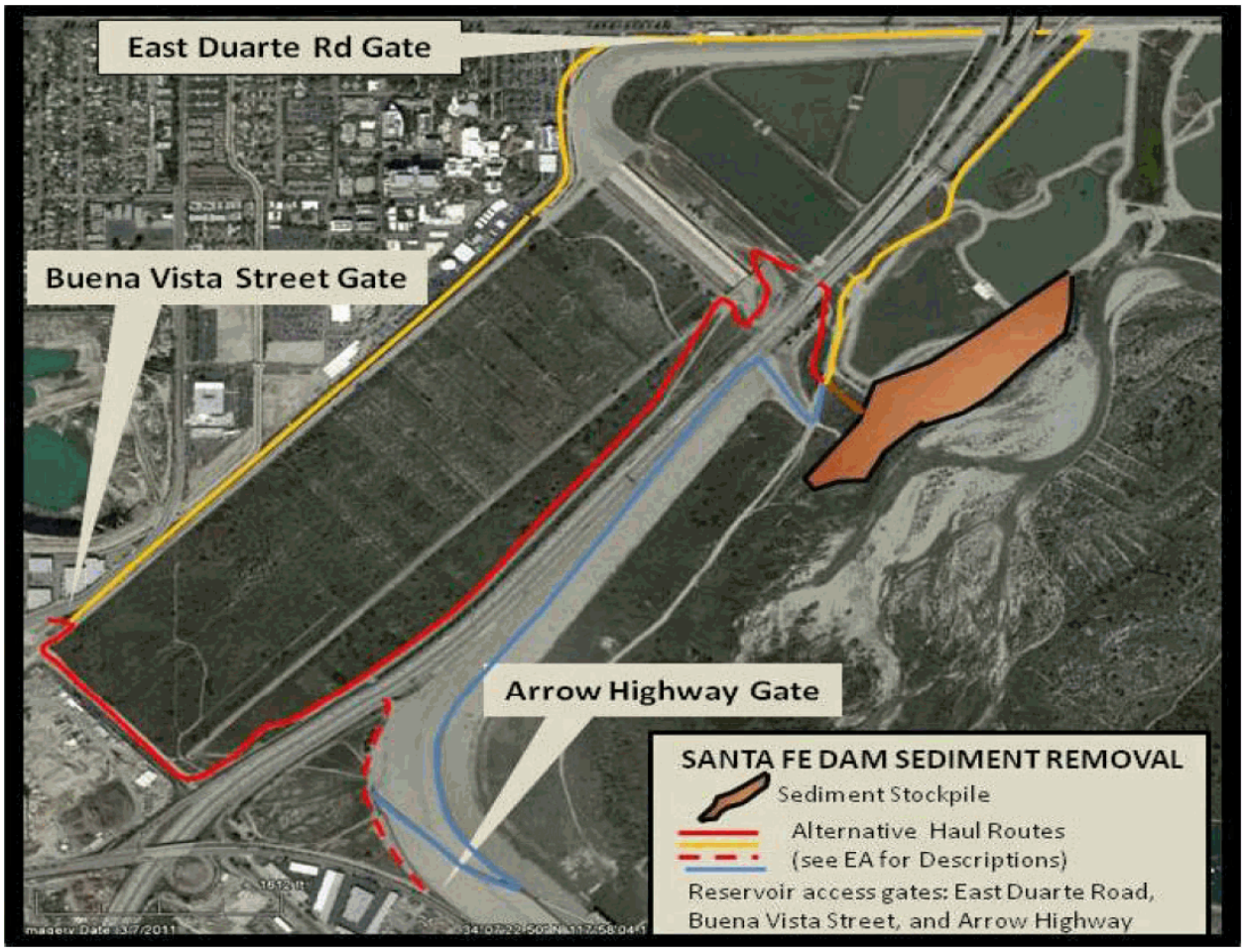
The Draft Environmental Assessment provides description of several alternative actions for the proposal, which in its life cycle may involve up to 20,000 haul truck loads leaving Santa Fe Basin from an Operations area just east of the 605 Freeway. Local Cities already contacted will continue providing input in determining final resolution as to appropriate levels of traffic in any municipal footprint involved in the sediment removal operation.

Location The location is Santa Fe Flood Control Basin, located in Irwindale, CA. Several Figures indicating the proposed Work Area are provided in the draft Environmental Assessment.

Public Involvement The Corps is inviting the general public to submit comments on potential environmental impacts that could result from implementation of the proposal. The public comment period on preparation of an EA for the proposal described above would extend from ***June 7 through July 8, 2013***. Please direct your comments to Carvel Bass, US Army Corps of Engineers at carvel.h.bass@usace.army.mil or by mail at 915 Wilshire Boulevard, Ste. 11098, Los Angeles, CA, 90017. If you have questions or would like additional information, please contact Carvel Bass, Ecologist, Asset Management Division at (213) 452-3392.

The Corps will actively consider any comments timely received. The results of this consideration would be reflected in a memorandum for record placed in the Administrative Record, unless consideration of the comments was reflected directly in the EA, either through a modification of the document prompted by the comments or an appendix to the EA articulating responses to the comments. Once the EA is complete and if a FONSI is determined to be appropriate based upon the analysis contained in the EA, pursuant to the last cause of 33 CFR § 230.11, a separate notification will be sent to concerned agencies, organizations and to the interested public stating that the FONSI is available for review. If significant effects on the quality of the human environment are subsequently identified and may not be mitigated to a less than significant level, the Corps will initiate preparation of an EIS.


N
W
E
S
SIERRA MADRE AVE
HUNTINGTON DR
210
DUARTE ROAD
BUENA VISTA ST
San Gabriel River
FOOTHILL BLVD
210
IRWINDALE AVE
ARROW HWY
605
LIVE OAK AVE
Legend
Corps Flowage Easement
Corps Property-Other Use (blank)
Description
City of Hope Parking Lot: Commercial
Edison Electric Lines: Utility
County of LA Trail: Recreation
County of LA: Recreation
DWP Electric Lines: Utility
Kare Youth League: Recreation
LACFCD Spreading Grounds: Utility
Agricultural Lease
Data Source: Corps 2010
Aerial Source: NAIP 2009
Santa Fe Dam Basin
Real Estate
0 0.25 0.5 1
Miles



US Army Corps of Engineers®

SANTA FE DAM BASIN
LOS ANGELES COUNTY, CALIFORNIA

SEDIMENT STOCKPILE MANAGEMENT

DRAFT ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT

June, 2013
Los Angeles District U.S. Army Corps of Engineers
P.O. Box 532711 Los Angeles, California 90053-2325

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(draft) FINDING OF NO SIGNIFICANT IMPACT
Sediment Stockpile Management Project
in Santa Fe Dam Basin
Los Angeles County, California

I have reviewed the Environmental Assessment (EA) that has been prepared for the proposed action of Sediment Stockpile Management within an upper area of the Santa Fe Flood Control Basin located in City of Irwindale, Los Angeles County, California. The EA has been prepared in compliance with applicable Federal laws, regulations, and Executive Orders and Corps' policies. The EA analyzes the impacts of the proposed alternatives on the environmental and human resources in and adjacent to the area of the proposed action. The EA and draft FONSI were available for public and agency review for 30 days, ending on July, 2013.

Under the No Action Alternative, the sediment would not be removed, in contrast to guidance provided in the Santa Fe Dam Water Control Manual to maintain flood risk management for the urban area downstream of the Santa Fe Dam. The sediment has been removed from other basin areas and then stored at the present location. The No-Action Alternative would not meet the purpose and need of the proposed project, although it described and is carried forward for comparison purposes.

Two Proposed Action alternatives, each at different levels of effort, would include a three-phase approach: 1) Site preparation; 2) Sediment mound removal; 3) Herbicide application on emergent invasive species through the second year, follow-up with further monitoring and weed eradication. The sediment mound consists of approximately 500,000 cubic yards of material. Up to approximately 20,000 round-trip truck trips may be required to remove this quantity of sediment, and local ordinances will provide the guidelines as to the appropriate number of haul truck trips per day. With implementation of the environmental commitments identified in Chapter 5, during the sediment management activities in the area of the Proposed Action, potential adverse impacts to environmental and human resources in and around the project area would be reduced to less than significant adverse impacts. A recommended alternative, the Optimal Management Alternative would most effectively meet the need and purpose of the proposed action. In addition, ongoing coordination among local stakeholders may further advance two additional alternatives, introduced here which, respectively, involve development of a conveyor belt and/or a rail car system; these alternatives would reduce traffic and air quality impacts..

By removing excess sediment and thus providing a more viable, sustainable flood pool volume as required, the Optimal Management alternative would be the most cost-effective and would minimize future/long term maintenance and optimize flood risk management within the Basin. The preferred alternative would also optimize secondary, restorative goals for the Basin and would enhance safety for future activities within the Work Area.

I have determined that implementation of the Preferred Alternative with the incorporation of the Environmental Commitments identified in this EA is in compliance with Section 106 of the National Historic Preservation Act (36 CFR 800), the Endangered Species Act, Migratory

Bird Treaty Act, and other Federal laws, regulations, and Executive Orders as described in this EA. I have considered the available information contained in the EA, and it is my determination that there are no significant adverse impacts on the quality of human environment resulting from the approval of the Recommended Plan. There are no unresolved environmental issues. Preparation of an Environmental Impact Statement (EIS), therefore, is not required.

Prepared by:

_____ _____

Carvel Bass
Ecologist, Civil Works Branch
Asset Management Division

Date

Approval Recommended by:

_____ _____

Theresa M. Kaplan
Chief, Asset Management Division

Date

Approval Provided by:

_____ _____

R. Mark Toy, P. E.
Colonel, US Army
Commander and District Engineer

Date

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the US Army Corps of Engineers (Corps) to comply with the National Environmental Protection Act (NEPA)) (42 USC 4321 et seq.), Council on Environmental Quality (CEQ) regulations published at 42 Code of Federal Regulations (CFR) part 1500, other environmental laws, Executive Orders, and Corps' regulations. The purpose of the EA is to provide sufficient information on the existing environmental conditions within the area of the Proposed Action and the potential environmental effects of the No-Action Alternative and various alternative actions so decision makers can determine the need to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

For the purposes of this document and pursuant to guidelines for implementing NEPA, the baseline used for the impact analysis reflects conditions at the time of the preparation of this report.

1.1 Proposed Action

The Proposed Action would allow a Contractor to recover lost flood storage volume by removing an existing accumulation of sand, gravel, and cobble material, which is approximately 500,000 cubic yards in volume and was placed at the present location during various episodes of maintenance practices which began several decades ago. The project would regain and preserve some of the Dam's design capability for water-holding. Because of high local population density (Cities of Duarte, Irwindale, and City of Hope Hospital campus), the project is designed to perform at a level to not exceed local, State, and Federal air quality or other standards and to avoid the need to prepare an Environmental Impact Statement (/EIS).

It is likely that the Contractor would dispose of the sediment material within a 5-mile radius of the existing location. Disposal of materials at a site further than 5 miles would cause additional, adverse air quality impacts to the local environment even though they would only be temporary in nature. Due to fuel costs from the perspective of a potential Contractor, a disposal site farther than 5 miles from the existing site may be economically infeasible.

The Proposed Action Alternative will consist of a three-phase approach: 1) Site preparation; 2) sediment removal; 3) apply herbicide on emergent invasive species through the second year; and follow-up with further monitoring and weed eradication. It is likely that, given the range of haul truck sizing, the use of a large dump truck with capacity of up to 400 tons, as well as Caltrans restrictions as to allowable haul truck weight upon bridges, would amount to up to 20,000 truck loads needed to remove the accumulated sediment. The number of days required can be determined by the number of trucks per day that may operate per rules imposed by local city (/cities) once a destination for the sediment has been determined.

1. A Corps Contractor would be activated and, following site preparation, the material would be excavated by clean excavation methods and then removed to an approved location outside the flood control reservoir. Geotechnical testing of the material has

already occurred, and may again be conducted, to determine the material's properties which could influence an ultimate, approved disposal location. The sediment will be removed to an approved location under terms of a contract yet to be implemented.

2. Once the sediment is removed then the site's emergent vegetation would be controlled to prevent re-establishment of weeds.

3. A Corps Operations area adjacent to the stockpile may be utilized for mobilization or other work area purpose and is included by reference in this analysis. An adjacent area would be chosen whereby any further impacts, if any, would not be significantly adverse.

At present (Spring, 2013), the proposed Action Area does not include habitat, or immediate proximity to habitat, for Federally-listed bird species which could be affected by the proposal. The project scope includes biological monitoring prior to and during the project, should work be conducted during the bird breeding season (approximately March 15-September 15 of any calendar year). In light planning for no significant adverse effects and because of the importance of removing this sediment due both to safety considerations and to the importance of its potential use at a related Corps flood control project, the project would generally be conditioned to allow its implementation during any season, year-round.

1. 2 Proposed Action Area

The Proposed Action would affect a rod-shaped parcel that is approximately 5 acres in size, located in the west-central area of Santa Fe Basin, just east of the 605 Freeway, adjacent to the San Gabriel River, and northwest of areas known to be habitat for the Federally-listed-as-endangered least Bell's vireo. Elevation of the stockpile is approximately 480 ft.-510 ft. elevation. The total stockpile removal/work area is indicated on a Figure (Section 2.3, below). In addition, while no requirement for additional land has yet been determined, several acres of adjacent Operations land is available just southwest of the stockpile and could be used for support purposes without adding significant adverse impacts to resources including to wildlife, listed species, air quality, or recreation. This is mentioned because there may be a potential need to develop up to 1-2 acres of Operations-designated land adjacent to the stockpile to be used as a mobilization or contractor's work area.

North and west of the sediment stockpile lies a groundwater percolation ponds facility which is operated by the Los Angeles County Department of Public Works (LACDPW) under outgrant from the Corps. The Proposed Action Area includes no specific areas which are outgranted for recreation at Santa Fe Basin.

The Proposed Action would occur at the northwestern Santa Fe Dam Basin (Dam, Basin), which is located on the upper San Gabriel River in the San Gabriel Valley near Irwindale, CA, Los Angeles County, California and owned in fee by the United States. This portion of the Basin is bordered on the west by the San Gabriel Freeway/605 Freeway and on the north by the Foothill Freeway /210 Freeway (see Figure, Section 1.4).

Acreage at the Basin is utilized primarily for: Operation and Maintenance of the Dam, for Recreation purposes managed by the County of Los Angeles (County) through its Parks and Recreation Department, and for the adjacent water management (percolation) ponds managed by Los Angeles County Department of Public Works (LACDPW). With the exception of minor use of unsurfaced roads shared by LA DPW in their leased percolation ponds area, the proposed Project Action Area involves land used by the United States as Operations lands at Santa Fe Basin.

1.3 Authorities and Land Allocation Designation

Authorized land uses in Santa Fe Basin consist of operations and maintenance for flood risk management; of outdoor recreation; of environmental stewardship; and incidental water capture or pass-through to facilitate groundwater recharge.

Flood Risk Management Authority

Although the authorized Project purpose in the legislation for the Project was originally referred to as flood control, it is now referred to as Flood Risk Management. The Project purpose is to provide flood risk management to the communities downstream of the Basin, and all other activities that may occur within the Basin must not impede or diminish the purpose of flood risk management.

Santa Fe Dam Basin was authorized pursuant to two acts of Congress. The Flood Control Act (FCA) of 1936 (Public Law [P.L.] 74-738) provides for the construction of the dam and related flood risk management works for the protection of metropolitan Los Angeles County, California. The FCA of 1938 (P.L. 75-761), amended the 1936 Act by providing for the acquisition of land, easements, and right-of-way for Dam and Basin projects, channel improvements, and channel rectification for flood risk management. The Project is a part of the comprehensive plan, in this instance on the San Gabriel River corridor, for flood risk management in Los Angeles County known as the Los Angeles County Drainage Area (LACDA). Santa Fe Dam is managed by the Corps, Los Angeles District. Additional documentation and regulations, such as ER 1110-2-3600 and the Santa Fe Dam Water Control Manual, discuss water and sediment storage allotments at Corps basins, including at this basin.

Project Operations lands are those necessary to enable the Corps to operate and maintain the Dam for its primary purpose of Flood Risk Management. Project Operations lands occur at and around the location of the Dam structure, and where access for operation and maintenance requirements are necessary. While informal, limited, low-density recreation activities may occur on lands within this classification, activities must not interfere with flood risk management operations. The total area of Project Operations land is 1,271.7 acres and includes the stockpile location which, at approximately 500 feet elevation, is located at approximately that of the Basin's calculated 100-year flood event elevation.

Recreation

Section 4 of the FCA of 1944, (P.L. 78-534), as amended authorizes the Corps to construct, maintain, and operate public park and recreation amenities at water resource development projects and to permit the construction, maintenance, and operation of such amenities. It authorizes the Corps to grant leases of lands, including structures or amenities that are suitable for public parks and recreation purposes to Federal, state, or local government agencies when such action is determined to be in the public interest.

Land Allocation Categories

Land allocation refers to the identification and documentation of lands at Civil Works projects in accordance with the authorized purposes for which they were acquired. There are four primary land allocation categories applicable to Corps projects: Project Operations (e.g., flood risk management, water supply, hydropower, etc.), Recreation, Fish and Wildlife, and Mitigation.

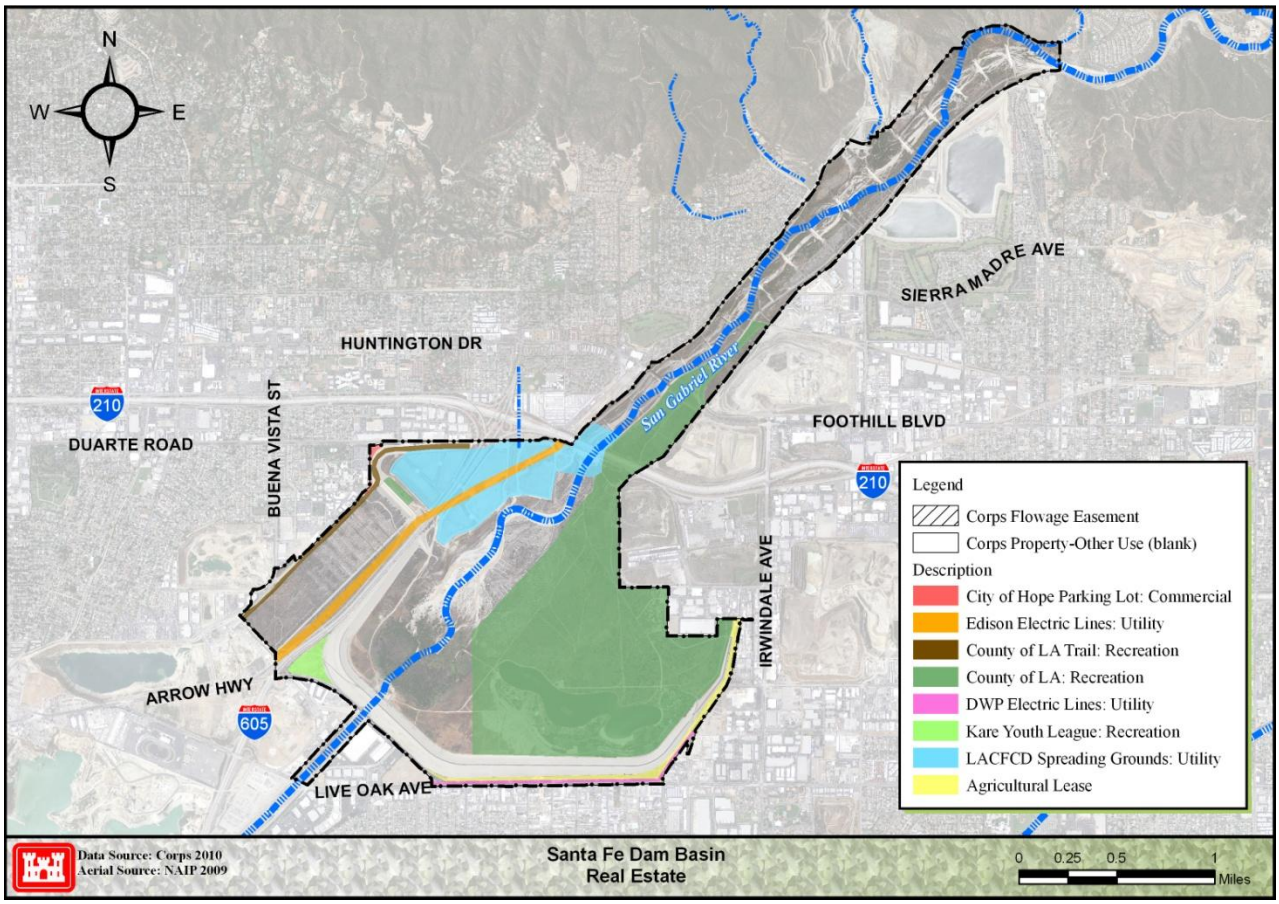
The area of the Proposed Action is classified in the Santa Fe Basin Master Plan as Operations lands. Corps' guidance defines this land use classification as "Lands in this sub-category shall be managed for the structure, operations center, office, maintenance compound and other areas that are used solely for Project Operations. This area is part of the 2,131.90 acres which were acquired to provide flood risk management and for which all other land use classifications are secondary to this purpose and must be compatible with flood risk management. The Santa Fe Basin Master Plan (Corps 2011) provides use limitations for Operations areas. Since this area is not outgranted for recreation use, access is restricted to authorized personal and no recreation amenities have been developed. Some minor, informal use of non-recreation areas by casual walkers does occur at various locations, if unauthorized, within the Basin.

1.4 Background

The proposed Action Area is an approximately 5-acre location within the northwest-central Santa Fe Basin and in addition would include an existing roadway route out of the basin, still to be selected. The Proposed Action Area is located east of the 605 Freeway and south of the 210 Freeway, at a central basin plateau area which is relatively high with respect to flood management elevations and has been outside of any such high-water impoundments during and following typical winter storms since its placement there over twenty years ago. This area, in contrast to eastern basin areas, is not out-granted to the County for recreation and it remains under the direct operation and management by the Corps, Operations Branch. The Santa Fe Dam Basin Master Plan, 2011, classifies this area as Project Operations.

From the west, the sediment pile overlooks the meandering San Gabriel River riverbed located immediately eastward. A frequently dry channel due to public water management activities, the San Gabriel River runs southward from Azusa Canyon in the north, exiting via the Dam's outlet structure and then generally following the 605 Freeway corridor southward where it eventually enters the Pacific Ocean in the vicinity of Seal Beach, CA. The work proposed for this location would occur *outside* the river channel because the stockpile is at a higher elevation than the channel and because clean excavation practices shall be required whereby no sediment would be allowed to fall into the riverbed.

The Proposed Action Area is a Corps maintenance responsibility but because of other necessary work, active management of the sediment accumulation area took a relatively low priority in comparison with other maintenance duties, given the limited resources available. The sediment has remained in place and the disturbed area and mound has been colonized by non-native, invasive plant species such as black mustard, wild fennel, a variety of non-native grasses, and small non-native woody species such as Tree Tobacco (*Nicotiniana spp*.), Mustard, and other generally non-native species. The proposed sediment pile removal work would include implementation of measures including weed control which are designed to allow restoration of the immediate landscape to a more natural state.



1.5 Purpose and Need

Sediment has continued to be placed at the present location as part of ongoing maintenance and none of the pile has yet been removed from the Basin. The subject Proposal would, if implemented, improve safety conditions at and downstream of the Basin because an originally allocated flood control space would be restored by the removal of this large sediment mound to an approved location outside the Basin.

The Corps includes a sediment 'allotment' in its design of Santa Fe Dam, as listed and documented in its water control manual and in practice. The intent of this allowance is that naturally-arriving sediment or its production within the basin only be temporary and that active

sediment accumulation within the basin be followed by its routine removal to outside the Basin. This retains the maximum *flood storage space* at Santa Fe to be available for the annual, predictable large storm inflows for which the Dam was built.

During and after the late 1980's, Los Angeles County DPW constructed and performed other maintenance at its out-granted percolation facilities, and the resulting excess rock and gravel material was placed at the present stockpile's northern area. Additionally, during 1990's-present, when Corps maintenance crews during annual maintenance activities utilized the stockpile's southern area as a sediment placement site in their removal of accumulated sediment carried from upstream, to keep the Dam's intake gates clear during winter storm events.

1.5.1 Safety and Security

Should a large storm result in quantities of this accumulated sediment being washed downstream, toward the dam gates, then some could enter the gates area and contribute to partial blockage during gate operations at a critical time. The gates are operated to allow outward hydraulic flow during a high-water event and the blockage by even a part of the stockpile, entrained within the river flow, could constrain Corps water control flexibility during such high-water weather conditions as do occur on occasion. This could result in structural and other safety problems at both the Dam itself and to downstream residents. Because such an event could result in extensive damages, the sediment should be removed from the Basin.

