SMP-30 Revised Use Permit
Sunol Valley Aggregate Quarry Project

Draft Environmental Impact Report

SCH No. 2011102051

Prepared for:

County of Alameda
Planning Department
224 W. Winton Avenue, Suite 111
Hayward, Ca 94544

April, 2012

LAMPHIER - GREGORY
URBAN PLANNING, ENVIRONMENTAL ANALYSIS & PROJECT MANAGEMENT

Notice of Availability of a Draft Environmental Impact Report/ Notice of Public Hearings on the Sunol Valley Aggregate Quarry Revised Surface Mining Permit Project Sunol Valley, Alameda County

Notice is hereby given that the County of Alameda is making available for public review and comment a Draft Environmental Impact Report (DEIR) prepared for the proposed Sunol Valley Aggregate Quarry Revised Surface Mining Permit-30 (SMP-30) within a portion of unincorporated Alameda County, California. As the local land use authority, Alameda County authorizes mining activities on unincorporated lands through the issuance of Surface Mining Permits pursuant to Alameda County Code of Ordinances, Title 6: Health and Safety, Section 6.80: Surface Mining and Reclamation. The Sunol Valley Aggregate Quarry currently operates under such a County Surface Mining Permit (SMP-30), approved by Alameda County in 1992. The current SMP-30 permit authorizes mining of sand and gravel at this quarry through June 1, 2021 or upon completion of reclamation, whichever occurs first. The Project applicant, Oliver de Silva, Inc., proposes to amend the current SMP-30 permit to expand the overall production potential of the quarry by increasing the area under permit by approximately 58 acres and deepening the depth of excavation, extend the expiration date of the mining permit to 30 years after approval of the revised permit, and add additional ancillary uses at the site including an asphalt batch plant and a concrete plant.

An Environmental Impact Report (EIR), which is a written document that discusses the potential environmental effects of the project and feasible mitigation measures to reduce those effects to less-than-significant levels, is proposed for certification by the County pursuant to the California Environmental Quality Act (CEQA) and State and County CEQA Guidelines. Possible environmental impacts of this project include impacts upon or related to land use plans and policies, aesthetics, air quality, climate change, biological resources, geology and soils, hazardous materials, hydrology and water quality, noise, and transportation.

Responsible and trustee agencies and those who have already expressed an interest in this matter will automatically receive a copy of the Draft EIR; for other interested persons, copies of the Draft EIR may be requested free of charge from the Alameda County Planning Department at the address and telephone number given below.

The 45-day review period for the Draft EIR is from April 2, 2012 to May 17, 2012. During this period, comments may be submitted to the Alameda County Planning Department at the address given below, in either writing or by e-mail, or comments may be made during the public hearing, the date and location of which is described below.

A public hearing where all interested members of the public may attend and be heard will be held on **May 16, 2012, beginning at 6:30 p.m. at the Sunol Glen Elementary School** at 11601 Main Street in Sunol, California. This hearing will be for acceptance of public comments on the Draft EIR. No decision regarding the project or certification of the EIR will be made at this meeting.

Copies of the Draft EIR in electronic or bound form may be obtained by mail or in person from:

Mr. Bruce Jensen, Senior Planner
Alameda County Community Development Agency
224 W. Winton Avenue, Suite 110
Hayward, CA, 94544

or requested via e-mail with subject line "Revised SMP-30 EIR", to:

bruce.jensen@acgov.org

The Draft EIR will also be made available through the County's Internet site at:

http://www.acgov.org/cda/planning/landuseprojects/currentprojects.htm

A copy of the document may also be viewed at:
Fremont Main Library
2400 Stevenson Blvd
Fremont, CA 94538, and at:

City of Pleasanton Library
400 Old Bernal Avenue
Pleasanton, CA 94566

Comments on the Draft EIR should be submitted to Mr. Bruce Jensen at the County Community Development Agency address or e-mail address provided above. Comments on the Draft EIR must be received no later than **5:00 p.m. on May 17, 2012**. If you challenge the proposed certification of the EIR and approval of the Project in court, you may be limited to raising only those issues you or someone else raised at a public hearing, or in written or e-mail correspondence delivered to County Staff at or prior to a public hearing.

Responses to all comments made on the Draft EIR will be prepared and presented in a Final EIR for this project. The Final EIR will be made available for review from May 25 through June 4, 2012. The Alameda County Planning Commission will consider certification of the EIR and consider a decision on the proposed project at a public hearing to be held on **Monday, June 4, 2012 at 6:00 p.m.** at the Alameda County Public Hearing Room located at 224 West Winton Avenue in Hayward, CA. All persons interested in the matter may appear and be heard at this hearing. The County encourages broad participation in the EIR process.

SMP-30 REVISED USE PERMIT DRAFT EIR

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Appendices

(Technical Appendices are included on a CD disk included in the back cover of the Draft EIR document)

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Appendix B: Responses to Notice of Preparation

Appendix C: Air Quality Technical Data and Modeling Results

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United States Department of the Interior, Fish & Wildlife Service Species List

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Introduction

Purpose of the EIR

In compliance with the California Environmental Quality Act (CEQA), this Draft Environmental Impact Report (EIR) is a public information document that identifies and evaluates the environmental consequences of the proposed Revised SMP-30 Surface Mining permit as proposed by Oliver de Silva, Inc. (ODS) the current leaseholder/operator of the Sunol Valley Aggregate Quarry. This EIR is designed to inform County staff, the Planning Commission, the County Board of Supervisors, other interested agencies, and the general public of:

- the proposed Project and the potential environmental consequences of the Project,
- mitigation measures recommended to lessen or avoid significant adverse impacts, and
- a reasonable range of feasible alternatives to the Project.

The information contained in the EIR will be reviewed and considered by public agencies prior to making a decision to approve, reject, or modify the proposed Project. The County of Alameda (County) is the lead agency for environmental review of the proposed Project.

Proposed Project

Site

The approximately 381-acre Project site is located at 6527 Calaveras Road, approximately one mile south of I-680 in the Sunol Valley portion of unincorporated southern Alameda County (see **Figure 1-1**). The site is bounded by San Antonio Creek to the north, Alameda Creek to the west and Calaveras Road frontage to the east. To the immediate north across San Antonio Creek and to the immediate west across Alameda Creek is the Lehigh-Hanson Quarry. The site is included within two separate Alameda County Assessor's parcels; portions of APN 096-0080-008 and APN 096-0375-011-05.

The Project site consists of a currently active quarry operating on 323 acres, and a proposed expansion area of approximately 58 acres along the southeast boundary of the current quarry (see **Figure 1-2**).

Existing Context

The currently active quarry at the site, known as the Sunol Valley Aggregate Quarry, is an active sand and gravel mining operation comprised of active excavation areas, maintenance and operations buildings, silt/holding basins, processing facilities and other outdoor equipment and materials storage areas. The existing plant at the quarry site is actively sorting and producing various aggregate materials, and the material product is being hauled to various locations throughout the Bay Area.

Figure 1-1
Regional Location

Source: GoogleMaps, aerial photo October, 2011

Figure 1-2
Project Site Location

Aerial Source: October 2011

The Project site is located within a portion of the San Francisco Public Utilities Commission's (SFPUC) Alameda Watershed lands. These SFPUC-owned lands include approximately 36,800 acres of the 47,000 acre watershed that is tributary to San Antonio and Calaveras Reservoirs, as well as lands which drain into Alameda Creek. The Sunol Valley Aggregate Quarry site has been leased to several quarry operators and used for sand and gravel extraction for more than 50 years.

The current quarry activities at the Project site are a permitted use pursuant to County Surface Mining Permit 30 (SMP-30), which was approved by Alameda County in 1992. This current permit authorizes the mining of sand and gravel within 323 acres of the Project site to a depth of up to 140 feet. Quarrying operations are permitted through June 1, 2021 or upon completion of reclamation, whichever occurs first.

In 2010, the SFPUC executed a quarry lease agreement with Oliver de Silva, Inc. (ODS), the Project applicant. The lease includes the currently active quarry site of 323 acres permitted under Alameda County SMP-30 and an additional approximately 58-acre area along the southeast boundary of the current SMP-30 site. As the new leaseholder/operator of the Sunol Valley Aggregate Quarry, ODS has now applied to Alameda County for a Revised SMP-30 mining permit (i.e., the Project).

Project Description

Overview

Although resources are available and the site could support additional long-term production of construction aggregates under its existing permit (SMP-30) through 2021, the adjacent 58-acre parcel has become available, providing opportunity to increase aggregate reserves and to expand the quarry basin, ultimately to be used for water storage.

The overall objectives of the proposed Project (Revised SMP-30) are to:

- expand the overall production potential of the quarry by increasing the area under permit by approximately 58 acres and deepening the depth of excavation;
- to extend the expiration date of the mining permit to 30 years after approval of the modification; and
- to add additional ancillary uses at the site including an asphalt batch plant and a concrete plant.

Proposed Quarry and Plant Operations

Raw material (sand and aggregate resource) extraction activity, crushing and sorting at the Project site will generally continue in the same manner as occurs today, as more fully described in Chapter 3: Project Description. However, the Revised SMP-30 permit (the Project) proposes to deepen the permitted excavation depth from 140 below ground surface, to at least 225 feet below ground surface and potentially to a maximum depth of 400 feet below ground surface. Under current SMP-30 permit conditions the quarry is estimated to have approximately 12 million tons of remaining yield. With the 58 additional surface acres and an increased depth, sand and gravel production from the quarry could increase up to approximately 60 million tons of saleable aggregate.

Currently, all sand and gravel materials produced from the quarry are hauled to separate locations for use in construction projects and/or used in the production of Portland cement concrete and asphalt. The proposed Project includes plans for adding an on-site asphalt concrete plant and a ready-mix concrete plant at the Project site.

The proposed new asphalt batch plant will use aggregate materials directly from the quarry operations, mix them with asphalt cement, and heat the mix in the batch plant for production of asphalt. The asphalt would be hauled to various construction sites throughout the region via truck. It is estimated that the asphalt batch plant may produce up to 1.0 million tons of hot-mix asphalt per year, including recycled asphalt products.

The proposed new concrete plant will use aggregate materials directly from the quarry and mix them with water from the on-site water supply as well as with Portland cement and other chemicals for production of Ready-mix concrete. The concrete can be custom-made at the batch plant to suit different construction application needs, and then delivered to the construction site in truck mixers. It is estimated that the concrete batch plant may produce up to 250,000 cubic yards of mixed concrete per year.

The future annual yield of construction aggregate, asphalt and concrete produced at the Project site will continue to be highly dependent upon market demand for these products by the construction industry. However, with the changes proposed under the Project it is possible that the quarry may increase its annual volume of extracted materials from its regularly recurring peak production of approximately 1.1 million tons per year, to nearly 3 million tons per year (up to 1 million tons to be used in the production of asphalt, up to 0.5 million tons to be used in the production of up to 250,000 cubic yards of concrete, and up to 1.5 million tons of saleable raw aggregate).

Project Phasing

Phase I

Upon approval of the Project, the following activities would occur under Phase I operations:

- Certain existing water transmission lines and overhead power lines traversing the site will be relocated to an alignment parallel to Calaveras Road in order to fully and safely access the expanded quarry pit.
- A soil/bentonite slurry cutoff wall will be installed along the northerly portion of Alameda Creek, and another slurry cutoff wall installed along a portion of San Antonio Creek to prevent creek in-flow into the quarry pit and basins.
- The current quarry pit (plus the 58-acre expansion site) will be excavated to a minimum depth of 225 feet, with a potential maximum depth of 400 feet. Side slopes would be maintained at a 2:1 horizontal to vertical ratio.
- Plant operations such as washing, crushing and sorting of sand and aggregates will continue at the existing plant site, but certain outdated or under-efficient plant equipment may be replaced with modernized, movable sand and aggregate processing facilities. This newer equipment (which can/likely will be replaced under authority of the current SMP-30 permit) would enable mining of the entire site as proposed.
- The existing plant site will be expanded to accommodate the proposed asphalt and concrete batch plants, as well as ancillary structures such as a Quality Control lab, an additional small office and truck scales. On-site circulation throughout the plant will be improved to better accommodate truck circulation.
- Ingress into the site will be maintained at the existing driveway off of Calaveras Road. Egress may continue from the existing driveway, but a new "south gate" exit may be installed in Phase I, further south along Calaveras Road, as an exit-only. With the new south gate, the existing driveway would become an entrance-only.

Phase II

Once the existing quarry pit (and the 58-acre expansion area) has been excavated to its full depth, Phase II of the Project will be initiated, including the following:

- Material wastes (or fines) that are generated during the washing, crushing and sorting of sand and aggregates of sand and aggregates in Phase I will have been stored on site. These fines will be

replaced back into the south end of the quarry pit as engineered fill, creating a bench within the quarry with a surface elevation of approximately 50 feet below ground surface.

- All of the Phase I plant equipment (the washers, crushers, sorters, the asphalt and concrete batch plants, and the weigh station, office and scales) will be relocated onto this new bench within the old quarry pit.
- Once the equipment has been moved, the north end of the quarry pit will be expanded so that the former plant site can be excavated.
- Ingress and egress to the Phase II (long-term) plant site would be from the new "south gate" installed during Phase I.

Phase III - Reclamation

The proposed Project includes updating the currently approved SMP-30 Reclamation Plan to incorporate current reclamation standards pursuant to state law. The proposed updated Reclamation Plan will include the following:

- Ultimate reclamation efforts will allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded quarry pit is expected to result in approximately 23,000 acre feet of water storage at completion. Additional storage could be provided by mining deeper than 225 feet, as may be feasible.
- Native plants will be planted along Calaveras Road to minimize visual impacts. Species to be used in revegetation are proposed to be commercial erosion control species that have a demonstrated high rate of success on surfaces created from processed fines. Species may be modified for consistency with the Sunol Valley Restoration Plan.
- The stream banks along reaches of Alameda Creek and San Antonio Creek adjacent to/fronting the Project site will be re-vegetated.
- Future public access trails through the Project area, as may be desired by the East Bay Regional Park District, will be accommodated. Trails may be accommodated during Phase I and/or Phase II operations if found to be feasible and practical.

Conservation Plan

Subject to Project approval by Alameda County and lease approvals by the SFPUC, the following conservation measures are proposed to be implemented to enhance habitat for special status species in the vicinity of the Project site.

- Both banks of Alameda Creek and both banks of San Antonio Creek adjacent to the Project site will be restored with native vegetation, thus contributing to the SFPUC's efforts toward restoration of a more natural stream function that is compatible with and enhances habitat quality in these stream reaches.
- The Project applicant will contribute funds toward restoration planning for the reach of Alameda Creek in the Sunol Valley; will contribute funds toward a study of the geomorphology of Alameda Creek; will financially support a Sunol Valley Restoration Plan (a separate planning and restoration effort initiated by the SFPUC to include streambed repair, grade stabilization, riparian re-vegetation, migratory fish passage, and fish habitat enhancement of the Alameda Creek); and financially supporting Alameda County Flood Control and Water Conservation District (ACFC&WCD) projects intended to help restore steelhead trout to Alameda Creek.

Environmental Review Process

Initiating the Environmental Review Process

Subsequent to receiving the application for the Revised SMP-30 (the Project), Alameda County Planning staff determined that the proposed Project was subject to CEQA, and decided at the outset that an EIR would be required for the environmental review.

EIR Scope

The County of Alameda circulated a Notice of Preparation (NOP), which included an Initial Study Checklist that indicated those topic areas which would require evaluation in the EIR (see **Appendix A**). The NOP was published on October 25, 2011 and the public comment period for commenting on the scope of the Draft EIR lasted through November 25, 2011. The NOP was sent to property owners within 500 feet of the Project site, trustee agencies, organizations and interested individuals and to the State Clearinghouse.

A public scoping session was held in the nearby community of Sunol at the Sunol Glen Elementary School on November 15, 2011.

All comments received by the County at the scoping session and in writing or via e-mail on the NOP were taken into account during the preparation of the EIR. The written comments received are included in **Appendix B**.

The following environmental topics are addressed in this EIR:

- Chapter 5: Aesthetics
- Chapter 6: Air Quality
- Chapter 7: Biological Resources
- Chapter 8: Geology/Soils
- Chapter 9: Greenhouse Gas Emissions
- Chapter 10: Hazards/Hazardous Materials
- Chapter 11: Hydrology/Water Quality
- Chapter 12: Land Use and Planning Policy
- Chapter 13: Noise
- Chapter 14: Transportation/Traffic

Report Organization

The EIR is organized into the following chapters:

Chapter 1: Introduction

This chapter discusses the overall EIR purpose; provides a summary of the proposed Project; describes the EIR scope; and summarizes the organization of the EIR.

Chapter 2: Executive Summary

This chapter provides a summary of the Project and a summary of the significant environmental impacts that would result from implementation of the proposed Project, and describes Conditions of Approval and mitigation measures recommended to avoid or reduce significant impacts.

Chapter 3: Project Description

This chapter provides a description of the Project's objectives, the Project site and context, and a detailed description of the proposed Project and its required local (County) approval process.

Chapter 4: Methodologies and Assumptions

This chapter describes key methodologies and assumptions used in the EIR analysis, including definitions of existing conditions versus baseline conditions, descriptions of the increment of net new changes at the site attributable to the Project, and assumptions regarding other cumulative development and methodologies used to define cumulative scenarios.

Chapters 5 through 14

These chapters address each of the environmental topics of this EIR. Each chapter includes a description of the existing physical setting, the applicable regulatory setting (including applicable County conditions of approval from the 1992 SMP-30 permit); thresholds of significance; potential environmental impacts and their level of significance; mitigation measures recommended when necessary to mitigate identified impacts; and resulting level of significance following implementation of mitigation measures. Cumulative impacts are also discussed in each technical topic section.

Chapter 15 – Alternatives

This chapter provides a comparative evaluation of three alternatives to the proposed Project. The three alternatives include:

- the CEQA-mandated No Project alternative,
- a quarry expansion only, no new processing equipment alternative (i.e., no on-site asphalt or concrete batch plant), and
- a reduced quarry throughput alternative.

Chapter 16 – CEQA-Required Assessment Conclusions

This chapter provides the required analysis of growth-inducing impacts; significant irreversible changes; effects found not to be significant; and significant unavoidable impacts.

Chapter 17 – Report Preparation

This chapter identifies the preparers of the EIR, references used, and the persons and organizations contacted.

Appendices

The appendices contain the NOP and written comments submitted on the NOP, as well as other technical studies and reports relied upon and prepared for the EIR.

Public Review

This Draft EIR is available for public review and comment during the 45-day period identified on the Notice of Availability/Notice of Completion of a Draft EIR (NoA/NoC) accompanying this document. This Draft EIR and all supporting technical documents and the reference documents are available for public review at the Alameda County Community Development Agency, Planning Department located at 224 W. Winton Avenue, Suite 110, Hayward, CA 94544. During the 45-day public comment period, written comments on the Draft EIR may be submitted to the Community Development Agency at the following address:

Attn.: Mr. Bruce Jensen, Senior Planner
Alameda County Community Development Agency
224 W. Winton Avenue, Suite 110
Hayward, CA, 94544

E-mail: bruce.jensen@acgov.org

Oral comments on the Draft EIR are welcome and may be stated at a public hearing, which shall be held as indicated on the NoA/NoC.

Following the public review and comment period, responses to all written and oral comments received on the environmental analysis in this Draft EIR will be responded to. The responses and any other revisions to the Draft EIR will be prepared as a Response to Comments document. The Draft EIR and its appendices, together with the Response to Comments document will constitute the Final EIR for the proposed Project.

Use of the EIR

Pursuant to CEQA, this is a public information document for use by governmental agencies and the general public. The information contained in this Draft EIR is subject to review and consideration by the County of Alameda as lead agency, the SFPUC, and any other responsible agencies prior to the County's decision to approve, reject or modify the proposed Project.

The Alameda County Planning Commission must ultimately certify that it has reviewed and considered the information in the EIR and that the EIR has been completed in conformity with the requirements of CEQA before making any decision on the proposed Project.

Certification of the EIR does not constitute approval of the Project.

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Executive Summary

Background

The approximately 381-acre Project site is located at 6527 Calaveras Road, approximately one mile south of I-680 (Scotts Corner) in the Sunol Valley portion of unincorporated southern Alameda County. Approximately 323 acres of the Project site (nearly 85%) is a currently active quarry operating under Alameda County Surface Mining Permit (SMP-30) which was approved by Alameda County in 1992 and which authorizes the mining of sand and gravel at the site.

The Project site is owned by the San Francisco Public Utilities Commission and has been leased to several quarry operators for more than 50 years. San Francisco also leases other SFPUC properties immediate adjacent to the Project site for quarrying at the Lehigh-Hansen Aggregate Quarry (SMP-24, -32 and -33). Both of these existing quarry sites have been designated by the Mining and Geology Board as being within a "Regionally Significant Construction Aggregate Resource Area".

The current lease holder is Oliver de Silva, Inc. (ODS, also the Project applicant), who executed their lease with the City and County of San Francisco in May of 2010. This lease includes the currently active quarry site of 323 acres permitted under Alameda County SMP-30, and an additional approximately 58-acre area along the southeast boundary of the current SMP-30 site. As the new leaseholder/operator of the Sunol Valley Aggregate Quarry, ODS has now applied to Alameda County for a Revised SMP-30 mining permit (i.e., the Project) as further described below.

Project Description

Project Overview

The Project represents continuation and expansion of the existing quarry and processing operations at the Project site. The Project would also expand the overall production potential of the quarry by increasing the area under permit by approximately 58 acres and deepening the depth of excavation to at least 225 feet below ground surface (bgs), and to a maximum 400 feet bgs. It would extend the expiration date of the mining permit to 30 years after approval of the modification, and it would add additional ancillary uses at the site, including an asphalt batch plant and a concrete plant. The Project would generally consist of three phases, as described below.

Phase I

Upon approval of the Project, certain existing water transmission lines and overhead power lines traversing the site would be relocated to an alignment parallel to Calaveras Road in order to fully and safely access the expanded quarry pit. A soil/bentonite slurry cutoff wall would be installed along the northerly portion of Alameda Creek, and another slurry cutoff wall installed along a portion of San Antonio Creek to prevent creek in-flow into the quarry pit and basins. The current quarry pit (pus the 58-acre expansion site) would be excavated to a minimum depth of 225 feet, with a potential maximum depth of 400 feet. Side slopes would be maintained at a 2:1 horizontal to vertical ratio.

Plant operations such as washing, crushing and sorting of sand and aggregates would continue at the existing plant site, but the existing plant site would be expanded to accommodate the proposed asphalt and concrete batch plants, as well as ancillary structures such as a quality control lab, an additional small office and truck scales. On-site circulation throughout the plant will be improved to better accommodate truck circulation.

Ingress into the site would be maintained at the existing driveway off of Calaveras Road. Egress may continue from the existing driveway, but a new "south gate" exit may be installed in Phase I, further south along Calaveras Road, as an exit-only. With the new south gate, the existing driveway would become an entrance-only.

Phase II

Once the existing quarry pit (and the 58-acre expansion area) has been excavated to its full depth, Phase II of the Project would be initiated. Material wastes (or fines) that are generated during the washing, crushing and sorting of sand and aggregates of sand and aggregates in Phase I would be replaced back into the south end of the quarry pit as engineered fill, creating a bench within the quarry with a surface elevation of approximately 50 feet below ground surface. All of the Phase I plant equipment (the washers, crushers, sorters, the asphalt and concrete batch plants, and the weigh station, office and scales) would be relocated onto this new bench within the old quarry pit.

Once the equipment has been moved, the north end of the quarry pit would be expanded so that the former plant site can be excavated.

Ingress and egress to the Phase II (long-term) plant site would be from the new "south gate" installed during Phase I.

Phase III - Reclamation

The Project includes updating the currently effective Reclamation Plan to incorporate current reclamation standards (per CCR §3700, et seq.). In addition the Reclamation Plan for the current Project would allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded and deepened quarry pit is expected to result in approximately 23,000 acre feet of water storage at completion (additional storage could be provided by mining deeper than 225 feet, as may be feasible). The Reclamation Plan also provides for planting native plants to minimize visual impacts from Calaveras Road, and re-vegetation of stream banks along reaches of Alameda Creek and San Antonio Creek fronting the Project site.

Sand and Gravel Production

Under the current SMP-30 permit conditions, the quarry yield is estimated to have approximately 12 million tons remaining. The proposed modifications would maximize sand and gravel production from the quarry up to approximately 60 million tons of saleable aggregate. The projected future annual yield of construction aggregate produced at the quarry would continue to be highly dependent upon market demand for these products by the construction industry. Recent quarry operations pursuant to SMP-30 have produced a fairly wide range of annual yield, reflecting the cycles of the construction industry. However as indicated above, during the years between 1999 and 2001 the quarry operated at a recurring peak of approximately 1.1 million tons of aggregate produced per year. It is reasonable to assume that future year production of saleable aggregate will again reach this peak.

The Project also proposes to add a new asphalt batch plant and a new concrete plant at the site. With these added components, it is possible that the quarry may increase its annual volume of extracted materials to nearly 3 million tons per year, used in the production of the following:

- up to 1 million tons to be used in the production of asphalt

- up to 0.5 million tons to be used in the production of up to 250,000 cubic yards of concrete, and
- the difference (1.5 million tons assuming the maximum asphalt and concrete production rates above) as saleable aggregate.

Conservation Plan

Subject to Project approval by Alameda County and lease approvals by the SFPUC, the Project applicant has entered into a private agreement (the Conservation Plan for Sunol Quarry SMP-30 Site) to undertake conservation measures and enhance habitat for special status species in the vicinity of the Project site. These measures include restoring both banks of Alameda Creek and both banks of San Antonio Creek adjacent to the Project site with native vegetation, contributing funds towards the SFPUC's efforts to restore a more natural stream function in Alameda Creek, accommodating possible future public access trails through the area, funding a study of the geomorphology of Alameda Creek to determine the need for stabilization and reconfiguration of the creek, financially supporting preparation of the Sunol Valley Restoration Plan (a separate planning and restoration effort to be initiated by the SFPUC that will address streambed repair, grade stabilization, riparian re-vegetation, migratory fish passage, fish habitat enhancements, long-term plans for reclaiming quarry pits and possible future public access), and financially supporting Alameda County Flood Control District and Alameda County Water District projects intended to help restore steelhead trout to Alameda Creek.

Summary of Impacts and Mitigation Measures

The following **Table 2-1**: Summary of Impacts and Mitigation Measures provides a summary of potential environmental impacts, recommended mitigation measures, and the resulting level of significance after implementation of mitigation measures. For a complete discussion of potential impacts and recommended mitigation measures, please refer to the specific discussions in the respective individual chapters of this Draft EIR.

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Land Use Policy		
Impact Land Use-1 (Physically Divide an Established Community): The proposed Project is not located in immediate proximity to any established community, and expansion and operation of the Project as proposed would not result in the physical division of an existing community.	None required.	No impact.
Impact Land Use-2 (Land Use Compatibility / Change in Environment): The proposed Project would not be incompatible with surrounding land uses and would not result in a substantial land use change in the surrounding environment.	None needed.	LTS
Impact Land Use 3 (Conflicts with Land Use Plans and Policies): The proposed Project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.	None required.	LTS
Impact Land Use-4 (Habitat and Natural Community Conservation Plans): The proposed Project would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan.	None required.	No impact.
Cumulative Impact Land Use-5: The proposed Project, in combination with other past, present and reasonably foreseeable future projects, would not result in a cumulatively significant physical division of an existing community, would not present a cumulative conflict with adjacent land use, would not present a cumulatively significant conflict with land use policies, and would not	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
present a cumulatively significant conflict with any applicable habitat conservation plan or natural community conservation plan.		
Aesthetics		
Impact Aesthetics-1 (Scenic Vistas): The Project is located in an area visible in scenic vistas from a number of surrounding vantage points. Although implementation of the Project would change existing views of the Project site from these vantage points, the Project would not substantially adversely affect these scenic vistas.	None needed.	LTS
Impact Aesthetics-2 (Visual Resources from the Scenic Highway): The Project would not substantially damage scenic resources such as trees, rock outcroppings or historic buildings within a state-designated Scenic Highway.	None needed.	LTS
Impact Aesthetics-3 (Visual Character and Quality of the Site): The Project would not substantially damage scenic resources along the locally designated scenic route on Calaveras Road, nor would it substantially degrade the existing visual character or quality of the site and its surroundings.	None needed.	LTS
Impact Aesthetics-4 (Light and Glare): The Project would introduce new sources of light which could substantially and adversely affect nighttime views in the area.	**MM Aesthetics-4 (Light and Glare): Night Lighting**. The Permittee shall design and place night time lighting and security lighting so that it is no higher than necessary to illuminate the area of security concern, and the lighting shall be directed toward the area. Under no circumstances shall areas beyond the Project site boundaries be directly illuminated nor shall general lighting radiate above the horizontal, but shall be shielded to illuminate only the area of concern. a) Any lighting placed on areas nonessential for security or active operations shall be placed on a motion detector circuit so illumination only occurs as necessary. b) Any lighting for operations in the quarry pit shall be placed as low into the pits as possible.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	c) Monitoring shall include occasional inspection of night time conditions by County staff to ensure that lighting is directed toward the area of concern and that areas beyond the site boundaries are not directly illuminated d) The Permittee shall immediately respond to complaints about excessive night lighting.	
Cumulative Impact Aesthetics-5: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects could result in significant adverse changes to scenic resources and in the scenic character of the area.	**MM Aesthetics-5: Calaveras Road Landscape Plan**. The Project applicant and the County shall re-assess the Landscape Planting, Irrigation and Maintenance Plan for the landscape buffers along Calaveras Road to determine if additional plantings are necessary to achieve the condition's objectives of visually filtering and softening views of the site from Calaveras Road. If additional tree plantings determined by the County to be necessary to adequately screen and soften views, the Project applicant shall prepare, as a condition of approval of the Reclamation Plan, a detailed landscape and planting plan for the Calaveras Road landscape buffer which shall include provisions for additional tree plantings consistent with the species types and sizes as originally required pursuant to SMP-30 Condition of Approval #21.	LTS
Air Quality		
Impact AQ-1 (Fugitive Dust): Construction of the Project would not result in fugitive dust-related air quality impacts.	None needed. Compliance with Bay Area Air Quality Management District (BAAQMD) regulatory requirements during construction activity results in less than significant impact.	LTS
Impact AQ-2 (Construction Impacts: Criteria Pollutants): Construction-related criteria air pollutant emissions from the Project would not violate an air quality standard or substantially contribute to an existing or projected air quality violation.	None needed.	LTS
Impact AQ-3 (Construction Impacts: Toxic Air Contaminants): Construction -related air pollutant emissions from the Project would not expose sensitive receptors to substantial concentrations of toxic air pollutants or respirable particulate matter.	None needed.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Impact AQ-4 (Operational Impacts: Criteria Pollutants): Criteria air pollutant emissions generated during operation of the Project could violate an air quality standard or substantially contribute to an existing or projected air quality violation.	US EPA and California ARB emissions standards will result in a reduction in emissions (including the emission of NOx) from the on-road trucking fleet over the duration of the Project. The following mitigation measure is recommended to further reduce or offset these emissions to less than significant levels: **Mitigation Measure AQ-4: CAP Emissions Monitoring and Reduction Plan.** Within one year of Project approval, the applicant shall prepare and implement a CAP Monitoring and Reduction Plan (CAP Plan). a) The CAP Plan shall include a complete inventory of Project-related CAP emissions to determine how the Project's emissions of ROG, NOx, PM10 and PM2.5 compare to the significance thresholds applicable at that time on an annual basis. b) If the Project's CAP emissions exceed any applicable threshold, the CAP Plan shall demonstrate how the Project will reduce or off-set remaining, un-mitigated CAP emissions. Reductions may take the form of replacing or retrofitting engines for onsite rolling stock, or reducing overall production rates at the Project site so as to not exceed the threshold. Off-site compensation, also known as offsets, can provide for the remaining difference between reduced emissions and the thresholds applicable at that time. c) The CAP Plan will be submitted to the Alameda County Community Development Agency on an annual basis. d) Upon approval, the operator shall implement specified measures as necessary.	LTS
Impact AQ-5 (Operational Impacts: Toxic Air Contaminants): Operation of the proposed Project would expose sensitive receptors to substantial concentrations of toxic air pollutants and fine particulate matter.	**MM AQ-5 (Operational Impacts: Toxic Air Contaminants): TAC Emissions Monitoring and Reduction Plan.** Within one year of project approval, the applicant shall prepare and implement a TAC Monitoring and Reduction Plan (TAC Plan). a) The TAC Plan shall include a complete inventory of Project-related TAC emissions to determine how the estimated excess cancer risks from Facility emissions compare to the significance thresholds on an annual basis. b) If risk thresholds are exceeded, the TAC Plan shall demonstrate how the facility will reduce impacts to below thresholds, which may take the form of replacement or retrofit of engines used in one of the two scrapers such that they meet a minimum of USEPA Tier 4 interim emissions standard, or reducing overall production rates at the Project site so as to not exceed the threshold. c) The TAC Plan shall be submitted to the Alameda County Community Development Agency on an annual basis.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	d) Upon approval, the operator shall implement specified measures as necessary.	
Impact AQ-6 (Operational Impacts: Carbon Monoxide): Operation of the Project would not result in an increase in localized carbon monoxide concentrations that exceed state or federal standards	None needed.	LTS
Impact AQ-7 (Operational Impacts: Odors): Operation of the Project would not create objectionable odors affecting a substantial number of people	None needed.	LTS
Cumulative Impact AQ-8 (Cumulative Criteria Pollutants): Construction and operation of the Project, in combination with other past, present and reasonably foreseeable future projects, could result in significant adverse cumulative impacts on air quality	Implementation of **Mitigation Measure AQ-4 (CAP Emissions Monitoring and Reduction Plan)**	LTS
Cumulative Impact AQ-9 (Cumulative Health Risk Impact): Construction and Operation of the Project would not contribute to a cumulatively considerable health risk impact on air quality.	Implementation of **Mitigation Measure AQ-5 (TAC Monitoring and Reduction Plan**	LTS
Climate Change		
Impact CC-1 (Stationary Source Emissions): The proposed Project would generate greenhouse gas emissions from stationary source equipment at levels in excess of the BAAQMD-established significance thresholds for greenhouse gas emissions.	**MM CC-1: Stationary Source GHG Monitoring and Reduction Plan**. Within one year of Project approval, the applicant shall prepare and implement a GHG Monitoring and Reduction Plan. a) The Plan shall include a complete inventory of Project-related stationary source GHG emissions to determine how the facility emissions compare to the significance thresholds on an annual basis. b) If stationary source GHG emissions exceed thresholds applicable at the time of the annual review then the Plan must demonstrate how the facility will reduce or offset remaining, un-	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	mitigated stationary source GHG emissions. c) Reductions may be achieved by limiting total plant production to levels that would not result in exceeding the threshold. Based on a straight-line interpolation of the asphalt plant emissions, the current stationary source threshold (10,000 MT CO2e per year) is not exceeded until the asphalt plant reaches a production of approximately 770,000 tons/year. On an annual basis, the output from the asphalt plant could be limited to a maximum production of approximately 770,000 tons per year, thus staying at or below the currently effective stationary source threshold. d) Offsets may take the form of off-site compensation also known as offsets. e) The Plan will be submitted to the Alameda County Community Development Agency on an annual basis.	
Impact CC-2 (Non-Stationary Source Emissions): The proposed Project would generate greenhouse gas emissions from non-stationary sources at levels in excess of the BAAQMD-established significance thresholds for greenhouse gas emissions.	**MM CC-2: Non-Stationary Source GHG Monitoring and Reduction Plan.** Within one year of Project approval, the applicant shall prepare and implement a GHG Monitoring and Reduction Plan. a) The Plan shall include a complete inventory of Project-related GHG emissions to determine how the facility emissions compare to the significance thresholds on an annual basis. b) If GHG emissions exceed thresholds, the Plan shall demonstrate how the facility will reduce or offset remaining, un-mitigated GHG emissions. c) Reductions may take the form of alternative fuel use or the installation of on-site alternative energy generation facilities. d) Offsets may take the form of off-site compensation (also known as offsets). e) The Plan shall be submitted to the Alameda County Community Development Agency on an annual basis.	LTS
Impact CC-3 (Construction Emissions): BAAQMD has not provided a significance threshold for construction-related GHG emissions but requires that projects quantify and disclose such emissions. Without comparison to a significance criterion, these emissions are considered to be less than significant.	None needed.	LTS
Impact CC-4 (Compliance with Qualified GHG Reduction Strategy): The County does	None needed.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
not have an approved, qualified GHG Reduction Strategy; therefore compliance cannot be determined.		
Biology		
Impact Bio-1 (Special-Status Species): The proposed Project could have a substantial adverse effect on special-status species.	The proposed Project includes measures protective of natural and biological resources that are or will be required as permit or lease conditions. In addition to those measures included as part of the Project, the following additional mitigation measures are recommended to reduce potential impacts to sensitive species to a level of less than significant: **MM-Bio-1a (Special-Status Species): General Measures**: ODS shall ensure that the following general measures are implemented as part of quarry operations and by the construction contractor(s) as applicable to minimize or avoid impacts on biological resources: a) Construction contractor(s) shall minimize the extent of the construction disturbance as much as feasible. b) Prior to the start of construction, the construction contractor, in coordination with a qualified biologist, shall install 4-foot-tall fencing at the limits of construction, and outside the driplines of all trees to be retained that are located within 50 feet of any grading, road improvements, underground utilities, or other construction activity. A qualified biologist and ODS must first approve any encroachment into these fenced areas. The contractor shall maintain the temporary fencing until all construction activities are completed. No construction activities, parking, or staging shall occur within the fenced areas. c) Project-related vehicles shall observe a 15-mile-per-hour speed limit on unpaved roads in the work area, or as otherwise negotiated with the applicable regulatory agencies. d) ODS and construction contractors shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be collected daily from the Project site and placed in a closed container, from which garbage shall be removed weekly. e) Construction personnel shall not feed or otherwise attract fish or wildlife in the Project area. f) No pets or firearms shall be allowed in the Project area. g) Staging areas shall be located at least 50 feet from aquatic areas. h) If vehicle or equipment fueling or maintenance is necessary, it shall be performed in designated staging areas.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	i) At individual construction site (not the quarry pit) where excavations require dewatering, the intakes shall be screened with a maximum mesh size of 5 millimeters. **MM-Bio-1b (Special-Status Species): Construction Monitoring and Protocols.** At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation-removal activities, a USFWS- and CDFG-approved biologist shall conduct on-site monitoring for the presence of California tiger salamander and California red-legged frog in the area where ground disturbance shall occur as follows: a) Exclusion fencing shall be inspected to ensure it does not have any tears or holes, that the bottoms of the fences are still buried, and that no individuals have been trapped in the fences. b) Any California tiger salamander and California red-legged frog along and outside the fence shall be closely monitored until they move away from the construction area. c) All open trenches or holes and areas under parked vehicles shall be checked for the presence of California tiger salamander and California red-legged frog. d) All excavated or deep-walled holes or trenches greater than 2 feet in depth shall be covered at the end of each workday using plywood or similar materials, or escape ramps shall be constructed of earth fill or wooden planks. Before such holes are filled, they shall be thoroughly inspected for trapped animals. e) Project personnel shall be required to immediately report any harm, injury, or mortality of a special-status species during construction (including entrapment) to the construction foreman or biological monitor, and the construction foreman or biological monitor shall immediately notify ODS. ODS shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California and/or to the local CDFG warden or biologist (as applicable) within one working day of the incident. ODS shall follow up with written notification to the USFWS and/or CDFG (as applicable) within five working days of the incident. All observations of federally and state-listed species shall be recorded on CNDDB field sheets and sent to the CDFG by ODS or representative biological monitor. f) While it is not necessary that the biological monitor stay on-site for the entire day, the monitor shall remain on-call in case any of these animals are discovered and it is necessary to move them. ODS shall designate a representative as the point of contact in the event that a California tiger salamander and California red-legged frog is discovered on-site when the biological monitor is not present. g) If the biological monitor or construction personnel find any of these species within the work area, construction activities shall cease in the immediate vicinity of the individual until: (1) the USFWS and/or CDFG are contacted and/or the animal has been removed from the construction	