1.5.2 Habitat Restoration

Following removal of the accumulated sediment, which is currently dominated by non-native plant species, the Corps would subject the site to weed control in a minimal restoration action to stimulate development of native habitat within the proposed Action Area and to help meet the goals of the Corps' mission of stewardship listed in Engineering Pamphlet (EP) 1130-2-540, Environmental Stewardship, Operation and Maintenance Guidance and Procedures, Nov. 1996, as amended, which states:

The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resources Management Mission is to manage and conserve those natural resources, consistent with eco-system management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance, and restoration practices. The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources ... that contribute to the quality of American life.

The restoration of native landscape at Corps' water resource projects is in keeping with the goals of the Corps' guidance on environmental stewardship and minimization of effects of climate change, by planting a viable, resilient, sustainable plant palette at water resource projects. One long-term objective indentified in the Santa Fe Dam Basin Master Plan (2011) is restoration of

the Basin's native habitat in non-recreational use areas and throughout the Basin where practicable. The present proposal would initiate weed control following sediment removal.

2.0 ALTERNATIVES

The project would remove sediment from the Basin and deliver it to an approved end-point. In addition to the No-Action alternative, alternatives under consideration include alternative means available to remove the sediment from the Basin (*Basin Alternatives,* below) in light of regional conditions and potential alternatives pertaining to the accumulated sediment's ultimate disposal site.

This EA analyzes the likely effects of the Proposed Action by comparing a No-Action Alternative with the Proposed Action/Alternative and with other alternatives deemed to be reasonable, practicable, and feasible. Action alternatives considered are limited to those which would meet the purpose and need for sediment removal without exceeding environmental parameters, and the No-Action Alternative is included, for comparison purposes as required under NEPA. The No-Action Alternative would not meet the Corps' Purpose and Need to reduce sediment volume at Santa Fe Basin.

The alternatives analysis consists of providing, and then choosing among, different methods and routes, to remove the sediment from the basin. Methods and routes are initially provided and only those which appear to best meet the Project Purpose, which includes minimizing adverse environmental impacts, are carried forward for further analysis.

One objective to be met is that the alternative chosen must be practicable in terms of meeting the purpose in a timely and effective manner. A subsequent, second objective would have the site be restored to a weed-free condition following the sediment removal.

Impacts to existing air quality and to the local outdoor recreation experience were considered in formulating viable alternatives so that no alternative selected by this assessment process would result in significant adverse effects to levels of either air quality or to the outdoor recreation experience in and around Santa Fe Basin. Impacts to air quality and recreation will be further discussed in appropriate sections, below.

2.1 ALTERNATIVES CARRIED FORWARD FOR FURTHER ANALYSIS

2.1.1 No-Action Alternative

Under the No-Action Alternative, the sediment mound would not be removed from the Proposed Action area and weed eradication would not occur. The Corps is required to consider the "No Action" option as one alternative in order to comply with requirements of NEPA (at 42 CFR, part 1502.14). The No-Action Alternative is the basis for comparison with other alternatives for it represents a condition, both current and future, under which nothing would be done to address the identified problems. By comparing the No-Action Alternative to each alternative, the advantages and disadvantages of the alternatives may be assessed in relation to current and future "without-project" conditions.

The No-Action alternative does *not* meet the Corps purpose and need because the area would remain out of compliance with Corps sediment management regulations and with its policy on environmental stewardship at water resource projects.

The No-Action alternative will be carried forward in subsequent sections for comparison purposes, per NEPA requirements.

2.1.2 Optimal and Minimal Management - 2 Alternatives

Information is provided in the Air Quality Section (Section 4.3) which indicates that, as to number of pieces of heavy equipment, the proposed range provided would result in acceptable (*de minimis*) air quality impacts and would thus allow the sediment mound removal to occur without preparation of an EIS on the basis of air quality impacts. Note that this range of levels of mechanical effort, which does meet the Project Purpose, may still result in different levels of impact upon other environmental parameters. Therefore, a maximum (Optimal) and a lesser (Minimal) effort to meet the Project Purpose are described here and comprise the sole two, remaining action alternatives.

The difference between the ***Optimal Management Alternative***, and that of the following ***Minimal Management Alternative,*** is that of the level of heavy machinery equipment to be utilized in removing the sediment material to an approved location, and hence in the overall time and environmental impact required to remove the material. All other project Phases, parameters, and commitments are the same in each instance. Both Alternatives are introduced in this section with the same Phases as described below. In both cases, it is suggested that the essential route of removal from the stockpile area is that the materials would be onloaded into waiting haul trucks and then trucked a short distance to the southwest, and from there to the top of the Dam where the trucks would travel as far as the roadway traversing the downstream Dam face and exit at Arrow Highway. This route is described in Section 2.3 as Basin Exit #4 and shown in Section 2.3's Figure.

Phase 1 – Site and Roadway Preparation

Initial site preparation consists of additional geotechnical testing if needed to determine this extensive sediment pile's differing regions of mineral materials (e.g. cobbles, sands, silts); of vegetation removal from the mound; and of delineating and preparing general work area boundaries to maximize safety management in work areas.

Following any additional geotechnical testing, the Work Area/site vegetation would be removed, mulched, and placed at adjacent, designated Operations areas where the approved mulching for vegetation reduction is employed.

In Phase 1 of both Optimal and Minimal Management alternatives at the designated Project Area footprint, all existing vegetation would be mowed and/or grubbed and mulched and then stockpiled at adjacent, disturbed work areas and thus be removed from the mound work site itself and allow for subsequent removal by heavy equipment operators. Boundaries of all project work

areas for mulched vegetation placement, sediment excavation, and its placement into trucks shall be delineated by visible markers in this phase

Phase 2 – Sediment Removal

The sediment, which is located outside of waters of the US, would be pushed by bulldozer (up to 500 HP capacity), would be loaded by an excavator/loader (up to 450 HP capacity) into waiting trucks (composite Dumpster/Tender trucks of up to 40 cy capacity), which would depart the Basin via an approved route outlined below (Basin Exit Route #4), and be delivered to a pre-selected location.

In the **Optimal Alternative**, the following machinery would be used:
Up to 8 – 5 CY Loaders (@ 450 HP)
Up to 8 - Bulldozers (@ 500 HP)
Up to 32 – Composite Dumpster/Tenders
Up to 8 - Watering Trucks

In the **Minimal Alternative**, the following machinery would be used:
1 – 5 CY Loader (@450 HP)
1 - Bulldozer (@ 500 HP)
4 - Composite Dumpster/Tenders
1 - Watering Truck

Workers and equipment would remain within designated work areas. Water truck(s) shall be used on all non-hard-surfaced areas during all Project Phases. Contractor shall take adequate measures to provide Caution and/or Detour signage on all work areas including at the route out of the Basin. Both prior to the start of heavy equipment operation and at a recurring, weekly Safety meeting, the Corps shall coordinate project status information with the Basin's Recreation lessee and Public Works out-grantee (Los Angeles County Parks & Recreation, and Los Angeles County DPW, respectively).

Phase 3 - Restoration (Weed Eradication)

Once significant areas have been fully excavated and ongoing Project activities will not hinder restoration activities, the gently sloping Proposed Activity area would undergo initial restoration by a weed eradication phase whereby appropriate, approved herbicides are utilized to control weeds and the weed seedbank at this location, for a period of approximately two years.

Following successful weed eradication, the Corps may adopt further restoration activities such as additional soil preparation and then the broadcastinging of seed from locally-represented native scrub species,and/or of the stolens of a native grass known as salt grass (*Distichlis spp*) which has shown adaption to the extreme heat and dryness conditions which this area endures during summer months. If or whether, to plant or to seed, shall depend on what passive restoration may already be occurring naturally during weed the eradication phase.

Logistics

An entry point and a route, to the work site directly to the project work areas for all construction equipment and workers, would be chosen and would likely include the access road from the top of the Dam, by any of several routes into the Basin, including from Arrow Highway. Any potential direct conflicts with informal recreation users in these Operations areas would be resolved with Detour signage, at a minimum, and other activities to be coordinated between Corps Asset Management and County out-grantee staff.

Work and heavy equipment vehicles would be restricted to existing maintenance roads until the area to be excavated is reached, to avoid collateral soil compaction and to minimize fugitive dust and possible oil and other fluid leaks from engines.

Equipment storage would take place outside the Proposed Activity area, but may occur within the Basin, if necessary. Work-crew parking would occur in appropriate locations either inside or outside the project area, including at Corps fee lands including at the downstream side of the Dam at a nearby parking lot along Arrow Highway to the south. During flood season months (approximately November 15-April 15, with appropriate exceptions made based on weather forecasting) heavy equipment would be moved onsite daily but during the dry season could remain at on-site locations. When a storm event is forecast within 48-hours, work would stop and all equipment and vehicles moved to an elevation, greater than the 100-year event, as proscribed by the Corps.

Work hours would be Monday through Friday for approximately 8-hr. days, from approximately 7:00 am to 4:00 pm daily, which is an eight-hour day plus a 1-hour lunch. Saturday work is also an option, with similar controls as to required level of coordination among Basin outgrantees. It is anticipated that work would be ongoing for several months, depending on the level of effort chosen as described above in the Optimal and Minimal action alternative descriptions and also based on any necessary communications with local Cities).

All activity for vegetation eradication would occur between 15 September and 15 March due to potential use of the area by foraging migratory birds. Activity could be suspended or cut short depending on forecast weather conditions or flooding/inundation of the project area. Complete eradication of non-native vegetation is a process that would include Phase 1 (mowing/mulching/ and/or grubbing of vegetation) and Phase 3 (control of re-emerging non-native vegetation over at least two years).

Areas south and east of the sediment mound, near the lower elevation San Gabriel River corridor, has been an area of known least Bell vireo habitant for the past several years. Work in these areas would be avoided, and heavy equipment noise would be curtailed within 500 feet of known territorial areas.

2.2 Basin Exit Methods Considered and Eliminated From Further Consideration

The removal of sediment may be managed in different ways but all methods are not equally expedient, cost effective, or possible to complete within a timely manner. Methods of removing the sediment to an approved location which have been eliminated from consideration include: the use of a conveyor belt system and the use of train cars; in addition, several potential haul-truck routes out of the basin were analyzed and we recommend that most be eliminated as well, due to additional miles of dust production on unsurfaced roadways or to construct additional roadway.

2.2.1 A *conveyor belt system* was considered because such a system could potentially allow the accumulated sediment's conveyance to a new location and with a minimum of air quality (truck traffic) impact. A conveyor belt may be designed, built, and operated whereby sediment is mechanically or otherwise loaded upon the conveyor system and transported in the direction of an approved disposal site. This can reduce the necessity of lengthy mileage by haul trucks and which would reduce haul-truck exhaust during portions of the total trip from the accumulated sediment's site to approved disposal location outside Santa Fe Basin.

However, at this time, an ultimate location for the sediment material is unknown because a specific bid for removal by Contractor to an approved site has not yet been chosen. Thus, while a conveyor belt could potentially be designed to carry materials from the sediment's location, at this time there is no specific destination. While the conveyor belt concept would replace a high level of haul-truck exhaust impact, that amount or the proportion of minimization is unknown because the ultimate destination and total haul route is still unknown. While it is hoped that the ultimate chosen location be located close to the existing stockpile, at this time the Corps has no way of knowing in which direction the placement site will be and therefore cannot propose a conveyor belt with no known direction or destination.

Therefore, while the concept has value in reducing air quality impacts, the specific alternative scenario to use a conveyor belt at any stage in this proposal will not be further considered here although, if some portion of a route ultimately chosen does overlay an area which could benefit from a conveyor belt segment and without adding additional environmental impacts to those considered here, then such a segment may be incorporated at later stages as soon as practicable.

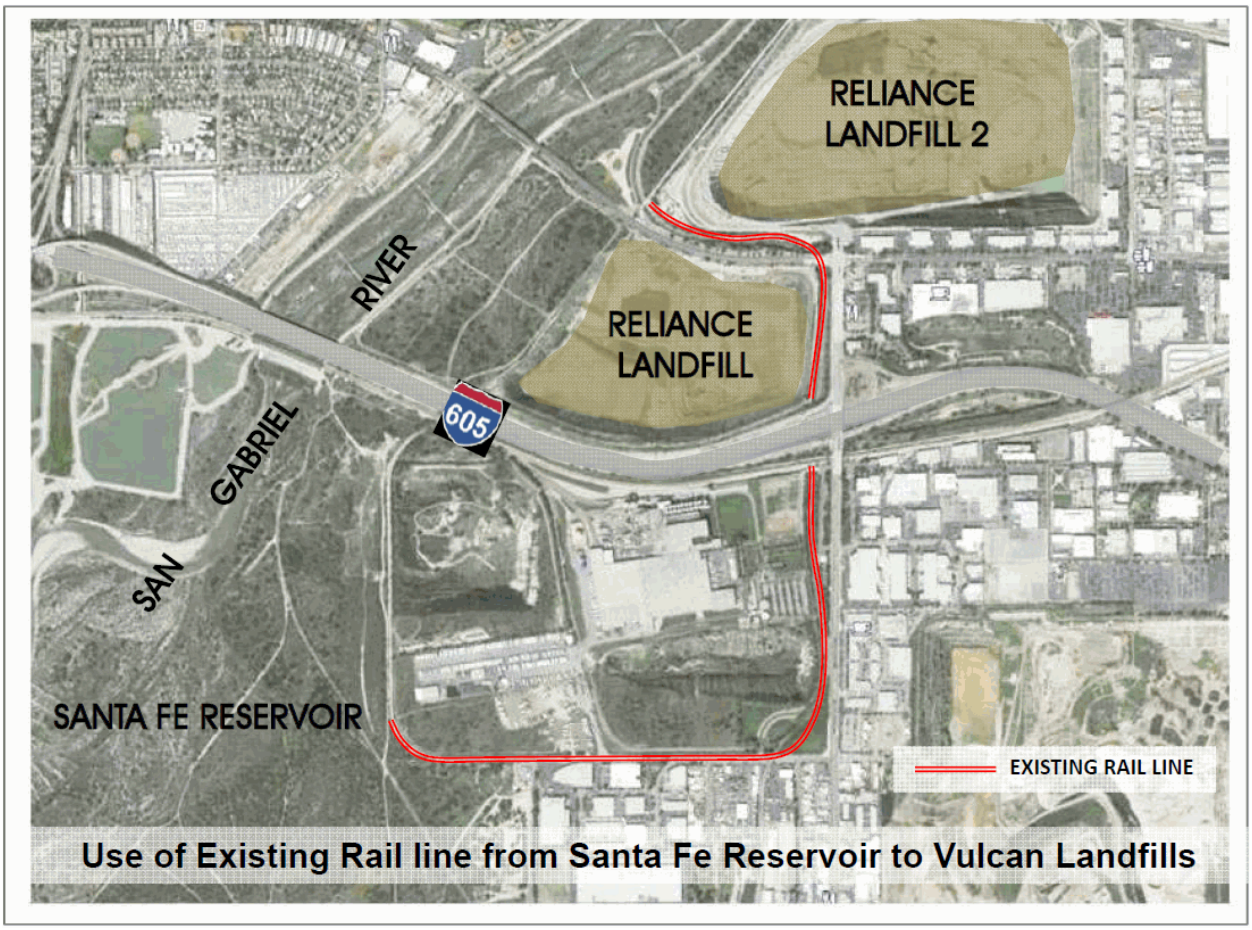
2.2.2 Another potential scenario for the sediment's placement is into one of the several local, large excavated pits which are found within 3-5 miles of the Basin, in different directions in the vicinity, and it is possible that use of a *train car system* could possibly be utilized because of the location of one train line (a commercial east/west-oriented train line just north of the sediment mound and which passes near one local existing large open pits) as well as a second line which could service two additional pits. A Figure showing this second, unused rail line is provided on the following page. The benefit of rail lines, as well as with conveyor belts, is that air quality impacts may be consolidated and reduced.

Under this scenario, an initial site mobilization would prepare a receiving facility, at the train tracks, to which trucks could bring and then upload the material into waiting rail cars; a concurrent construction project would build an offloading facility close to the existing pits; and then the offloaded materials could be transported to the nearby pit, *if available*.

At this time, definite arrangements have not been made with rail and/or pit companies. In addition, portions of one of the rail lines mentioned will in the near future be renovated to accommodate Metropolitan Transportation Authority/MTA plans for an east-west Gold Line rail extension for which the scope and timing of that work is unknown at this time.

In the future, should a definite railway-related plan become available for analysis, then this method could potentially receive more attention, but since no footprint can be analyzed, then at

this time this proposed alternative removal method is dropped from further consideration. A Figure showing the relation of train tracks to two potentially available pits is provided on the following page.



The scope of this Environmental Assessment is to examine likely scenarios over which the Corps has some practical control, rather than assuming cooperation from major agencies or commercial companies as a railroad corporation or the owners of any one particular local pit, to receive sediment. The Corps has no control over these potential scenarios and so the most reliable scenario, at this time, involves use of haul trucks.

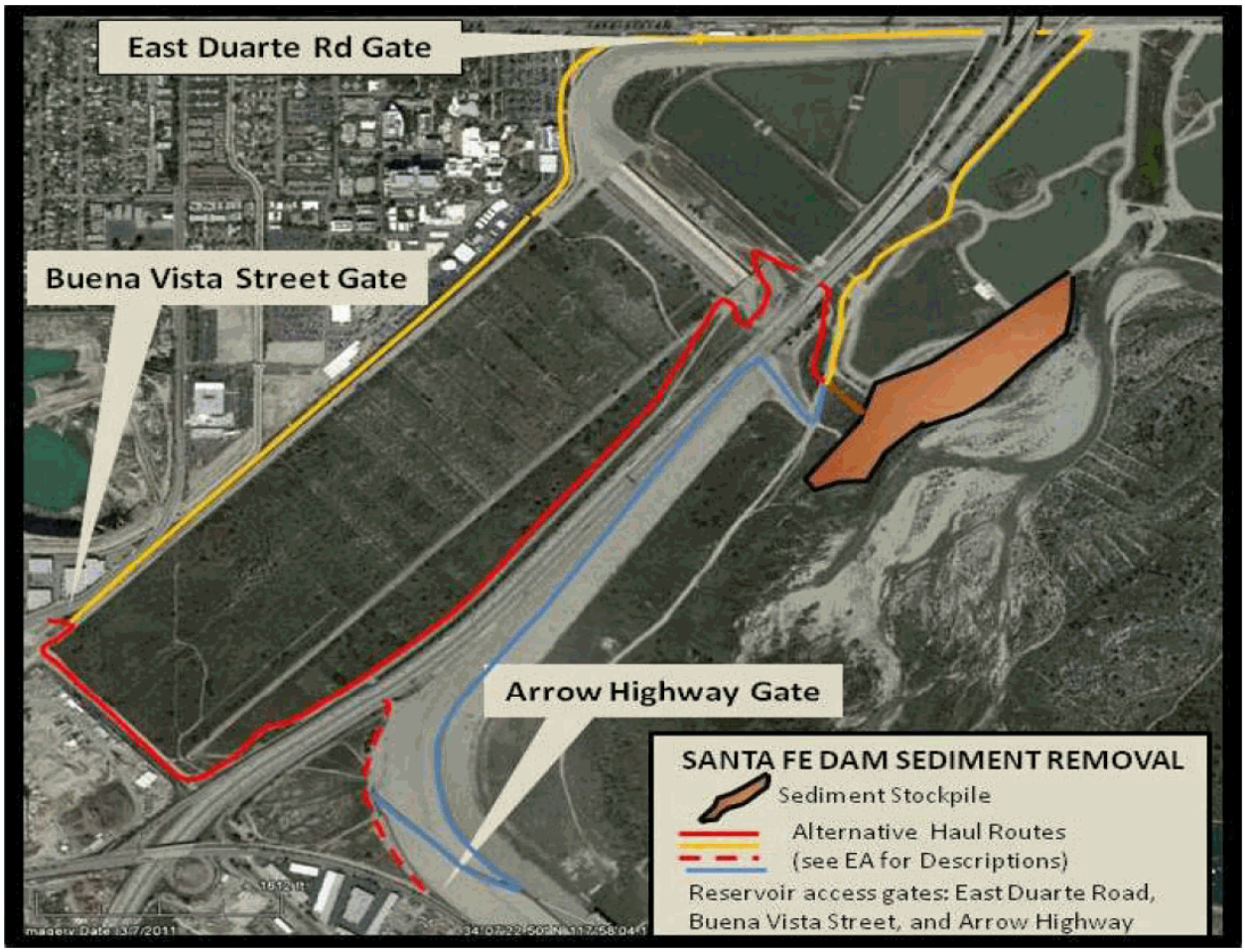
2.3 Haul Truck Exit Routes Considered, including Exit Routes Excluded from Further Consideration

2.3.3 Once loaded into a conveyance such as a haul-truck then the material must leave the Basin. The Corps prefers to minimize environmental impacts while satisfying the need to remove the entire stockpile and therefore considers how to do so in the most direct and timely manner which first consists of the project's initial excavation/hauling phase. Although the ultimate destination is not yet known, a haul truck route to leave the Basin and/or to reach hard-

surfaced roads rather than dirt roads as quickly as possible would best minimize Basin and local air quality impacts from dust and exhaust production.

Due to the eastern position of the San Gabriel River with respect to the stockpile, only four (4) haul truck routes are available for removing materials from the Basin, and these are to the west of the mound. Because of local features, each route differs in the amount of dust/exhaust which would be produced within and around the Basin. Those producing the highest air quality impacts should be discarded from further discussion, especially if that alternative would run adjacent to or through existing residential or commercial areas. While each alternative is potentially viable, each has critical communication and impact minimization requirements. In any case, the removal of sediment is conditioned to minimize impacts to air quality and to avoid impacts to listed species habitat also present in the basin.

Four (4) general routes out of the basin are proposed (with #3 having two options); the several potential haul routes, from existing location to one outside the basin, are indicated on the accompanying Figure, and described, below.



1. Remove sediment via the north: North from the accumulated sediment, upon common access road to dirt road West under 605 Freeway, then via north gate, out to Duarte City streets then

upon other City or freeway roadways such as Buena Vista Road or 605 Freeway). This route skirts County DPW percolation ponds and would also parallel a proposed approved MTA laydown area for future Gold Line work.

Environmental Impacts: Dirt roadway 7,000 linear feet and this is entire Corps-controlled roadway; a. Truck travel through Duarte residential area(s); b. Need to coordinate work hours with other construction activities (MTA)/users at the northernmost location; little-used DPW horse trail crossing. No listed species impacts.
Impact minimization: Dust control; Outreach to Duarte and to LACDDPW ponds/trail to Detour for Ponds staff, equestrians to avoid direct contact; coordinate with other construction agencies at this gate area.

2. As above, remove sediment via common access dirt road to the north and then to West under 605 Freeway; continue past the above north gate into Duarte, continue on dirt roadway around DPW western ponds, then south past City of Hope Hospital on haul road south, parallel to the dirt-surfaced horse trail just east of City of Hope campus; continue south to exit gate at 'old' Buena Vista Road.

Environmental Impacts: Dirt roadway ~ 9,000 feet; and this is entire Corps roadway. Some concerns: a. Additional activity (haul truck caravan) adjacent to City of Hope; b. horse trail indirect impacts/Safety or Detour issues for equestrians; c. some truck travel through City of Irwindale industrial area. No listed species impacts.
Impact minimization: Dust control; Outreach to County DPW (ponds and equestrians), and to City of Hope, Irwindale; Outreach/Detour for recreationists.

3. Remove sediment via dirt road to directly westward, under 605 Freeway, then southward: construct and traverse ramp up over hill to asphalt road, then South on asphalt access road and with two options, both hard-surfaced, to public roadways:

A. to southernmost 'spillway' area, then west, requiring road construction across scrub vegetation, to 'old' Buena Vista Road by gate; ***OR***

B. to east through tunnel beneath 605 Freeway and out at Arrow Highway.

Environmental Impacts: approximately 6,600 feet dirt road and 9,000 feet total a. Must build a large ramp at narrow SCE tower area, and if "A", clear some scrub veg to renovate southern haul route (no listed species impacts).
If "B", then close/Detour bike trail tunnel for informal recreationists. 1800 feet dirt road and 7,500 feet total
Impact minimization: Dust control; additional construction footprint(s); Outreach/Detour for Sta Fe Dam/LA County casual recreationists.

4. Remove via trucks: over dam via Operations road, then exit at Arrow Highway.

Environmental Impacts: 1200 feet dirt road and 7300 ft total. Shortest dirt road route Close the over-dam recreation trail at this location; need to monitor and repair possible physical damage to dam crest road surface. No impact to listed species.
Impact minimization: Dust control; Outreach to and Detour Sta FE Dam/County recreationists to avoid this paved road trail; inspect and repair dam surface as needed.