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	area, in accordance with permits, by a USFWS- and CDFG-approved biologist and released near a suitable burrow or other suitable habitat within 0.25 mile of the construction area, or (2) the animal moves away from the construction area on its own. h) Once all initial ground-disturbing activities are completed, the biological monitor shall perform spot checks of the Project area at least once a week for the duration of construction to ensure that any exclusion fencing is in good order, trenches are being covered if left open overnight (or escape ramps provided), Project personnel are conducting checks beneath parked vehicles prior to their movement, and all other required biological protection measures are being followed. **MM Bio-1c (Special-Status Species): Conduct Preconstruction Surveys for Special Status Bats and Implement Avoidance and Minimization Measures**. Not more than one week prior to tree removal or removal of- any abandoned structure, a qualified biologist (i.e., one familiar with the identification of bats and signs of bats) shall survey the tree or structure to be removed in the Project area for the presence of roosting bats. Bats may be present any time of the year. The biologist shall thoroughly search trees or structures that provide appropriate habitat (trees with foliage or cavities or that are hollow) for the presence of roosting bats or evidence of bats. a) If no roosting bats or evidence of bats are found, the removal of trees or structures may proceed. b) If bats are found or evidence of use by bats is present, the biologist shall map and mark the tree or structure with flagging. ODS shall ensure that the trees or structures are not removed until the CDFG has been consulted for guidance on measures to avoid and minimize disturbance of the special-status bats. Measures may include monitoring trees or structures and excluding bats from a tree or structure until it is removed and/or timing tree or structure removal and use of a construction buffer to avoid disturbance of young before they are able to fly.	
Impact Bio-2 (Riparian Habitat and Other Sensitive Natural Communities): The proposed Project could have a substantial adverse effect on riparian habitat or other sensitive natural communities. Specifically, implementation of Phase I and Phase II of the proposed Project would permanently remove approximately 8.75 acres of willow scrub and 0.65 acres of mulefat scrub.	None needed With implementation of the Project's proposed Conservation Plan and Reclamation Plan, impacts to riparian habitats from the proposed Project would be reduced to less than significant.	LTS
Impact Bio-3 (Wetlands): The proposed Project could have a substantial adverse effect on federal or state protected wetlands.	None needed With Project regulatory compliance, implementation of the Project's proposed Reclamation Plan and	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	participation in and contribution of funding to local and regional habitat planning and restoration efforts pursuant to the proposed Conservation Plan, temporary and permanent losses of federal and State waters, if any, would be fully compensated for.	
Impact Bio-4 (Migratory Corridors and Nursery Sites): The proposed Project would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	None required.	LTS
Impact Bio-5 (Conflict with Local Policies or Ordinances): The proposed Project could conflict with local policies or ordinances protecting biological resources.	None required Compliance with the Alameda County Tree Ordinance, and implementation of the Project's proposed Reclamation Plan and Conservation Plan would provide for consistency with local policies and ordinances protecting biological resources.	LTS
Impact Bio-6 (Conflict with an Applicable Habitat Conservation Plan): The proposed Project would not conflict with an applicable habitat conservation plan or natural community conservation plan.	None required	LTS
Impact Bio-7 (Cumulative Impacts): Quarry expansion and reclamation under the Project, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, could potentially have a cumulatively considerable impact on biological resources.	None required Once the Project's proposed Conservation and Reclamation Plans are fully implemented, local habitat will be considerably improved for special status species. Proposed funding of planning efforts and restoration of habitat that contributes to regional enhancement of values for special status as well as common wildlife provides compensation for the Project's specific impacts as well as for the Project's contribution to cumulative impacts.	LTS
Geology		
Impact Geo-1 (Geologic Risk of Fault Rupture): The Project could potentially expose people or structures to substantial risk of loss, injury, or death involving rupture of the	**MM Geo-1: Structure-Specific Geologic Investigation.** Prior to construction of any structures intended for human occupancy (i.e., expected to be occupied for more than 2,000 person-hours per year) within the Alquist-Priolo zone, a detailed geologic investigation of the structure location shall be prepared by a geologist registered in the State of California. This report shall address the potential	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Calaveras Fault.	for surface fault displacement at the structure site, based on a geologic investigation designed to identify the location, recent activity and nature of faulting that may have affected the structure site in the past and may affect the structure site in the future. If, based upon the findings of the geologic investigation, the site of the proposed structure is underlain by an active fault trace, the structure shall be located at least 50-feet away from such an active fault trace	
Impact Geo-2 (Seismically Induced Ground Shaking and Liquefaction): The Project could potentially expose people or structures to substantial risk of loss, injury, or death involving groundshaking and liquefaction.	None needed. Implementation of slope stability design measures incorporated into the Project would reduce the extent potential earthquake-induced hazards resulting from strong groundshaking and ground failure to a less than significant level.	LTS
Impact Geo-3 (Slope Instability): Slope failure could affect cut slopes created by quarry excavations and could affect fill slopes constructed for roads, levees, the backfilled bench at the long-term processing facility, and stockpiles. Slope failure could damage internal and external roads, buried utilities and pipelines, transmission tower foundations or on-site structures.	Current geo-technical investigations have confirmed that the Project's proposed design measures (e.g., slope designs and setbacks) would eliminate or reduce hazards related to slope failure. Further detailed engineering analyses as required in the following mitigation measures is recommended to ensure that such hazard are reduced to a less than significant level. **MM Geo-3a: Engineering Analysis.** The Project applicant shall submit an updated detailed engineering analysis to demonstrate that proposed side slopes of all quarry pits, benches, engineered fill, roadway designs and material stockpiles will not exceed the critical gradient as determined by an engineering analysis of slope stability. Such report shall be prepared by a soils engineer or a civil engineer registered in the State of California or an engineering geologist registered and certified in the State of California. a) In no event should the steepness of any slopes exceed the critical gradient as determined by the engineering analysis. b) The engineering analysis shall also demonstrate that the proposed Reclamation Plan does not include any slope designs that would be incompatible with the intended future use as water storage, would not be hazardous to persons that may utilize the site post-reclamation, and would not reduce the effectiveness of revegetation and erosion control measures. **MM Geo-3b: Annual Review.** Based on the recommendations of the Project geologists, an annual review of the stability of cut slopes is recommended to determine if exposed conditions indicate that the proposed quarry slopes should be modified. **MM Geo-3c: Managing Stockpile Height.** If a stockpile significantly higher than the reach of the loader begins to become over-steepened or undercut, immediate action is required. Material should be bumped over the crest and the pile worked down from above until the slope approaches the original angle of repose. The safest methods of trimming material off a stockpile to reduce its height	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	are to use a bucket conveyor, a grab on an overhead crane, a dragline, or a walkway that will enable workers to probe material off the top of the pile manually. Where it is necessary to use a front-end loader at the face of a stockpile, some of the basic safety measures recommended are: a) Limit the height of the worked faces to the maximum reach height of the machines working the stockpile. b) Maintain angled faces and prevent steep, high faces from forming. c) Where front-end loaders have to carry out undercutting in front of high faces, a cab should be fitted to enclose an operator overhead and on at least three sides. This will trap enough air for an operator to breathe in case the machine becomes buried in a sudden fall of material. A cab can also provide protection from falling material which may not bury the operator but still be heavy enough to cause injury.	
Impact Geo-4 (Soil Erosion): Soil erosion could occur at the Project site if proper drainage and erosion control measures are not provided. Excessive soil erosion could create gullies, undercut slopes and cause slope failure. Soil erosion can also affect surface water quality (see Hydrology and Water Quality chapter).	**MM Geo-4a: NPDES Stormwater Permits.** The Permittee (Project operator) shall be responsible for obtaining any necessary amendments and/or updates to the currently applicable NPDES permit for water management within the Project. **MM Geo-4b:** The removal of vegetation and overburden from the 58-acre expansion site shall occur no more than one month prior to commencement of excavation and raw aggregate harvesting activities from the expansion of the quarry pit into this area.	LTS
Impact Geo-5 (Expansive Soils): As a quarry operation and processing plant, there is no concern that expansive soils would create substantial risks to life or property.	None required.	No impact.
Impact Geo-6 (Soils Unsuitable for Wastewater Treatment): The Project does not pose any issues related to soils that are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.	None required.	No impact.
Hazardous Materials		
Impact Haz-1 (Project Site Located on a List	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
of Hazardous Material Sites): Although the proposed Project is located on a site that is included on a list of hazardous material sites (i.e., hazardous waste facilities or hazardous waste properties) compiled pursuant to Government Code Section 65962.5, the available records indicate that all previous environmental cases are closed or remediated, and thus would not create a significant hazard to the public or the environment.		
Impact Haz-2 (Accidental Release of Hazardous Materials): The Project could create a significant hazard to the public or environment through upset or accident conditions releasing hazardous materials used in the mining and plant operations.	None required. Compliance with applicable regulations will minimize the potential for accidental release of hazardous materials and will reduce hazards to the public and the environment through upset or accident conditions to less than significant levels. The following additional mitigation measures are recommended to further reduce this impact: **MM Haz-2a: Above Ground Storage Tanks.** The Project shall not include any underground storage tanks, and only above-ground storage tanks that have been approved by the U.S. EPA shall be used for storing petroleum products and other regulated substances. Any new above-ground tanks shall be double walled and meet all ballistic and flame impingement requirements in CFC Article 79. The containment structures shall not be equipped with any valves or drains. **MM Haz-2b: Fuel Delivery Requirements.** All delivery, maintenance, and repair trucks containing petroleum products will be required to comply with the California Department of Transportation's regulations for transport of hazardous materials. All trucks carrying petroleum products shall be equipped with quick-connect couplings and automatic shut-off valves to prevent spills, and shall carry appropriate absorbent materials to contain and recover spillage. **MM Haz-2c: Comprehensive Fire Protection Plan.** The Project applicant shall engage a Fire Protection Engineer to perform a Code analysis and submit a Comprehensive Fire Protection Plan for the proposed Project for review by the County Fire Marshall. The submittal shall include an evaluation of the Project's compliance with the Uniform Fire Code requirements relating to storage of hazardous materials (including aboveground tanks), the need for fire suppression system, alarm systems, storage of flammable or combustible materials, containment basins around hazardous materials, and compliance with hazardous materials regulations. Hazardous materials at the proposed asphalt plant shall be specifically considered in the review. **MM Hydro-1: Chemical Release Prevention.** To prevent the inundation of the processing area and	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	the potential release of hazardous materials to water in the basin (once the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl) due to a 100-yr storm event, one or more of the following measures shall be taken: a) Bulk storage for Portland cement, asphalt oil, fuels, and other chemicals shall be maintained outside of the basin perimeter. Only those materials needed for daily operations shall be stored and maintained in the processing area once it is relocated to the south end of the basin. If reliable weather predictions call for the potential for a 100-year storm event, or a series of events that could potentially yield equivalent flood flows, then all hazardous materials shall be removed from the processing area; or b) The processing area should not be relocated to the south end of the basin until sufficient excavation has been completed such that the basin volume below the elevation of the processing area (approximately 220 ft. msl) is greater than at least 6,000 acre-feet. At a volume of 6,000 acre-feet, the basin would be capable of holding the total volume of water that could potentially enter the basin due to a breach during a 100-year storm, without overtopping into the processing area.	
Impact Haz-3 (Asphalt Plant Operations): The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, particularly as pertaining to the asphalt plant operations.	None required. Compliance with applicable regulations will minimize significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials to less than significant levels. However, the following additional mitigation measures are recommended to further reduce this impact: **MM Haz-3a: Prohibited Truck Spraying.** During operations, the asphalt plant operator shall not allow the loading of any trucks that have had their beds sprayed with diesel fuel or any other petroleum hydrocarbon-containing liquid. a) Annual inspections will be conducted by the County Certified Unified Program Agency (CUPA, administered by County Environmental Health) to ensure that soil contamination has not occurred at the site due to spraying of truck beds with diesel fuel or other petroleum hydrocarbon-containing liquids. b) Suitable bio-degradable surfactants are available on the market that shall be utilized by the truck operators (if desired) to prevent the asphalt from sticking to the beds of the truck beds. **MM Haz-3b: Best Management Site Practices.** The Project site equipment and servicing materials shall be maintained in a neat and orderly manner to aid in accounting for and detecting potential sources of contamination; a) Non-functional equipment, scrap metal, construction debris, used batteries and tires, and similar	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
	objects shall be removed from the site on a regular basis and disposed of at appropriately licensed facilities; b) Best Management Practices specific to the storage of spare equipment such as heavy equipment parts, conveyor belts, tires and other replacement or extra equipment pieces, shall be established pursuant to the Project's SWPPP to ensure that runoff from storage areas does not result in surface water contamination. Spare parts containing petroleum products (i.e., lubricants, hydraulic oil, etc.) shall be stored using Best Management Practices (BMPs) to prevent contamination of soil or storm water runoff; and c) Storage areas shall be inspected by the Operator monthly. Any petroleum leaks shall be documented and cleaned up. Leaking equipment shall be repaired. Inspection and monitoring documentation shall be retained for a minimum of five years and be available to County staff during site inspections. **MM Haz-3c: Reclamation Requirements.** Upon completion of mining and processing operations at the Project site and pursuant to implementation of the Reclamation Plan, all hazardous materials and above ground storage tanks shall be removed and the site shall be cleaned of hazardous material. a) Prior to closure of any above ground storage tank used to hold hazardous material, the Project applicant shall obtain a tank closure permit from the County DEH and shall comply with all applicable tank closure guidelines. b) The Project applicant shall obtain a closure permit for all above ground hazardous materials storage facilities. c) Fuel tanks and other hazardous materials containers shall be transported by licensed haulers to an approved disposal or recycling facility in accordance with all applicable laws and regulations. d) Any reported releases of hazardous substances which may have occurred during Project operations shall be fully remediated according to the corrective actions proscribed by the identified lead agency, and a case closure letter from the lead agency obtained.	
Impact Haz-4 (Hazardous Materials or Emissions Near a School): The Project would not emit hazardous emissions or acutely hazardous materials, substances, or waste within a one-quarter mile of an existing or proposed school.	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Impact Haz-5 (Naturally Occurring Asbestos): The proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials including transport, use or disposal of asbestiform minerals.	None needed.	LTS
Impact Haz-6 (Inconsistency with an Airport Master Plan / Airport Safety): The proposed Project would not result in inconsistency with an airport master plan. The proposed Project would not result in a safety hazard for people residing or working at the site.	None required.	No impact
Impact Haz-7 (Wildland Fires): The proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wild lands are adjacent to urban areas or where residences are intermixed with wild lands.	None required. However, the following additional mitigation measure (derived from Impact Haz-2 above) is recommended to further reduce wildland fire hazards: **MM Haz-7: Comprehensive Fire Protection Plan**. The Project applicant shall engage a Fire Protection Engineer to perform a Code analysis and submit a Comprehensive Fire Protection Plan for the proposed Project for review by the County Fire Marshal. The submittal shall include an evaluation of the Project's compliance with the Uniform Fire Code requirements relating to storage of hazardous materials (including aboveground tanks), the need for fire suppression system, alarm systems, storage of flammable or combustible materials, containment basins around hazardous materials, and compliance with hazardous materials regulations. Hazardous materials at the proposed asphalt plant shall be specifically considered in the review.	LTS
Hydrology and Water Quality		
Impact Hydro-1 (Discharge to Surface Water): The Project could result in a violation of water quality standards or waste discharge requirements and substantially degrading surface or groundwater water quality.	None required. The Project will be required to comply with all applicable regulatory requirements to maintain the quality of water discharged to San Antonio Creek and Alameda Creek, thus reducing impacts to a level of less than significant.	LTS
Impact Hydro-2 (Use of Fuels and Other	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Chemicals): Potential Release of Fuels and Other Chemicals. If flooding occurs on Alameda Creek such that floodwaters enter the basin, the concrete and asphalt batch plants could become inundated and hazardous materials such as Portland cement and asphalt oil could be released to water in the basin. This is a potentially significant impact only after the time the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl.	Compliance with applicable regulations would reduce impacts to a less than significant level. The following additional mitigation measure is recommended to further reduce potential impacts to water quality: **MM Hydro-1 Use of Fuels and Other Chemicals): Chemical Release Prevention.** To prevent the inundation of the processing area and the potential release of hazardous materials to water in the basin (once the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl) due to a 100-yr storm event, one or more of the following measures shall be taken: a) Bulk storage for Portland cement, asphalt oil, fuels, and other chemicals shall be maintained outside of the basin perimeter. Only those materials needed for daily operations shall be stored and maintained in the processing area once it is relocated to the south end of the basin. If reliable weather predictions call for the potential for a 100-year storm event, or a series of events that could potentially yield equivalent flood flows, then all hazardous materials shall be removed from the processing area; or b) The processing area should not be relocated to the south end of the basin until sufficient excavation has been completed such that the basin volume below the elevation of the processing area (approximately 220 ft. msl) is greater than at least 6,000 acre-feet. At a volume of 6,000 acre-feet, the basin would be capable of holding the total volume of water that could potentially enter the basin due to a breach during a 100-year storm, without overtopping into the processing area.	
Impact Hydro-3 (Depletion of Groundwater Supplies/Interference with Groundwater Recharge): The Project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume, or a lowering of the local groundwater table level.	None needed.	LTS
Impact Hydro-4 (Alteration of Existing Drainage Patterns Resulting in Erosion or Siltation): The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Impact Hydro-5 (Increase in the Rate or Amount of Surface Runoff): The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	None required.	LTS
Impact Hydro-6 (Contribute Runoff Exceeding the Capacity Drainage Systems or Adding Sources of Pollution): The Project will not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, cause flooding on- and off-site, or provide substantial additional sources of polluted runoff.	None required.	LTS
Impact Hydro-7 (Housing within a Flood Hazard Area): The Project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.	None required.	No impact
Impact Hydro-8 (Structures Which Would Impede or Redirect Flood Flows): The Project would not place a structure within a 100-year flood hazard area, which would impede or redirect flood flows.	None required.	No impact
Impact Hydro-9 (Flooding as a Result of the Failure of a Levee or Dam): The Project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
Impact Hydro-10 (Potential Inundation): The Project will not be inundated by, nor result in any inundation by seiche, tsunami, or mudflow.	None required.	LTS
Cumulative Impact Hydro -11 (Cumulative Hydrology and Water Quality Impacts): Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects would not result in significant adverse changes to hydrology and/or water quality.	None needed.	LTS
Noise		
Impact Noise-1 (Noise in Excess of Standards): Project operations are calculated to generate noise levels at the nearest sensitive noise receptor that would exceed 50 dBA during the daytime and would exceed 45 dBA at night time, thereby exceeding the applicable noise standards of the County Municipal Code.	**MM Noise-1a (Noise in Excess of Standards): Noise Survey.** A noise survey shall be conducted within 30 days after the plant site and its processing facilities have been moved to the south. At that time, with the final plant layout in place, a determination shall be made as to whether or not additional noise barriers or other noise control measures for the equipment are required to reduce noise levels at the most affected receptor to acceptable levels (i.e., to 50 dBA in the daytime and 45 dBA at nighttime), and the exact locations and types of noise control measures, as may be needed, shall be determined. **MM Noise-1b (Noise in Excess of Standards): Noise Barrier.** The method to be used to mitigate Phase II noise impacts shall be noise barriers. Normally, noise barriers are located close to, or on the equipment itself. Typically, the barriers are wood, metal, or quilted noise control blankets. Sometimes, material stockpiles can also be used as a noise barrier when the stockpiles can be maintained at the necessary minimum height to block line of sight from the noise source to the receiver, but in this case the processing area would be below elevation of the surrounding ground, making stockpiles less effective.	
Impact Noise-2 (Vibration): Operation of the Project would not expose people to excessive vibration.	None required.	LTS
Cumulative Impact Noise-3 (Cumulative Increase in Ambient Noise Levels): Operation of the Project would result in a permanent	Implementation of **MM Noise-1a (Noise Survey)** and **Noise -1b (Noise Barrier)**	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
increase in cumulative ambient noise levels of up to 5 dBA Ldn over existing levels in the Project vicinity.		
Traffic		
Impact Transp-1 (Intersection Level of Service): The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including intersection level of service standards.	None required.	LTS
Impact Transp-2 (Peak Signal Warrant): The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to traffic signal warrant criteria.	None required.	LTS
Impact Transp-3 (Freeway Operations): The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to freeway operating conditions.	None required.	LTS
Impact Transp-4 (Site Access and Circulation): The proposed Project could substantially increase traffic hazards due to a design feature; existing conditions at the Project site's current driveway create the potential for near-misses and collisions (especially given the mix of heavy trucks, passenger vehicles and recreational cyclists), and the increase in vehicles relying on this driveway under the Project would	**MM Transp-4a (Site Access and Circulation): Intersection Sight Distance:** Keep the area around the southern driveway intersection free of visual obstructions such as tall landscaping and signage, which would obstruct line of sight for drivers exiting the site. a) Vegetation fronting the site along Calaveras Road should be trimmed as necessary to allow at least 550 feet of sight distance, which is the minimum corner sight distance required per the California Highway Design Manual. b) Allow the location of the southern driveway to shift north or south along Calaveras Road to best	

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
potentially exacerbate this current condition. Sight distances all along Calaveras Road, including at the proposed new south access drive, are limited by differing grade conditions and vegetation. Additionally, with only one driveway access to the site, if that driveway was blocked or obstructed, an emergency vehicle may not be able to easily access the site in case of emergency.	accommodate the required sight distance. c) Raising the elevation of the southern driveway approach to Calaveras Road to reduce the grade difference would improve the sight lines at the intersection. **MM Transp-4b (Site Access and Circulation): Two Points of Access, Phase II.** During Phase II, which assumes only one access point to/from the site, consider keeping the existing driveway as a secondary access for emergency vehicles only.	
Impact Transp-5 (Pedestrian Circulation): The Project would not conflict with adopted policies, plans or programs regarding pedestrian facilities.	None required. The Project proposes to accommodate a new trail alignment. However, possible pedestrian/vehicle conflict points associated with one of the potential trail alignments could decrease the performance or safety of such facilities. **Recommendation Transp-5 (Hiking Trail)**: It is recommended that if the future hiking trail moves forward, the western trail alignment along Alameda Creek should be considered preferable as it provides less pedestrian/vehicle conflict points as compared to the eastern alignment along Calaveras Road.	LTS
Impact Transp-6 (Bicycle Circulation): The Project would not conflict with adopted policies, plans, or programs regarding bicycle facilities, or otherwise decrease the performance or safety of such facilities.	None required. Although not required to avoid or reduce a conflict with adopted policies, plans, or programs regarding bicycle facilities, the following recommendation is made to increase the safety for bicycle riders using Calaveras Road: **Recommended MM Transp-6 (Signage):** Signage. Due to the presence of recreational cyclists along Calaveras Road, it is recommended that the installation of "Share the Road" signs in conjunction with Bicycle Warning signs be considered along Calaveras Road and on the Project site driveways to warn drivers to watch for bicyclist, who generally travel at slower speeds. Placement of these signs shall be determined in consultation with the Alameda County Public Works Department.	LTS
Impact Transp-7 (Roadway Safety Hazards): The Project would not substantially increase roadway hazards due to a design feature or an incompatible use.	None required.	LTS
Cumulative Impact Transp-8 (Cumulative Intersection Level of Service): The Project will	None required.	LTS

Table 2-1: Summary of Project Impacts and Mitigation Measures for the Revised SMP-30 Sunol Quarry Project

Potential Environmental Impacts	Mitigation Measures	Resulting Level of Significance
not make a significant contribution of traffic to cumulative traffic levels at study area intersections, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system (including intersection level of service standards) would occur.		
Cumulative Impact Transp-9 (Cumulative Peak Hour Traffic Signal Warrant Analysis): The Project will not make a significant contribution of traffic to cumulative traffic levels at study area intersections, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system, including but not limited to traffic signal warrant criteria, would occur.	None required.	LTS
Cumulative Impact Transp-10 (Cumulative Freeway Operations): The Project will not make a significant contribution of traffic to cumulative traffic levels on study area freeways, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system, including but not limited to freeway operating conditions, would occur.	None required.	LTS

3

Project Description

This chapter describes the proposed Revised Surface Mining Permit-30 (SMP-30) for the Sunol Quarry (the Project) which is evaluated in this Environmental Impact Report (EIR). This chapter begins with a description of the Project site, planning context and a discussion of relevant Project background, followed by a detailed description of the proposed Project, Project objectives and a discussion of the intended uses of the EIR for required Project approvals.

In summary, the proposed Project would require the following three discretionary actions by Alameda County, serving as lead agency:

- Certification of the EIR;
- Approval of modification to the existing use permit (SMP-30), which was approved by Alameda County in 1992; and
- Approval of a new Reclamation Plan for SMP-30 in compliance with the California Surface Mining and Reclamation Act (SMARA).

Further details about the Project are provided below.

Context / Setting

Project Site

The approximately 381-acre Project site is located at 6527 Calaveras Road, approximately one mile south of I-680 (Scotts Corner) in the Sunol Valley portion of unincorporated southern Alameda County. The site is bounded by San Antonio Creek to the north, Alameda Creek to the west and Calaveras Road frontage to the east (see **Figure 3-1**). Another quarry operation (SMP-24/SMP-33) operated by Lehigh-Hanson Aggregates is across the creeks to the north and west.

Approximately 323 acres of the Project site (nearly 85% of the Project site) is a currently active quarry operating under Alameda County Surface Mining Permit (SMP-30) which was approved by Alameda County in 1992. This permit authorizes the mining of sand and gravel within 323 acres of the Project site to a depth of up to 140 feet. Quarrying operations are permitted through June 1, 2021 or upon completion of reclamation, whichever occurs first. The remainder of the Project site consists of a 58 acre expansion area at the southeast portion of the Project site.

The site is included within two separate Assessor's parcels; portions of APN 096-0080-008 and APN 096-0375-011-05 (see **Figure 3-2**).

Figure 3-1
Project Site Location

Aerial Source: October 2011

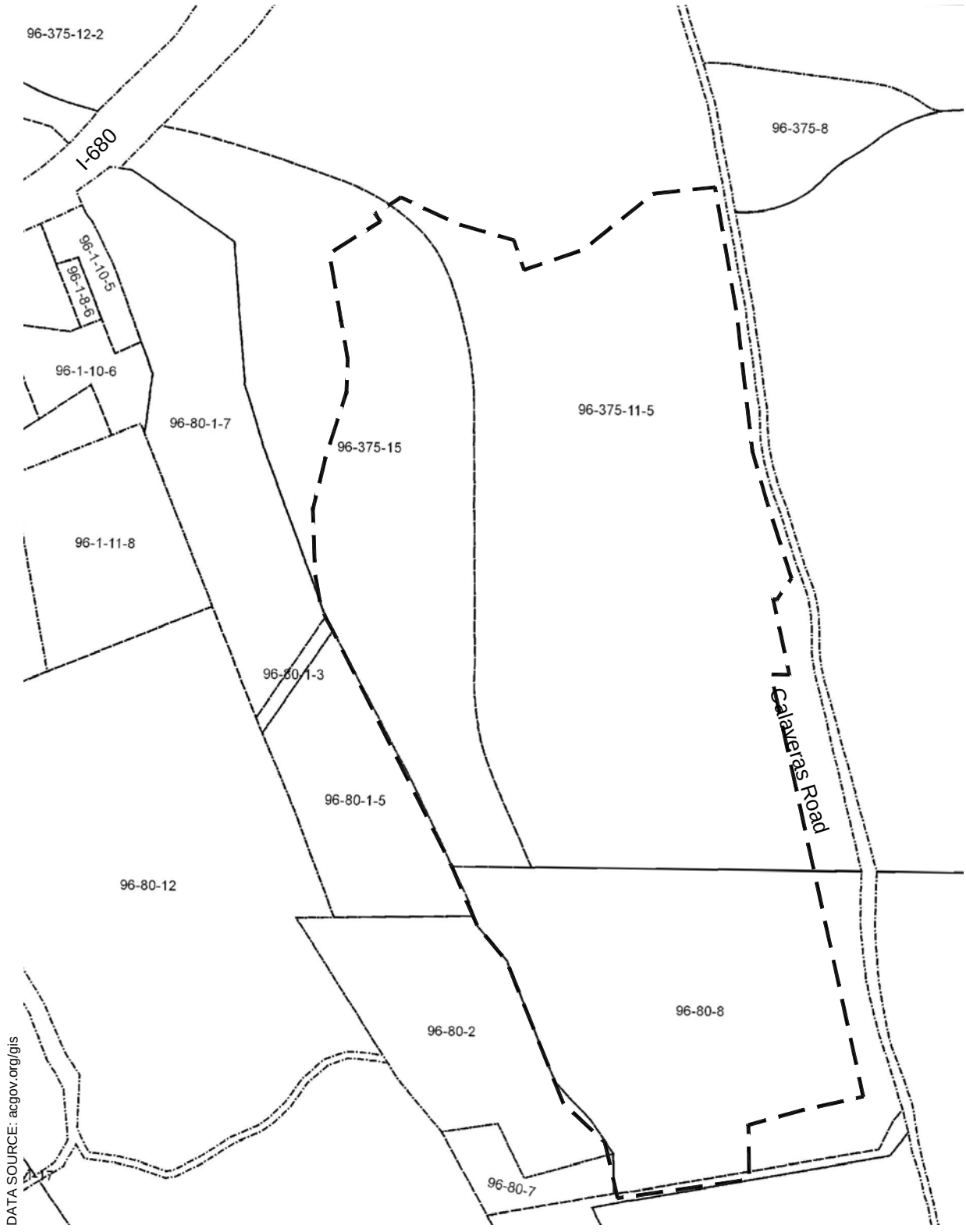


Figure 3-2
Project Site, Assessor's Parcels

Data Source: acgov.org
Source: Benchmark Resources

Surrounding Land Uses

As shown in **Figure 3-3**, there is a variety of land uses types in the surrounding vicinity of the Project site:

- To the immediate north across San Antonio Creek and to the immediate west across Alameda Creek is the Lehigh-Hanson Quarry. This is an active sand and gravel mining operation comprised of active excavation areas, maintenance and operations buildings, pits, silt/holding basins, processing facilities and other outdoor equipment and materials storage areas.
- A plant nursery, including greenhouse structures and outdoor storage areas, occupies land to the north across San Antonio Creek and along Calaveras Road.
- Open SFPUC watershed lands bound the site across Calaveras Road to the east.
- San Antonio Reservoir is approximately 4,000 feet east of the Project site.
- SFPUC maintains a chlorination facility and the Sunol Valley Water Treatment Plant to the immediate south of the site. Additional open SFPUC watershed lands are to the south.
- EBRPD's Sunol Regional Wilderness is approximately 2 miles to the south. Principal access to the park is via Calaveras Road past the Project site to Welch Creek Road and Geary Road.
- A private ranch residence and a SFPUC watershed keeper's residence located to the south of the site are the only residences in the vicinity.
- The Town of Sunol is approximately two miles northwest of the Project site, westerly along Highway 84 (Paloma Road) about ¾ mile from the intersection of Calaveras Road and I-680.

Other recent, current and/or planned projects and on-going land management activities in the vicinity include the Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir project, the New Irvington Tunnel project, the Alameda Siphon #4 Project, the San Antonio Backup Pipeline project, and the Upper Alameda Creek Filter Gallery project.

Additionally, the surrounding SFPUC watershed lands are managed pursuant to the approved SFPUC Watershed Management Plan and its associated EIR. More discussion regarding these surrounding land uses is found in the Land Use chapter of the EIR.

Planning and Policy Context

State of California - Surface Mining and Reclamation Act

An objective of the State of California's Surface Mining and Reclamation Act (SMARA) was to create a mineral lands inventory by designating certain areas of the State as being important for the production and conservation of existing and future supplies of mineral resources. Pursuant to Section 2790 of the Surface Mining and Reclamation Act, the Mining and Geology Board has designated certain mineral resource areas to be of regional significance. The purpose of this designation is to provide local agencies, such as Alameda County, with information on the location, need and importance of mineral resources and to assure that this information is considered in local land use decisions. Construction aggregate was the first mineral commodity selected by the state for the regionally significant designation due to its importance throughout the construction industry. Construction aggregate is used in Portland cement concrete, asphalt, railroad ballast, stucco, road base and fill. The availability of aggregate deposits and their proximity to markets are critical factors in the strength of the overall economy.

Figure 3-3
Surrounding Land Uses

Source of aerial: Googleearth, 10-29-11

The Project site and much of the surrounding areas (which are currently in active quarrying operations) have been designated by the Mining and Geology Board as being a "Regionally Significant Construction Aggregate Resource Area". The Project site is designated MRZ-2(a), by the California Department of Conservation. This designation indicates that there is a high likelihood that significant aggregate deposits are present.

SFPUC - Watershed Management Plan

The Project site is located within a portion of the San Francisco Public Utilities Commission's (SFPUC) Alameda Watershed lands. These SFPUC-owned lands include approximately 36,800 acres of the 47,000 acre watershed that is tributary to San Antonio and Calaveras Reservoirs, as well as lands which drain into Alameda Creek. Much of these watershed lands abut other public properties owned by the East Bay Regional Park District (EBRPD). As indicated in the *Alameda Watershed Management Plan*,[1] the SFPUC's watershed management goal for the majority of these lands (over 30,000 acres designated as "primary watershed") is to maintain and improve source water quality, to maximize water supply, and to preserve and enhance ecological resources.

The Watershed Management Plan also designates approximately 6,000 acres of these watershed lands as "secondary watershed" (see discussion in Chapter 5: Land Use). The secondary watershed lands are defined as lands where runoff enters Alameda Creek and does not enter SFPUC reservoirs and are therefore considered less sensitive in terms of water quality protection than the surrounding "primary watershed" lands. The Project site and other nearby properties (including other adjacent quarry operations) are located in lands designated by the SFPUC as "secondary watershed".

The Watershed Management Plan also contains several Plan Elements, reports and technical memoranda to support the SFPUC's on-going planning and management efforts. One of these Plan Elements is particularly relevant to the Project site; the Sunol Valley Resources Management Element. This Element addresses the integrated management of water resources, gravel mineral resources, SFPUC facilities, cultural resources, agricultural resources, economic resources, recreation/park facilities and fisheries in the Alameda Creek corridor. Pursuant to this Element, portions of these watershed lands are leased to produce revenue for the SFPUC from a variety of uses including grazing, plant nurseries and quarry operations.

The Project site has been leased to several quarry operators and used for sand and gravel extraction for more than 50 years. The most current operator has been CEMEX operating on a holdover basis after the term of that lease expired. On September 19, 2007, the SFPUC entered into an exclusive negotiating agreement with Oliver de Silva, Inc. (the Project applicant), which resulted in a quarry lease executed by the City and County of San Francisco on May 27, 2010. San Francisco also leases other SFPUC properties in the immediate vicinity for quarrying operations consisting of the Lehigh-Hansen Aggregate Quarry (SMP-24, -32 and -33) immediately adjacent to the Project site.

Alameda County

General Plan Policy

The Project site is designated on the Alameda County General Plan East County Area Plan (ECAP) Diagram as Water Management (see Chapter 5: Land Use). Subject to the provisions of Measure D (see below), the Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos, and similar and compatible uses. Sand and gravel quarries allow

[1] SFPUC, *Alameda Watershed Management Plan*, 2007

a range of uses including sand and gravel processing, associated manufacturing and recycling uses requiring proximity to quarries, reclamation pits, and public use areas.

ECAP also contains special land use policies pertaining to quarries and Regionally Significant Aggregate Resource Areas. The goal for these special land use policies is to; "*recognize the regional value of the County's construction aggregate resources and to ensure compatibility between quarry operations and surrounding land uses*."

Pursuant to this goal, County policy (Policy 160) is to ensure that, "*where quarry operations are located in areas designated as Water Management, extraction of the aggregate resource shall be allowed in the short-term. Reclamation of the land for water management and other compatible uses shall occur subject to conditions of Surface Mining Permits and Reclamation Plans . . .*"

Furthermore, pursuant to Policy 162, the County allows manufacturing uses which make extensive use of harvested aggregate to be located near sand and gravel quarries. It is further stated in the County General Plan policy (Policy 161) that the County shall, "*. . . participate with the San Francisco Water Department (SFWD) in its* planning *efforts for SFWD-owned watershed lands within the Sunol Valley to ensure that future quarry activity is compatible with Sunol community interests and water management objectives*".

Measure D

Passed by the voters of the County in November 2000 and now fully incorporated into the County General Plan, Measure D placed strict limits on where new mine excavations may be conducted. The text of Measure D, (ECAP Policy 155) so far as it applies to quarries, reads as follows, "Except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry." A quarry that has received all necessary discretionary County and other approvals and permits prior to the effective date of the ordinance, but has not yet exercised those approvals and permits is to be considered an "existing" rather than a "new" quarry.

The Project site is located outside of the Urban Growth Boundary established under Measure D, but is not a new quarry. All proposed excavations pursuant to the Project would occur immediately adjacent to an existing quarry (i.e., immediately adjacent to the existing SMP-30 operations). A more detailed analysis of the proposed Project's consistency with County General Plan policies and provisions of Measure D is included in Chapter 5 of this EIR.

Zoning

The Project site and its surroundings are zoned as "A": Agriculture. The County Zoning Ordinance defers to the Surface Mining and Reclamation Ordinance and mining activities are permitted within any County zoning designation, including Agriculturally-designated lands, subject to the provisions of the Surface Mining and Reclamation Ordinance (see below).

Surface Mining and Reclamation Ordinance

Alameda County Surface Mining Permits (SMP)

As the local land use authority, Alameda County authorizes mining activities on unincorporated lands through the issuance of Surface Mining Permits pursuant to Alameda County Code of Ordinances, Title 6: Health and Safety, Section 6.80: Surface Mining and Reclamation. The Project site currently operates under such a County surface mining permit SMP-30, which was approved by Alameda County in 1992. This permit authorizes the mining of sand and gravel within 323 acres of the Project site to a depth of up

to 140 feet. Quarrying operations are permitted through June 1, 2021 or upon completion of reclamation, whichever occurs first.

County Code Section 6.80.190 requires the Planning Commission to periodically review mining permits and approved reclamation plans. The timeframe for review is set by permit condition(s), with five years being the standard increment. Additionally, County Code Section 6.80.181 requires permitted operators to submit an annual report to the Planning Director and State Department of Conservation. These annual reports are utilized by County staff to track mining and reclamation activities.

The provisions of the County's Surface Mining and Reclamation Ordinance (Section 6.80 et. seq. of the County Ordinance Code) apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit, reclamation plan, and financial assurances for reclamation.

Requirements for Mining Operations

Surface mining operations permitted under the ordinance must be conducted in compliance with a wide variety of prescribed requirements. These requirements, found in Section 6.80.210 of the ordinance are briefly summarized as follows:

- Finished slopes of the mining pit and other excavations shall ensure slope stability, maintenance of required vegetation, public safety, and the control of drainage. Generally, final slopes are not to be steeper than two feet horizontal to one foot vertical (2:1);
- Benches are to be provided where necessary to control drainage on slopes or to provide for access or public safety;
- Excavations should be set back at least twenty-five (25) feet from a common property line (except where the adjacent property is being mined in the same manner or as approved by the Planning Commission), fifty (50) feet from the right-of-way or future width line of any street, and set back from water courses, flood control channels, reservoirs and water conservation facilities a distance sufficient to protect these types of facilities;
- Operations that may conflict with the visual qualities of adjacent areas shall be screened by landforms and plantings;
- Fencing is to be designed and installed in order to preserve the health, safety and welfare of the public, and be designed to permit passage of wildlife with minimal hazard in areas with wildlife movement corridors;
- No explosives are to be used except as may be specifically authorized by the surface mining permit;
- Levees or other flood control devices should be constructed where necessary to prevent flooding from adjacent streams or from slope failures caused by infiltration and seepage from surface water bodies;
- The transmission of groundwater through the excavation shall not be reduced, nor shall the excavation and operation result in groundwater pollution or contamination;
- Any water discharged from the site must meet applicable water quality standards which may be achieved through the use of on-site settling ponds or de-silting basins;
- Erosion of adjacent lands from water discharged from the site shall be prevented by using such means as retarding basins, settling ponds and other water treatment facilities, ditches, dikes and revegetation of slopes;

- Stockpiles of overburden and minerals shall be managed to minimize water and wind erosion, and the removal of vegetation and overburden in advance of surface mining shall be kept to a minimum. However, topsoil suitable for use in revegetation shall be stockpiled for future reclamation;
- Noise, dust and bright lights should not exceed levels compatible with the uses of adjacent lands, and hours of operation shall be set to minimize conflicts with other uses conducted in the immediate area;

Additional Uses

A number of uses accessory to mining operations may be permitted if conducted within an Agriculture or Industrial zoning district. Such accessory uses may include sorting, crushing, reducing, refining, mixing, packaging or other processing of minerals; the operation of an asphalt or concrete batch plant; or any operation that uses or supplies materials produced, imported or used by mining and/or processing operations or an asphalt or concrete batch plant. The effects of such accessory uses pertaining to noise, odor, smoke, dust, bright lights, vibration, traffic, and production of waste must be controlled so as to be compatible with adjacent uses and so as not to degrade natural resources.

Reclamation Plan Requirements

Reclamation of mined lands is to take place as soon as practical following completion of mining operations. Reclamation plans need to address provisions for the disposal of overburden and mining waste; restoration of streams and watershed diversions; re-grading and revegetation of the site; and the maintenance of water quality standards. Ponds or lakes created as a feature of a reclamation plan must be approved by the County Flood Control and Water Conservation District, the Health Care Services Agency and the Mosquito Abatement District.

Financial Assurances

To ensure that reclamation proceeds in accordance with an approved reclamation plan, the County requires a security (e.g., a surety bond, trust fund, irrevocable letter of credit or other method) of an amount adequate to perform reclamation in accordance with the surface mining operation's approved reclamation plan, including revegetation and landscaping requirements, restoration of aquatic or wildlife habitat, restoration of water bodies and water quality, slope stability and erosion and drainage control, disposal of hazardous materials, and other measures. Cost estimates for the financial assurance shall be submitted to the County Planning Department for review and approval prior to the operator securing financial assurances. The Planning Director forwards a copy of the cost estimates to the State Department of Conservation, Division of Mines and Reclamation for review.

Current SMP-30 Operations

The Project site is currently undergoing active sand and gravel extraction, the plant is actively sorting and producing various aggregate materials and the material product is being hauled to various locations throughout the Bay Area pursuant to the current Alameda County SMP-30 permit. Current operations, activities and permit conditions, and reclamation requirements are more fully described below and illustrated on **Figures 3-4 and 3-5**.

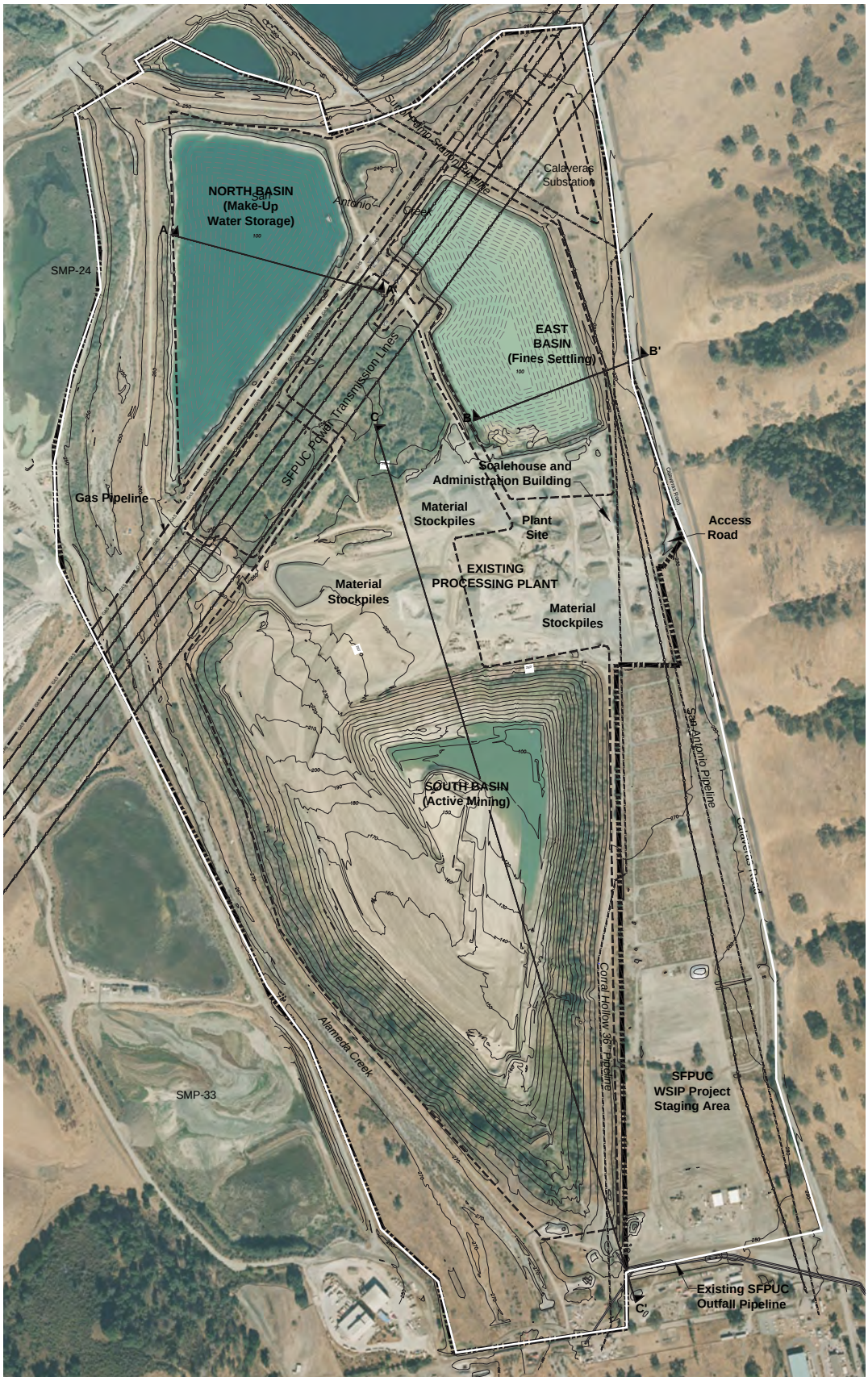
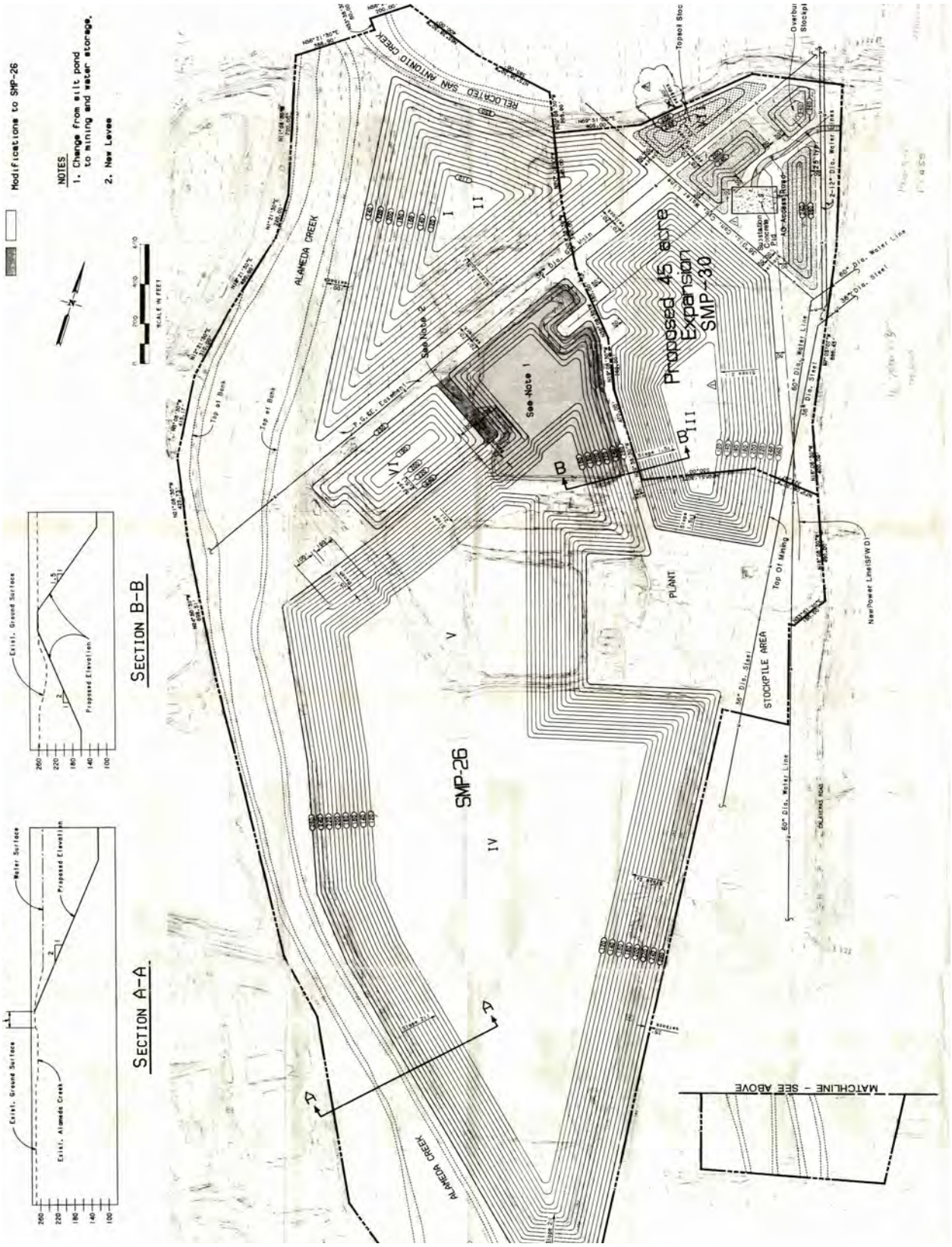


Figure 3-4
Current SMP-30 Mining Operations

Source: Benchmark Resources



1991 Site Plan, Bissel & Karn Engineers

Figure 3-5
1992 Approved SMP-30 Site Plan

Source: Benchmark Resources

Sand and Gravel Extraction

Currently, raw aggregate materials (sand and gravels) are extracted from the active mining pit (South Basin) in the southern portion of the Project site. Depending on operational requirements, raw aggregate material is either extracted by digging into the active pit with large excavators or by scraping material from the exposed surface of the active pit using large "scrapers". Extracted raw materials are then hauled to the main plant for processing. No explosives are used in the quarrying operation.

The currently approved pit depth per the effective SMP-30 permit is 140 feet below ground surface. The currently effective SMP-30 permit also establishes a mining setback of 100 feet from the banks of Alameda Creek and a setback of 50 feet from the banks of San Antonio Creek. The side slopes of the mining pit are established under the SMP-30 permit as being 2:1 (horizontal: vertical) throughout the site, and 1½:1 adjacent to the plant site.

Within the central portion of the site there are a number of smaller silt ponds. These silt ponds were used during previous excavations, but were not fully excavated to the permitted 140 foot depth. Additional excavation throughout the Project site, including further excavation of these smaller silt ponds to a depth of 140 feet could occur under the conditions of the currently effective SMP-30 permit.

Plant Operations

As the raw aggregate materials are extracted from the active mining pit, they are hauled to the plant for washing, crushing and sorting. Generally, this operation involves stockpiling raw materials near the plant, where a loader then delivers this raw material to the processing plant. At the processing plant, a number of operations are performed to clean and sort the raw materials into processed aggregates:

- Raw materials are typically "washed" with water to initially separate out the silt, sands, and aggregate.
- Larger rocks are often crushed to make smaller, production-size aggregate.
- The washed and crushed aggregates are then passed through a series of screens and conveyors which further sort the aggregate by size.
- At the end of the screening and separation process, the sorted aggregates are lifted via conveyor belts and dumped into fully sorted stockpiles of pea gravels, various aggregate sizes and sand.
- Loaders then fill haul trucks with fully sorted aggregate depending on the ordering requirements at the time. These materials are then weighed and hauled to construction sites, ready-mix cement plants and asphalt plants.

Water Management

As the active mining pit deepens, groundwater and underground surface water flows are encountered. This water fills up the bottom portion of the South Pit. In order to excavate the bottom portion of the pit and in accordance with the currently applicable NPDES permit, this water is pumped out of the active mining pit and piped to the "wash water pond" in the northwesterly portion of the site (North Basin). The wash water pond is a fully completed mining pit previously excavated to a depth of 140 feet.

Water from the wash water pond is then pumped to the plant to be used in the initial raw materials "washing" process. The used wash water is then pumped back out of the plant to a silt pond located in the northeasterly portion of the site (East Basin). Sediment settles to the bottom of the silt pond and the water is stored, recharged into the groundwater, and/or evaporates. The silt pond is a fully completed mining pit previously excavated to a depth of 140 feet.

Sand and Aggregate Production

The annual yield of construction aggregate produced at the quarry is highly dependent upon market demand for these products by the construction industry. As shown in the following table, recent quarrying operations at the site pursuant to SMP-30 have produced a fairly wide range of annual yield, reflecting the cycles of the construction industry. However, during the years between 1999 and 2001 the quarry operated at a peak of approximately 1.1 million tons of aggregate produced per year. In recent years the overall production has been reduced due to very low market demand.