Summary:
In addition to dust/exhaust the other potential major significant adverse effect is to users in approved recreation areas. In general, adjacent or concurrent presence of the County's equestrian trail and/or model airplane concession represents potential conflict with the proposed haul truck traffic and could affect Alternative #s 1, 2, 3a, and 3b. Also, should the roadway pass through adjacent or concurrent Corps Operations areas where informal pedestrian or biking occurs, as in Alternatives 3b and 4, there exists a potential for conflict and the conflict should be mitigated by detouring and/or adequate Caution signage.

	Dirt Road (feet)	Total Distance (feet)	Direct Impact to Recreation
Roadway Alternative:			
# 1	7,000	7,000	Low
# 2	7,600	7,600	Moderately Low
# 3a	6,600	9,000	Moderately Low
# 3b	1,800	7,500	Moderate but mitigatible*
# 4	1,200	7,300	Moderate but mitigatible*

- - Mitigatable to less than significant adverse impact per NEPA guidelines – see Air Quality section, Section 4.1.3.

To best minimize dust/exhaust impacts in the immediate area, Roadway Alternative #4 is the preferred alignment out of the Basin and is the designated route in both Optimal and Minimal Alternatives, above. Air quality impacts from #3a are greater than #4 because a large ramp would need to be constructed for 3a with no such construction for #4. Roadway Alternatives 1-3b will not be further considered at this time because #4 is the shortest route and presents the fewest environmental impacts of the range of possible roadways. Although the use of water trucks on dirt roadways would reduce air quality impacts, the need for use of water trucks would be would be the least with Exit Alternative #4.

Outdoor recreation is informal in these areas and consists of individuals on foot or bicycle passing through open areas either on or off the dirt or surfaced utility access roadways. Impacts to informal recreation would be temporary and may be mitigated by adequate Detour or Caution signage. Recreation impacts to any alternatives chosen for ongoing analysis will be discussed in the Recreation section of the EA.

Basin Exit Alternative #s 1-3b will not be further considered for analysis because the potential adverse air quality impacts, due to hauling on dirt-surfaced roads, creating new roadway through scrub, and/or creation of a large earthen ramp.

2.3 Remaining Basin Exit Route - Alternative Considered For Further Analysis

The Basin Exit Route considered for further analysis is Alternative # 4 which was included in Optimal and Minimal Alternatives, above*. This is because the air quality impacts are*

lowest of other exit alternatives and because temporary impacts to recreation can be mitigated with signage and other controls.

3.0 ENVIRONMENTAL CONDITIONS AND ALTERNATIVES ANALYSIS

3.1 PHYSICAL LAND RESOURCES AND EXISTING CONDITIONS AND USE

3.1.1 Topography

Approximately 95% of the drainage area above Santa Fe Dam Basin consists of steep, undeveloped, mountainous terrain, dissected by deep, narrow ravines containing the numerous watercourses tributary to the San Gabriel River system. The remainder of the drainage area consists of a relatively flat alluvial fan and valley fill surface, which is occupied by open space, spreading grounds, gravel pits, and urban development. Elevations in the watershed vary from over 10,000 feet at Mount San Antonio (aka Mount Baldy), which is the highest point in the watershed, to 421 feet (NGVD 1929) at the Dam (Corps 1991) and downstream to lower elevations (sea level). Elevations within the Basin range from approximately 421 feet at the downstream toe of the Dam embankment, to 750 feet (NGVD 1929) at the upstream boundary of the Basin. The elevation (NVGD 1929) of the subject accumulated sediment is approximately 475-500 feet and at this elevation the subject mound's underlying topography is relatively flat, if gently sloping to the southeast.

3.1.2 Geology

The Santa Fe Dam Basin is located on a large alluvial fan system formed by the erosion of the southern flank of the San Gabriel Mountains. Bedrock in the mountains upstream of the Basin is a complex mix of igneous and metamorphic rock, which is highly fractured, faulted, and tectonically active, resulting in extremely high erosion potential. The Basin is situated on a large deposit of poorly-sorted alluvium consisting of sand, gravel, cobbles, and boulders. Overbank areas tend to consist of the same material with somewhat larger amounts of silt and clay in the matrix. The stockpile itself sits upon alluvium, which has been cut to the east by the San Gabriel River.

3.1.3 Local Sediment and Soils

Sediment production within the San Gabriel Valley region varies considerably, primarily depending on the terrain. In the alluvial fan and valley fill areas, sediment production is at a minimum, and may be expected to decline even further with a continued increase in soil and channel stabilization and in the predominant areas devoted to recreation and urban development. In the steep mountainous segment of the watershed, sediment production can be very high, particularly following periods in which wildfire impacts the watershed. Cogswell, San Gabriel, and Morris Dams initially intercept much of the sediment produced by the 211 square mile watershed upstream of these structures. Average annual sediment yield for the San Gabriel Dam watershed (upstream of Santa Fe Dam) is about 3.8 acre-feet per square mile per year. Bradbury, Maddock, and Spinks debris basins also intercept additional debris from the southern flank of the mountains upstream of Santa Fe Dam and downstream of Morris Dam, which would normally impact the urbanized areas immediately downstream and eventually make its way into the Basin area behind Santa Fe Dam.

A 5-foot contour interval plane table survey, based on aerial photos made in August 1938, is considered the "original" survey for sedimentation calculations. A bottom survey made in April 1943 and the "original" survey were used to reflect the change in capacity. A plane table resurvey was made in November 1949 and 5 range lines were established. Basin surveys performed in November 1949, March 1959, June 1961, February 1967, September 1968 (following excavation to restore lost capacity), August 1969, and September 1982 indicate a broad range of sediment production values, ranging from 1,518 acre-feet per square mile per year during the period 1949-1959, to over 123 acre-feet per square mile per year during the period September 1968 to August 1969; the latter being due to the impact of the January and February 1969 floods.

Basin sediment data surveys indicate that deposition in the Basin area behind Santa Fe Dam amounted to 7.4% of gross (1943) storage capacity as of September 1982. This figure would have exceeded 13% in the absence of sediment excavation and removal performed since Dam operation began. Sediment removal in the Basin area continued since the survey in September 1982 (Corps 1991). The August 1995 Basin survey showed Basin storage capacity to be 30,887 acre-feet at spillway crest; about 11% less than the original gross (with sediment allowance) capacity of 34,670 acre-feet. Los Angeles County Department of Public Works (/LACDPW) surveyed the lower reservoir up to elevation 472 ft. (NGVD 1929) in September, 2010.

Overall, the soils in the Basin, and especially the finer-textured soils deposited within the floodplain, tend to be well-graded alluvial materials receptive to the growth of vegetative cover. Soil cover in the larger watershed tends to be shallow, stony, and poorly-developed, with large exposures of bare rock evident. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic STATSGO database, which is maintained by the Natural Resources Conservation Service (NRCS 2006). NCRS STATSGO Hydrologic Groups are classified as A, B, C, and D, based on soil infiltration rates. The deep alluvial soils in the vicinity of the Basin are divided nearly equally between high infiltration rate soils (Hydrologic Group A) and moderate infiltration rate soils (Hydrologic Group B) (Map 15). A small area along the San Gabriel River has a slow infiltration rate (Hydrologic Group C) (Map 15).

3.1.4 Local Seismicity

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 in order to identify hazard areas along active faults that should be avoided when planning areas of human occupancy. The Santa Fe Dam Basin lies within the Sierra Madre Fault Zone (CADC 2010) (Map 14). In total, five active Quaternary faults (faults less than 1.6 million years old) can be found within a 25-mile radius of the Santa Fe Dam Basin (SCEDC 2010). These faults include:

Newport-Inglewood – 25 miles to the southwest.
Raymond Hill 5 – miles northwest of the Dam.
San Andreas 24 – miles to the north.
Sierra Madre 2 – miles north.
Whittier-Elsinore – 10 miles to the south.

The Santa Fe Dam Basin lies within the state of California's designated Seismic Zone based on historic occurrences of liquefaction, or local geological, geotechnical and groundwater conditions that indicate the potential for permanent ground displacements. Over two hundred earthquakes including after-shocks, above a Richter magnitude 4.0 have occurred within a 25-mile radius of the Basin during the period from 1900 through 1987. In October 1987, a 5.9 magnitude event occurred near Whittier, California, approximately 8 miles south of the Dam. Approximately 35 aftershocks above magnitude 3.0 have occurred since that event. The San Fernando Earthquake of 1971, magnitude 6.4, is beyond the 25-mile radius, and had no effect on the Dam (Corps 1991).

3.2 WATER RESOURCES

3.2.1 San Gabriel River Watershed

Santa Fe Dam Basin is located within the San Gabriel Valley on the San Gabriel River which is a major river in the system draining the Los Angeles coastal plain and mountains. The San Gabriel River originates on the southern slopes of the San Gabriel Mountains, flows through precipitous canyons to the base of the mountains and crosses a broad alluvial fan to Santa Fe Dam. Three dams are located upstream of Santa Fe Dam: Cogswell and San Gabriel Dams are operated by the County for flood risk management and water conservation purposes, and Morris Dam (originally built and operated by the Metropolitan Water District of Southern California for water supply purposes) is currently owned and operated by the County for water conservation.

The drainage area (or watershed) above the Dam is 236 square miles (Maps 2 and 5). The rugged San Gabriel Mountain Range forms the majority of the drainage divide of the watershed and reaches an elevation of 10,064 feet at Mount San Antonio (Mt. Baldy), the highest peak in the drainage area. Santa Fe Dam Basin lies about 3 miles southwest of the canyon mouth. Upstream and downstream of the Dam, the San Gabriel River flows across a broad alluvial fan and urbanized valley area (Corps 1991). Seven miles downstream from Santa Fe Dam Basin, the San Gabriel River flows into Whittier Narrows Dam Basin. All principal channels of the river system below the mountain front have been channelized.

Vegetation communities range from mixed sage and grasses near the Dam, to dense chaparral on intermediate slopes, to coniferous forests at the highest elevations. Large areas of the watershed may be periodically denuded by wildfire.

3.2.2 Local Hydrology

Most precipitation in the drainage area results from general winter storms that are associated with extra-tropical cyclones of North Pacific origin and are characterized by extended periods of light-to-moderate precipitation, but with many heavy showers and thunderstorms within the storm system. Within the drainage area, mean annual precipitation ranges from about 19 inches near the Dam to more than 45 inches on the northern boundary of the watershed in the San Gabriel Mountains above Crystal Lake, and averages about 30 inches over the drainage area. There is great year-to-year variability in monthly, as well as annual, precipitation.

All major inflow and impoundment events in the history of the Santa Fe Dam Basin have been the result of general winter storms. Runoff from the watershed is characterized by high flood

peaks of relatively short duration, often moderated or delayed by the three upstream dams operated by LACDPW for flood risk management and water conservation. Floods result from high-intensity rainfall on a combination of stony and shallow soils, a shallow depth to bedrock, steep gradients, a relatively efficient conveyance system, and periodic clearing of vegetation by fire. Most streams in the watershed are intermittent, with little or no flow during the dry season, which generally begins in May and continues through October. Flood hydrographs are typically of less than 24 hours duration and are usually less than 48 hours duration, with inflow rates dropping rapidly between storms. Channel flow below the Dam is characterized by Basin releases of relatively long duration with occasional sharp peaks resulting from inflow of tributary runoff in urban areas downstream.

3.2.3 Flood Risk Management/Dam Operation

Santa Fe Dam was completed in 1949, and is a 92-foot high zoned earthfill structure with a crest length of 23,800 feet at top of Dam, an elevation of 513 feet. Santa Fe Dam is authorized and constructed to provide flood risk management to the downstream area in the San Gabriel River Valley, and it is an integral part of the overall Los Angeles County Drainage Area (LACDA) flood risk management system. The regulation plan for Santa Fe Dam calls for consideration of the operational status of Whittier Narrows Dam in the determination of the release of water from Santa Fe Dam.

The basic flood risk management operation described in the water control manual (Corps 1991) uses the Basin storage space (30,887 acre-feet) in conjunction with the outlet release capability (maximum of 41,000 cfs) to control flood inflow events to the safe flow carrying capacity of the downstream San Gabriel River channel. The available downstream channel capacity varies throughout flood events depending on the physical condition of the channel as well as the rainfall and flood runoff downstream of the Dam that use up a portion of the channel conveyance capacity. Flood releases from Santa Fe Dam may be reduced if necessary so as not to overtax the flood risk management operations at Whittier Narrows Dam downstream.

Due to continued accumulation of Basin sedimentation and the resulting steady reduction in storage capacity, Basin inundation will continue to occur frequently and at higher surface water levels. Land use planning within the Basin should consider the impacts of future sedimentation and the likely continuation of periodic excavation of sediment deposits at the Basin and the upstream San Gabriel River approach channel.

3.2.4 Flood Risk Management

The Corps recently performed a risk-based safety evaluation of Los Angeles District dams in accordance with Corps Engineering Circular 1165-2-210 (Water Supply Storage and Risk Reduction Measures for Dam Safety). Corps' Dams are classified into Dam Safety Action Classes (DSAC) 1 through 5, based on individual Dam safety risk (DSAC 1 being the highest risk level). DSAC classifications consider event probability, probability of failure, and consequences, given the physical properties of the Dam. The Santa Fe Dam was rated DSAC 2 using this classification system (Chitwood 2010).

The Corps has prepared a formal plan to address the actions to be taken during emergency situations at the Dam resulting from earthquake, large flood, or security alert. The Emergency

Action and Notification Subplan for Santa Fe Dam prescribes notifications necessary for: 1) prompt evacuation of downstream residents, 2) ensuring safety, 3) vacating project areas where emergency operations may be conducted, and 4) coordination with Federal agencies and non-Federal units of government; and also provides information regarding procedures and areas that may be subject to risk of health or safety as well as the agency contact information essential for a coordinated response to a heightened risk to health or safety.

3.2.5 Jurisdictional Waters

The Corps has not had occasion to make jurisdictional waters determinations within Santa Fe Dam Basin, although the San Gabriel River, at least intermittently, flows through the basin. Such waters are water bodies subject to the Clean Water Act (CWA) regulation per definition of the phrase "waters of the United States," and codified by subsequent agency determinations and court decisions. Jurisdictional waters determinations are broadly defined in 33 CFR 238.3(a), and include consideration of hydrologic, environmental, commercial, and historical use aspects of the water body as related to the goal of improving water quality nationwide. Wetlands may also be included under the definition of "waters of the United States."

3.2.6 Floodplain Management

Executive Order (EO) 11988, Flood Plain Management, requires Federal agencies to recognize the significant values of floodplains and to consider the public benefits that would be realized from restoring and preserving floodplains. The objective is to avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base (100-year) floodplain and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practicable alternative.

3.2.7 Surface Water Quality

There are no gauging stations for water quality for the San Gabriel River within Santa Fe Dam Basin. Due to the relatively undeveloped nature of the watershed upstream of the Dam, runoff entering the Basin behind the Dam is generally expected to be of good quality. Santa Fe Dam is operated primarily for flood risk management and is not normally used to impound water for long periods of time. The short duration of flood water impoundments does not provide time for changes in water quality resulting from temperature changes or changes in biological activity. However, some quantity of sediment may settle out of the water column during even short periods of impoundment. Basin operation does not significantly impact water quality, and may reduce turbidity.

Beneficial Uses

The Los Angeles Regional Water Quality Control Board (LARWQCB) Region 4 has designated Beneficial Uses for the Santa Fe Dam Basin (LARWQCB 1995);

Municipal (MUN) – Water used for military, municipal, individual water systems, and may include drinking water.

Ground Water Recharge (GWR) – Natural or artificial Ground Water Recharge for future extraction, to balance natural hydrologic processes, and to maintain navigable channels.

Recreation Contact 1 (REC1) – Recreation Contact 1 is protective of activities where body with water contact or possible ingestion may occur. Examples of these activities include: wading, swimming, diving, surfing, white water rafting, etc.

Recreation Contact 2 (REC2) – Recreation Contact 2 is protective of activities near water, but not occurring in water. Examples of these activities include picnicking, sunbathing, hiking, beach-combing, camping, boating, tide pool exploration, etc.

Warm water Habitat (WARM) – Water used for the support of warm water ecosystems for the preservation and maintenance of aquatic habitat and wildlife species (flora and fauna).

Wildlife Habitat (WILD) – Waters that support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Impairments

As required under the CWA Section 303(d), states, territories, and tribes are required to develop a list of impaired water bodies. At this time, the Santa Fe Dam Basin and those reaches of the San Gabriel River within the Basin boundaries are not 303(d) listed impaired water bodies (CEPA 2006a), and therefore no Total Maximum Daily Load (TMDL) plans have been established (CEPA 2006b).

3.2.8 Local Groundwater

The Santa Fe Dam Basin is located on top of the San Gabriel Valley Groundwater Basin (SGVGB) in eastern Los Angeles County, which includes a portion of the upper Santa Ana Valley. The SGVGB is confined and bounded in the north by the Raymond Fault and the San Gabriel Mountain consolidated basement rocks. To the south and the west the SGVGB is bounded by consolidated rocks of the Repetto, Merced, and Puente Hills. The Chino and the San Jose Fault form the eastern boundary of the SGVGB. The SGVGB is 170 square miles and underlies the San Gabriel River floodplain. There are two sub-basins in the SGVGB; the lower San Gabriel Canyon Basin (northernmost) and the San Gabriel Basin (southernmost). In addition to natural infiltration of rainfall and runoff, the SGVGB is recharged with fresh water by the Metropolitan Water District of Southern California connection to Morris Dam and Santa Fe Dam.

Groundwater quality is considered to be good within the Santa Fe Basin area. The EPA monitors several wells in the Basin area. The Main San Gabriel Water Quality Authority currently develops and implements water quality improvement plans and projects as well as coordinating on-going testing and any necessary clean-up with the EPA (Corps 1998). Water quality within the SGVGB is under the jurisdiction of the LARWQCB Region 4, which has designated the following Beneficial Uses (LARWQCB 1995):

Municipal (MUN) – Water used for military, municipal, individual water systems, and may include drinking water.

Industrial Service Supply (IND) – Water supply for industrial uses that do not depend on water quality.

Industrial Process Supply (PROC) – Uses of water for industrial activities that depend primarily on water quality.

Agricultural (AGR) – Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Groundwater Quality

Water quality in public supply wells has been used to characterize groundwater quality in the area.

Impairments

The SGVGB has been severely impaired due to past and present human activities, and as a result, has been listed as a Superfund Site. Groundwater contaminants identified within SGVGB include trichloroethylene (TCE), perchloroethylene (PCE), and carbon tetrachloride. The four impaired areas include Santa Fe, Puente Basin, Baldwin Park, and El Monte areas).

In addition, numerous sites in the Puente Basin are undergoing clean-up efforts. One of these sites is an EPA assigned Superfund Site (Puente Valley Operable Unit) tasked with cleaning up plumes of TCE and PCE (CEPA 1998). Though these impairments are present in the SGVGB, it is unclear in how they have, or will affect Santa Fe Dam Basin. Currently, none of the impairments in the SGVGB are seen in the Basin's surface water.

3.2.9 WETLANDS

Wetlands in Los Angeles Basin have been dramatically reduced in the past century. Remaining wetlands have been significantly degraded through alteration of hydrologic regime, vegetation, and soils. The National Wetland Inventory (NWI) indicates that a large portion of the Basin is wetland, the majority of which is classified as riverine streambed, lake, or seasonally or temporarily flooded scrub-shrub wetlands with the following breakdown:

Table 1. Wetland Classifications and Acreages

NWI	Wetland Description	Acres
L1UBh	Lacustrine, Limnetic, Unconsolidated Bottom, Diked/Impounded	67.8
PEM/USAh	Palustrine, Emergent/Unconsolidated Shore, Temporarily Flooded, Diked/ Impounded	79.38
PEMCh	Palustrine, Emergent, Seasonally Flooded, Diked/Impounded	61.3
PFOA	Palustrine, Forested, Temporarily Flooded	6.39
PFOCh	Palustrine, Forested, Seasonally Flooded, Diked/Impounded	31.92
PFOCx	Palustrine, Forested, Seasonally Flooded, Excavated	0.59
PSSA	Palustrine, Scrub-Shrub, Temporarily Flooded	97.6
PSSAh	Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded	64.64
PSSC	Palustrine, Scrub-Shrub, Seasonally Flooded	15.03
PSSCh	Palustrine, Scrub-Shrub, Seasonally Flooded, Diked/Impounded	10.56
PSSCx	Palustrine, Scrub-Shrub, Seasonally Flooded, Excavated	1.41
PSSJ	Palustrine, Scrub-Shrub, Intermittently Flooded	32.4
PUBFh	Palustrine, Unconsolidated Bottom, Semipermanently Flooded, Diked/Impounded	15.81

PUS/EMCh	Palustrine, Unconsolidated Shore/Emergent, Seasonally Flooded, Diked/Impounded	9
PUSCh	Palustrine, Unconsolidated Shore, Seasonally Flooded, Diked/Impounded	172.12
PUSCx	Palustrine, Unconsolidated Shore, Seasonally Flooded, Excavated	2.32
R4SBA	Riverine, Intermittent, Streambed, Temporarily Flooded	43.7
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded	180
	Total Acres of Wetlands	891.97
Source: NWI 2010.		

3.3 AIR QUALITY

The Santa Fe Dam Basin lies within the boundaries of the South Coast Air Basin (SCAB), which is managed by the South Coast Air Quality Management District (SCAQMD). The SCAB, which covers an area of approximately 6,745 square miles, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and encompasses most non-desert portions of Orange, Riverside, and Los Angeles County.

3.3.1 Regional Climate

The SCAB is primarily a coastal plain with interconnected valleys and low hills progressing into high mountain ranges on the perimeter. The region is located within a semi-permanent high-pressure system that lies off the coast. As a result, the weather is mild, tempered by a daytime sea breeze and a nighttime land breeze although seasonally punctuated by periods of extremely hot weather, winter storms, and Santa Ana winds. Rainfall in the SCAB mainly occurs from November through April, with rainfall totals usually within a range of 15 to 18 inches.

The SCAB has a low average wind speed of 4 miles per hour, and as a result, air contaminants in the SCAB do not readily disperse. On spring and summer days, most pollution is moved out of the SCAB through mountain passes or is lifted by the warm vertical currents produced by the heating of the mountain slopes. From late summer through the winter months, lower wind speeds and the earlier appearance of offshore breezes combine to trap pollution in the SCAB. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. These conditions tend to last for several days at a time.

The SCAB experiences a persistent temperature inversion as a result of the Pacific high, which is a large subtropical high pressure system and which can hold air contaminants relatively near the ground. Under normal atmospheric conditions, temperature decreases with altitude. During an inversion condition, temperature increases with altitude and, as air pollutants rise in the atmosphere they reach an altitude where the ambient temperature exceeds the temperature of the pollutants. This causes air-borne pollutants to sink back to the earth's surface and thus the phenomenon acts to trap and concentrate air pollutants near the surface. In summer, longer daylight hours and bright sunshine combine to cause a reaction between hydrocarbons and

oxides of nitrogen to form ozone. In winter, the greatest pollution problems are carbon monoxide and nitrogen oxides, which are trapped and concentrated by the inversion layer.

Periodically, the SCAB experiences an intermittent weather condition known as El Niño-Southern Oscillation (ENSO) and its counterpart La Niña. During El Niño years, the SCAB experiences warmer air and ocean temperatures, and higher than normal precipitation. ENSO occurs in the tropical Pacific Ocean on an average of every 5 years, but varies from 3 to 7 years. The driving factor in ENSO conditions is warmer-than-normal ocean surface temperatures in the tropical Pacific, which causes the reversal, or in milder years the slowing or stopping of circulation patterns between Asia and the Americas. This change in circulation patterns shifts the "normal" pattern of rising warm wet air and rainfall from Southeast Asia to South and North America. La Niña is the counterpart to El Niño and usually has an opposite effect on weather patterns; wetter than normal conditions across the Pacific Northwest and dryer and warmer than normal conditions across much of the southern tier. La Niña brings dry weather to the SCAB and the southwest and southeastern states, usually prevailing strongest from November to January.

3.3.2 Local Climate

As in much of coastal southern California, the San Gabriel Valley has Mediterranean-like climate year-round with warm dry summers and moderately cool winters. Temperature records range from the low 20º F to well in excess of 100º F and with an average annual precipitation of 17.24 inches, generally confined to the period of November through April.

3.3.3 Air Quality Standards

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the Federal Clean Air Act, the EPA has identified criteria pollutants and has established national ambient air quality standards (NAAQS) to protect public health and welfare. The NAAQS are defined as the maximum acceptable concentration that may be reached, but not exceeded more than once per year. The EPA has established the NAAQS for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM10, PM2.5), and lead (Pb). These pollutants are called "criteria" pollutants because standards have been established for each of them to meet specific public health and welfare criteria. The California Ambient Air Quality Standards (CAAQS) are more restrictive than the national standards in some cases. Table 3.2 presents the national and state ambient air quality standards and provides a brief description of the related health effects and principal sources for each pollutant.