Table 3-1: Annual Construction Aggregate Yield

Operational Year	Annual Quarry Yield - (tons per year)
1995	880,000
1996	1,020,000
1997	1,055,000
1998	1,098,000
1999	1,212,000
2000	1,104,000
2001	850,000
Regular Recurring Peak (1996-2000	1,100,000
2009	500,000
2010	500,000

Source: Oliver de Silva, as reported by CEMEX

Permit Conditions Addressing Air Quality and Noise

Conditions of the current SMP-30 permit which address issues of air quality and noise include the following:

- all engines and dirt moving equipment are equipped with mufflers to reduce engine noise
- all surface mining and processing operations that emit airborne contaminants comply with control measures as required by the County and the BAAQMD
- signs are posted along haul routes reminding drivers of dust and noise control requirements, and a spray bar is used to moisten loads before they leave the site
- the main access road is paved with asphalt, and other on-site roads and haul routes are graveled and watered to maintain dust control

Permit Conditions Addressing Reclamation and Other Environmental Factors

Pursuant to current SMP-30 permit conditions, the end use of the site upon complete reclamation is agriculture and water storage. Reclamation activities are on-going as mining operations occur. Key elements of the reclamation plan and current activities include:

- Topsoil stripped from mined areas is stockpiled for later use in revegetation and restoration. The height of the topsoil stockpiles vary but are generally low (5 feet in height) to blend naturally with the surrounding terrain.
- A large oak tree located along Calaveras Road near the plant entrance has been preserved, and protected by a fence established 5-feet outside of the tree drip-line.
- A Landscape Plan has been established along Calaveras Road to visually screen quarry and plant operations from the road. The Landscape Plan was implemented in 1995 and the growth and health of trees are monitored by the County.
- A Riparian Screening Plan has been established along the banks of San Antonio Creek, acting as a visual filter and providing natural wildlife habitat. The Riparian Screening Plan was implemented in 1996 based on direction provided by the County and the US Army Corps of Engineers.
- Exposed slopes adjacent to the wash water pond and the silt pond have been re-vegetated. All final reclaimed banks and bare soil areas are required to be re-vegetated with native grasslands pursuant to the final Reclamation Plan.
- A native tree and shrub planting plan shall be established for the entire bank of San Antonio Creek between Calaveras Road and its confluence with Alameda Creek.

Detailed Project Description

Background

In 2006, the SFPUC put out a request for proposals to prospective quarry operators to lease and operate the quarry at SMP-30, and to potentially expand quarry operations at the site through a revision of SMP-30 permit. The SFPUC entered into an exclusive negotiating agreement with Oliver de Silva, Inc. (ODS), and ODS has now been issued a lease from the City and County of San Francisco for the Sunol Valley Aggregate Quarry Site. The lease includes the currently active quarry site of 323 acres permitted under Alameda County SMP-30, and an additional approximately 58-acre area along the southeast boundary of the current SMP-30 site (as previously shown in Figure 3-2). As the new leaseholder/operator of the Sunol Valley Aggregate Quarry, ODS has now applied to Alameda County for a Revised SMP-30 mining permit (i.e., the Project) as further described below.

In advance of submitting the permit application for the Project to Alameda County, ODS has worked with the Alameda Creek Alliance, the Center for Biological Diversity and concerned/interested residents from the adjacent community of Sunol to address a number of issues associated with the currently proposed Project, as well as to address certain possible longer-term issues associated with future mining operations that are not a part of this application. One of the outcomes of this effort has been the jointly developed Conservation Plan for Sunol Quarry SMP-30 Site. This Conservation Plan is intended to significantly reduce potential biological impacts associated with the Project, to provide full mitigation for potentially unavoidable biological resource impacts of the Project, and to provide additional conservation benefits that will help to restore Alameda Creek and to improve habitat for native species in the vicinity of the Project. The specific measures from this Conservation Plan that are to be implemented by ODS pursuant to the proposed Project are more fully described under the "Detailed Project Description Elements" discussion below.

Project Objectives

The objectives of the proposed Project are as follows:

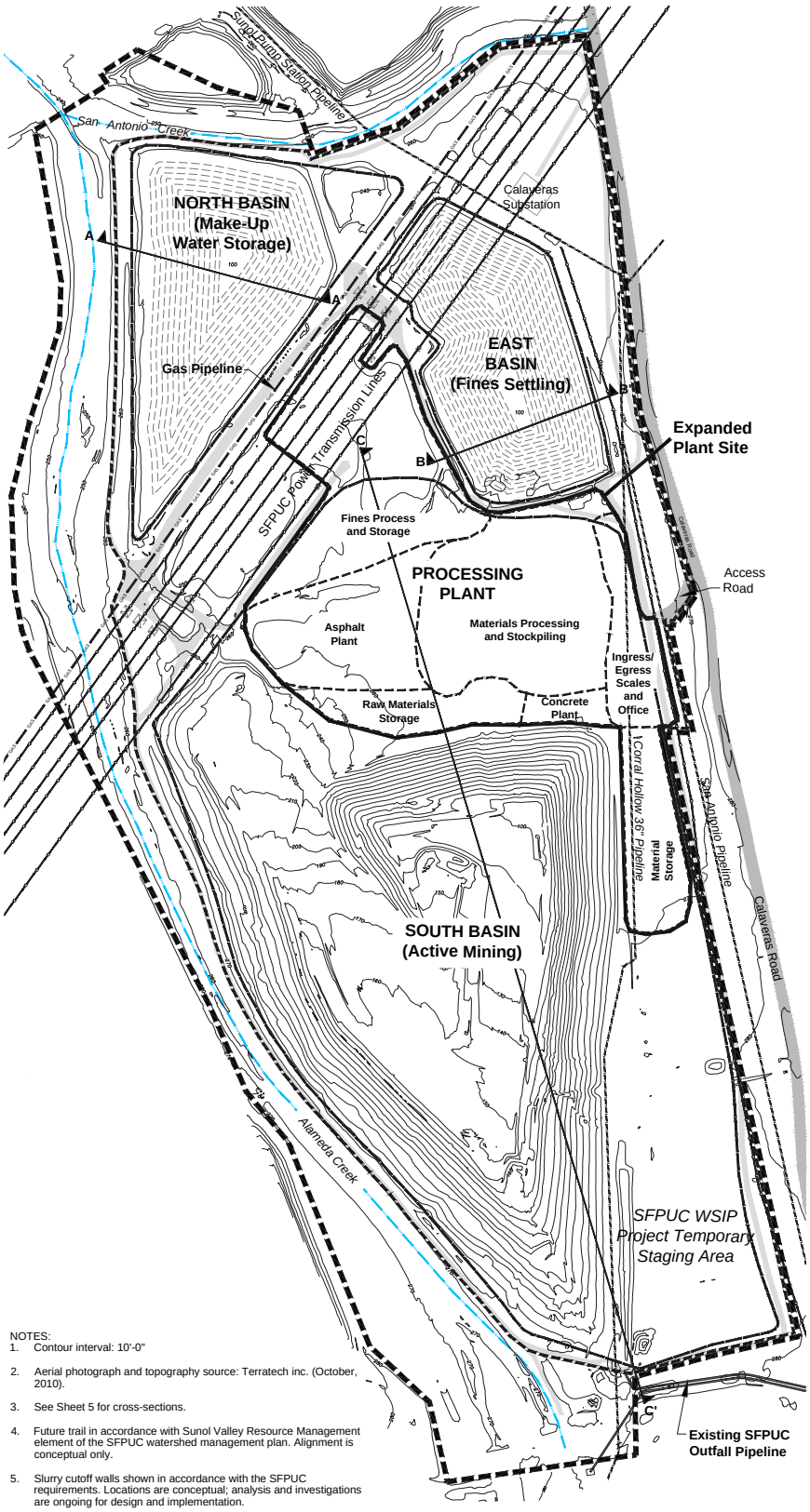
- To expand the overall production potential of the quarry by increasing the area under permit by approximately 58 acres and deepening the depth of excavation to at least 225 feet below ground surface (bgs), and to a maximum 400 feet bgs.
- Extend the expiration date of the mining permit to 30 years after approval of the modification
- To add additional ancillary uses at the site, including an asphalt batch plant and a concrete plant.
- To significantly reduce potential biological impacts associated with the Project, to fully mitigate any potentially unavoidable biological resource impacts of the Project, and to provide additional conservation benefits that will help to restore Alameda Creek and to improve habitat for native species in the vicinity of the Project through implementation of the Conservation Plan for Sunol Quarry SMP-30 Site.
- The primary objective of the Landowner (SFPUC) is to achieve the water storage goals set forth in the Sunol Valley Resource Management Element of the Alameda Watershed Plan adopted by the SFPUC in 2000.
- To ensure the on-going business enterprise as a commercial mining and aggregate products business, the Project applicant has identified the following objectives that the Project will need to meet, which include:
    - A supply of sufficient resources for long-term (30 years) availability;
    - A property of sufficient size and existing surrounding land uses that minimize land use compatibility issues;
    - A location with competitive distance to aggregate consumption markets;
    - A site located within the MRZ-2a zone;
    - Property under one ownership;
    - Ability to efficiently transport product via the local road network and state highway system;
    - A site with no prohibitive easement, agreement, or contract restrictions;
    - A site consistent with Alameda General Plan policies, including Measure D for expansion of an existing quarry site on the same or adjoining parcel;
    - A site consistent with the SFPUC Watershed Management Plan; and
    - A site that minimizes additional contributions to GHG emissions by enhancing supply and production proximal to destinations of construction projects.

Project Overview / Phasing

Phase I

Upon approval of the Project, the following activities would occur under Phase I operations (see **Figure 3-6**):

- Certain existing water transmission lines and overhead power lines traversing the site would be relocated to an alignment parallel to Calaveras Road in order to fully and safely access the expanded quarry pit.
- A soil/bentonite slurry cutoff wall would be installed along the northerly portion of Alameda Creek, and another slurry cutoff wall installed along a portion of San Antonio Creek to prevent creek in-flow into the quarry pit and basins.



Expanded processing plant site, expanded South Basin to include 58-acre expansion area

Figure 3-6
Phase I Mine Plan

Source: Benchmark Resources

- The current quarry pit (pus the 58-acre expansion site) would be excavated to a minimum depth of 225 feet, with a potential maximum depth of 400 feet. Side slopes would be maintained at a 2:1 horizontal to vertical ratio.
- Plant operations such as washing, crushing and sorting of sand and aggregates would continue at the existing plant site, but certain outdated or inefficient plant equipment may be replaced with modernized, movable sand and aggregate processing facilities. This newer equipment (which can/likely will be replaced under authority of the current SMP-30 permit and may include a new clarifier) would enable mining of the entire site as proposed.
- The existing plant site would be expanded to accommodate the proposed asphalt and concrete batch plants, as well as ancillary structures such as a quality control lab, a small office and truck scales. On-site circulation throughout the plant will be improved to better accommodate truck circulation.
- Ingress into the site would be maintained at the existing driveway off of Calaveras Road. Egress may continue from the existing driveway, but a new "south gate" exit may be installed in Phase I, further south along Calaveras Road, as an exit-only. With the new south gate, the existing driveway would become an entrance-only.

Phase II

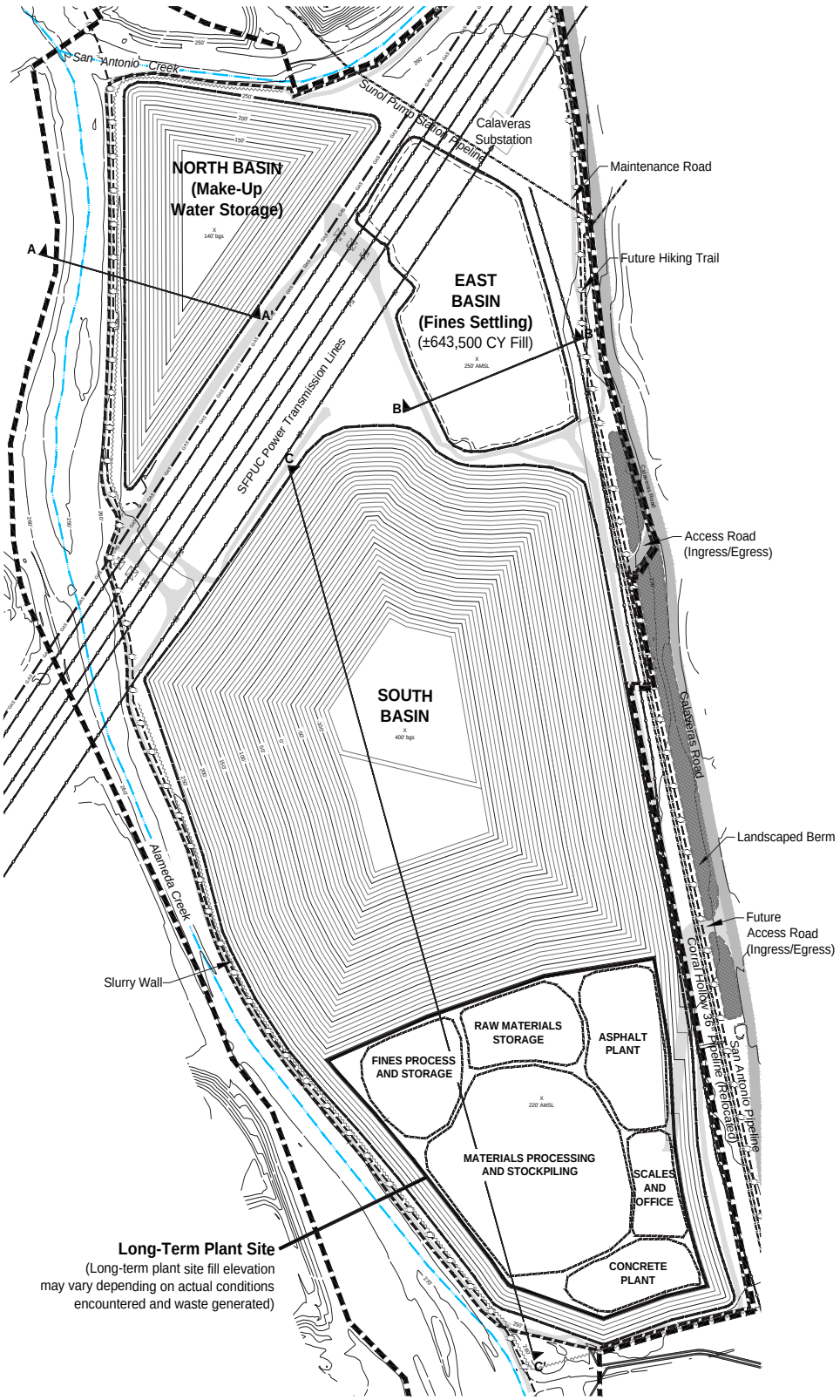
Once the existing quarry pit (and the 58-acre expansion area) has been excavated to its full depth, Phase II of the Project would be initiated (see **Figure 3-7**), including the following:

- Material wastes (or fines) that are generated during the washing, crushing and sorting of sand and aggregates of sand and aggregates in Phase I would have been stored on site. These fines would be replaced back into the south end of the quarry pit as engineered fill, creating a bench within the quarry with a surface elevation of approximately 50 feet below ground surface.
- All of the Phase I plant equipment (the washers, crushers, sorters, the asphalt and concrete batch plants, and the weigh station, office and scales) would be relocated onto this new bench within the old quarry pit.
- Once the equipment has been moved, the north end of the quarry pit would be expanded so that the former plant site can be excavated.
- Ingress and egress to the Phase II (long-term) plant site would be from the new "south gate" installed during Phase I.

Phase III - Reclamation

The current SMP-30 permit includes an approved Reclamation Plan. Because the Revised SMP-30 Project increases the surface disturbance area, increases the depth and clarifies the site end use, it is considered a "substantial deviation" of the previously approved Reclamation Plan pursuant to CCR §3502(4)(d). As such, the proposed Project includes updating the Reclamation Plan (see **Figure 3-8)** to incorporate current reclamation standards including, but not limited to, the Reclamation Standards under CCR §3700, et seq. In addition to the current Reclamation Plan requirements pursuant to the current SMP-30 permit, the following site reclamation efforts would be part of the current Project:

- Ultimate reclamation efforts to allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded surface area mined to a minimum depth of 225 feet below ground surface with resulting side slope of 2:1 is expected to result in approximately 23,000 acre feet of water storage at completion. Additional storage could be provided by mining deeper than 225 feet, as may be feasible.
- Planting native plants to minimize visual impacts from Calaveras Road; and



Relocated processing plant, expansion of the South Basin to quarry prior plant site

Figure 3-7
Phase II Mine Plan

Source: Benchmark Resources

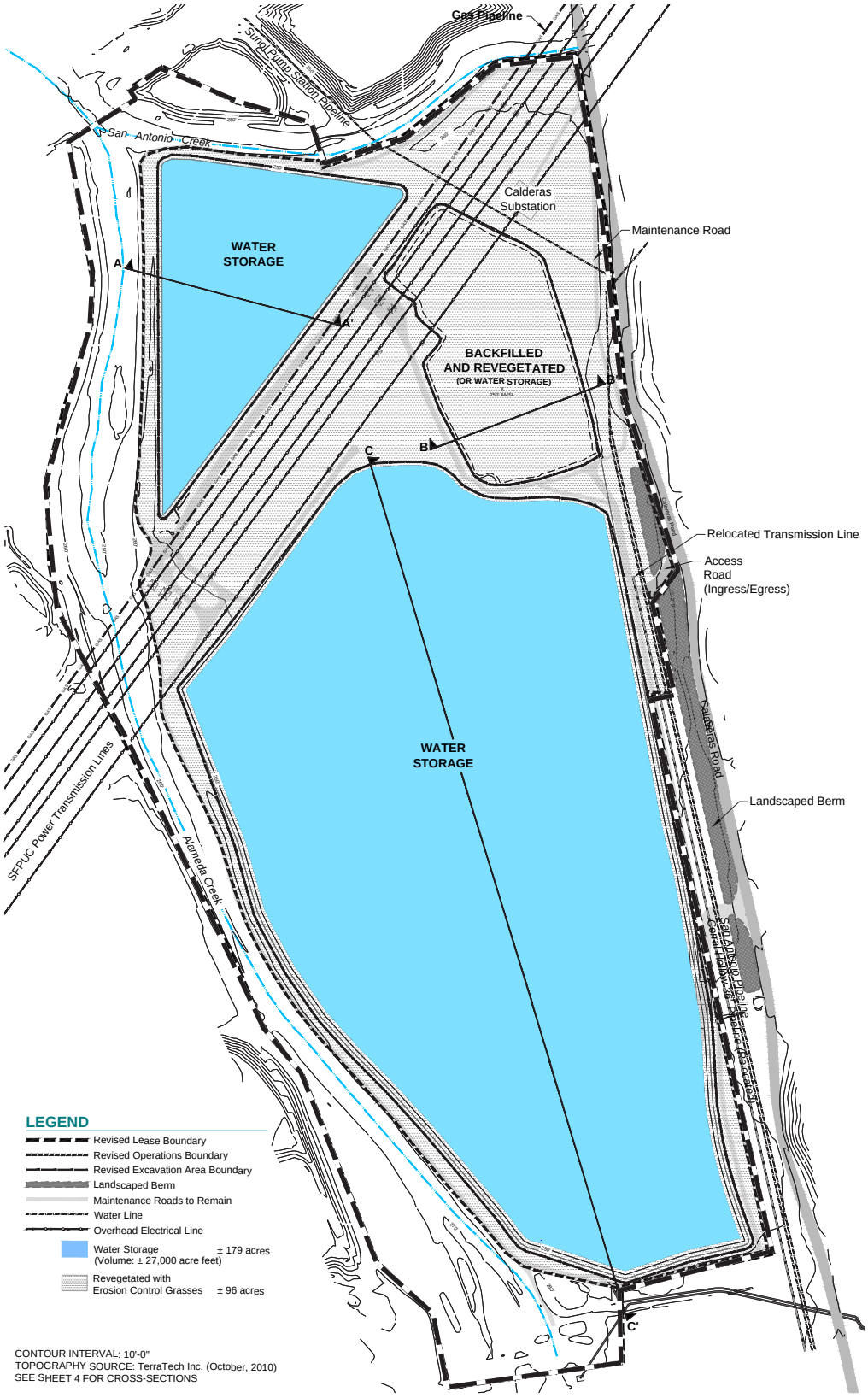


Figure 3-8
Reclamation Plan

Source: Benchmark Resources

- Re-vegetation of stream banks along reaches of Alameda Creek and San Antonio Creek fronting the Project site.

Detailed Project Description Elements

Sand and Gravel Extraction

Raw materials extraction activity at the Project site would generally continue in the same manner as occurs today and as described above under "Current SMP-30 Operations". The Revised SMP-30 permit (the Project) includes the following changes and/or revisions to the current SMP-30 permit provisions regarding extraction of materials.

Expansion of the Quarry Area

Under the proposed Project, the approximately 323 acre area currently under permit would be expanded to include an additional 58-acre area. This expansion area had previously been under a separate lease from the SFPUC to Naka Nursery, and was operated as a commercial nursery with wholesale and retail sales of containerized landscape materials (trees, bushes and shrubs and groundcover). This nursery lease has expired and the Naka Nursery relocated in 2009. The 58-acre expansion area is currently vacant and used as a staging area for other SFPUC construction projects, but is underlain with high quality construction aggregate.

Although the surface area of the quarry pit would be expanded, the proposed Project has been designed to maintain a 250-foot setback from Calaveras Road, and would maintain the same setbacks along Alameda Creek and San Antonio Creek as specified in the existing SMP-30 Use Permit.

Depth of Excavation

The currently permitted depth of excavation under SMP-30 is a maximum of 140 feet. Under the proposed Project, the depth of excavation would be increased from the currently allowed 140 feet to a minimum depth of 225 feet (with a potential maximum depth of 400 feet). Side slopes would be maintained at a 2:1 horizontal to vertical ratio.

Site Preparation

In order to fully and safely access the expanded quarry pit, it would be necessary to relocate certain existing water transmission lines and overhead power lines. Such relocation would occur after approval of Revised SMP-30 and prior to the start of excavation in the expansion area.

Additionally, in order to prevent the inflow of water from Alameda Creek and San Antonio Creek into the active mining pit, the SFPUC has required (subject to Project approval and further technical studies) the installation of a soil/bentonite slurry cutoff wall along the northerly portion of Alameda Creek within the Project area, and to install another slurry cutoff wall along a portion of San Antonio Creek (see **Figure 3-9**). The slurry walls are further addressed in Chapter 12: Hydrology.

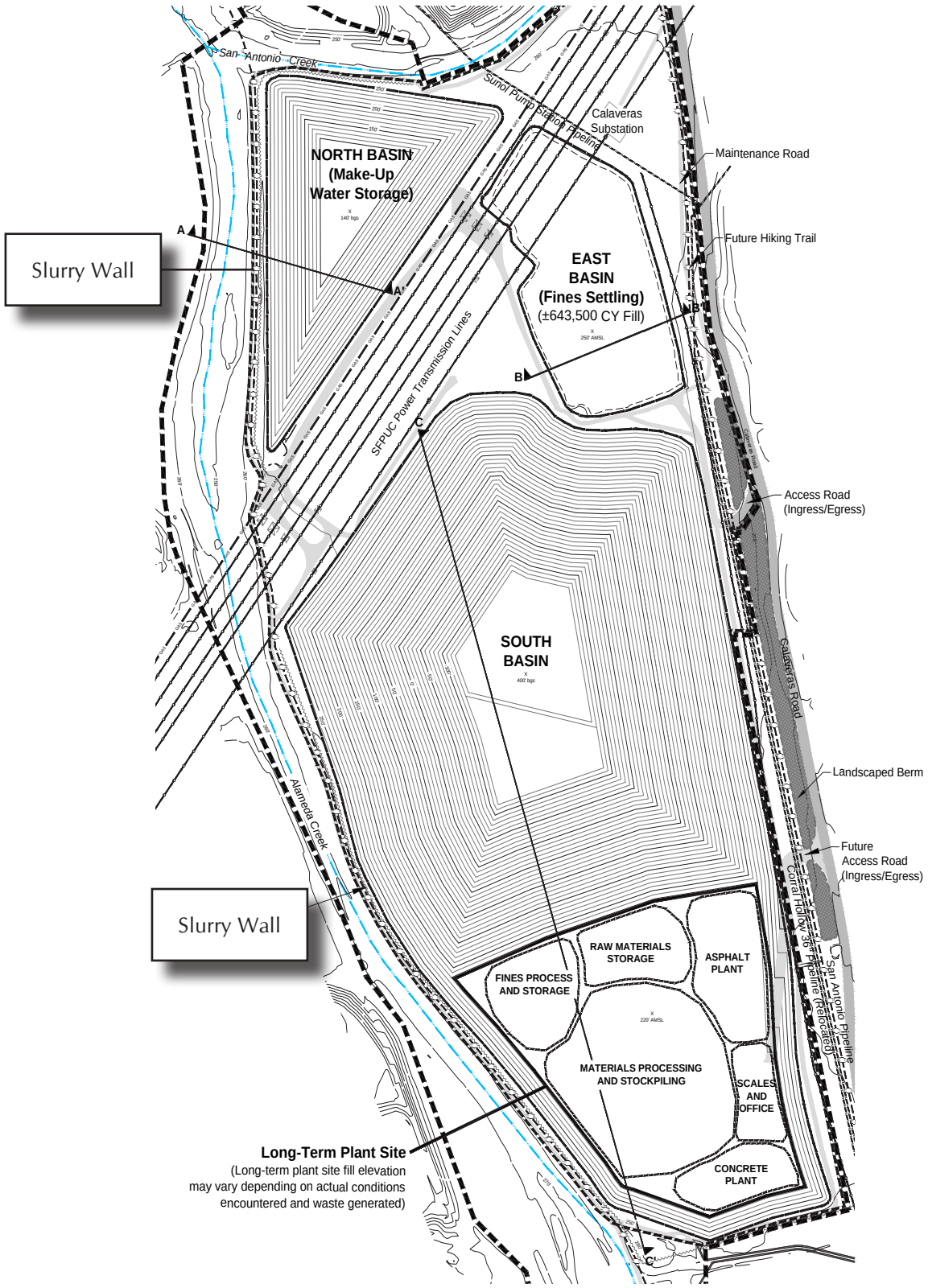


Figure 3-9
Mine Plan, Slurry Cut-Off Wall Locations

Source: Benchmark Resources

Plant Operations and Water Management

Similar to the extraction process, plant operations and water management activity at the Project site would generally continue in the same manner as occurs today and as described above under "Current SMP-30 Operations." The Revised SMP-30 permit (the Project) includes the following changes and/or revisions to the current SMP-30 permit provisions regarding plant operations.

Operating Hours

The current quarry and plant operates from 6 a.m. to 11 p.m. on Monday through Saturday, with occasional Sunday and 24-hour operations. The current proposal is for up to 24-hours/day quarry and plant operations on Monday through Saturday, with occasional Sunday operations as necessary for project requirements.

Site Access

An existing driveway provides direct access to the SMP-30 plant site and load-out area. This driveway is acceptable at its existing location for continued operations of the plant. As operations expand, an additional access driveway would be installed south of the existing driveway.

Phasing, Plant Relocation and Equipment

Plant operations such as washing, crushing and sorting of sand and aggregates would continue, but the plant location would move as the active mining pit is expanded and enlarged. Plant operations would ultimately be moved further to the south as shown on Figure 3-7. The proposed Project may replace certain outdated or under-efficient on-site plant equipment with modernized, movable sand and aggregate processing facilities. This newer equipment and relocation of the Plant would enable mining of the entire site as proposed.

Materials Stockpiling

Once raw aggregates have been crushed, screened and separated, the sorted aggregates are lifted via conveyor belts and dumped into fully sorted stockpiles of pea gravels of various aggregate sizes and sand. Under currently effective conditions of approval pursuant to the 1992 SMP-30 permit, material stockpiles are limited to a maximum height of 25 feet:

18. Height of stockpiles throughout the permit boundaries shall be restricted to two tiers, or 25 ± feet to minimize obstruction of distant views from Calaveras Road and to increase safety of on-site workers.

Under the proposed Project, the applicant has requested that the maximum material stockpile height be increased from 25 feet, to 50 feet. A 50-foot stockpile height would enable a greater volume of sorted aggregate to be available for transport at any given time, and is consistent with the capacity of newer conveyor systems. Visual assessment of the increased stockpile height is addressed in the Aesthetics chapter, and the stability of the stockpiles is addressed in the Geology and Soils chapter of this EIR

Equipment & Material Storage, and Vehicle Parking

As currently occurs, various pieces of equipment used in the quarrying and processing efforts would be stored on the Project site, and new materials associated with the asphalt plant and concrete plants would also need to be stored at the site.

- The storage of any hazardous materials used as part of daily operations (such as diesel, gasoline, natural gas, asphalt oil, motor oils, automatic transmission fluids, paints and thinners, hydraulic fluids, lubricating grease, bottled oxygen and acetylene, cleaning solvents, lubricating grease, brake fluids and anti-freeze) would primarily be limited to factory-supplied containers of 55-gallon drums or less, which would be stored within designated maintenance areas and in accordance with existing

local, state and federal hazardous materials regulations. The Project would retain one existing above-ground fuel tank used to store diesel fuel, but would remove one existing above-ground storage tank currently holding gasoline.

- The proposed asphalt plant would include the use of various hazardous materials including asphaltic oil, diesel fuel, liquid propane, oil emulsions, motor and hydraulic oil, waste motor oil, compressed gases, and hydrated lime. The storage of such material would occur in above-ground storage tanks specifically designed to meet U.S. EPA standards (i.e., double walled and meeting all ballistic and flame impingement requirements of CFC Article 79). Pursuant to 40 C.F.R. § 112.7(b), a Spill Prevention Control and Countermeasures Plan would be prepared to demonstrate that appropriate containment and/or diversionary structures or equipment is provided for all such tanks to prevent a discharge from contaminating the environment or creating a hazard.
- Spare equipment such as heavy parts, conveyor belts, tires and other replacement or extra equipment pieces would either be stored indoors or on an impermeable surface. Pursuant to the Project's required NPDES permit, all on-site storage of such equipment would be consistent with Best Management Practices (BMPs) to prevent contamination of soil or storm water runoff and to avoid surface water contamination.
- Non-functional equipment, scrap metal, construction debris, used batteries and tires, and similar objects would be removed from the site on a regular basis and disposed of at appropriately licensed facilities.

Additionally, as part of the proposed revisions to the currently effective Surface Mining Permit (SMP-30), the Project applicant proposes to amend the permit to allow for on-site storage of construction materials. Specifically, the applicant desires to store K-rails (cast concrete roadway barriers) and/or other construction equipment or materials on the Project site from time to time. These K-rails and/or other construction materials and equipment are not accessory to the quarry or processing operations, but materials owned by the Project applicant and which need to be stored until such time as they may be used for other purposes. Specifically, the Project includes the proposal to store these K-rails and/or other construction materials in the utility corridor underneath the main SFPUC power transmission lines which cross the site and which will remain.

Raw aggregate, concrete and asphalt will all be hauled from the Project site in large capacity (primarily 24-ton) trucks. A number of the trucks that would haul material from the Project site will be owned by other private haulers, but the Project applicant (ODS), would also own and operate a fleet of haul trucks as well. These haul trucks, as well as other on-site rolling stock (scrapers, loaders, etc.), would be parked on-site when not in use. Additionally, during periods of heavy production when large volumes of aggregates, asphalt and/or concrete are loaded and hauled, it may be necessary for the haul fleet to queue while waiting to be loaded with material. The proposed plant site would incorporate an internal ring road capable of accommodating such queues without blocking access to the loading areas or blocking the ingress and egress of other trucks and vehicles.

Water Management / Clarifiers

Water management at the Project site is currently, and would continue to be an effectively closed-loop system. As the active mining pit (the South Basin) deepens, groundwater and underground surface water flows that are encountered would be pumped out of the active mining pit in accordance with an applicable NPDES permit, and piped to the wash water pond (the North Basin) in the northwesterly portion of the site. Water from the wash water pond would then be pumped to the processing plant to be used in the initial raw materials "washing" process. The Project would introduce a water clarifier system between the wash water pond and the plant to remove sediment before entering the plant process equipment. The used wash water would then be pumped out of the plant to a silt pond (the East Basin)

located in the northeasterly portion of the site. In the East Basin, sediment settles to the bottom of the silt pond and the water is stored, recharged into the groundwater, and/or evaporates.

Additional water demands associated with the Project include the water needed for mixing concrete on-site. This water would be derived primarily from pumped groundwater from the active quarry pit, supplemented by additional SFPUC water supply sources as may be necessary.

New Accessory Uses

Currently, all sand and gravel materials produced from the quarry are hauled to separate locations for use in construction projects and/or used in the production of Portland cement concrete and asphalt. The proposed Project includes plans for adding an on-site asphalt concrete plant and a ready-mix concrete plant at the Project site (see **Figure 3-10**).

Asphalt Batch Plant

Asphalt concrete is a composite material commonly used in construction projects such as road surfaces, airports and parking lots. It consists of asphalt (refined residue from the distillation process of selected crude oils, which is used as a binder) and mineral aggregate mixed together and heated.

The proposed new asphalt batch plant at the Project site would use aggregate materials directly from the plant and mix them with asphalt cement which would be brought to the site. The processed aggregate materials would be piled near the batch plant to an approximate height of 40 feet. From there the material would go into the batch plant for production of asphalt. The batch plant facilities would include:

- incline conveyors to move raw materials from the stockpiles to the batch plant,
- a feeder assembly with bins that hold different sizes and types of aggregate materials,
- a drum mix assembly, which dries and heats aggregates by tumbling it through hot air, then moves it to a mixer where it is coated with heated asphalt cement and thoroughly mixed,
- once mixed, the hot mix asphalt is moved into silo towers for temporary asphalt storage prior to loading the material into trucks.
- There would also be a tower to load asphalt into trucks for shipment to job sites, and scales to weigh the trucks.

The batch plant would be comprised of all late-model modern equipment fitted with ‘best available control technologies” for emissions. It would include heated and insulated asphalt oil storage tanks, a heating oil system, and a fuel tank for equipment. Emissions controls would include an exhaust vent and a separator to separate dust from the gas stream. The emission control system traps and removes fine sand and dust particles and returns them to the mix. There would also be a blue smoke control system. As proposed, the asphalt batch plant would be a maximum of 60 feet in height. However, the associated service platform on top of the silos would extend the height to approximately 90 feet (see **Figure 3-11**.

It is estimated that the asphalt batch plant may produce up to 1.0 million tons of hot-mix asphalt per year, including recycled asphalt products.

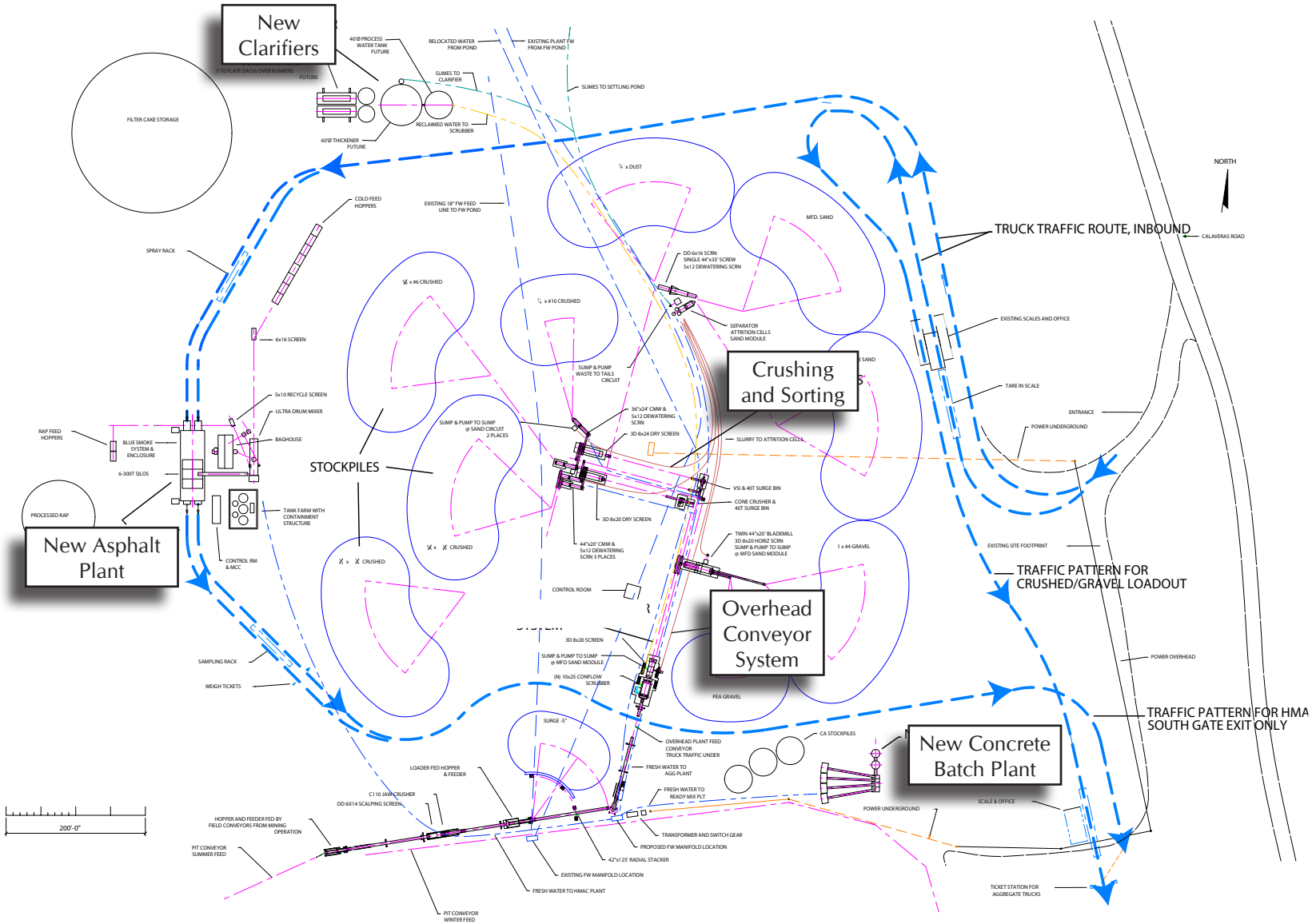
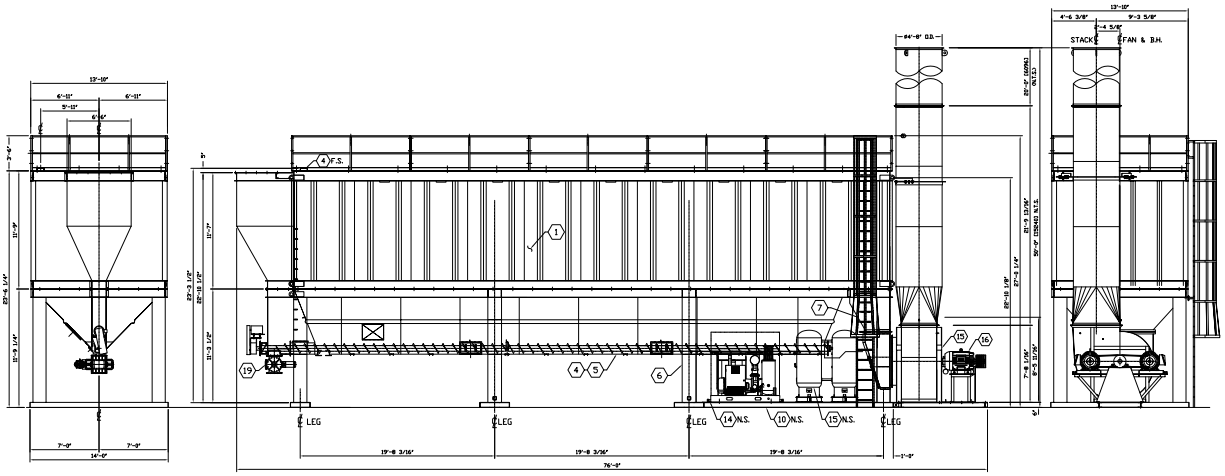


Figure 3-10
Phase I Plant Site, Site Plan

Source: Benchmark Resources



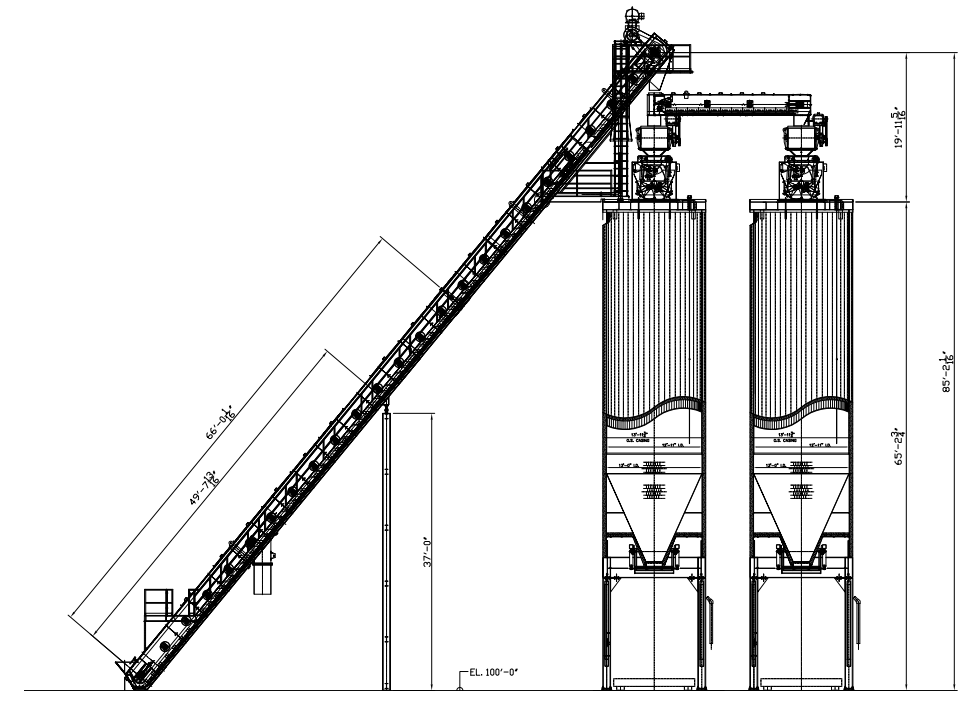


Figure 3-11
Elevation Drawing, Asphalt Plant

Source: ASTEC Industries, Inc., provided by Project applicant

Concrete Batch Plant

Concrete is a construction material composed of cement (commonly Portland cement), aggregate (gravels or crushed rocks), fine aggregate such as sand and water, and chemical admixtures. Concrete solidifies and hardens after mixing with water due to a chemical process known as hydration. The water reacts with the cement, which bonds the other components together, eventually creating a stone-like material. Concrete is used to make pavements, pipe, architectural structures, foundations, roads and bridges, parking structures, brick walls and structural footings. Ready-mixed concrete (RMC) is concrete that is specifically manufactured for delivery to a construction site in a freshly mixed and unhardened state. RMC can be custom-made at a batch plant to suit different applications and then delivered to a work site by truck mixers.

The proposed new concrete plant at the Project site would use aggregate materials directly from the plant and mix them with water from the on-site water supply as well as with Portland cement and other chemicals which would be brought to the site. The raw aggregate materials would be stock piled near the plant to an approximate height of 40 feet. From there the material would go into the plant for production of concrete. The concrete facilities would also be comprised of all late-model, modern equipment, and would include:

- the processed aggregate material is delivered by front-end loader or conveyor from the quarry plant to the concrete batch plant,
- an incline conveyor would move raw materials from the stock piles to the batch plant's elevated bins,
- from the bins, the materials would be fed by gravity into weigh hoppers which combine the proper amount of each material based on a pre-defined recipe dependent upon the intended use,
- sand, aggregate, cement, and water are then all gravity fed from the weigh hopper into mixer trucks, and the concrete is mixed with water on the way to the site where the concrete is to be poured. Alternatively, water may be added to the mixture prior to feeding into the mixer truck.
- As proposed, the concrete batch plant would be approximately 100 feet in height at the top of the silo.

It is estimated that the concrete plant may produce up to 250,000 cubic yards of mixed concrete per year.

Sand and Gravel Production

Under the current SMP-30 permit conditions, the quarry yield is estimated to have approximately 14 million tons remaining. The proposed modifications (58 additional surface acres and increasing the depth of excavation to a minimum of 225 feet and up to approximately 400 feet) would maximize sand and gravel production from the quarry up to approximately 60 million tons of saleable aggregate.

The projected future annual yield of construction aggregate produced at the quarry would continue to be highly dependent upon market demand for these products by the construction industry. Recent quarry operations pursuant to SMP-30 have produced a fairly wide range of annual yield, reflecting the cycles of the construction industry. However as indicated above, during the years between 1999 and 2001 the quarry operated at a recurring peak of approximately 1.1 million tons of aggregate produced per year. It is reasonable to assume that future year production of saleable aggregate will again reach this peak.

The Project also proposes to add a new asphalt batch plant and a new concrete plant at the site. With these added components, it is possible that the quarry may increase its annual volume of extracted materials to nearly 3 million tons per year, used in the production of the following:

- up to 1 million tons to be used in the production of asphalt
- up to 0.5 million tons to be used in the production of up to 250,000 cubic yards of concrete, and

- the difference (1.5 million tons assuming the maximum asphalt and concrete production rates above) as saleable aggregate.

Conservation Plan

Subject to Project approval by Alameda County (as lead agency) and lease approvals by the SFPUC (as a responsible agency), the Project applicant (ODS) would undertake the following conservation measures, pursuant to the Conservation Plan for Sunol Quarry SMP-30 Site,[2] to enhance habitat for special status species in the vicinity of the Project site.

- ODS will restore both banks of Alameda Creek and both banks of San Antonio Creek adjacent to the SMP-30 lease (i.e.. the Project site) with native vegetation. The revegetation would be completed within two years of Project approvals (including the Revised SMP-30 Lease with SFFPUC).
- ODS has already contributed funding towards the SFPUC's efforts to restore a more natural stream function in Alameda Creek that is compatible with and enhances habitat quality.
- The proposed Project includes optional alignments for accommodating possible future public access trails through the area that may be desired by the East Bay Regional Park District.
- Not later than one year after Project approval and SFPUC lease extension, ODS would fund a study of the geomorphology of Alameda Creek to determine the need for stabilization and reconfiguration of the creek within the entire gravel quarry reach of Alameda Creek in the Sunol Valley.
- After approval of the Project and extension of the SFPUC lease agreement, ODs and other quarry leaseholders in the Sunol Valley would financially support preparation of the Sunol Valley Restoration Plan, a separate planning and restoration effort to be initiated by the SFPUC. The Sunol Valley Restoration Plan will include streambed repair, grade stabilization, riparian re-vegetation, migratory fish passage, and fish habitat enhancement of the Alameda Creek stream reach in the Sunol Valley, including both banks of Alameda Creek from the Sunol Valley Water Treatment Plant downstream to the Sunol Water Temple. The Restoration Plan will also consider long-term plans for reclaiming quarry pits in the Sunol Valley and possible future public access trails in the area that may be desired by EBRPD. [3]
- After the Alameda County Water District has obtained all permits, easements and other necessary approvals, the contract for the work has been awarded and all other available funding has been disbursed, ODS will provide additional financial support and/or in-kind services to Alameda County Flood Control District and Alameda County Water District projects intended to help restore steelhead trout to Alameda Creek, including fish passage projects at the BART weir, inflatable rubber dams in lower Alameda Creek, and retrofitting the PG&E pipeline crossing in the Sunol Valley.[4]

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[2] Oliver de Silva, Inc., "*Conservation Plan for Sunol Quarry SMP-30 Site"*, A Conservation Plan to Enhance the Biological Resources of the Sunol Quarry SMP-30 Project Area in Alameda County, December 15, 2008

[3] The SFPUC will be the lead agency for the Restoration Plan and SFPUC, ODS, EBRPD and other quarry leaseholders in the Sunol Valley will negotiate cost sharing for funding of the Plan. To the extent that additional environmental review may be necessary prior to implementation of the Restoration Plan, such environmental review would occur subsequent to and not as a part of the environmental review of this Project.

[4] To the extent that additional environmental review may be necessary prior to implementation of ACFC&WCD fish passage projects, such environmental review would occur subsequent to and not as a part of the environmental review of this Project.