3.3.4 Local Air Quality

The California Air Resources Board (CARB) coordinates and oversees state and Federal air pollution control programs in California; oversees activities of local air quality management agencies; and maintains air quality monitoring stations throughout the state in conjunction with the EPA and local air districts. The air quality monitoring station closest to the Santa Fe Dam Basin is in the Eastern San Gabriel Valley, station number (state ID) #70060. This station monitors most criteria pollutants including Ozone (O_3), Carbon Monoxide (CO), Particulate Matter 2.5 and 10 (PM 2.5, PM 10), Nitrogen Dioxide (NO_3), and Sulfate (SO_3). The ambient air quality data from this station for 2006, 2007, and 2008 is shown in Table 3.3.

The existing levels of criteria pollutants in the project area summarized in Table 3.7 show frequent exceedance of state standards for O_3 in 2007 and 2008 and consistent below-the-relevant state standards for CO, and NO_2. The sampling station for all three years (2006, 2007, and 2008) showed infrequent Federal air quality exceedences for PM 2.5 and state exceedences for PM 10. Data collected at monitoring stations are used by the CARB to classify air Basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. Table 3.4 identifies the attainment status for the criteria pollutants in the SCAB.

Table 2. Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	State Standard	National Standard	Health Effects, Pollutant Characteristics and Major Sources
Ozone (O_3)	1 Hour	0.09 ppm	NA	Short term exposures to high concentrations can irritate eyes and lungs. Long-term exposure may cause permanent damage to lung tissue. Ozone is a secondary pollutant that is formed in the atmosphere through reactions between reactive organic gases (ROGs) and nitrogen oxides (NO_X) in the presence of sunlight. Major sources of ROGs and NO_X include combustion processes (including motor vehicle engines) and evaporative solvents, paints and fuels.
	8 Hour	0.07 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen. Exposure to high CO concentrations can cause headaches, dizziness, fatigue, unconsciousness, and even death. CO is an odorless, colorless gas that is formed by incomplete combustion of fuels. The primarily source of CO is the internal combustion engine, primarily gasoline-powered motor vehicles.
	8 Hour	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	NA	Irritating to eyes and respiratory tract. NO_2 is a reddish brown gas that is a by-product of combustion. Motor vehicles and industrial operations are the main sources of NO_2.
	Annual	0.03 ppm	0.053 ppm	
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	NA	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight. SO_2 is a colorless acid gas with a strong odor. Fuel combustion, chemical plants, sulfur recovery plants, and metal processing are the main sources of this pollutant.
	3 Hour	NA	0.5 ppm	
	24 Hour	0.04 ppm	0.14 ppm	
	Annual	NA	0.03 ppm	
Respirable Particulate Matter (PM10)	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility. Solid or liquid particles in the atmosphere. Sources include dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	Annual	20 $\mu g/m^3$	50 $\mu g/m^3$	

Table 2. Ambient Air Quality Standards for Criteria Pollutants				
Pollutant	**Averaging Time**	**State Standard**	**National Standard**	**Health Effects, Pollutant Characteristics and Major Sources**
Fine Particulate Matter (PM2.5)	24 Hour	NA	35 μg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling. Solid or liquid particles in the atmosphere. Major sources include fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning. PM2.5 may also be formed from photochemical reactions of other pollutants, including NO_X, SO_2, and organics.
	Annual	12 μg/m^3	15.0 μg/m^3	
Lead (Pb)	Monthly	1.5 μg/m3	– 1.5	Disturbs the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardio vascular system. Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	NA	μg/m3	
Source: CARB 2010; EPA 2010a.				

Table 3 Ambient Air Quality in the Basin Vicinity							
Pollutant	**Averaging Time**	**Maximum Concentration by Year**			**Number of Days State Standard Exceeded**		
		2006	**2007**	**2008**	**2006**	**2007**	**2008**
Ozone	1-hour (ppm)	.17	.158	.135	-	22[1]	34[1]
	8-hour (ppm)	.120	.112	.111	-	28[1]	39[1]
Carbon Monoxide	1-hour (ppm)	2	3	2	-	-	-
	8-hour (ppm)	1.7	1.8	1.6	-	-	-
Nitrogen Dioxide	1-hour (ppm)	.11	.12	.10	-	-	-
	24-hour (ppm)	.07	-	-	-	-	-
PM 2.5	24-hour (μg/m^3)	20.8	37.0	18.7	--	1[1]	-
PM 10	24-hour (μg/m^3)	52.8	63.8	53.7	8[2]	19[2]	6[2]
Source: AQMD 2006, 2007, 2008. [1]State standards, [2]Federal standards.							

Table 4 Attainment Status of Criteria Pollutants		
Pollutant	**State[1]**	**Federal**
Ozone	Nonattainment	Severe Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment[2]
Carbon Monoxide	Attainment	Unclassified/Attainment[2]
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Attainment
Sulfates	Attainment	Not Available

Table 4 Attainment Status of Criteria Pollutants		
Pollutant	**State[1]**	**Federal**
Lead	Attainment	Attainment
[1]2006 State Area Designations, [2]2008 National Area Designations, Source: CARB 2006, EPA 2010b.		

3.3.5 Greenhouse Gas Emissions

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere. The most important naturally occurring greenhouse gas (GHG) compounds are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor. CO_2, CH_4, and N_2O are produced naturally by respiration and other physiological processes of plants, animals, and microorganisms; by decomposition of organic matter; by volcanic and geothermal activity; by naturally occurring wildfires; and by natural chemical reactions in soil and water. Ozone is not released directly by natural sources, but forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. While water vapor is a strong greenhouse gas, its concentration in the atmosphere is primarily a result of, not a cause of, changes in surface and lower atmospheric temperature conditions.

Although naturally present in the atmosphere, concentrations of CO_2, CH_4, and N_2O also are affected by emissions from industrial processes, transportation technology, urban development, agricultural practices, and other human activity. The Intergovernmental Panel on Climate Change (IPCC 2001;2007) estimates the following changes in global atmospheric concentrations of the most important greenhouse gases:

- Atmospheric concentrations of CO_2 have risen from a pre-industrial background of 280 ppm by volume (ppm) to 379 ppm in 2005.
- Atmospheric concentrations of CH_4 have risen from a pre-industrial background of about 0.70 ppm to 1.774 ppm in 2005.
- Atmospheric concentrations of N_2O have risen from a pre-industrial background of 0.270 ppm to 0.319 ppm in 2005.

The IPCC has concluded that these changes in atmospheric composition are almost entirely the result of human activity, not the result of changes in natural processes that produce or remove these gases (IPCC 2007).

3.3.6 Climate Change

Climate change (CC) is a shift in the average weather patterns observed on earth, which can be measured by such variables as temperature, wind patterns, storms, and precipitation. Scientific research to date indicates that observed CC is most likely a result of increased emission of GHGs associated with human activity (IPCC 2007). In California, the transportation sector is the largest emitter of GHGs (accounting for 40.7% of the total GHG emissions in the state in 2004), followed by electricity generation (California Energy Commission 2006). If California were a country, it would rank between the 12th and 16th largest emitters of CO_2 in the world.

The many effects of GHG emissions are still being researched and are not fully known, but are expected to include increased temperatures, which could reduce snowpack, which in most areas is a primary source of fresh water. CC is expected to exacerbate air quality problems and adversely affect human health by increasing heat stress and related deaths; increase the incidence of infectious diseases, asthma and respiratory health problems; cause sea level rise threatening urban and natural coastal areas; cause variations in natural plant communities affecting wildlife; and cause variations in crop quality and yields. CC is also expected to result in more extreme weather events and heavier precipitation events that can lead to flooding as well as more extended drought periods.

Water Resources

Water supply can be described in terms of indices such as precipitation, snow pack, and runoff. Analysis of data and weather records are studied to determine the trends and variability, of these indices, which affect water availability.

Most precipitation in California occurs between October and April more specifically, in terms of amount of precipitation occurring, from November through March. There is evidence that the amount of precipitation that occurs on an annual basis is becoming more variable (i.e., periods of both high and low rainfall are becoming more common). A study performed by CDWR (2006) indicates that present day variability in annual precipitation is about 75% greater than that of the early 20th century. Precipitation across California appears to have increased over the past century, and individual water years have become more variable in terms of the amount of precipitation that occurs. Similar trends are observed for runoff.

California Wildlife

Rising temperatures, an increase in punctuated storm events, prolonged droughts, and sea level rise will likely change the makeup of entire ecosystems, increasing adaptation pressures that would shift wildlife distributions and in some cases, increase the frequency of local extinctions. While some species adapted to arid environments may increase their ranges or densities or both, species closely tied to the dwindling natural water resources in southern California may be particularly at risk. Stream systems supporting aquatic species such as salmonids or amphibians would be degraded by loss of cold-water habitat and reduced stream flows for spawning, incubation, and rearing. Furthermore, increased scouring of stream channels by surges of storm runoff would damage eggs and egg laying habitat, although secondary effects related to GCC such as increases in infectious diseases and increased input of pollutants and sediments through storm runoff may have the greatest impacts. Other wildlife such as bird species that rely on remnant patches of riparian habitat in southern California may also be at risk from GCC. Shifts in timing and rate of migration, habitat loss, increased frequency of punctuated storm events, loss of prey base, and shifts in plant species regimes are all predicted as likely to occur and would negatively impact local populations. In many cases, the severely degraded riparian habitat currently present in southern California has already led to some riparian bird populations to be depressed or even threatened, making them increasingly susceptible to future environmental changes brought upon by GCC.

At a regional level, climate change may also contribute to more frequent and intense El Niño events, helping trigger a number of large-scale environmental changes. Warmer waters drive

toxic algae blooms in bays and estuaries and depress offshore ocean productivity, affecting wildlife throughout the food web. The frequency of environmental catastrophes such as those caused by the 1997-98 and 2009-2010 El Niño events would be expected to increase. During those events, primary production precipitously declined along the Pacific Coast, causing large die-offs of primary and secondary consumers. In inland areas, the frequency and intensity of droughts and wildfires increased, substantially altering upland vegetation. Subsequent heavy rains triggered extensive erosion in the burned areas, which removed topsoil from the upper reaches of local watersheds. Powerful storm runoff events moved high sediment loads downstream where they scoured and buried riparian vegetation and physically altered floodplains, fundamentally impacting local ecosystems.

The heavily altered natural environment of the Santa Fe Dam Basin and its geographic location within an arid, water-stressed biome, make it particularly susceptible to future impacts from GCC. These impacts would undoubtedly stress local wildlife populations, and in particular, further impact sensitive species already susceptible to environmental shifts and stochastic events.

3.4 AIR QUALITY

3.4.1 Existing Conditions

Greenhouse Gas Emissions

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and reradiate a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere. The most important naturally occurring greenhouse gas (GHG) compounds are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor. CO_2, CH_4, and N_2O are produced naturally by respiration and other physiological processes of plants, animals, and microorganisms; by decomposition of organic matter; by volcanic and geothermal activity; by naturally occurring wildfires; and by natural chemical reactions in soil and water. Ozone is not released directly by natural sources, but forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. While water vapor is a strong greenhouse gas, its concentration in the atmosphere is primarily a result of changes in surface and lower atmospheric temperature conditions.

Climate Change

Climate change is a shift in the average weather patterns observed on earth, which can be measured by such variables as temperature, wind patterns, storms, and precipitation. Scientific research to date indicates that observed climate change is most likely a result of increased emission of GHGs associated with human activity. If California were a country, it would rank between the 12th and 16th largest emitters of CO_2 in the world.

Climate change is expected to exacerbate air quality problems and adversely affect human health by increasing heat stress and related deaths; increase the incidence of infectious diseases, asthma and respiratory health problems; cause sea level rise threatening urban and natural coastal areas; cause variations in natural plant communities affecting wildlife; and cause variations in crop

quality and yields. Climate change is also expected to result in more extreme weather events and heavier precipitation events that can lead to flooding as well as more extended drought periods.

3.4 NOISE

Noise Factors

Noise can be defined as unwanted sound or combination of sounds that may interfere with conversation, work, rest, recreation, and sleep, or in the extreme may produce physiological or psychological damage. Sound travels from a source in the form of wave, which exerts a pressure on a receptor such as a human ear. The amount of pressure a sound wave exerts is referred to as sound level, commonly measured in decibels (dB). As a reference, a sound level of zero dB corresponds roughly to the threshold of human hearing, and a sound level in the range of 120 to 140 dB can produce human pain (Table 3.5).

Table Error! No text of specified style in document.**.5 Sources and Effects of Common Noise Levels**

Noise Level	Effects	Evidence	Source
130	Hearing Loss	Pain Threshold	Hard Rock Band
120		Deafening	Thunder
110			Jet Take-Off
100			Loud Auto Horn at 10 feet
90		Very Loud	Noisy City Street
85			
80			School Cafeteria
75			
70	Physiological Effects	Loud	Vacuum Cleaner at 10 Feet
65			
60	Interference with Conversation		Normal Speech at 3 Feet
55			
50	Sleep Interruption	Moderately Loud	Average Office Dishwasher in Next Room
45			
40	Sleep Disturbance		Soft Radio Music Quiet Residential Area
35			
30		Faint	Interior of Average Residence
20			Average Whisper at 6 Feet
10			Rustle of Leaves in Wind
5		Very Faint	Human Breathing
0		Hearing Threshold	

Source: Los Angeles County 2008.

Sound has two main components to a human ear: pitch and loudness. While the pitch of a sound is generally associated with an annoyance, sound loudness can interfere with activities such as

conversation, sleep, and learning, and can even have lasting physiological effects, such as hearing loss. Those who are more sensitive to noise such as children and the elderly are at higher risk of being adversely affected by excessive noise levels.

Noise can be one of the most widespread environmental pollutants affecting communities. "Community noise," or environmental noise, in any given area varies continuously over a period of time depending on the contributing sound sources within and surrounding the area. This community noise is typically made up of a combination of relatively stable background noise, where individual contributors are not identifiable, and the periodic addition of short duration noise sources such as aircraft flyovers, motor vehicles, sirens, etc. Some land uses can be considered more sensitive to community noise levels than others, and are often referred to as sensitive receptors. These include residences, schools, hotels, hospitals, nursing homes, churches, libraries, and cemeteries. Shopping centers, commercial parks, strip malls, industrial areas, and active recreation areas can be considered less noise-sensitive receptors.

In addition, wildlife may be sensitive receptors to noise and vibrations. Animals rely on meaningful sounds for communication, navigation, avoiding danger and finding food. Noise may be defined for wildlife as "any human sound that alters the behavior of animals or interferes with their functioning" (Bowles 1995). The level of disturbance may be qualified as damage, which may harm health, reproduction, survivorship, habitat use, distribution, abundance or genetic distribution, or disturbance which causes a detectable change in behavior. Behavioral and physiological responses of wildlife to noise have the potential to cause injury, energy loss, decrease in food intake, habitat avoidance and abandonment, and reproductive losses.

3.4.1 Existing Noise Environment in Santa Fe Dam Basin

The predominant noise source within the County of Los Angeles is transportation, including railroad, airport, and motor vehicle sources. Traffic volume, average speed, vehicular fleet mix (i.e. combination of automobiles, motorcycles, buses, and trucks), roadway steepness, distance, and characteristics of the pathway between generator and receptor, and weather all influence the level of noise near roadways. Typically, the greater the vehicle speed and truck percentage, the greater the level of noise emission from the transportation facility.

Ambient noise levels within the Santa Fe Dam Basin are generally low. Major off-site noise sources in the area include traffic on the Interstate 210 (Foothill Freeway), Arrow Highway, and Live Oak Avenue. Onsite noise is generated from recreation activities, events, and maintenance within the Basin. Approximately 1,200 acres (86%) of the area within the Basin has been set aside for recreation purposes (WCA 2010). Recreation activities are generally comprised of low noise level uses, such as picnicking, camping, hiking, bird watching, exploring the nature center, and using the equestrian staging area. Some areas may generate a greater level of noise, such as the group picnic rental areas or the swim beach. Large events, such as the Renaissance Faire, may also generate high noise levels.

Development surrounding the Basin area includes a mixture of commercial and industrial to the east and south, and predominantly residential to the west. In addition, sensitive uses located within 1 mile from the Basin include schools, places of worship, the City of Hope Hospital, hotels, libraries, and community parks. The Dam embankment attenuates noise from south of

the Basin to a considerable degree, and buffers the residential areas to the south and southwest from noise generated on the site (Corps Master Plan, 1995).

3.4.2 Relevant Noise Regulations

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set testing guidelines and regional noise standards for mobile sources such as aircraft and motor vehicles. Local agencies typically regulate stationary sources, mainly through municipal policies and local noise ordinances.

Under the authority of the Noise Control Act of 1972, the EPA established noise emission criteria and testing methods that apply to interstate rail carriers and some construction and transportation equipment such as portable air compressors and medium- and heavy-duty trucks (40 CFR Part 204). The EPA has also issued guidance levels for the protection of public health and welfare in residential land use areas. Under the Occupational Safety and Health Act of 1970 (29 USC §1919 *et seq*.), OSHA has adopted regulations designed to protect workers against the effects of occupational noise exposure. The Noise Control Act of 1972 was amended by the Quiet Communities Act of 1978, which provides guidance for the development of noise control programs through the Quiet Communities Program.

3.5 BIOLOGICAL RESOURCES

3.5.1 Plant Resources

A reconnaissance-level vegetation survey of Santa Fe Dam Basin was performed in January 2010. The vegetation survey was intended to capture sufficient detail to fully describe each vegetation alliance and any other dominant vegetation features present within the Basin. However, surveys were not exhaustive and not all species within the Basin were inventoried. Vegetation features were determined in the field using tools such as current aerial photography, regionally appropriate plant identification keys, and data from other available sources. All areas of the Basin within the Basin boundaries were surveyed, including all Federally owned lands and lands with flowage easements (Map 3). Common plant species were identified and listed in Appendix D1 and vegetation alliances were determined and mapped using Sawyer *et al.* (2009). Not all plants within the Basin were inventoried and Appendix D1 lists only those species directly observed. Non-native habitat types, which are defined here as human-altered areas dominated by non-native vegetation features, were also identified and mapped.

Native vegetation alliances identified in the Basin included *Salix exigua* Shrubland Alliance and *Artemisia californica* shrubland alliance, as defined by Sawyer *et al.* (2009). Several non-native habitat types are present in the Basin and include ornamental tree/maintained lawn, disturbed riparian, agriculture, and ruderal land. Map 16 shows the distribution of each vegetation alliance and non-native habitat type found in the Basin.

Vegetation in the Santa Fe Dam Basin has been altered from its historic condition by the construction of the Dam and associated works. Since construction, vegetation communities have been further altered by several factors, including drought, natural and human-caused erosion, planting of non-native species, and the ongoing maintenance of lawn and ornamental trees within Park recreation areas. At the time of surveys, California was in its third year of drought, causing

many of the species to be in a drought-induced dormancy. Disturbances have allowed invasive plant species to become established and widespread. Overall, native plant communities are fragmented, degraded, frequently dominated by invasive species, and small in size.

3.5.2 Vegetation Communities

Salix exigua Shrubland Alliance This alliance is composed of dense, broadleafed, winter-deciduous riparian thickets dominated by several willow species including red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and sandbar willow (*Salix exigua*) with scattered emergent Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*) (Sawyer *et al.* 2009). Most stands of this shrubland alliance are too dense to allow much understory development. Soils in this vegetation community are loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows. This early seral type requires repeated flooding to prevent succession to southern cottonwood-sycamore riparian forest. Other plant species common to this community include mule fat (*Baccharis salicifolia*) and Southern California black walnut (*Juglans californica*); and invasive species such as giant cane (*Arundo donax*), tobacco tree (*Nicotiana glauca*), and castor bean (*Ricinus communis*). Within the Basin, this alliance is restricted to two remnant areas; bordering the San Gabriel River north of the Interstate 210 and upstream of the toe of Santa Fe Dam. The area of *Salix exigua* shrubland alliance found in the floodplain immediately upstream of the Dam hosts many exotic plant species, with high densities of salt cedar (*Tamarix parviflora*) present. This vegetation community comprises approximately 446.2 acres or 18.1% of the Basin (Map 16).

***Salix exigua* Shrubland Alliance**

***Artemisia californica* Shrubland Alliance**

Ornamental Tree/ Maintained Lawn

Artemisia californica Shrubland Alliance No single species or pair of species dominates mixed sage scrub; instead, three or more species are typically common and provide equal cover in this mostly upland habitat (Sawyer *et al.* 2009). This alliance is dominated by mixed evergreen-deciduous shrubland that occurs across a range of altitudes from 0 to 3,937 feet (1,200 meters) and maintains a continuous or intermittent canopy that rarely exceeds 6 feet (2 meters) in height. California sage-brush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), white sage (*Artemisia ludoviciana*), coyote brush (*Baccharis pilularis*), black sage (*Salvia mellifera*), laurel sumac (*Malosma laurina*), coastal prickly pear cactus (*Opuntia littoralis*), valley cholla (*Cylindropuntia californica*), and California yerba santa (*Eriodictyon californicum*) all intermix within this vegetation community (Sawyer *et al.* 2009). Some of this alliance found in the Basin forms a transition zone with Riversidian alluvial fan sage scrub (Sawyer *et al.* 2009). Since this transition zone primarily has characteristics of *Artemisia californica* Shrubland Alliance, these areas are discussed only under this vegetation community type. The alliance is extensive in the southeast of the Basin, dominating the area between the man-made lake within the Santa Fe Dam Recreation Area and the northern-most extent of the Basin. Throughout this area, it is found adjacent to the *Salix exigua* community that borders the San Gabriel River stream channel. All areas of this alliance have been at least partly degraded by disturbance and invasion of exotic species; however, areas such as near the Santa Fe Dam Nature Center appear to have been partly restored and protected. This vegetation community comprises approximately 889.8 acres or 36.0% of the Basin.

Ornamental Tree/Maintained Lawn A vast expanse of ornamental tree/maintained lawn is found in the Basin surrounding Santa Fe Lake, where picnic areas and playgrounds are part of a large recreation area. This area is dominated by a planted and maintained lawn interspersed with a mostly even distribution of ornamental trees. Dominant tree species include western sycamore, Canary Island pine (*Pinus canariensis*), sweetgum (*Liquidambar styraciflua*), and Shamel ash (*Fraxinus udei*), all exotic species. Tree canopy is partly open and large gaps exist around open water and park features. Ornamental tree/maintained lawn is regularly mowed and weeded, and there is essentially no native plant species or habitat. This non-native habitat comprises approximately 55.7 acres or 2.3% of the Basin.

Disturbed Upland This community includes upland habitats located within the Basin that have been altered from their native plant composition. A few of these areas have some ruderal land characteristics, but because they host at least some amount of native plants, they are considered to be disturbed upland. Vegetation found in disturbed upland includes a mix of native and introduced species such as black mustard (*Brassica nigra*), telegraph weed (*Heterotheca grandiflora*), tobacco tree, castor bean, prickly Russian thistle (*Salsola tragus*), and giant wildrye (*Elymus condensatus*). Other species occur in lower densities and include native upland species such as California buckwheat and California sagebrush, and introduced invasive species such as sacred thorn-apple (*Datura wrightii*), perennial pepperwood (*Lepidium latifolium*), and cocklebur. Disturbed upland is found throughout the groundwater recharge basins on the west side of Santa Fe Dam Basin. This non-native habitat comprises approximately 230.2 acres or 9.3% of the Basin.

Disturbed Upland **Ruderal Land**

Ruderal Land Ruderal lands are areas that have been substantially altered by maintenance or construction causing them to be generally devoid of vegetation. In the Santa Fe Dam Basin, ruderal land surrounds the Dam, dominates the area south of the interchange of Interstates 210 and 605, and it is also present throughout industrial areas. Ruderal land is typically found throughout the Basin on graded access roads and trails, dirt parking areas, and groundwater recharge basins. High frequency of disturbance and poor quality soils found in these areas prevents most plants from becoming established; however, hardy herbaceous invasive species such as prickly Russian thistle and cocklebur are both present. This non-native habitat comprises approximately 570.8 acres or 23.1% of the Basin.

3.5.3 Non-native and Invasive Plants

Significant non-native plant infestations are considered to be areas with ≥50% of the total vegetation cover dominated by a non-native plant species. Infestations within Santa Fe Dam Basin include those caused by black mustard (*Brassica nigra*), shortpod mustard (*Brassica geniculata*), cocklebur (*Xanthium strumarium*), and salt cedar (*Tamarix parviflora*) (Map 16). Two areas have particularly high densities of exotics. Within the vegetation communities near the recreation area, there are patches where shortpod and black mustards almost completely dominate the herbaceous and shrub layers. Additionally, infestations of cocklebur and salt cedar occur where the San Gabriel River meets the upstream side of the Dam.