Terms

The proposed Project would extend the duration of the surface mining permit from its current expiration date of June 1, 2021 to 30 years from the effective date of the action modifying the permit.

Comparison of the Existing SMP-30 Operation to the Proposed Project

A comparison of the existing SMP-30 operation to the proposed revisions to SMP-30 is shown in **Table 3-2**.

Table 3-2: Comparison of Approved Operation vs. Revised SMP-30 (Project)

Design/Operating Characteristics	Approved Operations (SMP-30)	Proposed Project (Revised SMP-30)	Change
Operations			
Site and Parcels	96-375-11-5 (portion) and 96-80-8	96-375-11-5 (portion) and 96-80-8	Expansion into adjacent 58-acre parcel under same ownership
Startup Date and Termination Date	Startup: Ongoing since the 1960s Termination: June 1, 2021	Startup: Ongoing since the 1960s Termination: December 31, 2042 (or 30 years after date of approval)	Operation extended by 21 years
Type of Materials/Product to be Mined/Sold	Sand and gravel	Sand and gravel, asphaltic concrete, and ready-mix concrete	Sales of products made from sand and gravel
Operating Hours	6 a.m. – 11 p.m. (Monday – Saturday), Occasional Sunday and 24-hour operations	Up to 24-hours/day (Monday – Saturday). Occasional Sunday and 24-hour operations as necessary for project requirements	Operating hours consistent with changes in industry to meet public works project demands
Mine And Reclamation Data			
Acreages	323 acres	381-acres	±58-acres
Total Production	None stated (calculated as ±12 MT remaining)	60 MT	±48 MT
Facility Production	Permitted: No stated maximum limit (actual maximum: 1.2 million tons)	Sand and Gravel Production Maximum: 3.0 MT/yr Asphaltic concrete: 1.0 MT/yr Ready-mixed concrete: 250,000 CY/yr	Up to 1.8 MT/yr limit increase Production specified
Maximum Excavation Depth	120 feet AMSL (140-feet bgs)	-140-feet AMSL (400 feet bgs)	260-feet increased depth

Setbacks	Alameda Creek – 100 feet San Antonio Creek – 50 feet All buried utilities and pipelines - 50 feet (only applies to 1992 45-acre expansion area) Transmission tower foundations – 50 feet (only applies to 1992 45-acre expansion area)	Calaveras Road – 250 feet Alameda Creek – 100 feet San Antonio Creek – 50 feet All buried utilities and pipelines – 50 feet (only applies to 1992 45-acre expansion area) Transmission tower foundations – 50 feet (only applies to 1992 45-acre expansion area)	Setbacks maintained
Slopes	Original 285-acre site: 2:1 (above seepage or groundwater level) 2 ½:1 (below groundwater level) 4:1 (where groundwater level has been lowered causing seepage through the slope) Fill slopes shall be constructed of "pit run" materials and compacted to a relative compaction of 90% 45-acre expansion area	Cut slope: 2:1 Fill slopes: 2:1	Maximum slope angles maintained; supported by geotechnical investigation
Reclamation	No quantities of water storage estimated	Water storage up to approximately 27,000 AF	New plan will store up to approximately 27,000 AF
Other Details		Slurry Cutoff Wall Reclamation and revegetation in accordance with Alternative F of the Sunol Valley Resources Management Element of the Alameda Watershed Management Plan. Alameda and San Antonio Creeks Bank Restoration Relocation of existing 36-inch water line Relocation of Power Line Screening of quarry operations from Calaveras Road Coordination with the SFPUC, Alameda County, EBRPD and the Town of Sunol for planning a comprehensive regional trail system along the local reaches of Alameda Creek.	

Discretionary Actions

It is anticipated that this EIR will provide environmental review for all discretionary approvals and action necessary for this Project. A number of permits and approvals would be required before the changes in operation at the Project site could proceed, although quarrying operations pursuant to the currently effective SMP-30 permit are anticipated to continue throughout the environmental review process period.

As Lead Agency for the proposed Project, the County of Alameda would be primarily responsible for the approvals required. The primary approval being sought is a Revision to the current SMP-30 permit to enable those changes and/or revisions to the SMP-30 permit described above.

As part of any approval action for the Project, Alameda County would be required to certify the final EIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring plan. In Alameda County, the Planning Commission is the approval authority for the Surface Mining Permit and Reclamation Plan, which action is appealable to the County Board of Supervisors.

As a public agency landowner, the City and County of San Francisco and the SFPUC have retained some discretion with respect to modification of SMP-30, including the right to require certain modifications to the quarry lease as may be related to Project-required mitigation measures.

Other Agencies whose Approval may be Required

- City and County of San Francisco and the SFPUC
- California Department of Conservation, Office of Mine Reclamation
- Bay Area Air Quality Management District
- Regional Water Quality Control Board
- California Department of Fish and Game
- US Fish and Wildlife Service

4

Methodology and Assumptions

This chapter of the EIR provides an overview of the methodologies and assumptions underlying the following topic-specific chapters of the EIR. The following provides an overview of the scope of the analysis included in this chapter, organization of the sections, the methods for determining what impacts are significant.

Scope of the Analysis

Issues Fully Addressed in the Initial Study

The County circulated a Notice of Preparation (NOP) on October 25, 2011, which included an Initial Study Checklist indicating those topic areas which would require evaluation in the EIR (see Appendix A). As indicated in that Initial Study, there were a number of environmental issues that were determined to be either not significantly affected by the Project, adequately examined under the previous 1992 Mitigated Negative Declaration, or fully mitigated through implementation of mitigation measures that would be adopted as condition of Project approval. The Initial Study indicated that, unless further concerns regarding these environmental issues were raised during the public review of the NOP/Initial Study, no further analysis of these issues would be conducted. The environmental topic areas which were fully addressed in the Initial Study include:

- Agricultural and Forest Resources,
- Cultural Resources,
- Mineral Resources
- Population and Housing,
- Public Services and Recreation, and
- Utilities and Service Systems.

No further analysis for these environmental topic areas is contained within this Draft EIR.

Water Supply Assessment

CEQA Guidelines Section 15155 requires lead agencies to consult with appropriate water agencies to determine if larger "water-demand projects" has been accounted for in the most recently adopted urban water management plan, and to request the water agency to prepare a water assessment for such projects. "Water-demand projects" are defined as projects including, but not limited to residential developments of more than 500 dwelling units; industrial, manufacturing or processing plants, or industrial parks planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor space, or projects that would demand an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project.

Depending on the source of information and the particular characteristics of a given residential project, a residential home can generate water demands of between ½ to 1 acre-foot of water per year, or between

127,000 and 326,000 gallons per year. At those ratios, a 500 unit residential project can generate a demand for between 63 and 82 million gallons of water per year. This is the range of water demands anticipated to qualify as a "water-demand project" under the CEQA Guidelines.

The proposed Project's water demands are primarily generated by the demand for water to be used in the mixing of concrete in the on-site concrete batch plant. On average, a typical cubic yard (yard) of concrete mix includes approximately 35 gallons of water. At the Project's projected peak production rate of 250,000 cubic yards of concrete per year, the water demand associated with this use is approximately 8.7 million gallons per year. This water demand is far less than the 63 to 82 million gallons of water per year considered to qualify a project as a "water-demand project" under the CEQA Guidelines. Thus, consultation with the governing body of a water system and preparation of a water supply assessment for this Project is not required under CEQA.

As proposed under the Project, the source of water used in the mixing of concrete is proposed to be derived primarily from groundwater pumped out of the main quarry pit. This groundwater is currently pumped out of the quarry pit and stored in the North Basin where it is used for process water, percolates back to the groundwater table, or is discharged to San Antonio Creek and Alameda Creek. Groundwater has been pumped from the current excavation pit at rates averaging from 1,000 gpm to over 2,500 gpm, and pumping rates as high as 10,000 gpm have occurred due to excessive rainfall in late winter and early spring in 2011. At average pumping rates, groundwater pumping is expected to provide a reliable water supply for the mixing of concrete. If additional water supplies are required, the applicant could withdraw additional water from the North Basin (which as a volume of nearly 638 million gallons) or may request water supplies from the nearby SFPUC water system.

Remaining Scope of the EIR

The following remaining environmental topics are further analyzed as to potential environmental effects of the Project in the following chapters of this EIR:

- Chapter 5: Land Use Policy Consistency
- Chapter 6: Aesthetics
- Chapter 7: Air Quality
- Chapter 8: Greenhouse Gas Emissions
- Chapter 9: Biological Resources
- Chapter 10: Geology/Soils
- Chapter 11: Hazards/Hazardous Materials
- Chapter 12: Hydrology/Water Quality
- Chapter 13: Noise
- Chapter 14: Transportation/Traffic

Public Comments on the Scope of the Draft EIR

The Notice of Preparation and Initial Study that was published on October 25, 2011 indicated that a public comment period for commenting on the scope of the Draft EIR would last through November 25, 2011. The NOP and Initial Study were sent to property owners within 500 feet of the Project site, trustee agencies, organizations and interested individuals and to the State Clearinghouse. Additionally, a public scoping session was held in the nearby community of Sunol at the Sunol Glen Elementary School on November 15, 2011. During that public comment period, a number of comments were received by the

County at the scoping session and in writing or via e-mail. The written comments received are included in **Appendix B**. These comments are briefly summarized below, along with a notation indicating generally where in this Draft EIR these comments have been taken into account in the preparation of this Draft EIR.

Governor's Office of Planning and Research, State Clearinghouse and Planning Unit

This response was a standard form reply from the State Clearinghouse indicating that the Draft EIR had been provided to the following state agencies for their review and comment; the Resources Agency; the Department of Conservation; the Department of Parks and Recreation; the Department of Water Resources; the Department of Fish and Game - Region 3; the Native American Heritage Commission; the California Highway Patrol; Caltrans - District 4; the Air Resources Board - Major Industrial Projects; the Department of Toxic Substances Control; and the Regional Water Quality Control Board - Region 2. This response letter did not require any specific issues be taken into account in preparation of the Draft EIR.

California Department of Transportation (Caltrans) District 4

Caltrans' letter of November 22, 2011 specifically requested the following:

- *"The EIR should evaluate the Project's impacts on state transportation facilities, in particular on I-680 and State Route 84."*

Project impacts on I-680 and SR 84 are addressed in Chapter 14: Transportation under the impact heading of Freeway Level of Service.

- *"Any traffic-related mitigation measures that may require work or traffic control within the State right-of-way would require an encroachment permit issued by the Department, and should be incorporated into the construction plans for the Project."*

As indicated in Chapter 3: Project Description and Chapter 14: Transportation, the Project does not propose nor require any mitigation measures that would occur within the state right-of-way.

San Francisco Public Utilities Commission (SFPUC)

The SFPUC letter of November 18, 2011 specifically requested that the Draft EIR address the following issues:

- *"There are a number of land uses, including many SFPUC facilities and utility infrastructure systems, which surround the Project site and should be included in the Draft EIR and analyzed for potential impacts with the proposed Project. "*

Potential land use impacts, including the Projects' impacts on surrounding SFPUC facilities, are addressed in Chapter 5: Land Use and Policy Consistency. To the extent applicable, surrounding SFPUC utility and infrastructure projects are considered within the context of potential cumulative impacts.

- *"The project description should specify ownership of the water transmission lines and overhead power lines that will need to be relocated. The project description should also describe the reclamation plan required by the SFPUC in detail, including finish grading and engineered levees to create a storage lake for the volume of water as directed by the SFPUC, and a schedule showing the completion of various phases of the project, including reclamation. "*

Ownership of those SFPUC water transmission lines and overhead power lines which are proposed for relocation is indicated in Chapter 3: Project Description. The Project Description also describes the actions and activities associated with each phase of the Project, and to the extent applicable, impacts are also identified by phase within each subsequent chapter of this EIR. The proposed grading plan pursuant to the Project's proposed Reclamation Plan is also shown in the Project Description. Other policy-based

requirements of the SFPUC for the Project and its ultimate reclamation are addressed in Chapter 5: Land Use and Policy Consistency under the sub-heading of Consistency with the SFPUC Alameda Watershed Management Plan.

- *"The Draft EIR should include an analysis of the potential slope instability associated with the updated Reclamation Plan. The new slopes should be analyzed for stability under water storage conditions, and the experience of East Bay Regional Park District (EBRPD) in the re-use of quarries for recreational lakes should be considered. "*

Slope stability issues, including stability of side slopes under water storage conditions is addresses in Chapter 10: Geology and Soils, specifically under the heading of Slope Stability.

- *"The Draft EIR should address the requirements of the Alameda Watershed Fire Management Element (August 1996) found in Appendix A-1 of the SFPUC Alameda Watershed Management Plan."*

Fire Management issues are addressed in Chapter 11: Hazards and Hazardous Materials, specifically under the topic of Fire Hazards. Additionally, Chapter 5: Land Use and Policy Consistency, also addresses the Project's consistency with the specific policies of the SFPUC Alameda Watershed Management Plan.

- *"The EIR should analyze potential conflicts with the SFPUC's Alameda Watershed Habitat Management Plan (AWHCP) which is currently being developed."*

The applicability of the SFPUC Alameda Watershed Habitat Conservation Plan to the Project, and any potential conflict with that Plan is addressed in Chapter 9: Biological Resources, specifically under the topic of Consistency with Habitat Conservation Plans.

- *"The Draft EIR should include a description of the future use of the site as including recreational trails."*

The Project Description specifically describes the alignment of potential trails through the Project site, and Chapter 14: Transportation specifically addresses potential pedestrian impacts related to the provision of pedestrian trails on the site during quarry operations.

- *The Draft EIR should include a citation for the sighting of California tiger salamander at the SFPUC WSIP project, as indicated in the Initial Study.*

The presence of special status species within the Project area and vicinity is addressed in the Setting section of Chapter 9: Biological Resources.

Center for Biological Diversity (CBD) and the Alameda Creek Alliance (ACA)

The CBD/ACA letter of November 15, 2011 expresses support for implementation of those conservation measures included in the Project's Conservation Plan, indicating that they believe that these measures will fully addresses all potential species, vegetation, habitat and biological impacts of the Project. The effectiveness of conservation measures included in the Project's Conservation Plan to mitigate the Project's potential impacts on special-status species, vegetation, habitat and biological resources is addressed in Chapter 9: Biological Resources.

Public Scoping Meeting

The public scoping session held at the Sunol Glen Elementary School on November 15, 2011 generated relatively few comments on the scope of the EIR other than the following:

- *The EIR should analyze the Project's consistency with the provisions of Measure D.*

The consistencies of the Project with the provisions of Measure D, which are now fully integrated into the County's East County Area Plan (ECAP), are addressed in Chapter 5: Land Use and Policy Consistency.

- *The EIR should explain the relationship between the proposed Project and another proposed quarry operation at Apperson Ridge.*

The relationship (or lack thereof) between the Project and the Apperson Quarry project is more fully described below.

Overall Assumptions and Methodology for Defining Potential Environmental Effects

Definition of the Project

As stated in the Project Description, the Project site is currently undergoing active sand and gravel extraction, the plant is actively sorting and producing various aggregate materials and the material product is being hauled to various locations throughout the Bay Area. These activities are occurring pursuant to a current Alameda County Surface Mining Permit (SMP-30). Quarrying activities at the site have been on-going since the 1960s, and the current SMP-30 permit will not terminate until June 1, 2021. Therefore, the Project as analyzed in this EIR compares those changes as currently proposed under the Revised SMP-30 permit application (SMP-30) to the currently active quarry operations pursuant to the effective SMP-30 permit. The analysis assumes a base level of activity at the site consistent with on-going operations and approved activities, and identifies the environmental effects associated with the increment of change to these current operations and approved activities associated with the proposed revisions to the Surface Mining Permit. As noted in the Project Description, the major significant changes associated with the proposed Project (Revised SMP-30) as compared to current operations (SMP-30 as approved by the County in 1992) include, but are not limited to the following:

  - expanding the Project site by an additional 58 acres, on an immediately adjacent parcel under the same ownership
- extending operation of the Project for 21 years (the current SMP-30 permit is scheduled to terminate in 2021, the Project would extend the permit through 2042, or 30 years after date of approval),
- adding additional equipment at the site to enable on-site production of asphaltic concrete and ready-mix concrete
- increasing annual sand and aggregate yield from the quarry to a maximum of 3 million tons of sand and gravel per year, with on-site processing of up to 1 million tons per year of asphaltic concrete and 250,000 cubic yards of ready-mixed concrete
- increasing the maximum excavation depth of the quarry from 140 feet below ground surface (as currently permitted), to a maximum of 400 feet below ground surface
- increasing the water storage capability of the site under the Reclamation Plan to approximately 27,000 acre-feet

The environmental effects associated with these increments of change are the subject of analysis in this EIR.

Existing Conditions vs. Baseline Conditions

Existing Conditions

Pursuant to CEQA Guidelines Section 15125, an EIR "must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." Further, CEQA Guidelines section 15126.2 provides that "an EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced."

A number of recent court decisions (*Communities for a Better Environment v. South Coast Air Quality Management District* [2010], *Sunnyvale West Neighborhood Association v. City of Sunnyvale* [2010], and *Pfeiffer v. City of Sunnyvale City Council* [2011]), have interpreted how these CEQA Guidelines should be applied, making it clear that an EIR must focus on impacts to the existing environment. These cases have also raised substantial discussion and analysis among the professional and legal community on this topic.

Use of Existing Conditions in this EIR

Consistent with these CEQA Guidelines and the above case law, each subsequent chapter of this EIR begins with a Setting section which presents "existing conditions" as they exist at the time the NOP for this EIR was published (October 25, 2011), or at the time specific environmental analysis was commenced. For example, the Transportation chapter includes traffic counts conducted on October 6th and October 21st 2010, and compares the Project's contribution of traffic to these current conditions. As another example, the Air Quality chapter includes measurements of meteorological data which were obtained at the site throughout 2010 and 2011, and utilizes this current data in assessment of the Project's air quality impacts. Similar analysis of the Project's effects on all other environmental topics is compared against current, existing conditions.

Baseline Conditions

These are other examples of case law (*San Joaquin Raptor Rescue Center v. County of Merced* [2007], *Fairview Neighbors v. County of Ventura* [1999]), which recognize that there may be instances in which calculating the baseline as the existing conditions present on the date of the NOP does not always capture true pre-project conditions, and that in appropriate situations a lead agency has limited discretion to select a different baseline method. These case law examples suggest that a different baseline condition may be needed to adequately analyze impacts that vary over time. In such cases (i.e., San Joaquin Raptor), the courts have cautioned that "*established usage of the property may be considered to be part of the environmental setting*", but that the baseline "*must be premised on realized physical conditions on the ground, as opposed to merely hypothetical conditions allowable under existing plans.*"

Use of Baseline Conditions in this EIR

As stated in the Project Description, the annual yield of construction aggregate produced at the existing quarry is highly dependent upon the market demand for these products as generated by the construction industry. As a result, quarrying operations at the site pursuant to the currently effective operating permit (SMP-30) have produced a fairly wide range of annual yield, reflective of the cycles in the construction industry. For example, during the years between 1995 and 2001(when demand was relatively high) the quarry operated at a regularly recurring peak of approximately 1.1 million tons of aggregate produced

per year. This can be compared to more current years when the overall production rate of construction aggregate has been reduced due to very low market demand. Specifically, during the years 2010 and 2011 the quarry generated only approximately 0.5 million tons of aggregate. Furthermore (based on discussions with the Project applicant), the traffic counts conducted in October of 2010 occurred on a specific day in which the site generated a relatively low amount of trips, even for the modest business years during 2010/2011. Thus, "existing conditions" as measured in 2010 (and specifically in October of 2010) may not be the most reflective of the true context within which the Project would occur.

The existing SMP-30 permit, issued by the County in 1992 and which regulates current operations at the site, does not contain or mandate a maximum annual production rate, and there is no currently effective limit on quarry production of raw aggregate or the rate at which aggregate material may be hauled from the site. The environmental document prepared in conjunction with the SMP-30 permit (the 1992 Santa Clara Sand and Gravel (SMP-30) Mitigated Negative Declaration) contains limited assumptions about production rates and associated truck trips, stating only that *". . . mining the 45 acres defined by [that] project description would extend the operating lifetime of the quarry by approximately 3 to 5 years. This projection is consistent with the estimated annual tonnage for a recent year and the total anticipated production, estimated at 3 million tons of material, from the 45 acres*." With a total of 3 million tons of material extending the lifetime of the quarry by approximately 3 years, the assumption from the 1992 Neg. Dec. is consistent with an assumed average annual production rate of approximately 1 million tons per year.

Because there is no reason other than market demand that limits or restrains the production of aggregate from the quarry to the current "low cycle" of production (i.e., at 0.5 million tons per year as occurred in 2011), a "baseline" condition is also presented in this EIR reflective of the regularly recurring peak production rate of 1.1 million tons per year as occurred between 1995 and 2001. Use of this "baseline" condition allows for comparison of the environmental consequences associated with the Project in a more complete context, reflective of conditions that have occurred in the past and would likely occur again under conditions of higher market demand than those conditions which existed in October 2011. This baseline comparison is used in this EIR because:

- It provides useful information against which to measure or compare the Project's impacts.
- It is not reflective of a hypothetical allowable condition under existing permits or a predicted future condition, but rather is an actually realized physical condition established under previous use of the property.
- Mining operations at the facility on any given day or within any particular recent time frame may be misleading and illusory given the demand-driven fluctuations of production that the mine has, and will experience in response to changing market conditions.

This EIRs presentation of existing conditions and its comparative analysis against both existing conditions and a previously realized prior baseline condition, fulfills requirements to provide an accurate measurement of the magnitude and range of change that can be expected to occur under the Project as compared to known conditions.

Project Phasing and Operational Fluctuations

Identified Project Phases

Integral to the Project Description is the concept of phasing of Project operations. The timing for each phase will be determined based on the market demand for sand and gravel aggregate, rather than upon any particular calendar event or date specific. There are certain environmental effects which may not be considered significant in this EIR based on Phase I operations, but may become more significant under Phase II operations. For example, the noise impacts to adjacent sensitive receptors that may be heard

under Phase I operations (when equipment is added to the existing plant site) are projected to be substantially different than the noise impacts that will occur in Phase II (when the plant is relocated to a different location within the site, but closer to the Project's southern boundary. To the extent applicable, potential impacts are identified relative to the individual phase in which they are anticipated to occur.

Operational Fluctuations

Given that the annual yield of construction aggregate produced at the Project will vary depending upon market demand for the aggregate products produced, there are certain impacts which may occur under higher production rates that would not necessarily occur under lower annual production rates, when demand for the products is lower. For example, operation of the asphalt plant is projected to generate emissions of stationary source GHGs, and mobile sources (e.g., haul truck) will emit non-stationary source GHGs and other air quality pollutants. However, the amount of these emissions will vary considerably, depending upon the volume of asphalt and/or aggregate produced in any given year. Therefore, to the extent applicable, potential impacts are identified relative to the production rates or particular "impact triggers" under which such effects would occur.

Determination of Significance

Under CEQA, a significant effect is defined as "a substantial or potentially substantial adverse change in the environment". In each of the following chapters of this EIR the impact evaluations are prefaced by a list of criteria of significance, which are the thresholds for determining whether an impact represents a substantial adverse change (i.e., is "significant". The thresholds used in this EIR implement and supplement provisions in the CEQA Guidelines for determining the significance of environmental effects, including Sections 15064, 15064.5, 15065, 15382 and Appendix G.

Additionally, in May of 2011 the Bay Area Air Quality Management District (BAAQMD) adopted new Thresholds of Significance for air quality and greenhouse gas emissions, and issued an update to their *California Environmental Quality Act Air Quality Guidelines.* This EIR relies on these May 2011 BAAQMD Thresholds as supplemental to the County EIR thresholds of significance.