Other non-native plant species are also found within the Basin, but at densities below infestation level. Tobacco tree and castor bean are distributed throughout the Basin but have the highest densities on disturbed slopes near the San Gabriel River or Santa Fe Lake. Poison hemlock,

stinging nettle, cocklebur, and giant wild rye are all common to riparian habitats. Prickly Russian thistle and white nightshade are found throughout the Basin in areas of frequent disturbance.

3.5.4 Animal Resources

The mixed habitat found in the Basin is composed of native shrubland alliances, riparian habitats, constructed open water, and urban environments that provide a variety of native and non-native habitats to species that may be present in the area. During field surveys, species directly observed were recorded and provided in Appendix D2 though no formal wildlife surveys were conducted in preparation of this DEA. Not all species common to the area were observed during field surveys.

Species common to the Basin include native and non-native fishes, amphibians, reptiles, mammals, and birds. Over 100 bird species use the Basin for breeding, wintering, or are residents. The open water areas found in the Basin attract wading birds, waterfowl and shorebirds. Riparian and upland habitats host a diversity of passerine species. Bat species are also present and use the Basin for roosting, breeding, or are year-round residents. Only two amphibians are common, including the California toad and Pacific tree frog. Dry upland areas host common lizard and snake species. Non-native species such as feral cats and dogs are also found in the Basin.

Stream flow through the Basin is heavily altered by human activities and mostly seasonal, occurring primarily during the rainy season. The altered seasonal flows and existing barriers to fish passage severely limit fish presence in the Basin. Native non-game freshwater fishes that have been historically present in waters of the Basin include arroyo chub, Santa Ana speckled dace, Santa Ana sucker, threespine stickleback, and rainbow trout. Common non-native species of unknown origin may include largemouth bass, bluegill, western mosquito fish, channel catfish, fathead minnow, common carp, and goldfish. No fish data were collected during field surveys within the Basin.

3.5.5 Special Status Listed Taxa

A list of Federally designated threatened, endangered, or candidate species that are known to occur in Los Angeles County was obtained from the U.S. Fish and Wildlife Service (USFWS 2010). In addition, a list of species that have been recorded to occur within the Basin or Basin vicinity has been formally obtained from the California Natural Diversity Database (CNDDB), maintained by the California Department of Fish and Game (CDFG 2010b).

According to the CNDDB, of the USFWS list, there are only two special status species that have been observed within the Basin (Table 3.6), including the least Bell's vireo and coastal California gnatcatcher, which have both been observed within the previous ten years (Map 17). Other special status species reported within Los Angeles County by the USFWS (2010) have no recorded occurrences within the Basin according to the CNDDB (CDFG 2010b).

Coastal California Gnatcatcher The coastal California gnatcatcher (*Polioptila californica californica)* is a small, long-tailed member of the thrush family. This species is restricted to coastal southern California and occurs almost exclusively in the coastal sage scrub plant community, and less often in chaparral habitat (USFWS 2003). This gnatcatcher is non-

migratory and breeds from late February through July. Documented home ranges vary from as little as 13 acres to as many as 39 acres. Population decline is widely attributed to habitat destruction and as few as 30 pairs were estimated to exist in Los Angeles County (none in San Bernardino County) in 1992 (USFWS 1993). The CNDDB notes that coastal California gnatcatchers had not been observed within their historic range in the Basin for the previous 3 decades, when a single adult female was observed in 2007 (CDFG 2010b). Though it is unknown if this species has taken up permanent residence in the area, it is possible that the coastal California gnatcatcher is present in the Basin.

Potentially Occurring Special Status Species

Common Name Scientific Name	Federal Status	Critical Habitat[1]	CNDDB[2]	Federal Register	Year Listed
Coastal California gnatcatcher *Polioptila californica californica*	T	2007	2008	58:16757	30-Mar-93
Least Bell's vireo *Vireo bellii pusillus*	E	1994	2003	51:16482	2-May-86

[1]Year designated, [2]Last observed in Basin, Source: USFWS 2010, CDFG 2010b.

Least Bell's Vireo The least Bell's vireo (*Vireo bellii pusillus*) was listed as endangered in May 1986 (USFWS 1986). Critical habitat for the species was designated in 1994, though it does not extend into the Basin. The least Bell's vireo is a spring and summer breeding resident, migrating south for fall and winter. It primarily inhabits riparian woodlands, scrublands, and thickets for breeding. Population declines of least Bell's vireo are due to urban and agricultural development, habitat alteration, and brood parasitism by the brown-headed cowbird. Preferred habitat features of the least Bell's vireo do exist in or adjacent to Santa Fe Dam Basin and according to the CNDDB, 2 adult male vireos and 7 breeding pairs were observed in the *Salix exigua* shrubland community near the training channel in 2001 (CDFG 2010b). Survey data compiled by the Corps has also reported positive identification of vireos in Santa Fe Dam, including at least 22 pairs of nesting vireos observed in 2009 (Corps 2010d). It is assumed that nesting least Bell's vireo are present within the Basin.

3.5.6 Wildlife Corridors

Habitat connectivity is an important factor for the health of fish and wildlife populations (Krebs 1994). The minimum range that a species needs varies. A larger suitable habitat range allows for more abundant and diverse plant and animal populations. Movement of species within or between areas of suitable habitat can be limited by the presence of barriers, which may limit the overall habitat range available. The Santa Fe Dam is located near the San Gabriel Mountains; an area of relatively high biological diversity and abundance. The connectivity of the Basin with these mountains determines the species diversity and abundance found within the Basin. Movement of wildlife between two areas varies by species and each species may require differing corridor characteristics. Spencer (2005) identifies two types of barriers; a barrier that is impassable under any circumstances for a particular species, and a filter barrier, which may be utilized by a species under some circumstances. For example, most ground-dwelling species will

not pass over a busy roadway, particularly if it has several lanes of traffic, retaining walls, a large area with no vegetation, fences, or other physical barriers. In general, smaller ground-dwelling species, such as amphibians, reptiles, and small mammals, are more reluctant to pass over barriers or through filters, and are therefore less mobile than other species. Large mammals and birds are less sensitive to barriers. Fish barriers include low or no streamflow, culverts, dams, concrete channels, high water flows, felled trees and other natural and man-made obstacles.

Santa Fe Dam Basin is connected to the San Gabriel Mountains via the San Gabriel River, which passes beneath Interstate 210 and is both an aquatic and terrestrial habitat corridor. This is a pathway that plants, fish and wildlife may use to for dispersal or movement between habitats. Aquatic passage through this corridor is extremely limited; a series of drop structures prevent fish passage during low flows, and high velocity flood flows may not allow upstream passage. Terrestrial species are able to pass into the San Gabriel River corridor from Angeles National Forest and then pass into the Basin beneath Interstate 210. The highway bridge is sufficiently large to allow physical passage of all species. However, roadways and overpasses may act as filter barriers to some species.

The Basin is not connected to any other significant natural habitats and movement in or out of the Basin is restricted by the Dam embankment, surrounding urbanization, and roadways. As a result, it is important to maintain open and unrestricted passage within the San Gabriel River corridor for terrestrial species. This requires maintaining suitable riparian habitat conditions and restricting human activities away from wildlife trails.

Within the Basin, species movement is unrestricted between natural habitat areas. The San Gabriel River channel is connected to riparian and upland natural habitats, including the areas of proposed Environmentally Sensitive land on the east side of the Basin. Limited human use in the area means less inhibition of species movement as well.

3.6 CULTURAL RESOURCES

Cultural resources are locations of human activity, occupation, or use. They include expressions of human culture and history in the physical environment, such as archaeological sites, historic buildings and structures, or other culturally significant places. Cultural resources can also be natural features, plants, and animals or places that are considered to be important or sacred to a culture, subculture, or community. Resources may be important individually or as part of a grouping of complementary resources, such as a historic neighborhood. Cultural resources that may be present include three general categories: archaeological resources, historic buildings and structures, and traditional cultural properties.

Traditional cultural properties are places associated with the cultural practices or beliefs of a living community. The significance of these places is derived from the role the property plays in a community's cultural identity, as defined by its beliefs, practices, history, and social institutions. Examples include natural landscape features, plant gathering places, sacred sites, and Native American burial locations. They can also include urban neighborhoods whose structures, objects, and spaces reflect the historically rooted values of a traditional social group. Identifying any traditional cultural property or sacred site requires direct consultations with potentially affected communities. Consideration of important historic, cultural, and natural

aspects of our natural heritage is required through NEPA and principally regulated by the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC Section 470).

Under Section 110 of the NHPA, Federal agencies are required to fully integrate the management of cultural resources in ongoing programs and to proactively identify, evaluate, nominate and protect historic properties. Historic properties are cultural resources that meet specific criteria for listing on the National Register of Historic Places (NRHP). Agencies are not required to preserve all historic properties, but agencies must follow a process to ensure that their decisions concerning the treatment of these places result from meaningful consideration of cultural and historic values and the options available to protect the properties.

Section 106 of the NHPA describes the procedures for identifying and evaluating historic properties, for assessing the effects of Federal actions on historic properties, and for project proponents consulting with appropriate agencies, including the State Historic Preservation Officer (SHPO), to avoid, reduce, or minimize adverse effects.

3.6.1 Cultural Resources within the Basin

The Santa Fe Dam Basin is located in an important area for the Tongva. Information from native inhabitants documented by early Spanish explorers, early settlers and 20th century ethnographers indicate several named locations associated with Tongva history and traditional practices. The mouth of San Gabriel River canyon was the terminus of an important trade route leading from the San Gabriel Valley to the Mojave Desert. Pictographs on rock walls and boulders are found nearby which may be related to spiritual practices or mark trails or territorial boundaries. The Basin is near a reliable water source and would have provided plants and animal life that would have been utilized by native inhabitants. The nearby city of Azusa is named for the Tongva village of Ashuukshanga.

A literature search, record search and pedestrian survey of the Santa Fe Dam Basin and vicinity were conducted in 1975 and 1985. No prehistoric archaeological sites were found, but three isolated artifacts were noted in the 1985 survey (Corps Master Plan, 1995). Historic resources including two railroad bridges and a large quantity of historic debris dating as far back as 1880 were noted. These survey reports have not been obtained and the results and methods employed are unknown. The Basin is also the site of a research station where Dr. A.A. Michelson, America's first Nobel Prize winner, conducted numerous experiments between 1922 and 1926 to determine the speed of light. The facility itself is gone, and the NRHP status of this location is unknown. The Dam itself is of historic age, but the status of the structure regarding its historic significance is unknown. No information was available in the previous Master Plans regarding SHPO concurrence with Corps findings or Native American consultation.

3.7 HAZARDOUS MATERIALS AND WASTES

A preliminary hazardous and toxic waste and materials (HTWM) investigation was conducted to determine the presence of current or historical contamination within Santa Fe Dam Basin.

Sites of Interest

Two preliminary sites of interest were identified. One of these sites was reported in the Federal NPL-CERCLIS database as a site under ongoing investigation that contains the greatest potential risk to human health and the environment. The other site was reported in the LUST-CORTESE database as a leaking underground storage tank. It was concluded that ongoing monitoring of clean-up status is warranted for the Federal NPL-CERCLIS site and that no additional investigation is necessary for the LUST-CORTESE site.

3.8 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Federal agencies are required, by EO 12898, Environmental Justice, 59 FR 7629, 1994, to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations."

The CEQ identifies minority groups as Asian, American Indian or Alaskan Native, Pacific Islander, Black not of Hispanic origin, and Latino (CEQ 1997). It defines a minority population as any group of minorities that exceed 50% of the existing population within the market area or where a minority group comprises a meaningfully greater percentage of the local population than in the general population. Additionally, the CEQ (1997) identifies low income using 2000 Census data for "individuals living below the poverty level." For the purposes of this study, a low income population will be defined similarly as a local or market area population with more than 50% of people living below the poverty level.

Therefore, providing environmental justice means ensuring that existing local and market area minority and low income populations must be actively protected from adverse human health or environmental effects of any management strategy undertaken or authorized in the updated Master Plan. Detailed demographics and socioeconomic data and their descriptions are provided in Section 2 of the updated Master Plan and data applicable to assessing environmental justice are provided in Table 3.7.

Table 7. Market Area Demographics

Census Data	Los Angeles County	San Bernardino County	Local Communities[1] Average
Asian	11.9%	4.7%	15.1%
Black	9.8%	9.1%	2.7%
Latino	44.6%	39.2%	**58.2%**[2]
Native American	0.8%	1.2%	1.2%
Native Islander	0.3%	0.3%	<1.0%
White	48.7%	58.9%	47.3%
Other	23.5%	20.8%	29.1%
Individuals Living Below Poverty Level	17.4%	15.8%	16.8%

[1]Local Communities include Arcadia, Azusa, Baldwin Park, El Monte, Irwindale, and Monrovia. Note: Mixed-race ethnicities reported resulted in a total greater than 100%.
[2]Communities that qualify for environmental justice protections. Source: U.S. Census Bureau 2000, 2009.

The adjacent communities of the Santa Fe project area are primarily White, but also have sizeable Latino populations. The larger market areas of Los Angeles and San Bernardino Counties do not have a significant minority population. However, when the local communities' ethnicities are averaged, including the neighboring cities, the Latino population is found to exceed 50% of the overall population. The local Latino community comprises a meaningfully greater percentage of the local population in comparison to the greater market area population. As a result, the local Latino community must be considered for additional protections under EO 12898.

The number of individuals living below the poverty level is less than 20% for the larger market area, and none of the local communities exceed a total of 26.1% of the total population. The market area does not have a significant low income population.

3.9 TRAFFIC AND TRANSPORTATION

Travel to the Basin occurs through a multi-modal transportation network in and around Los Angeles County that accommodates vehicular, bicycle, train, equestrian and pedestrian traffic (Map 18). The Basin is located in the southeast quadrant of the intersection of Interstates 210 and 605.

Access into of the Basin from the south via the gated entrance off Arrow Highway at Azusa Canyon Road, or from east of Irwindale Avenue through East 1st Street to South Peckham Road, which eventually connects to the main Azusa Canyon Road entrance (Graham 2010). Access to the San Gabriel River wash in the northern portion of the Basin is from Ranch Road or Crystal Canyon Road to San Gabriel Canyon Road at the far northern extent, or from West Foothill Boulevard just north of Interstate 210. Bicycle and pedestrian access to the Basin are available from various points around the perimeter, or by crossing the Dam wall (Graham 2010).

The Basin is surrounded by several high-capacity arterials and freeways, including Duarte Road and Interstate 210 to the north, Irwindale Avenue to the east, Live Oak Avenue to the south, Arrow Highway to the southwest, and Buena Vista Street and Interstate 605 to the west. Irwindale Avenue is a north-south arterial, whereas Arrow Highway is an east-west arterial that connects the communities of Irwindale and San Dimas, a distance of approximately 10 miles. There are no direct access points to the Basin from Interstates 210 and 605, so a linkage via local roadways is required. Traffic volumes for the nearby roads in the vicinity of the Basin are shown in Table 3.8.

Table 8. Average Traffic Volumes on Nearby Roadways			
Roadway Name	**Average Daily Two-way Traffic (thousands of cars)**	**Roadway Designation**	**Number of Lanes**
Interstate 210	242,000	Freeway	12
Interstate 605	185,000	Freeway	10
Arrow Highway	25,000	Arterial	4
Irwindale Avenue	21,000	Arterial	4
Source: Los Angeles County 2009, Caltrans 2009.			

Visitors traveling to the Basin by bicycle can make use of a network of designated bikeways and trails. Los Angeles County has developed a bicycle master plan and maintains a bikeways map online, which differentiates between the following three types of bike paths:

- Class I – Separate off-road paved bike path.
- Class II – On-road bikeway with lane striping.
- Class III – On-road bikeway with signage only.

The Basin is accessible by the San Gabriel River Bike Trail, a 38-mile Class I bike path that runs from Seal Beach to the San Gabriel Mountains and along the river. For visitors who prefer to walk to the Basin, there are continuous sidewalks on most connecting streets. Pedestrians and equestrians can connect to a network of trails in the foothills of the San Gabriel Mountains from the upper northeast extent of the Basin or from the San Gabriel River Bike Trail as well as from the 22 mile long LARio Trail.

Approximately 3 miles of roadways and several parking lots provide access to recreation amenities throughout the Basin, primarily on the east side of the San Gabriel River, with the subject Project Study Area located on the west side of the broad riverbed. Similarly, approximately 5 miles of equestrian trails, and several miles of unpaved looping pedestrian trails are available throughout the Basin. Cyclists and pedestrians also have the option of riding across the Santa Fe Dam to join with the San Gabriel River Trail. In-Basin trails are maintained by the County.

Emergency vehicles can access the Basin through the main entrances on Arrow Highway or from East First Street and South Peckham Road. The northern portion of the Basin can be accessed from San Gabriel Canyon Road or from West Foothill Drive. No additional non-public access points are available for emergency vehicles. Two emergency vehicle access points are available for the main portion of the Basin, and two emergency vehicle access points are available for the northern portion of the Basin.

3.10 UTILITIES

A variety of utilities such as water, electrical power, heating fuel, and sanitary sewerage services are provided within the Basin to serve the various amenities (Map 22**).** Utility owners represented in the Basin include the LADWP, Sanitation Districts of Los Angeles County, Azusa Light and Water, and Verizon.

There are two utility easements in the Basin. The first is to the LACDPW for two electric lines, one of which follows the southern perimeter of the Basin along Arrow Highway, then up along the southwest perimeter before turning east onto West Gladstone Street. The other begins near the intersection of Highland Avenue and Duarte Road, extends along Duarte Road to its intersection with East Circle Road, and continues along East Circle Road until the street turns west away from the Basin. The second easement was originally granted to the Los Angeles County Flood Control District (LACFCD), which is currently within LACDPW, for the spreading grounds facility in the northern portion of the Basin, which extends approximately 0.2 miles into the wash along the west side of the San Gabriel River.

Energy usage associated with Basin recreation activities and amenities includes lighting, heating, and air conditioning for 10 park restrooms, and for various recreation amenities including an administrative office, boathouse, lifeguard operation center, lifeguard supervisor office, nature center, maintenance yard, and concessionaire building. Limited street lighting is also provided within the Basin. Additional non-recreation energy usage is also associated with the Norman Nursery agricultural amenities.

3.11 AESTHETICS

The visual resources within and around the Basin vary between natural habitat to recreation amenities to urbanized areas. The dominant features of Santa Fe Dam Basin include the vegetation of the San Gabriel River and adjacent upland habitats, lawn and ornamental trees, Santa Fe Lake, and the Dam itself.

Top of Dam Looking West (subject sediment stockpile approx. 1 mile to west, beyond trees)

The San Gabriel Mountains rise rapidly from the valley floor and are a significant part of the viewshed northward from within the Basin. The Dam is the dominant visual feature to the south from all points within the Basin, when not obscured by vegetation. The overall visual quality is of open and expansive surroundings that provide a peaceful respite from the urbanized surroundings. Within the recreation area, picnic areas consist of maintained lawns and ornamental trees. The lake has a gently undulating shoreline and a large sand beach has been installed on the south side of the lake for swimming access.

From the crest of the Dam, urban and residential development may be seen in nearly all directions. State Route 210 is visible from the entire Basin, except when obscured by vegetation. The Dam itself is a long, solid gray feature along the entire south and southwest portion of the

Basin. It is visible throughout the majority of the Basin and limits the view to the south from within the Basin.

Picnic Areas

View from Top of Dam Looking North

3.12 RECREATION RESOURCES

No approved recreation areas are located in the proposed Project Area. A variety of recreation amenities and opportunities are available at the Basin and are described below.

The primary recreation features within the Basin are the extensive picnic and park grounds located generally south of the swimming and fishing lake. All recreation is concentrated in the southeast portion of the Basin, except for the model airplane area located in the spillway on the northwest side of the Basin, and the future recreation amenities to be developed by the Kare Youth League between the Dam and Interstate 605. Other recreation opportunities include hiking the extensive system of trails, camping, and the Nature Center. There are no formal sports fields, although there are several tot lots throughout the park. The only consumptive use approved within the Basin is fishing, which requires a license. Recreation amenities are described in detail below.

Santa Fe Lake This feature is a 70 acre man-made lake, which is the focal point of recreation in the southern portion of the Basin. The lake has an average depth of 6 to 8 feet and water is supplied to the lake by pumped groundwater. The southeastern shore of the lake is protected from erosion by grouted riprap. The lake provides a physical buffer zone between the Nature Area and the park area along the lake's south bank. Swimming, boating, and fishing are the key recreation activities provided. The lake is stocked with bass, trout, and catfish. Electric boats, rowboats, and paddle boats are available for rent at the lake, but motorized boats are prohibited.

Swimming Area/Beach The swimming area has a 5-acre sand beach with shower amenities, five 8-foot high lifeguard towers, nine fire rings, two-sets of posts for sand volleyball events, and a combination first aid station and restroom. A children's sand play area is also provided on the sand beach.

Boat Ramp A boat ramp on the south bank of Santa Fe Lake is 20-foot wide and extends 20 feet into the lake at a slope of 12%. Two fish-cleaning stations with counters and running water are

located near the ramp. Just to the east of the boat ramp is a Wheel Fun Rentals concession that has boats, kayaks, fishing gear, and multi-bike "surreys" available for rent, and food available for purchase. The Life Guard Office and a concrete structure that serves as a garage for lifeguard vehicles are located nearby as well as a small rock building which serves as a U.S. Coast Guard Office. The adjacent parking lot accommodates 105 cars with trailers.

Fishing Pier A fishing pier is located at the east end of the lake. It is constructed of wood, L-shaped and has two fish cleaning stations nearby that have counters and running water. Restrooms are available in close proximity.

ADA Fishing Pier The pier has been provided at the southeastern end of the lake. The 12-foot wide by 40-foot long pier extends into the lake to a depth of 5 feet and is accessed by a path leading from the adjacent parking lot.

Picnic Areas Picnic areas are dispersed throughout the park land adjacent to the lake's south and east banks. Throughout the picnic areas, family picnic units can be found at an approximate density of 3 units per acre. These units consist of unsheltered wood and concrete tables arranged in groupings of three, which is accompanied by one barbecue stand and one waste disposal unit. Drinking fountains are located at regular intervals within the picnic areas. Three 100-person picnic ramadas and two 50-person picnic ramadas are located on the southwestern shore of the lake. Reservations with the County are required to use the areas.

Little Squirt Water Play This area is located along the southwest end of Santa Fe Lake, and is a fenced water play area. Shallow pools with play equipment such as water slides and fountains are available to provide water play areas for younger children.

Fitness Zone This area is located near the administration building and consists of a group of exercise stations designed for strength, flexibility, and endurance. The equipment is metal and has been installed with a ground surface of dirt/decomposed granite. The area has signage that describes how to use the equipment. The fitness zone was developed by the Trust for Public Land.

Group Camping Area This area is used exclusively by local youth organizations such as the Boy Scouts. It is located directly north of the lake and to the east of the Wildlife Management (previously called Mitigation) area. Amenities consist of eight fire rings, five barbecues, drinking fountains and faucets, and parking for 40 cars.

Tent Camping Areas The camping areas consist of two sites totaling approximately 5 acres and are provided for organized youth groups. They are centrally located in the recreation area adjacent to the main road.

Outdoor Performing Arts Center The Performing Arts Center is located at the group picnic area adjacent to parking lot number six. The area is used for impromptu musical events as well as concerts. The existing turf provides seating and a portable stage is brought in on an as-needed basis.

Santa Fe Dam Nature Center and Nature Trail The nature center, constructed of local river stone, and trail are located near the group camping area. Inside the nature center are displays and information that provide a close up look at some of the natural resources in the Basin, such as native plants and animals. In addition, the nature center displays information on the Native Americans that once occupied the area. Located outside of the Nature Center is a plant garden and additional displays featuring pictures and other information about the area. Access is available from the nature center to the trail, which is designed to provide an educational experience for park visitors, including the visually and physically impaired.

Bicycle and Equestrian Trails These trails are located throughout the Basin's recreation and natural areas, and through the groundwater spreading grounds operated by the LACDPW. These trails connect to the San Gabriel River Trail and LARIO Trail upstream and downstream of the Basin. Trails are both paved and unimproved and accommodate pedestrian, non-motorized transport, and horses.

Model Airplane Field A Model Airplane area is located in the Dam spillway and features a long paved runway and a paved pit area. The area is used by model airplane and helicopter enthusiasts and is operated by the Santa Fe Dam Radio Control Modelers.

LARio Park This 45-acre equestrian staging area facility includes a restroom, parking, an entry road, and access to the bicycle trail. The area is located to the north of Foothill Boulevard.

Parks and Recreation Administration Center This is a small building located at the east end of the lake, which houses offices for park staff. The building has restrooms and includes a display area, information booth, and a reception desk to address questions and requests from park visitors.

3.13 PUBLIC HEALTH AND SAFETY

Public health and safety focuses on the potential risks to the public and personnel from hazards that may occur within the Basin, or which may impact public services adjacent to the Basin. Nearby public services, such as law enforcement, fire protection, hospitals and schools, may be designated as respondents to health and safety issues within the Basin, may be impacted by activities in the Basin, or may depend on access through the Basin. Public health and safety measures are intended to protect the public, to maintain public services, to ensure compliance with applicable Federal and state laws, to prevent waste contamination, and to minimize hazards resulting from actions on Corps-managed lands and amenities.

Public health and safety issues within the Basin can arise from recreation uses, plants and wildlife, flooding, hazardous materials, criminal activity, vehicle accidents, use conflicts, intoxication, and a variety of sports and activity-related accidents and injuries. Issues may also arise as a result of largely attended special events held at the Basin. A number of public service agencies provide security or emergency response to the Basin (Table 3.13). Onsite law enforcement at the recreation amenities is currently provided by the Los Angeles County Police which provides protection at county parks. In July 2010 the county police became a unit of the Los Angeles County Sheriff's Department. A substation is located at the nature center at Whittier Narrows approximately 3 miles south. The City of Irwindale provides police response in the surrounding community. Criminal activity has included trespass, fighting, vandalism,

unauthorized dumping, and firearm use. Vehicle entry is controlled and the park closes in the early evening. When large gatherings are held in the Santa Fe Dam Recreation Area, the City of Irwindale Police Department must typically assist in traffic control (City of Irwindale 2008).

Vegetation is sparse in most of the Basin but there are areas that are susceptible to wildfire. Fire Protection and EMT services are provided by the County of Los Angeles Consolidated Fire Department, Station No. 48, on Arrow Highway near the Recreation Area entrance. There is an interagency fire emergency command post at the Dam that is activated during major fires to coordinate wildfire response. Emergency Room and Hospital Services are found at Citrus Valley Medical Center - Queen of the Valley Campus approximately 3.5 miles southeast of the Arrow Highway entrance. There are also emergency lifeguard personnel onsite at the lake.

Emergency vehicles can access the Santa Fe Dam Basin through the main entrance on Arrow Highway or the secondary park entrance at First Street. Paved and unpaved roads within the Basin provide emergency access for most areas. Other than response within the Basin no public services are accessed by passing through the Basin.

Public Services in the Vicinity of the Santa Fe Dam Basin

Service	Name Address	Phone Number	Primary Server
Law Enforcement	Los Angeles County Sheriff 1427 W West Covina Parkway # 127 West Covina, CA 91790	(626) 813-3255	Y
Law Enforcement	Irwindale City Police Department 5050 Irwindale Avenue Irwindale, CA	(626) 962-3601	Y
Fire/EMT	County of Los Angeles Consolidated Fire District, Station No. 48. 15546 Arrow Highway Irwindale, CA 91706	(626) 334-9311	Y
Fire/EMT	West Covina Fire Department 1435 West Puente Avenue West Covina, CA	(626) 338-8800	N
Hospital	Citrus Valley Medical Center Queen of the Valley Campus 1115 South Sunset Avenue West Covina, CA 91790	(626) 962-4011	Y
Hospital	Citrus Valley Medical Center Inter-Community Campus 210 W. San Bernardino Road Covina, CA 91723	(626) 331-7331	N
Hospital	Methodist Hospital 300 West Huntington Drive Arcadia, CA	(626) 898-8000	N

School	Pleasant View Elementary School 14900 Nubia Street Baldwin Park, CA	(626) 962-8512	N/A
School	Margaret Heath Elementary School 14321 School Street Baldwin Park, CA	(626) 338-4013	N/A

The Public Safety Element (Section 6) and Safety Plan of the City of Irwindale 2020 General Plan outlines policies regarding provision of police and fire services in the City and identifies evacuation routes and the locations of emergency shelters. The Public Safety Element also emphasizes the importance of emergency preparedness in reducing the impacts of natural and manmade disasters while recognizing that an effective disaster response program requires the cooperation of many governmental agencies. In the event of an emergency, officials at the fire command post at Santa Fe Dam would issue an evacuation notice (City of Irwindale 2008).

The California Department of Public Health (CDPH) has coordinated a statewide mosquito-borne encephalitis surveillance program since 1969. Though no cases of encephalitis or West Nile Virus (WNV) have been reported in humans in Los Angeles County, the total number of human cases of WNV has risen steadily throughout the state of California since 1969 (CDPH 2010). In Los Angeles County, there have been 32 cases of WNV found in birds, and 49 positive samples in mosquito pool samples (CDPH 2010).

The presence of mosquitoes and other animals that convey disease or viruses is monitored by CDPH, while control of these animals, or vectors, is generally conducted by land owners or certified professionals that may be hired by land owners. At Santa Fe Dam Basin, vector control would be provided by the County if it were determined to be necessary. Mosquitoes require standing water to reproduce and the lakes within the Basin may contribute to a large mosquito population. The decision to use pesticides to control these vectors must be weighed against the impacts of pesticides on Basin's plants, wildlife, and human visitors.

At this time, no known vector control actions take place within Santa Fe Dam Basin. If occurrences of WNV are found in the Basin or vicinity by the ongoing CDPH surveillance program, the County may need to consider putting vector control measures into operation.

Evacuation Plan

During storm and flood events inflow to the Basin can create hazardous conditions related to flowing water, erosion of soil from stream-banks, and inundation of Basin lands. During non-flood periods, the risk of flooding or inundation is relatively minimal allowing for public utilization of Basin lands; the potential rate of rise of flood waters would be slow enough that anyone could readily walk to safety by moving to higher ground. Furthermore, the County would ensure that public use of the Basin during a potential flood condition would be curtailed through erecting roadway barriers and signage, and by having authorities in place to redirect traffic. The County maintains close coordination with law enforcement and the Corps as well as fire, medical, and emergency response agencies in the area.

As a result, there is no formal evacuation plan prepared for Santa Fe Dam Basin. The County determines the response to hazards which occur within the boundaries of the Basin. However, the Reservoir Regulation Section of the Corps has a comprehensive notification protocol that is followed during storm and flood periods, to notify entities that may be affected both within the Basin and downstream of the Dam. The Emergency Action and Notification Subplan for Santa Fe Dam Basin (Corps 2008) provides information needed to coordinate agency responses to earthquake, major flood, or security emergencies.

3.14 SUSTAINABILITY

3.14.1 Environmental Sustainability

Under ideal environmental sustainability conditions an ecosystem would maintain functionality and biodiversity over time. Characteristics of this ideal ecosystem would include a steady (equilibrium) state, the ability to recover from disturbance (resilience), and evolving plant communities (succession). Because the landscape within and around the study area has been altered, ideal ecosystem function does not exist, and achieving it may be no longer possible. However, the premise going forward is that with intervention, some of the critical ecosystem functions at many of the alternative restoration sites can be maintained, enhanced, or even to some extent restored. In all cases, it is assumed that an adaptive management program can be developed and implemented that will help support environmental sustainability. The baseline conditions with respect to functionality and biodiversity vary among the nine alternative sites in the study area.

Sustainability is best achieved through implementation of practices that are known to conserve and protect the resources within the Basin. Within the Basin, the implementation of measures to ensure sustainable use of resources may include developing a green waste and recycling plan. This plan should extend throughout the Basin and include specific measures for accommodating additional waste during special events.

3.14.2 Economic Sustainability

Similar to environmental sustainability, which is based on the ability of an ecosystem to maintain functionality over time, economic sustainability involves creating economic value (in terms of capital and monetary exchanges) from implementing restoration projects in the study area that would also be sustainable over time. For the alternative sites being considered, striving for economic sustainability may involve developing programs and activities that generate revenue for the maintenance and upgrade of amenities. Also, more indirectly, it may involve the development of amenities such as restaurants and lodging in or near the watershed as a result of the interest generated in activities afforded at the project sites. However, developing these types of income amenities would need to be accomplished without exploiting and/or sacrificing environmental protection and restoration. Therefore, in the planning, design, construction, and operation phases, the usage and potential waste of resources in the generation of economic activity would be accounted for, and the use of green technology and materials and renewable resources maximized.

3.14.3 Social Sustainability

Social sustainability is based on the concept that sustainable ecosystem restoration projects in the Santa Fe Dam Basin that maintain and enhance healthy natural environment and involve the development of sustainable (and revenue-generating) on-site and area activities would also result in ongoing high quality of life for area residents. It is also based on the above definition of sustainability whereby future generations should have the same or greater access to these quality of life benefits as the current generation. This concept encompasses human rights and environmental justice. Social sustainability applies not only to the provision of recreation and other social amenities but also to the protection of environmentally sensitive areas in the study area. Future generations deserve the opportunity to have a high quality experience with the natural areas of the watershed while perpetuating our collective responsibility of environmental stewardship. Finally, a healthy ecosystem that treats all people fairly with access to high quality amenities (both built and natural) is the best assurance of sustaining a vibrant economic system.

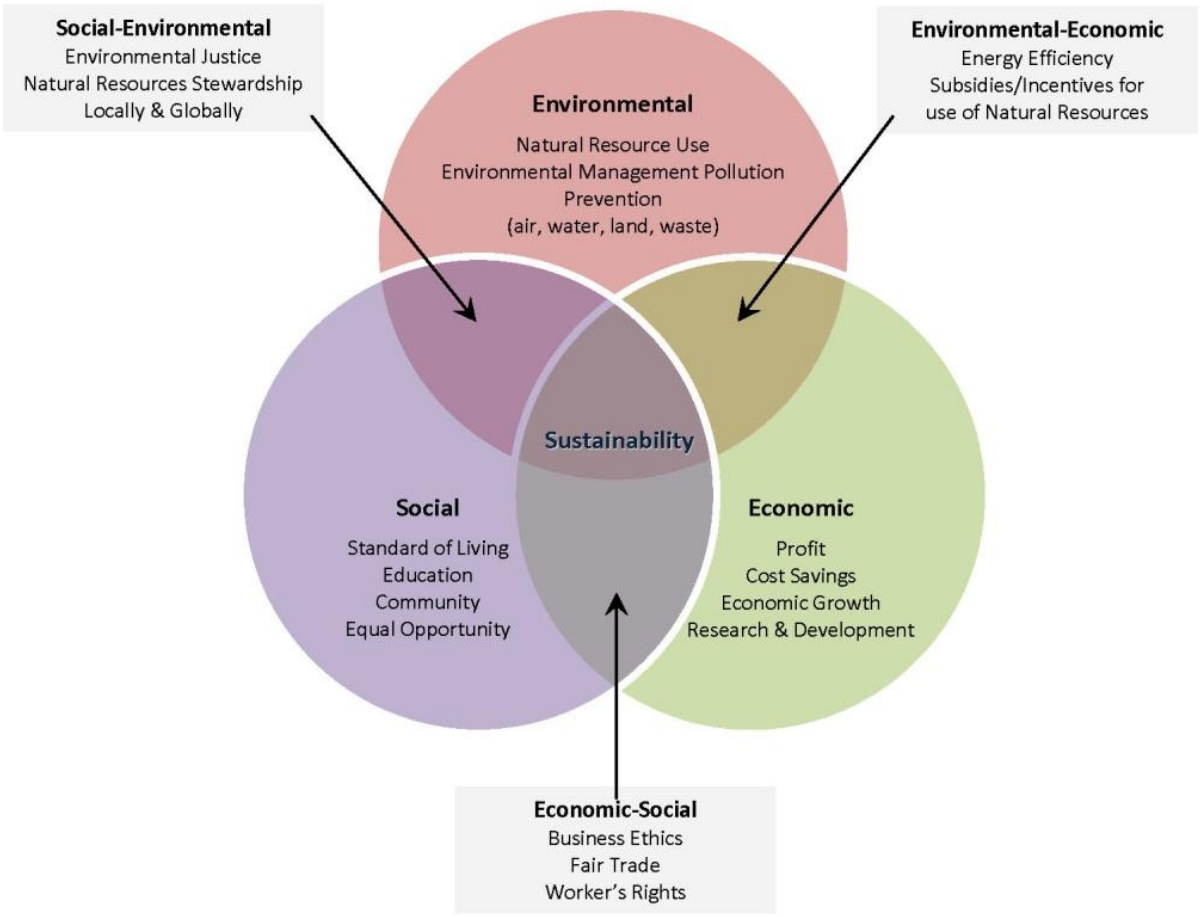


Figure 1. The Three Spheres of Sustainability

4. ENVIRONMENTAL IMPACTS: ENVIRONMENTAL SIGNIFICANCE CRITERIA AND PROJECT ALTERNATIVES IMPACT ASSESSMENT

In this Section, analysis is provided as to Baseline environmental levels' likelihood to be exceeded by the proposed Project's Action and No-Action alternatives which remain in place at this stage in the draft Environmental Assessment. This section also provides contextual basis for determining significance, or lack of significance, of adverse project effects.

To determine the potential for significant impacts, typical significance thresholds are provided which have been identified through application of Federal laws, Corps policy, published research, professional judgment, and in some cases through state and local regulations.

In general, significance thresholds may be exceeded if project features would negatively affect:

Public safety or health,
Wetlands, floodplains, or ecologically sensitive areas,
Important scientific, cultural, or historic resources, and/or
Threatened or endangered species or their habitat.

Project impacts are assessed to determine if they are;

Likely to be highly controversial or its impact analysis highly debated,
Likely to involve highly uncertain impacts or unique or unknown risks,
Likely to pave the way for future actions,
Part of a larger proposal,
Likely to violate any Federal law or requirement imposed to protect the environment.

The alternatives to be examined for significant adverse effects remain the:

No-Action Alternative
Minimal Management Alternative
Optimal Management Alternative

The above two action alternatives involve the use of trucking for sediment hauling; nevertheless, conveyor belt and train car conveyance remain potential options. Although not deeply analyzed in this document due to a current lack of some particular, specific information, it appears that the relevant environmental parameters (local air quality, recreation, and natural resource impacts related to sediment hauling by these means) may be managed at a less-than-significant level of adverse effect. If more specific opportunities along this line of thinking come to fruition, then additional, more specific documentation shall be prepared as necessary.

4.1.1 PHYSICAL LAND RESOURCES

Thresholds of Significance

A significant impact would occur to physical land resources if the proposed project;

Results in substantial adverse effects to people or structures from geologic conditions including expansive soils, liquefaction, earthquakes, landslides, substantial erosion, depletion of groundwater supplies or interference with groundwater recharge;
Results in the direct or indirect destruction of a unique geologic feature;
Results in the loss of availability of a known mineral resource of local, regional, or state value;
Significantly increases wind or water erosion of soils or loss of topsoil, either on or off site;
Significantly alters the physical or chemical quality of sediments or soils; and /or
Substantially alters topography beyond that which would result from natural erosion and deposition; and /or
Triggers or accelerates geologic processes such as erosion or sedimentation brought about by disturbance of landforms.

Potential Sources of Effect

Sedimentation occurs naturally as a result of flood inflows to the Basin. Anthropogenic practices may also exacerbate sedimentation rates. Introduction of heavy machinery, increased foot, horse, bicycle, or vehicular traffic, or changes in water control management (which may alter bank erosion patterns along the San Gabriel River) may all result in erosion or increases in sedimentation.

No Action Alternative

Under the No Action Alternative, existing topography and sedimentation rates would remain unchanged. Major landforms would remain and areas subject to erosion are expected to continue to erode at current rates. Current seismic activity, earthquake fault zones, and areas of liquefaction within the Basin would remain unchanged.

If an Action alternative is not approved, water and sediment management practices would be retained as is and managed through the guidance of the Corps' Santa Fe Water Control Manual. Sediment accumulation and removal would continue to occur as necessary. No additional foot, bicycle, equestrian, or vehicular traffic is anticipated as a result. No additional land clearing or development would be approved that would not be in compliance with the existing Master Plan

Under the No Action alternative, the Project Purpose would not be met.

Optimal Action Alternative

Under the Proposed Action Alternative, existing topography (except for the stockpile area) and sedimentation rates would remain unchanged. Major landforms would remain and areas subject to erosion are expected to continue to erode at current rates. Current seismic activity, earthquake fault zones, and areas of liquefaction within the Basin would remain unchanged. The stockpile itself would be removed and a native-vegetated landscaped restored as quickly as possible which would protect against future wind- and water-based erosion.

Minimal Action Alternative

As above, but conditions would be affected at a lesser rate of both stockpile removal and vegetative restoration.

Determination of Impacts

Based on the significance criteria above, there would be no significant impacts to physical land resources as a result of the implementation of the Action alternatives.

4.1.2 WATER RESOURCES

Thresholds of Significance

A significant impact would occur to water resources if the proposed project:

- Caused substantial interference with groundwater supplies, recharge or direction and rate of groundwater flow;
- Caused a violation of any water quality standard or waste discharge requirement, or otherwise substantially degrades water quality;
- Changed streambed scour or long-term channel degradation that occurs as a result of operation and maintenance would result in buried utilities being exposed to air or flowing water;
- Substantially altered the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial increase in erosion or siltation on or off site;
- Substantially altered the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in a substantial reduction in the quantity of surface water;
- Substantially altered the existing drainage pattern of the site or area, including 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 or provide substantial additional sources of polluted runoff;
- Exposed people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a Dam;
- Increased erosion or sedimentation in relation to existing conditions; and/or
- Released chemicals such as oil and grease into the waters of the United States.

Potential Sources of Effect

Water quality impairments are typically caused by the introduction of pollutants into a water body, either by direct dumping of pollutants into the water, urban runoff during storm events, or urban runoff not associated with a storm event.

Pollutants may be introduced directly through construction activities adjacent to the water body, which could contribute oils and grease from machinery and release sediments into the water body as a result of clearing vegetation or the use of heavy machinery. Direct pollution also

occurs as a result of public dumping of household chemicals or trash into the water body. During storm events, as water makes its way toward a stream or lake, it may pass through heavily urbanized areas, where it collects oils, grease, and gas from roadways, and pesticides, fertilizers, and other chemicals in residential and commercial areas. Non-storm event runoff occurs when residential or commercial activities result in excess water being discharged, such as from watering lawns or washing cars. Urban runoff is generally captured before it reaches the Basin and is not considered a significant contributor to water quality issues.

Water quality impairments may also occur in the form of thermal pollution, resulting from minimal flow or lack of shading from overstory vegetation. Algae blooms or waterfowl kills have not been reported for water bodies within the area, but could potentially occur as a result of high water temperatures that promote pathogen growth. A CWA 303(d) listing could become necessary if the proposed land use classifications resulted in increased water temperatures or other types of pollution.

Groundwater recession occurs on a seasonal basis, as a result of drought, or through artificial pumping. Currently, groundwater is the source of water for Santa Fe Lake. Diminished groundwater levels could affect groundwater dependent riparian vegetation, and in turn diminish habitat quality.

No Action Alternative

Under the No Action Alternative, existing water resources would not be affected. Existing water quality protection programs administered at the state and local levels will continue to address issues as they arise, including those at the Basin. Human use, groundwater use and recharge, and maintenance activities within the Basin are not expected to change as a result of the No Action Alternative.

Optimal Action Alternative

Under this proposed Action Alternative, existing water quality protection programs administered at the state and local levels will continue to address issues as they arise, including those at the Basin.

The major physical changes proposed for implementation at the Basin as a result of the Proposed Action Alternative is that a stockpile would be removed and the area revegetated. This would not introduce sediment or pollutants into the San Gabriel River or Santa Fe Lake. No changes would be made that would result in increased water temperatures that may lead to increased biological activity. Only temporary and spatially-limited human use and maintenance activities within the Basin are expected to change as a result of this plan. Groundwater usage for the lake and groundwater recharge management would not change as a result of the proposed action. There are no significant adverse effects anticipated to result from implementation of the proposed Optimal alternative.

Minimal Action Alternative

Under this proposed Action Alternative, existing water quality protection programs administered at the state and local levels will continue to address issues as they arise, including those at the Basin. As above, a stockpile would be removed and the area revegetated although at a slower rate. This would not introduce sediment or pollutants into the San Gabriel River or Santa Fe Lake. However, the quicker the stockpile is removed and the area revegetated, the sooner that a native plant root system may again help bind the soil surface against future water or wind erosion and also assist in recharging the underlying soil matrix during and after rain events.

Determination of Impacts

The Proposed Action Alternatives would not create significant impacts on water resources although the Optimal alternative would allow the restoration to begin sooner at this location. Also, the sooner the material is removed the sooner the Basin's water allocation pool will have been relieved of the amount of sediment contained in the stockpile.

4.1.3 AIR QUALITY

Thresholds of Significance

There could be significant impacts to air quality if the following were to occur:

- The project was inconsistent with the current approved Air Quality Management Plan;
- The project would result in non-compliance with the Federal General Conformity Rule (40 CFR Parts 6, 51, and 93) Requirements;
- The project would generate emissions of air pollutants that would exceed any SCAQMD regional air quality thresholds;
- The project would exceed 7,000 tons of CO2 ;
- 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 that exceed quantitative thresholds for ozone precursors);
- Expose the public (especially schools, day care centers, hospitals, retirement homes; convalescence amenities, and residences) to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Emissions on an individual day exceed 550 pounds per day for CO, 75 pounds per day for VOC, 100 pounds per day for N0x, 150 pounds per day for S0x, or 150 pounds per day for PM10, the project impacts would be considered significant; and/or
- Emissions on any pollutant exceed 100 tons per year of CO, 100 tons per year of VOC, 100 tons per year of N0x, 100 tons per year of S0x, or 70 tons per year of PM10.

Potential Sources of Effect

Most air pollution results from motor vehicle emissions, particularly in densely populated areas. Other sources include industrial amenities, agricultural areas, and construction zones that create fugitive dust.

Per Section 176(c) of the Clean Air Act Amendments (CAAA) of 1990, the Corps must make a determination of whether the proposed project (i.e., Proposed Action) "conforms" to the State Implementation Plan (SIP). If the total direct and indirect emissions from the proposed project are below the General Conformity Rule *de minimis* emission thresholds, the proposed project is exempt from performing a comprehensive Air Quality Conformity Analysis, and would be considered to be in conformity with the SIP.

Fugitive dust emissions were calculated using methods identified in EPA's AP-42, Compilation of Air Pollutant Emission Factors and SCAQMD's California Environmental Quality Act (CEQA) Air Quality Handbook (SCAQMD 1993). Ozone precursor emissions from on-site restoration activities were calculated using emission factors and methods from the CARB Emission Factors (EMFAC2007) model and SCAQMD CEQA Air Quality Handbook (SCAQMD 1993).

No Action Alternative

Under the No Action Alternative, air quality would be similar to that under the Proposed Action in most respects. Over time, population growth would likely result in an increase in vehicle use and emissions in the area. Local cities are implementing traffic reduction measures and programs to encourage alternate transportation and researching clean fuel alternatives. Local and regional planning agencies are also focusing on land use planning to reduce travel needs. These efforts would reduce future air emissions and are anticipated to be implemented regardless of the approval of the subject Action alternative.

Optimal Action Alternative

Optimal Alternative - Maximum Equipment below Daily SCQMD Threshold Scenario: this scenario evaluated air quality emissions for the maximum number of equipment that could be used without exceeding daily SCAQMD thresholds or the Clean Air Act annual *de minimis* thresholds. Air emissions are shown in Table 1 below.

Table 1: Air Emissions - Maximum Equipment below Daily SCQMD Threshold Scenario

	Qty.	Hrs./Day	ROG	CO	NOX	SOX	PM10	CO2	CH4
5 CY Loader 450 HP			0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093
	8	8	6.62	29.79	28.51	0.15	1.05	15168.53	0.60
Bull dozer 500 HP			0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164
	8	8	11.63	47.94	73.88	0.17	2.87	16951.84	1.05
Dumpster/Tender (Composite)			0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
	32	8	2.35	8.04	14.88	0.02	0.56	1951.85	0.21
Watering Truck (Composite)			0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103
	8	8	7.30	34.46	30.52	0.17	0.91	16644.17	0.66
Daily Emissions Total (lb/day) 2007 Values			27.90	120.23	147.80	0.51	5.38	50716.39	2.52
Daily Emissions Total (lb/day) 2012 Adjusted Values			**18.41**	**79.35**	**97.54**	**0.34**	**3.55**	**33472.82**	**1.66**
SCAQMD daily threshold (lb/day)			75	550	100	150	150		
Annual Emissions Total (tons/year)			**3.22**	**13.89**	**17.07**	**0.06**	**0.62**	**5857.74**	**0.29**
CAA de minimis threshold (ton/year)			10	100	10	100	70		

The subject proposal for the Basin would be expected to result in some air quality impacts, but other than heavy equipment vehicles in the limited stockpile area, would not result in substantively increasing vehicular access to the Basin. Basin parking capacity for recreation, in other areas of the Basin, would not change and even incremental increases in Basin use are not anticipated to result in significant adverse effects on air quality, especially in comparison to ongoing vehicle use in adjacent urbanized areas such as the 605 and 210 Freeways and Arrow Highway. However, the quicker the stockpile is removed and the area revegetated, the sooner that a native plant root system may again help bind the soil surface against future water or wind erosion and also assist in recharging the underlying soil matrix during and after rain events.

No more than minor and largely indirect impacts to air quality are anticipated from the proposed Optimal Action alternative. As above, local planning efforts would reduce future air emissions and are anticipated to be implemented regardless of the approval of the Optimal Action alternative.

- **Mimimal Alternative - Equipment below Daily SCQMD Threshold Scenario:** this scenario evaluated air quality emissions for a minimal level of equipment mobilization that could be used without exceeding daily SCAQMD thresholds or the Clean Air Act annual de minimis thresholds. Air emissions are shown in Table 2 below.

Table 2: Air Emissions - Minimum Equipment Scenario

	Qty.	Hrs./Day	ROG	CO	NOX	SOX	PM10	CO2	CH4
EF 5 CY Loader 450 HP			0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093
	1	8	0.83	3.72	3.56	0.02	0.13	1896.07	0.07
EF Bull dozer 500 HP			0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164
	1	8	1.45	5.99	9.23	0.02	0.36	2118.98	0.13
EF Dumpster/Tender (Composite)			0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
	4	8	0.29	1.00	1.86	0.00	0.07	243.98	0.03
EF Watering Truck (Composite)			0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103

	1	8	0.91	4.31	3.82	0.02	0.11	2080.52	0.08
Daily Emissions Total (lb/day) 2007 Values			3.49	15.03	18.47	0.06	0.67	6339.55	0.31
Daily Emissions Total (lb/day) 2012 Adjusted Values			**2.30**	**9.92**	**12.19**	**0.04**	**0.44**	**4184.10**	**0.21**
SCAQMD daily threshold (lb/day)			75	550	100	150	150		
Annual Emissions Total (tons/year)			**0.40**	**1.74**	**2.13**	**0.01**	**0.08**	**732.22**	**0.04**
CAA de minimis threshold (ton/year)			10	100	10	100	70		

Minimal Action Alternative

Under this proposed Action Alternative, existing air quality protection programs administered at the state and local levels would continue to address issues as they arise, including those at the Basin. A sediment stockpile would be removed but at a slower rate than the proposed Optimal Action alternative.

The present (*Minimal*) action alternative would remove the stockpile at a far lesser rate as the *Optimal*, which is shown (above) to present a *de minimis* impact to air quality.

Determination of Impacts

Based on the significance criteria above, the Optimal (/Proposed Action) Alternative would not create significant impacts on air quality. Similarly, the Minimal Action Alternative would create fewer impacts. Both alternatives presented would produce *de minimis* impacts to air quality in the region.

4.1.4 NOISE

Thresholds of Significance

For this analysis, the proposed project may result in significant impacts on noise quality if:

- Noise levels projected for a Proposed Action did not comply with the relevant Federal, state, and/or local standards or regulations; and/or
- An increase in noise levels above the existing ambient condition as a result of the introduction of a new source of noise.

Although extremely loud noises can cause temporary or permanent damage, the primary environmental impact of noise is annoyance. The objectionable characteristic of noise often refers to its *loudness*. Loudness represents the intensity of the sound wave or the amplitude of the sound wave height (measured in decibels). The degree of impact is hard to assess because of the highly subjective character of individuals' reactions to changes in noise. Empirical studies have shown people begin to notice changes in environmental noise level around five dBA (USEPA, 1974). Thus, average increases in noise levels less than five dBA cannot be definitively considered as producing an adverse impact. For increases in level above five dBA, it is difficult to quantify the impact beyond the obvious: the greater the noise level change, the greater the impact.

Noise impacts on the surrounding community are enforced through City Codes, supported by nuisance complaints and subsequent investigation. The City Code lists maximum allowable noise levels to be used as the baseline for determination of public nuisance on various land uses/zones. The California Occupational Safety and Health Administration (Cal-OSHA) enforces mitigation of noise impacts on worker safety and health, but effectiveness depends on the vigilance of supervisors in seeing that workers use protective gear in high noise environments.

Noise impacts to wildlife are discussed below in section 4.1.3.5 Biological Resources.

Potential Sources of Effect

Common sources of noise include automobile traffic, construction, large events, industrial practices, and recreation uses of the Basin.

No Action Alternative

Federal, state, and county noise laws and ordinances would continue in force. There would be no new noise inputs at the Basin. The adjacent 605 Freeway would continue to be the major generator of noise in the proposed project area.

There are no anticipated significant adverse impacts to the noise condition within the Basin as a result of the No Action Alternative.

Optimal Action Alternative

The use of heavy equipment in Operations areas, on case-by-case bases which include project review, is already anticipated per Corps Basin Operations management activities, alluded to in the Basin Master Plan (2011). In addition, under the Proposed Action, noise issues shall continue to be regulated by local ordinances and state laws, as applicable.

Should the Optimal Action alternative be implemented, this would result in disturbance and the removal of an existing sediment stockpile, including minor development of an adjacent work area, which would increase ambient noise levels in this Operations-designated area of the Basin. While there are no human sensitive receptors to noise in this (Operations, non-Recreational) area of the Basin, and the location is less than ¼ mile from the 605 Freeway, the presence to the south and southeast within approximately ¼ mile of least Bell's vireo nesting activity from past years, should be considered in ultimately choosing and conditioning a viable work plan alternative. In general, areas of vireo activities should be protected from direct work noise impacts during the

biological/nesting season and buffered, if necessary, to avoid human-induced noise levels greater than approximately 60 dB being generated in the birds' active areas.

Because a limited number of heavy equipment vehicles would be used to excavate and remove the stockpile, and because the area is remote from populated areas and below the elevation of the street and above the elevation of the water surface of the San Gabriel River bed, the increase in noise would be less than significant. With a freeway to the east and north and Arrow Highway to the east, traffic noise from these sources is greater than that from the project area, without project. However, noise created during the implementation period would be of greater intensity , if only short-term (approximately days) and would have no significant impact on migratory birds as all work would be performed after 15 September and prior to 15 March.

Minimal Action Alternative:

This action alternative would induce fewer noise effects to the area than would the Optimal action alternative. If the work is not to be done during the nesting season then there would be no effects to listed species.

Determination of Impacts

Based on the significance criteria, the Proposed Action Alternative would not create significant impacts on noise quality. Other proposals for future activities in the Basin would need to be analyzed for potential impacts on noise quality in compliance with the Federal Noise Control Act and state and local laws and regulations.

4.1.5 BIOLOGICAL RESOURCES

Thresholds of Significance

Impacts to biological resources are considered significant if one or more of the following conditions would result from implementation of the selected project alternative:

- 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 (Endangered and threatened species referenced in this threshold are those listed by the USFWS and/or CDFG as threatened or endangered);
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS;
- Substantial adverse effect on Federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means;
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeded the use of native wildlife nursery sites;
- Created a conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

Created a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
Substantial increase in the ambient noise levels for adjoining areas that interfere with breeding behavior of listed species. For the purposes of this impact analysis, "substantial adverse effect" is defined as the loss or harm of a magnitude which, based on current scientific data and knowledge, would 1) substantially diminish population numbers of a species or distribution of a habitat type within the region; or 2) eliminate the functions and values of a biological resource in the region;
Substantial loss of species diversity in natural vegetation and wildlife habitat;
Substantial loss of habitat that is regionally unique designated sensitive;
Loss of breeding areas of listed threatened or endangered species; and/or
Significant disruption of wildlife corridors.

An evaluation of impacts on biological resources must consider the resource and how that resource fits into a regional or ecological context. Impacts are sometimes locally important but not regionally significant; although they may result in an adverse alteration of existing conditions at the project site, they may not substantially diminish, or result in the permanent loss of, that resource on a population-wide or region-wide basis.

Potential Sources of Effect

Possible sources of effect may include 1) changes to the lighting regime, which may affect foraging or breeding of nocturnal creatures, 2) water diversions that may affect the groundwater table or diminish aquatic habitat value, and 3) creating conditions that would increase noise in areas containing sensitive (i.e., nesting, breeding, or fledging) wildlife.

No Action Alternative

With the no action alternative, wildlife diversity and densities would be expected to remain the same or to decrease over time. Any future degradation of habitat due to increases in weedy species or urbanization would give species best adapted to urban environments an advantage over those that require intact native vegetation communities. The result would be for some populations of native species to decline and potentially be eliminated from the Basin, further reducing species diversity.

Under the No Action alternative, activities identified in A4-A9 would not be covered under this EA and would continue to be assessed on an event-by-event basis.

Optimal Action Alternative

Approval of the proposed stockpile removal by truck would result in few changes to biological resources management because this Operations area is already regularly traversed by work vehicles doing either Corps Operations maintenance or involved with the Los Angeles County DPW percolation ponds maintenance; the area is adjacent to the 605 Freeway and is sparsely vegetated with little intact native habitat in the portion of the basin (a terrace) as this area is an

extremely dry, mineral substrate, although some wildlife may cross through this area. Listed species found at the Basin, including the Federally-protected coastal California gnatcatcher and least Bell's vireo, are found at other locations in more eastern and southern areas within Santa Fe Basin as well as in the Drop Structure areas farther upstream to the north within the San Gabriel River corridor.

While the proposal's activities, including noise generation, would be noticeable, the proposal would occur on Operations land where humans have there is little direct contact with wildlife.

Minimal Action Alternative

A less intense sediment removal regime would affect wildlife, including any listed species, to a lesser degree than through the Optimal action regime, described above.

Determination of Impacts

Based on the significance criteria above, no significant adverse impacts are anticipated to biological resources as a result of the approval of the updated Master Plan. Instead, slight improvements to vegetation and associated wildlife assemblages may result.

4.1.6 CULTURAL RESOURCES

Thresholds of Significance

Criteria for the evaluation of effects to National Register properties are found in 36 CFR 800.9, *Criteria of Effect and Adverse Effect*. These include:

- An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of a property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered;
- An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
    - Physical destruction, damage, or alteration of all or part of the property;
    - Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
    - Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
    - Neglect of a property resulting in its deterioration or destruction; and/or
    - Transfer, lease, or sale of the property.
- Effect of an undertaking that would otherwise be found to be adverse may be considered as being not adverse for the purpose of these regulations;
    - When the historic property is of value only for its potential contribution to archeological, historical, or architectural research, and when such value can be

substantially preserved through the conduct of appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines;

- When the undertaking is limited to the rehabilitation of buildings and structures and is conducted in a manner that preserves the historical and architectural value of affected historic property through conformance with the "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings," and/or
- When the undertaking is limited to the transfer, lease, or sale of a historic property, and adequate restrictions or conditions are included to ensure preservation of the property's significant historic features.

Potential Sources of Effect

Natural events and human activities both have the potential to impact cultural resources. Human activities that may affect cultural resources include land clearing, sediment removal, vegetation removal, construction, development, and any other activity that physical alters soils where cultural resources may be present, historic buildings, or structure or traditional cultural properties.

No Action Alternative

Federal protections for cultural resources would continue under the No Action Alternative. For actions that could affect cultural resources on Federal land or actions that are funded, licensed, or permitted by the Federal government, compliance is required with the NHPA and other laws, statutes, and regulations. Consideration of the effects of actions on protected cultural resources would be required, and adverse effects would be resolved. There is potential for undiscovered or unevaluated resources to be present. In the event that cultural resources are discovered in the future, NEPA, NHPA and Corps policy would guide the approach to protection and preservation of the site.

Potential Impacts of the Optimal Action Alternative

Sites of cultural significance within Santa Fe Dam Basin have been noted in previous studies, although the locations and specifics of cultural resources are not made public. The present proposal would not result in significant ground disturbance at this location because the sediment stockpile, which would be removed, was originally placed directly upon the ground surface.

In connection with this Environmental Assessment, a Corps archaeologist is reviewing the proposal and providing guidelines as to the degree to which the proposal is an 'undertaking' under Section 106, and will provide specific work practices as needed to reduce potential adverse impacts to insignificance.

In the event that cultural resources are discovered in the future, NEPA, NHPA and Corps policy would guide the approach to protection and preservation of the site. The potential for discovery or the need to reevaluate methods of any previous inventories would be addressed by the Corps for future actions on a case-by-case basis.

Potential Impacts of the Minimal Action Alternative

The minimal action alternative would similarly have little potential for sub-surface disturbance and in any case, a Corps archaeologist is notified as to the proposal.

Determination of Impacts

The Proposed Action Alternatives would not create significant impacts on cultural resources. Any proposal for future development in the Basin would need to be analyzed for potential impacts cultural resources in compliance with NEPA, NHPA, Corps policy and state and local laws and regulations.

4.17 HAZARDOUS AND TOXIC WASTE MATERIALS

Thresholds of Significance

Impacts associated with the existence of hazardous and toxic materials in the Basin and surrounding region would be considered significant if the proposed action resulted in:

- Soil contamination, including flammable or toxic gases, at levels exceeding federal, State and local hazardous waste limits established by 40 CFR Part 261 and Title 22 CCR 66261.21, 66261.22, 66261.23 and 66261.24;
- Mobilization of contaminants, creating potential pathways of exposure to workers, the public or other sensitive receptors to contaminated or hazardous materials and such exposure exceeds permissible exposure levels set by the California OSHA in CCR Title B, and Federal OSHA in Title 29 CFR Part 1910;
- Exposure of the general public to hazardous situations through the transport, use, storage or disposal of hazardous materials; and/or
- Creation of a significant hazard to the public or environment through release of hazardous materials into the environment.

Potential Sources of Effect

Hazardous or toxic materials such as oils, grease, fertilizers, or pesticides may be introduced into the Basin as a result of the use of these compounds for construction, development, agricultural or vegetation management. An increase of exposure to hazardous or toxic compounds already existing within the Basin may result from spillage or leakage of containment units if they are inadvertently damaged through Basin activities. Environmental Commitments PS 1-4, below, outlines management practices designed to minimize any chance for hazardous materials exposure.

No Action Alternative

If the proposal is not implemented, the baseline conditions regarding the use of hazardous and toxic materials and the generation, storage, and disposal of hazardous and toxic wastes in the Basin would continue as at present into the foreseeable future. Sites requiring additional investigation may continue to pose threats to the human environment if they are not investigated,

and information regarding existing hazardous materials conditions would not be integrated into the Master Plan under the No Action Alternative.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this plan for sediment removal could increase the levels of hazardous or toxic substances (diesel fuel) in the Basin. Corps policy guides the management of and response to spills of oils, grease, and other compounds that may be introduced into the Basin as a result of typical maintenance procedures. There is anticipated to be no significant adverse effect from hazardous materials due to undertaking the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative

As above, Corps policy guides the management of and response to spills of oils, grease, and other compounds that may be introduced into the Basin as a result of typical maintenance procedures. This action alternative could potentially result in impacts due to hazardous materials, but Best Management Practices limit the likelihood of significant adverse impacts.

Determination of Impacts

The Proposed Action Alternatives would not create any significant impacts on hazardous and toxic materials through contamination or human exposure. However, any proposal for future development in the Basin would need to be analyzed for potential impacts to hazardous and toxic materials in compliance with Federal laws, Corps policy and state and local laws and regulations.

4.1.8 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Thresholds of Significance

Impact on socioeconomics and Environmental Justice would be considered significant if the following were to occur:

- Impacts to a sector of the economy, productivity, competition, prices, or jobs; impacts on the welfare of minority or low income populations;
- The impact of project induced population changes on the availability of public services;
- Impacts on the fiscal and physical ability of the local governmental agencies to meet the needs of the public following the project related changes in the local population;
- A substantial long-term decrease in local employment due to direct loss of jobs or an adverse effect on the local economy that results in an indirect long-term loss of jobs;
- A shortage of temporary housing during project construction caused by construction workers seeking local accommodations that prevents normal users from being able to obtain temporary housing in the area (temporary housing would include motels, hotels, campgrounds, RV parks, dormitories, and similar lodging);
- Disproportionately high and adverse impacts on minorities, low income residents, or children.
- A substantial population growth in an area was induced by the project; and/or
- Substantial numbers of existing housing or people were displaced.

Potential Sources of Effect

An example of a disproportionate effect on a significant population might be the use of an economically repressed neighborhood for the development of a facility that contributes significant health hazards to the surrounding community. This would unfairly place the pressure of health hazards on a portion of the population that is less readily able to handle the additional pressures.

No Action Alternative

Failure to implement the Action Alternative/s would not affect existing socioeconomic compositions of the Basin's market area. However, socioeconomics and environmental justice should be reviewed with respect to potential future development within the Basin.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this plan for sediment removal would not likely affect local socioeconomic and related conditions. There is anticipated to be no significant adverse effect to environmental justice as a result of hiring a Contractor to remove the sediment mound from Santa Fe Basin.

Potential Impacts of the Minimal Action Alternative
As above, there is likely to be no significant adverse effect to local socioeconomic conditions as a result of the sediment removal as proposed.

Determination of Impacts

The Proposed Action Alternative would not create significant impacts to local area socioeconomics and environmental justice issues, but continued reevaluation of population statistics would be required to ensure ongoing environmental justice for minority populations. Any proposal for future development in the Basin would need to be analyzed for potential impacts in compliance with Federal laws, Corps policy, state and local laws, and regulations.

4.1.9 TRAFFIC AND TRANSPORTATION

Thresholds of Significance

An impact would be considered significant on transportation and traffic if:

- A major roadway (arterial or collector classification) would be closed to through traffic as a result of the Proposed Action's activities and there would be no suitable alternative route available;
- The Proposed Action's activities would restrict access to or from adjacent land uses and there would be no suitable alternative access;
- An increase in vehicle trips associated with additional commuter and truck trips would result in an unacceptable reduction in level of service of local jurisdictions on roadways in the

vicinity of the Proposed Action or would result in safety problems for vehicular traffic, transit operations, or trains;

An increase in roadway wear in the vicinity of the work zone would occur as a result of heavy truck or equipment movements, resulting in noticeable deterioration of roadway surfaces;

The Proposed Action and its location would conflict with planned transportation improvements in the area;

Project activities or operation of the project would result in safety problems for vehicular traffic, transit operations, or trains; and/or

An increase in vehicle trips associated with additional commuter and truck trips would result in an unacceptable reduction in the level of service standards of local jurisdictions in the project vicinity.

Potential Sources of Effect

Expanded sports amenities, new roads, or new public venues could contribute to increased traffic, decreased accessibility to the Basin or its neighboring communities, reduction in the availability of transportation modes, or a reduction in the connectivity of the multi-modal transportation network within the Basin.

No Action Alternative

If the proposal were not implemented, Baseline conditions regarding traffic and transportation in and around the Basin would continue as at present into the foreseeable future. Within the Basin and park area, existing roads, trails, and access points currently available for pedestrians, cyclists, and equestrians, as well as parking areas and trail systems, are unlikely to change in the future under without-project conditions. Existing signage and educational opportunities such as nature interpretive trails that are already in place in the Basin would likely be maintained in their current condition. Similarly, the existing equestrian, bicycle, and pedestrian linkages between the Basin and surrounding trails would likely be maintained in their current state under future without-project conditions. These approved recreation areas are separate from the proposed Work Areas.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this plan for sediment removal would increase levels of truck traffic both within and immediately outside Santa Fe Basin. It is likely the proposal would result in approximately 20,000 round-trip haul truck trips during the course of its completion, which has not yet been scheduled. This traffic will be regulated per local traffic guidelines. The project is scoped to entail a minimal increase of traffic on local city streets because the project's objective is to remove the sediment materials to the nearest possible disposal sites, preferably by utilizing local freeways, as well as using other means besides trucks, if possible, as presented earlier (Section 2.2).

A current multi-modal transportation system, primarily confined to areas leased for recreation, within the Basin would not be anticipated to change. Bicyclists and equestrians would need to

be informed as to work area boundaries although the proposed work areas do not overlay approved recreation areas. With the exception of the Contractor providing a Detour plan to cover Safety considerations in areas where informal recreation users may choose to be, the Proposed Action alternative(s) would not create obstacles or cause diversions to the existing transportation system.

There is anticipated to be no significant adverse effect to traffic and transportation due to undertaking the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative

As above, but with this less-intense effort to remove materials, the process would take longer, to the degree of additional months required to remove the entire stockpile. Thus, traffic and transportation would be affected to a greater temporal extent, as a result of the proposal. However, local ordinances would continue to govern appropriate levels of traffic as a result of the project, and a Safety communications plan shall be developed by the Contractor to inform informal recreationists as to the boundaries of work areas. There is anticipated to be no significant adverse effect to traffic and transportation due to undertaking the proposed sediment removal.

Determination of Impacts

Based on the significance thresholds, the Proposed Action would not create significant impacts to Basin and local area traffic, transportation routes, access, or parking. Any proposal for development in the future would require a separate impact analysis to determine significance.

4.1.10 UTILITIES

Thresholds of Significance

The proposed project would have a significant impact on utilities if it would:

- Require a substantial modification to existing utility facilities that would have an adverse environmental impact on sensitive resources or land uses; and/or
- Create a hazardous situation that could not be mitigated

Potential Sources of Effect

Development, construction, modification, or alteration of any features within the Basin may result in the inadvertent severing or damage of utility infrastructure. These actions may also overload utility capacity, causing damage or outages. Increasing demand or overburdening of utilities as a result of increased human use of an area may also cause significant impacts.

No Action Alternative

If the proposal were not implemented, the baseline conditions regarding existing utilities in the Basin would continue as at present into the foreseeable future.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this sediment removal plan are not anticipated to affect existing utilities in the Basin due to the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative
As above; the issue of utilities is not seen as being affected by this proposal.

Utility condition, use, and energy consumption are not anticipated to change under either Action Alternative. Maintenance and operation of the utilities would continue to be the responsibility of the utility owner or County.

Determination of Impacts

The proposed Action Alternatives would not create significant adverse impacts to utilities as a result of the Stockpile Management Plan.

4.1.11 AESTHETICS

Thresholds of Significance

The factors considered in determining impacts on esthetic resources typically include:

- Direct, permanent changes to important existing scenic characteristics of a landscape that are enjoyed by a large number of viewers;
- Impairment of or obstruction of views from public gathering places of scenic resources;
- Viewing distance and degree to which the Proposed Action would dominate the view of the observer;
- Resulting contrast of amenities related to the Proposed Action with existing visual resources; and/or
- The level of public interest in the existing landscape characteristics and concern over potential changes.

Potential Sources of Effect

Long-range views may be adversely impacted by introduction of obstructions, such as tree plantings or construction developments. Local or short-range views may be negatively impacted through natural occurrences such as wildfire, flood, storm or establishment of non-native invasive plant species, as well as human uses such as vegetation clearing, construction, large events, or overuse that results in worn amenities or trash dumping. Replacement of open or green space with developed areas would reduce the availability of esthetic resources, while increases in lighting would diminish esthetic value with increased light pollution.

No Action Alternative

If the proposal were not implemented, the baseline aesthetics conditions in the Basin would continue as at present into the foreseeable future and conditions would not become significantly adverse.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this plan for sediment removal would temporarily affect the aesthetic experience for viewers of the subject part (western portion) of the Santa Fe Basin due to the increased activity of haul trucks which would be conducting multiple round-trip excursions during sediment removal activities. But, there is anticipated to be no significant adverse effect to aesthetics due to undertaking the proposed sediment removal, as the Basin was constructed as a location where active maintenance activities have occurred many times over its history and because in general, this area of the basin is viewed from a distance, and only briefly, by individuals moving in traffic along the 605 Freeway. No permanent impacts to aesthetics are envisioned by removal of the sediment mound, and in fact, new vistas for drive-by viewers will be made available once the material is removed.

Potential Impacts of the Minimal Action Alternative
As above; no significant adverse effects to aesthetics are likely to occur with removal of the sediment stockpile.

Determination of Impacts

The viewshed from the top of Santa Fe Dam includes the San Gabriel Valley and San Gabriel Mountains. Within the Basin, local views are the lake and landscaped parks, and relatively natural riparian and upland habitats. Views are not anticipated to be impacted by the Action Alternative, which does not propose any development or construction within the Basin.

The proposed Action alternatives would not create significant impacts to Basin esthetic quality. Any proposal for development in the future would require a separate impact analysis to determine significance however.

4.1.12 RECREATION

Thresholds of Significance

Impacts to recreation may be significant if the Action Alternative reduces the availability or quality of a variety of existing recreation opportunities to a broad socioeconomic spectrum of the existing market area. Impacts may include those that have an effect on high intensity or low intensity recreation, and may impact support amenities associated with the recreation areas, such as restrooms, shelters, drinking fountains, barbeques or picnic tables. Impacts on recreation and the use of recreation amenities could be considered significant if the following were to occur:

The creation of significant disruption to access of recreation amenities or areas;
Construction or operational activities substantially conflict with recreation uses;

The construction of support amenities associated with the recreation areas; and/or
Impacts to recreation support amenities as a result of the action.

Potential Sources of Effect

Measures that may reduce the availability of recreation amenities to a broad socioeconomic spectrum may include the restriction of universal accessibility at existing amenities, or introduction of costs or fees associated with use of the facility that may restrict those without sufficient financial resources. Recreation opportunities may also be reduced through the inactivation of recreation amenities for the purpose of rejuvenation or as a result of budget constraints. The quality of amenities may be diminished if greater numbers of people begin to visit the Basin.

No Action Alternative

If the proposal were not implemented, baseline conditions regarding recreation in the Basin would continue as at present into the foreseeable future.

Potential Impacts of the Optimal Action Alternative

There would be no immediate change to existing recreation amenities as a result of the proposed sediment management activities. No new recreation amenities are in proposal and no existing recreation amenities are proposed for alteration or modification. No new fees or expenses are proposed for implementation within the Basin. No additional amenities or parking areas are proposed for development, which might increase the use of the area beyond its current capacity.

Activities proposed under this sediment removal plan could increase impacts to unauthorized or informal recreation in the Basin, although designated, approved recreation areas are not part of the proposed Action area or project footprint. It will be necessary for all proposed activities to be coordinated among Basin agency staff, to include Los Angeles County Department of Public Works, Los Angeles Department of Parks and Recreation, and Corps Operations and other staff all of whom manage activities in their respective areas at Santa Fe Basin.

With successful outreach to recreationists and to agency staff, there is anticipated to be no significant adverse effect to recreation due to undertaking the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative

As above; with sufficient outreach and communication to potentially affected parties, during all proposed project activities, there should be no significant adverse impacts as a result of this action alternative.

Determination of Impacts

The Proposed Action Alternation would not create any significant impacts to Basin recreation resources. Any proposal for development in the future would require a separate impact analysis to determine significance.

4.1.13 PUBLIC HEALTH AND SAFETY

Thresholds of Significance

An alternative would have a significant adverse impact on public health and safety if it would:

- Increase exposure of people or structures to flooding hazards;
- Create conditions that would present potential dangers to the public or attract the public to a potentially hazardous area (e.g., attractive nuisances);
- Create wildlife habitat in a manner and amount that resulted in a substantial increase in the potential for aircraft collisions;
- Exceed currently limited herbicide use restrictions;
- Create mosquito breeding conditions in an amount that would require increased levels of mosquito abatement programs to maintain mosquito populations at pre project levels;
- Impact public services or emergency services;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered public services, need for new or physically altered public services, the construction of which could cause significant environmental impacts;
- Require additional fire protection or law enforcement staff and/or equipment to maintain an acceptable level of service;
- Substantially increase emergency service response times by fire and law enforcement;
- Require substantial changes to the daily schedule or calendar of a school, a major reorganization of students or classrooms, or other temporary or permanent disturbance to the school's activities; and/or
- Create unsafe or overcrowded conditions at schools.

Potential Sources of Effect

Hazards may be introduced into the Basin in the form of hazardous or toxic waste, the creation of isolated or unlighted areas that would facilitate increased criminal activity, or a reduction in security patrols or security stations. Allowing human use in areas where natural or man-made hazards occur may compromise public safety. These areas may include those with known poisonous plants or dangerous animals, where steep or unstable slopes occur, or adjacent to water hazards or Dam infrastructure. Public services may be compromised if fire, medical, or police vehicles or personnel are obstructed from entering the Basin as a result of closures or inaccessibility to the entire Basin area. Services may be compromised if planned events result in a larger number of service calls than the fire, medical, or police personnel are able to attend to.

No Action Alternative

The Corps would continue to protect the public health and safety of users and identify public services that may be impacted by activities in the Basin or may impact the Basin under the No Action alternative.

Were the proposal not implemented, the baseline conditions regarding Health and Safety in the basin would continue as at present into the foreseeable future. Sites requiring additional investigation may continue to pose threats to the human environment if they are not investigated under the No Action Alternative.

Note that the sediment mound is an attractive nuisance to unauthorized recreationists, and also that its presence reduces the volume available for flood storage volume at Santa Fe Basin. Further, the No Action Alternative ignores and does not meet the Corps' project Purpose and Need in removing the extra, mineral volume.

Potential Impacts of the Optimal Action Alternative

No new amenities are proposed that would 1) create isolated or unlighted areas, 2) would result in a significant increase in Basin visitors that might increase the need for public safety services, or 3) create unsafe conditions or increase exposure to unsafe conditions. Removal of the sediment mound would improve Safety conditions in the Basin and immediately downstream, in case of a design, 100-year flood whereby presence of the sediment mound would interfere with sufficient water storage, for flood risk management at the Basin as it was designed to accomplish.

Activities proposed under this plan for sediment removal could increase the levels of hazard in the Basin by the proposal's inherent industrial nature, but a Safety Plan as required would significantly reduce risks. There is anticipated to be no significant adverse effect to Health and Safety due to undertaking the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative

As above; flood risk management at Santa Fe Basin directs the Corps to remove the sediment mound for purposes of human Health and Safety, including for structural stability of the Dam itself.

It is not expected that the proposal and its reliance upon a fully developed Safety Plan would lead to new, significant adverse risk, to Health and Safety conditions, if properly implemented.

Determination of Impacts

The Proposed Action Alternative would not create significant impacts to safety and public services within, or in relation to, the Basin. Any future development proposal would require a separate impact analysis to determine significance.

4.1.14 SUSTAINABILITY

Thresholds of Significance

An alternative would have a significant adverse impact on sustainability if it resulted in:

Economic, ecological, or social changes in the use, visitation, or management of the Basin;

Inability of ecosystems to maintain functionality and retain current levels of abundance and biodiversity over time;
Inability to ensure future generations have the same or greater access to social resources as the current generation; and/or
Inability of an area to retain its value, both in terms of capital and monetary exchanges over time.

Potential Sources of Effect

Ecological diversity and abundance may be impacted through reduction in size of protected natural areas within the Basin or the reduction in quality of natural areas. Quality of natural areas may be affected by the degradation of air quality, water quality, noise levels, soil condition, and vegetation condition. Social sustainability was previously addressed in the Recreation section and the Socioeconomics and Environmental Justice section above. Economic sustainability may be negatively impacted if financial viability were compromised as a result of the proposed action plan.

No Action Alternative

The sediment removal project as proposed provides a recommended approach to solving a particular limited but important problem and is based on ecological, social, and economically sustainable principles.

If the proposal were not implemented, the baseline sustainability conditions in the Basin would continue as at present into the foreseeable future. However, the Basin becomes less sustainable as a flood risk management facility, the longer that additional sediment accumulates within itself.

Potential Impacts of the Optimal Action Alternative

Activities proposed under this sediment removal plan would increase Basin sustainability by allowing reallocation of sediment volume, to better align with the intent of the Santa Fe Dam's Water Control Manual. There is anticipated to be no significant adverse effect to sustainability due to implementing the proposed sediment removal.

Potential Impacts of the Minimal Action Alternative

As above: the Basin's sustainability is determined by correct management of its various physical and biological aspects.

Determination of Impacts

The Proposed Action Alternative would not create any significant impacts to Basin energy, environmental, or economic sustainability. Any proposal for development in the future would require a separate impact analysis to comply with NEPA and other applicable laws and regulations.

4.2 CUMULATIVE IMPACTS

A cumulative impact is an "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR § 1508.7). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time (40 CFR § 1508.7). CEQ's guidance for considering cumulative effects states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ 1997).

4.2.1 Past Actions

Santa Fe Dam Basin was constructed in the San Gabriel Valley, an area of continually increasing urbanization that has significantly altered the natural environment. The communities surrounding the Basin have become densely urbanized over the past century, marked by extensive automobile traffic, highly developed industrial and residential areas, numerous noise sources, and dense population. The construction of the Dam and development within the Basin has also contributed to cumulative environmental impacts to the area. Following construction, ongoing operation and maintenance of the Basin and its recreation amenities has continued to impact environmental conditions. As a result, the San Gabriel River and its floodplain have become highly altered, and along with surrounding urbanization, have contributed to the overall physical alteration of the San Gabriel Valley.

Cumulative impacts of development within and around the Basin have adversely affected water quality and quantity, air quality, and noise levels. Dense urbanization has adversely affected the presence of culturally valuable resources, as well as the native fish, wildlife and vegetative habitats that were historically present in the Basin. Development both within and around the Basin has increased the possibility for introduction of pollutants, toxic materials, wastes, and non-native plant and animal species to the Basin. The overall quality of the natural environment at the Basin has diminished significantly since industrialization and urbanization of Los Angeles County.

The construction of Santa Fe Dam, completed in 1948 necessitated clearing the land that is now the Dam embankment and spillway. In contrast to the land surrounding the Basin which has undergone an intense urbanization process, during the same time, the native plant communities and wildlife habitats have re-established and the Basin is now an increasingly rare piece of naturalized open space in a highly urbanized region. In comparison with the surrounding area, sources of noise and air pollution within the Basin have remained fewer and of lower intensity, natural habitats have matured since construction of the Dam, and within the Basin traffic is much less than the surrounding area. The Basin's esthetic value is higher due its natural character and environmental quality that has evolved over time while urbanization outside the Basin has destroyed much of the natural environment. The Basin offers a retreat from densely urbanized surroundings and provides the community a place to enjoy nature and recreate safely.

4.2.2 Present Conditions

By tailoring management of the Santa Fe Dam Basin sediment allowance to its current conditions and needs, the approval of the proposed project will continue to temper some of the effects of urbanization and may improve some of them to a small degree. The land use

classification planning set forth in the updated (2011) Master Plan allows for maintenance of Operations areas to be kept up to date, as proposed in original design documents. Overall, the natural and human environments of the Basin will continue to be safeguarded and no significant cumulative adverse impacts are expected.

4.2.3 Future Actions

As the updated Master Plan does not contain recommendations for specific projects to be constructed or implemented, there are no potential future impacts to assess in combination with impacts of other ongoing or future projects in the nearby vicinity.

Aside from the primary use of the Basin for flood risk management, the only other authorization for development within a Federal water resources development project is for recreation amenities. If it is determined by the local community that additional recreation amenities are desired, the proposed action would be subject to project-specific NEPA documentation, which would further ensure that any significant cumulative adverse impacts are assessed.

By limiting the potential for development in the Basin, it is anticipated that the approval of the updated Master Plan would contribute to reducing the overall cumulative adverse impacts of the continually developing areas surrounding Santa Fe Dam Basin into the future. Maintaining the area as a naturalized open space area and recreation oasis would continue to mitigate the impacts of increasing traffic, noise, air and light pollution, loss of natural habitats and open space, to minority populations that may grow within the surrounding communities that result from crowding associated with greater infill of surrounding urban areas over time.

The proposed land use classification plan which includes management of Operations areas would not impact the natural resources found within the Basin into the future and may provide protection and encourage restoration of these resources, both through continued enforcement of existing laws and regulations, and in continuing to control the acreage of land that may be developed for sediment storage activities in the future.

5.0 ENVIRONMENTAL COMMITMENTS

This section describes the environmental commitments that would be implemented as part of the Proposed Action for the vegetation management activities. Due to the limited nature of disturbance, the activities of the Proposed Action are not expected to cause any long term adverse effects. The environmental commitments discussed below would decrease the severity of any short-term or temporary project related activities on resources. The environmental commitments described in this section are not legally binding and do not constitute a mitigation requirement that would be binding or enforceable against the United States.

GEOLOGY AND SOILS

SG-1 Work would not occur during heavy storms.
SG-2 Work would cease when wind speed exceeds 25 miles per hour.

WATER RESOURCES

WR-1 A Storm Water Pollution Prevention Plan (SWPPP) would be prepared to reduce the potential for accidental release of fuels, pesticides, and other materials. A Notice of Intent (NOI) shall be sent to the California Water Resources Board in Sacramento. The SWPPP would be reviewed and approved by Corps team members, including ERB and Engineering. This plan will include the designation of refueling locations, emergency response procedures, and definitions of reporting requirements for any spill that occurs. Equipment for immediate cleanup will be kept at the staging area for immediate use.

WR-2 When a storm event is forecast within 48 hours, work shall stop and all equipment and vehicles moved to an elevation greater than the 100-year event.

AIR QUALITY

AQ-1 A Fugitive Dust Emission Control Plan would be developed, provided by the Contractor, and implemented. Measures to be incorporated into the plan would include, but not be limited to the following:

- Water the unpaved road access and other disturbed areas of the active sites at least two times per day, or apply CARB certified soil binders.
- Install wheel washers/cleaners or wash the wheels of trucks and other heavy equipment where vehicles exit the site or unpaved access roads.
- Increase the frequency of watering, or implement other additional fugitive dust mitigation measures, of all disturbed fugitive dust emission sources when wind speeds (as instantaneous wind gusts) exceed 25 miles per hour.

AQ-2 Diesel engine idle time would be restricted to no more than ten minutes duration.

AQ-3 All on-road construction vehicles working within California would meet all applicable California on-road emission standards and would be licensed in the State of California. This does not apply to construction worker personal vehicles.

AQ-4 Activities and operations on unpaved roads areas would be minimized to the extent feasible during high wind events to minimize fugitive dust.

NOISE

N-1 Activities would comply with local ordinances. Any nighttime or weekend activities would be coordinated with local ordinances and would require a noise permit.

N-2 All equipment used would be muffled and maintained in good operating condition. All internal combustion engine driven equipment would be fitted with well maintained mufflers in accordance with manufacturer's recommendations.

NR-3 If, in the opinion of the Corps site Biologist that, any work would impinge upon least Bell's vireo territories, then such work shall be performed after September 15 and prior to March 15 to avoid impacting the listed species' bird nesting season.

BIOLOGICAL RESOURCES

BR-1 The Corps would retain a qualified biologist on site to supervise ground disturbing activities and oversee all aspects of monitoring that pertain to biological resource protection.
BR-2 Work would occur only during daylight hours to minimize disturbances to any urban wildlife species that move primarily at night.
BR-3 Unpaved areas would be watered as needed (or other measures implemented) to control dust on a continual basis.
BR-4 If, in the opinion of the Corps site Biologist that, any work would impinge upon least Bell's vireo territories, then such construction work would occur outside the migratory bird nesting/breeding season between March 15 and September 15. A project biologist with authority to stop work would be present on site during breeding-season work to ensure the limits of the operation do not encroach into suitable vireo habitat or within 250 ft (76.2 m) of a nesting vireo.
BR-5 No harassing, killing, collecting, or intentionally harming any species of wildlife, fish or vertebrate would occur.

CULTURAL RESOURCES

CR-1 In the event that previously unknown cultural resources are uncovered, work in the immediate area would cease until satisfaction of the requirements in 36 CFR 800.13.

AESTHETICS AND RECREATION

AR-1 Work and staging areas would be kept orderly and free of trash and debris.
AR-2 A storage area for collection and storage of recyclable and green waste materials would be kept within the work area. All trash and debris would be removed from the work area at the end of each day
AR-3 All recreation uses would be detoured from the area for safety of workers and the public.
AR-4 Signs would be posted prohibiting trespassing via any approved work areas.

TRAFFIC

TT-1 Public streets would be kept operational, particularly during the morning and evening peak hours of traffic.
TT-2 There would be coordination with the local transportation department of the applicable jurisdiction to implement standard construction traffic controls, such as the posting of notices, signage, detours, flag men, and other appropriate measures as needed.

SAFETY

PS-1 A Safety Plan, in accordance with applicable Corps standards, would be developed by Contractor and implemented during all phases of the proposed work to ensure safety of all personnel.
PS-2 Construction and maintenance fluids (oils, antifreeze, fuels) would be stored in closed containers (no open buckets or pans) and disposed of promptly and properly away from the channel to prevent contamination of the site.

PS-3 Refueling of heavy equipment machinery would be accomplished on site least 50 feet away from flowing water and with the use of liners. Best Management Practices (BMPs) would be used and include such actions as having hazardous waste clean-up equipment and spill kits staged on-site, using the appropriate size and gauge drip pans and absorbent diapers. Spill kits shall be in close proximity to the fuel truck and mower in case of fuel or other fluid spills. Contractor equipment would be checked for leaks prior to operation and repaired as necessary.

PS-4 Fluids released because of spills, equipment failure (broken hose, punctured tank) or refueling would be immediately controlled, contained, and cleaned-up per Federal and regulations. All contaminated materials would be disposed of promptly and properly to prevent contamination of the site. Someone would be present to monitor refueling activities to ensure that spillage from overfilling, nozzle removal, or other action does not occur.

6.0 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

6.1 National Environmental Policy Act Compliance

The National Environmental Policy Act (NEPA) is the nation's primary charter for protection of the environment. It establishes national environmental policy which provides a framework for Federal agencies to minimize environmental damage and requires Federal agencies to evaluate the potential environmental impacts of their proposed actions. Under NEPA, a Federal agency must prepare an Environmental Assessment (EA) describing the environmental effects of any proposed action having a significant impact on the environment. The EA must identify measures necessary to avoid or minimize adverse impacts resulting from the proposed action or determine if further analysis is required and prepare an Environmental Impact Statement (EIS).

This EA has been prepared in accordance with the requirements of NEPA of 1969 (42 USC 43221, as amended) and the CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), dated 1 July 1988.

6.2 U.S. Fish and Wildlife Coordination Act (16 U.S.C. 661)

This Act requires Federal agencies to coordinate with the US Fish and Wildlife Service (USFWS) and local and state agencies when any stream or body of water is proposed to be modified. The intent is to give fish and wildlife conservation equal consideration with other purposes of water resources development projects. The Preferred Alternative would not involve modification of a body of water, therefore, formal coordination and preparation of a Coordination Act Report is not required.

6.3 Endangered Species Act of 1973 (Public Law 93-205), as amended.

The Endangered Species Act protects threatened and endangered species, as listed by the USFWS, from unauthorized take, and directs Federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines Federal agency

responsibilities for consultation with the USFWS. There would be no impacts to endangered species as there are none known to be in the area and all activity would be limited to the period between September 15 and March 15, which is outside of the nesting/breeding time period. The Preferred Alternative is in compliance with the Act.

6.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the taking or harming of any migratory bird, its eggs, nests, or young without an appropriate Federal permit. Almost all native birds are covered by this Act and any bird listed in wildlife treaties between the United States and several countries, including Great Britain, Mexican States, Japan, and countries once part of the former Soviet Socialist Republics. A "migratory bird" includes the living bird, any parts of the bird, or its nests or eggs. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requires harvesting to be limited to levels that prevent over-utilization. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take. Disturbance of the nest of a migratory bird requires a permit issued by the USFWS pursuant to Title 50 of the CFR. The Preferred Alternative would not affect or impact migratory bird breeding or nesting activity.

6.5 Clean Water Act

Section 404 (b) prohibits the discharge of dredged or fill materials into the waters of the United States, including wetlands, except as permitted under separate regulations by the USEPA. The Corps does not require or issue itself permits.

The Action Alteratives do not involve discharge of dredged or fill material in waters of the US and a 404 (b)(1) permit is not required. The Preferred Alternative is in compliance with the Act.

6.6 Clean Air Act of 1970 (42 U.S.C. 7401 et seq.)

The 1977 Amendments to the Clean Air Act enacted legislation to control seven toxic air pollutants. EPA adopted National Emission Standards for Hazardous Air Pollutants, which have been designed to control Hazardous Air Pollutants emissions to prevent adverse health effects in humans.

The 1990 Amendments to the Clean Air Act determine the attainment and maintenance of National Ambient Air Quality Standards (NAAQS) (Title I), motor vehicles and reformulation (Title II), hazardous air pollutants (Title III), acid deposition (Title IV), operating permits (Titles V), stratospheric ozone protection (Title VI), and enforcement (Title VII).

Under Section 176(c) of the Clean Air Act Amendments (CAAA) of 1990, the Lead Agency is required to make a determination of whether the Proposed Action "conforms" to the State Implementation Plan (SIP). Conformity is defined in Section 176(c) of the CAAA as compliance with the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. However, if the total direct and indirect emissions from the Proposed Action are below the General Conformity Rule "*de*

minimis" emission thresholds, the Proposed Action would be exempt from performing a comprehensive Air Quality Conformity Analysis and would be considered to be in conformity with the SIP.

The Preferred Alternative would not have a significant impact on air quality. The total emissions of each criteria pollutant either meets or is below *de minimis* levels as prescribed in 40 CFR 93.153(b). The Alternative would not considered to be regionally significant. Because the use of heavy equipment would be limited to approximately 21 days, emissions are expected to be minimal and below the *de minimis* thresholds and thus would not violate National or state standards. As a result, the Preferred Alternative would have no long-term impacts on local or regional air quality.

6.7 Noise Control Act of 1972, as amended (42 USC 4901 et seq.)

Noise generated by any activity, which may affect human health or welfare on Federal, state, county, local, or private lands must comply with noise limits specified in the Noise Control Act. The Corps has determined that through environmental commitments to minimize impacts during construction, the Preferred Alternative is in compliance with the Act.

6.8 National Historic Preservation Act (Public Law 89-665; 16 U.S.C. 470-470m, as amended, 16 U.S.C. 460b, 470l-470n)

The Preferred Alterative does not impact cultural resources. However, if any cultural resources are discovered during maintenance activities, they will need to be evaluated for their eligibility for inclusion in the National Register of Historic Places pursuant to 36 CFR 800.13(b) Post-review discoveries.

6.9 Archeological Resources Protection Act, as amended

The Act requires that when cultural resources may be impacted when working on Federal lands or there is another Federal connection. The Act allows for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed. The Preferred Alternative would not impact cultural resources.

6.10 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provided EPA with the authority to identify and clean up contaminated hazardous waste sites. Individual states may implement hazardous waste programs under the Resource Conservation and Recovery Act (RCRA) with EPA approval. California has not yet received this EPA approval; instead, the California Hazardous Waste Control Law (HWCL) is administered by the California Environmental Protection Agency (CALEPA) to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the EPA approves the California program, both the state and Federal laws apply in California. CERCLA also contains enforcement provisions for the identification of liable or responsible parties. It details the legal claims that

arise under the statute, and provides guidance on settlements with the EPA. Section 120 of this Act addresses hazardous waste cleanups at Federal facilities, and requires the creation of a Federal Agency Hazardous Waste Compliance Docket, which lists facilities that have the potential for hazardous waste problems. For the Proposed Action, conformance with CERCLA would only be engaged if unforeseen waste was found or was abandoned on site in the future.

6.11 Executive Order 11988 Floodplain Management

Signed May 24, 1977, this order requires that Federal government agencies, in carrying out their responsibilities, provide leadership and take action to restore and preserve the natural and beneficial values served by floodplains. Before proposing, conducting, supporting, or allowing an action in the floodplain, each agency is to determine if planned activities will affect the floodplain and evaluate the potential effects of the intended action on the floodplain's functions. There are no direct or indirect impacts to the flood plain that are likely to induce development in the flood plain or outside it. An eight-step process, provided in ER 1165-2-26, para. 8, General Procedures (1984), was followed in developing the current proposal.

6.12 Executive Order 11990: Protection of Wetlands

Under Executive Order 1199, Federal agencies shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies responsibilities. Each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental, and other pertinent factors. Each agency shall also provide opportunity for early public review of any plans or proposals for new construction in wetlands. Wetlands are not a factor in this project.

6.13 Executive Order 12088, Federal Compliance with Pollution Control Standards

The head of each Executive agency is responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under control of the agency. Enactment of environmental commitments to minimize pollution impacts during implementation of the Proposed Action (see Section 4.0) would meet the standards of this Executive Order.

6.14 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Executive Order 12898 was signed on February 11, 1994. This order was directed Federal agencies "[to] make achieving environmental justice part of its mission by identifying and addressing... disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the [U.S.]..." No minority or low-income communities would be disproportionately affected by implementation of the Preferred Alternative. The Preferred Alternative would be in compliance with the Executive Order. (See Section 5.14)

6.15 Executive Order 13112 Invasive Species

Federal agencies are to expand and coordinate efforts to prevent the introduction and spread of invasive plant species and to minimize the economic, ecological, and human health impacts that invasive species may cause. Eradication of invasive species (non-native) within the Proposed Action area as an element of the Preferred Alternative would meet the intent of this Executive Order.

7. LIST OF PREPARERS includes staff from Engineering and Asset Management Divisions, including Melvin Meneses, Jon Sweeten, Kim Moon, and Mindy Grupe; and Carvel Bass, respectively. Consulted contributors also include staff from Los Angeles County Department of Public Works and Los Angeles County Parks and Recreation, as well as City Engineers from Cities of Duarte and Irwindale, and staff from the South Coast Air Quality Management District.

8. PUBLIC COMMENTS AND RECOMMENDATION:

The analysis in this Environmental Assessment indicates that the proposal should not result in significant adverse effects to the human environment and that an Environmental Impact Statement may therefore not be required. Comments will be received from the public and at that time it shall be determined as to whether a Finding of No Significant Impact (/FONSI) may be prepared.

Conclusion:

[ ] EIS **[ ] FONSI**

EA Prepared By: _____

Ecologist, Asset Management Division Date

Reviewed By: _____

Karen M. Kennedy, Chief Date
Civil Works Branch, Asset Management Division