Cumulative Analysis Context

CEQA defines cumulative as "two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts." Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts when the project's incremental effect is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. These impacts can result from a combination of the proposed project together with other projects causing related impacts. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects."

The methodology used in this EIR for assessing cumulative impacts varies depending on the specific topic being analyzed. For example, the geographic and temporal (time-related) parameters related to the cumulative analyses of traffic and/or air quality impacts are not necessarily the same as those for the cumulative analysis of noise or aesthetic impacts. This is because the geographic area that relates to traffic or air quality is much larger and regional in character than the geographic area that could be impacted by potential noise or aesthetic impacts. Cumulative noise and aesthetic impacts are more localized than air quality and transportation impacts, which are more regional in nature. The cumulative

analyses conducted in this EIR have therefore been determined by the degree to which impacts from this Project are likely to occur in combination with other projects.

Reclamation Plan as the Project's Proposed End-State

As indicated in the Project Description, the final phase of the Project (Phase III) consists of implementation of the proposed Reclamation Plan. The proposed Reclamation Plan anticipates ultimate use of the completed quarry pit for SFPUC water storage. At completion, the expanded surface area mined to a minimum depth of 225 feet below ground surface with resulting side slope of 2:1 is expected to result in approximately 23,000 acre feet of water storage. Additional storage could be provided by mining deeper than 225 feet, as may be feasible. Additionally, the Reclamation Plan includes planting native plants to minimize visual impacts from Calaveras Road and re-vegetation of stream banks along reaches of Alameda Creek and San Antonio Creek fronting the Project site. Potential environmental impacts resulting from implementation of the Reclamation Plan are addressed in this EIR.

Private Commitments Related to the Project (Revised SMP-30)

The Project applicant has entered into a private agreement with the Alameda Creek Alliance and the Center for Biological Diversity. Pursuant to that private agreement, the Project applicant has agreed to implement a Conservation Plan for the Sunol Quarry (SMP-30) site. Portions of that Conservation Plan are directly relevant and pertinent to the currently proposed Project (i.e., Revised SMP-30). For example, subject to Project approval by Alameda County and lease approvals by the SFPUC, the Project applicant will undertake the following conservation measures to enhance habitat for special status species in the vicinity of the Project site:

- restoring both banks of Alameda Creek and both banks of San Antonio Creek adjacent to the Project site with native vegetation, and contributing to the SFPUC's efforts toward restoration of a more natural stream function that is compatible with and enhances habitat quality in these stream reaches;
- contributing funds toward restoration planning for the reach of Alameda Creek in the Sunol Valley;
- accommodating possible future public access trails through the area that may be desired by the East Bay Regional Park District;
- contributing to the funding of a study of the geomorphology of Alameda Creek to determine the need for stabilization and reconfiguration of the creek within the entire gravel quarry reach of Alameda Creek in the Sunol Valley;
- financially supporting a Sunol Valley Restoration Plan, a separate planning and restoration effort to be initiated by the SFPUC. The Sunol Valley Restoration Plan will include streambed repair, grade stabilization, riparian re-vegetation, migratory fish passage, and fish habitat enhancement of the Alameda Creek stream reach in the Sunol Valley, including both banks of Alameda Creek from the Sunol Valley Water Treatment Plant downstream to the Sunol Water Temple. The Restoration Plan will also consider long-term plans for reclaiming quarry pits in the Sunol Valley and possible future public access trails in the area that may be desired by EBRPD; and
- financially supporting Alameda County Flood Control and Water Conservation District (ACFC&WCD) projects intended to help restore steelhead trout to Alameda Creek, including fish passage projects at the BART weir, inflatable rubber dams in lower Alameda Creek, and retrofitting the PG&E pipeline crossing in the Sunol Valley.

These private commitments made pursuant to the current Project (Revised SMP-30) are included in, and accounted for in the analysis contained in this EIR.

Subsequent Project Commitments and Further Revised SMP-30

In addition to these Project-related commitments, the Project applicant has also entered into a private agreement with the Alameda Creek Alliance and the Center for Biological Diversity which itemize a number of additional conditions that are applicable to a subsequent sequence of environmental reviews and approvals that are separate and apart from the currently proposed Project. These subsequent reviews and approvals would allow for development of a "Further Revised SMP-30" project. The Further Revised SMP-30 project is defined as continued operation of the Project's stockpile areas, aggregate processing plant, asphalt plant and ready-mix concrete plant, but for use in delivery, stockpiling and processing of aggregate material from an entirely separate quarry, the Apperson Quarry (SMP-17). The Apperson Quarry is an approximately 680-acre hard rock mining project approved by Alameda County in 1984 (pursuant to SMP-17), but, as of the publication of this Draft EIR, no quarry activities have as yet commenced at the SMP-17 site.

As the lease holder for both the Sunol Valley Quarry (SMP-30) and the Apperson Quarry (SMP-17), the Project applicant is considering the potential operational, economic and environmental benefits associated a possible future project wherein these two quarry projects would be linked together. As such, the Project applicant has reached a private agreement, predicated upon approval of the currently proposed Project, to defer mining at the Apperson Quarry until no earlier than 2030, and not before cessation of mining at the Project site (at SMP-30).

Under this possible future project, aggregates mined at the Apperson Quarry site would be delivered via a conveyor system to the processing plant at the Sunol Valley Quarry (assuming that the processing plant has been approved as proposed under the current Project) for stockpiling and processing. The operational benefits of linking these two separate quarry projects include a reduction in infrastructure and processing facilities at the Apperson Quarry site, so long as such activities instead occur at the Sunol Valley Quarry site. The environmental benefits include avoidance and reduction of potential impacts at the Apperson site by instead utilizing those same facilities at the Project site (again, assuming that the Project is approved), an area already impacted by past and proposed future quarrying and with little habitat value for sensitive wildlife.

To implement this possible future project (linking the Apperson and Sunol Valley Quarries), applications for a Further Revised SMP-30 permit and a Revised SMP-17 permit will need to be filed, additional environmental review conducted, Alameda County approvals granted, and revised leases with the SFPUC extended. No applications for a Further Revised SMP-30 permit or a Revised SMP-17 permit have been filed, and the currently proposed Project does not contemplate this possible future effort. As such, any analysis related to a Further Revised SMP-30 permit or a Revised SMP-17 permit at this time would be premature and speculative.

The implications of these private agreements that are relevant and pertinent to this EIR include the following:

1. Since there is no current proposal which links the Sunol Valley Quarry (i.e., the Project site) to the Apperson Quarry, this EIR does not include any analysis of the Apperson Quarry project or the potential link between the two quarries. Any such environmental review would only occur at such time as subsequent applications for a Further Revised SMP-30 permit and a Revised SMP-17 permit have been filed.
2. The proposed Project at SMP-30 is not dependent upon, nor does it rely on any future project approvals that would link these two quarry sites. The Project (as specifically defined in the Project Description) is a fully self-contained quarry with a proposed on-site expanded operations plant designed to process aggregates specifically mined from the Project (SMP-30) site only. The proposed Reclamation Plan fully describes the currently anticipated end-state for the proposed

Project as being water storage for SFPUC. Therefore, this EIR does not address any alternative end-state for the Project site whereby it continues on as a processing facility.

3. If the Project as proposed is approved, the Project Applicant has agreed to defer mining at the Apperson Quarry until no earlier than 2030, and not before cessation of mining at the Project site. Therefore, this EIR does not include the Apperson Quarry in any of its cumulative analyses. Under this agreement, there would be no scenario under which the proposed Project would be mining (i.e., harvesting raw aggregate) coincidentally with mining activity at the Apperson Quarry.

5

Land Use Plans and Policy Consistency

This chapter describes the existing land uses, adopted General Plan land use classifications and zoning designations on and around the Project site, and other applicable management plans and policies pertinent to the Project Area. This chapter also describes the applicable plans and policies that guide development in the Project area and evaluates the Project's consistency with these plans and policies and other existing land use regulations.

This chapter also identifies any potentially significant land use impacts and, if necessary, appropriate mitigation measures to avoid or reduce such impacts. Pursuant to Section 15358(b) of the CEQA Guidelines, mitigation measures are proposed only to address physical impacts that may result from the Project.

Applicable Plans, Policies and Regulations

The Project site is subject to a number of policy and regulatory plans and ordinances, as discussed below.

Because the site is located in unincorporated Alameda County, the County's General Plan provides overall land use policy direction and the County's Code of Ordinances provides the applicable land use regulations.

Additionally, the Project site is part of the Alameda Watershed, comprised of approximately 36,000 acres of land in both Alameda and Santa Clara Counties owned by the San Francisco Public Utilities Commission (SFPUC), a department of the City and County of San Francisco.[1] The SFPUC provides retail drinking water and wastewater services to San Francisco, wholesale water to three Bay Area counties, and green hydroelectric and solar power to San Francisco's municipal departments. The SFPUC manages their watershed lands with the mission to "provide the best environment for the production, collection, and storage of the highest quality water for the City and County of San Francisco and suburban customers" by "developing, implementing, and monitoring a resource management program which addresses all watershed activities."[2] The SFPUC provides for the management of their watershed lands in a comprehensive and integrated manner through the Alameda Watershed Management Plan. The Alameda Watershed Management Plan provides a long-term regulatory framework for decision-making on these watershed properties by the SFPUC, and is also used as a watershed management implementation guide by the SFPUC's Land and Resource Management Section staff.

Applicable County planning policies and zoning regulations that pertain to the Project site are presented below as are applicable SFPUC management goals and policies, followed by a discussion of the Project's consistency or inconsistency with each.

Potential conflicts with planning policies as contained in the General Plan and other applicable regulatory and management plans do not inherently result in a significant effect on the environment.

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[1] Also commonly referred to as the San Francisco Water Department (SFWD)

[2] SFPUC, Alameda Watershed Management Plan, April 2001, page 1-1

Instead, "*effects analyzed under CEQA must be related to a physical change in the environment*" (CEQA Guidelines Section 15358.b). CEQA Guidelines Section 15125.d provides that an EIR shall discuss any inconsistencies between a proposed project and the applicable general plan in the setting section of the document rather than as an impact. Appendix G of the CEQA Guidelines indicates that a project would result in a significant impact related to land use and plans if it would "*fundamentally conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and resulting in a physical change in the environment.*" Therefore, while this section of the EIR provides an analysis of the Project's consistency with applicable plans, policies and regulations, any physical impacts that may result from such conflicts are analyzed elsewhere in this EIR.

Alameda County Plans and Policies

East County Area Plan (General Plan)

The Project site is located in unincorporated Alameda County, in a portion of the County where the East County Area Plan (ECAP) serves as the applicable General Plan document. The purpose of the East County Area Plan is to present a clear statement of the County's intent concerning future development and resource conservation within East County. The goals and policies in the ECAP are intended to inform decision-makers, the general public, public agencies and those doing business in the County of the County's position on land use-related issues, and to provide guidance for day-to-day decision-making. The programs that follow the policies identify a set of specific actions the County will undertake to achieve the goals and policies of the ECAP. In addition to issues that directly address physical development, ECAP also addresses social, environmental and economic issues related to land use considerations. The ECAP identifies the need for public facilities and services and provides the basis for County zoning and subdivision approvals, as well as other regulatory actions. ECAP also serves as an important source of detailed information regarding existing conditions and trends in the East County.

In November 2000, the Alameda County electorate approved the Save Agriculture and Open Space Lands Initiative (Measure D; effective date, December 22, 2000). This Initiative amended portions of the County General Plan, including the ECAP. The policies introduced by the Initiative are intended to stay in effect indefinitely, or until modified by Alameda County voters.

The following analyses provide discussion of the Project's consistency or inconsistency with applicable land use goals, policies and programs of the ECAP.

Land Use Designation

The East County Area Plan includes the definition and designation of various land use categories, with corresponding allowable uses, intensities, and densities. The Project site is designated on the Alameda County ECAP Land Use Diagram as Water Management (see **Figure 5-1**).

Allowable Uses:

Subject to the provisions of Measure D, the Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos and similar and compatible uses.

> Consistency Analysis: The existing and proposed use of the Project site is a sand and gravel quarry with similar and compatible land uses, and ultimate reclamation of the quarry pit as a lake for water storage. (**Consistent**)

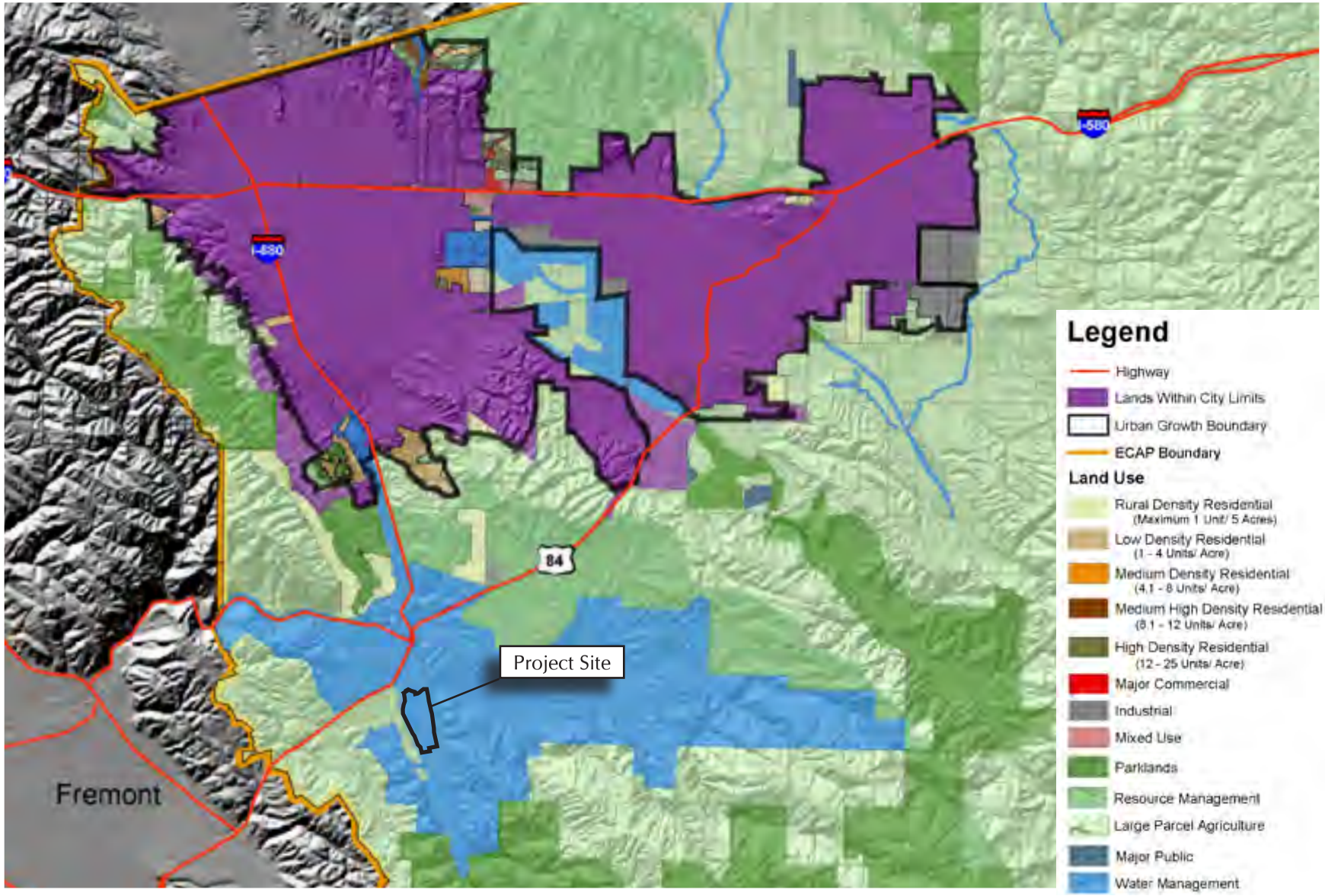


Figure 5-1
East County Area Plan (ECAP) Land USe Diagram

Source: Alameda County ECAP

Accessory Uses:

Sand and gravel quarries allow a range of uses including sand and gravel processing, associated manufacturing and recycling uses requiring proximity to quarries, reclamation pits, and public use areas.

Consistency Analysis: The proposed Project is primarily a sand and gravel quarry for processing of raw aggregate materials, and also includes accessory and associated manufacturing uses that benefit from (though do not necessarily require) proximity to the quarry, including the proposed asphalt batch plant and ready-mix concrete batch plant. (**Consistent**)

The Project also proposes to use a portion of the Project site that is located under the SFPUC main transmission lines for storage of non-accessory construction materials (k-rail). Outdoor storage of such material is not a use associated with the sand and gravel quarry, is not permitted within the underlying "A zoning district, and thus would only be permitted upon specific approval of this Project's revised Surface Mining Permit for this purpose, as described in the Project Description.

Parcel Size and Building Intensity

Water Management Lands allows for a minimum parcel size of 100 acres and a maximum building intensity of .01 FAR.

Consistency Analysis: The Project site is 381 acres in size, including approximately 323 acres under currently active quarry operations (pursuant to SMP-30), and a 58-acre expansion area at the southeast portion of the Project site. The proposed Project site is included within two separate Assessor's parcels; portions of APN 096-0080-008 (285acres) and portions of APN 096-0375-011-05 (383 acres). The Project does not propose to subdivide or further split these parcels and would not reduce parcels sizes below the 100-acre minimum. The 58-acre expansion area is defined only by the boundaries of a lease between the SFPUC and the Project applicant, and is not a separate parcel.

At 381-acres in size, a maximum floor-area ratio (FAR) of 0.01 would permit a total of approximately 166,000 square feet of building space on the site.[3] The County Code of Ordinances (Section 17.04.010) defines the term 'building' to mean "any structure erected for the support, shelter or enclosure of persons, animals or property." Although the proposed Project will include both existing and proposed new pieces of large equipment (i.e., the existing aggregate crusher, the proposed asphalt batch plant, the ready-mix concrete batch plant, water clarifiers, etc.), the only structures, either existing or proposed, which qualify as 'buildings' are the existing Scale and Office Building (approximately 900 square feet), a new office building (approximately 1,000 square feet) and a proposed Quality Control lab building (approximately 2,200 square feet). Together, these buildings add to approximately 4,200 square feet, far less than the 166,000 square foot maximum square footage permitted. For informational purposes, the land underlying the new pieces of large equipment (the asphalt plant, the concrete plant and the clarifiers – which do not qualify as "buildings" under the ordinance) totals approximately 132,000 square feet, still under the maximum square footage of building space on the Project site. (**Consistent**)

[3] 381 acres x 43,560 sq.f.t/acre x 0.01 = approx. 166,000 sq.ft.

Residential Use

One single family home per parcel is allowed, provided that all other County standards are met for adequate road access, sewer and water facilities, building location, visual protection, and public services. Residential and residential accessory buildings shall have a maximum floor space of 12,000 square feet.

Consistency Analysis: The Project does not propose any residential use at the site. (**Consistent**)

Development Envelope

Apart from infrastructure (under Policy 13), all buildings shall be located on a contiguous development envelope not to exceed 2 acres, except they may be located outside the envelope if necessary for security reasons or, if structures for agricultural use, necessary for agricultural use.

Consistency Analysis: As indicated above, the only new 'buildings' (as defined under County Code) proposed under the Project are the small Scale and Office Building and the proposed QA/QC Lab. These buildings are proposed to be located in immediate proximity to each other at the southerly portion of the plant site, within much smaller than a 2-acre development envelope. The exiting office and weigh scale building is separate and apart from these proposed new buildings, but located to efficiently manage truck circulation within the site. (**Consistent**)

The defined processing plant is the portion of the Project site where the existing office and weigh station, the two new buildings, all of the large processing and manufacturing equipment (i.e., the aggregate crushers, materials stockpiles, conveyor systems, asphalt batch plant, ready-mix concrete batch plant, water clarifiers, etc.), and the materials loading and hauling activities take place. The existing plant site is approximately 20 acres in size, and would be expanded by an additional approximately 6 acres (to approximately 26 acres) to accommodate the proposed new asphalt plant, concrete plant and clarifiers. Additionally, the Project application materials (see Project Description) show the processing plant as extending south along Calaveras Road and north under the SFPUC main power transmission lines, providing additional storage areas. With these plant area extensions for storage, the footprint of the processing plant will be approximately 50 acres in size.

Special Land Uses - Quarries and Regionally Significant Aggregate Resource Areas

ECAP contains special policies specifically applicable to quarries and aggregate resources. The goal of these policies is to recognize the regional value of the County's construction aggregate resources and to ensure compatibility between quarry operations and surrounding land uses.

Limitations on New Quarries

Policy 155: Except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry. A quarry that has received all necessary discretionary County and other approvals and permits prior to the effective date of the ordinance — but has not yet exercised those approvals and permits — is to be considered an "existing" rather than a "new" quarry.

Consistency Analysis: The Project site is located outside of the Urban Growth Boundary established under Measure D, but is not a new quarry. All proposed excavations pursuant to the Project would occur immediately adjacent to an existing quarry (i.e., immediately adjacent to the existing SMP-30 operations). The proposed 58-acre expansion area is immediately adjacent to the existing SMP-30 quarry site, the proposed expanded activities within the current plant (the asphalt and concrete batch plants) are located within the boundaries of the existing permitted

quarry, and the long-term plant site is also located within the boundaries of the existing permitted quarry. The currently effective SMP-30 permit was issued in 1992, well before the effective provisions of Measure D, and thus the SMP-30 quarry is an "existing" quarry, and the proposed Project (Revised SMP-30) is not a "new" quarry as it is adjacent to, and on the same and an adjoining parcel. (**Consistent**)

Policy 156: The quarry currently planned by the San Francisco Public Utility Commission in the Sunol area should not be established. If, despite Policy 155, that quarry goes into operation the County shall permit no related industrial or manufacturing uses, notwithstanding any other provision of the Initiative.

Consistency Analysis: The proposed Project (Revised SMP-30) is not the "quarry currently planned by the SFPUC in the Sunol Area". The "planned quarry" referenced in this policy is SMP-32 (expansion of the adjacent Lehigh-Hanson Quarry), a completely separate, unrelated quarry project north of I-680, and not part of this Project. (**Consistent**)

Development on State-Designated Regionally Significant Construction Aggregate Resource Areas

Policy 157: The County shall review proposals for development within or adjacent to state-designated Regionally Significant Construction Aggregate Resource Sectors. If the development is proposed on unincorporated land, the County shall consider the effects of such development on the future or continued extraction of the resource and shall approve such development only if conditions are applied to minimize the potential of the new use to preclude continued or future access to the resource. If the development is proposed within a city, the County shall encourage the city to do the same.

Consistency Analysis: The proposed Project is within a state-designated Regionally Significant Construction Aggregate Resource Sector. Rather than precluding continued access to that aggregate resource, the Project would provide for continuing and expanded extraction of that aggregate resource. (**Consistent**)

Minimizing Conflicts

Policy 158: The County shall require that, where conflicts between a new use and existing quarry are anticipated, notifying future residents and mitigating the conflict shall be the responsibility of the new use.

Consistency Analysis: The proposed Project is a continuation and expansion of the existing quarry and thus would not conflict with the existing quarry operations. The Project would not introduce any new residents to the area, and would not create conflicts with existing uses. (**Consistent**)

Protection of Nearby Uses

Policy 159: The County shall impose conditions on approval of new Surface Mining Permits and Reclamation Plans to protect nearby uses from potential traffic, noise, dust, health and safety, visual and other impacts generated by sand and gravel quarries. Conversely, the County shall not approve land uses adjacent to any existing quarry or Regionally Significant Construction Aggregate Resource Sector if the development of the new uses would result in exposure of residential or other sensitive uses to possible adverse impacts of the quarry, unless the new uses can effectively mitigate the significant adverse impacts and notify potential homeowners of the risk, as required by Policy 158.

Consistency Analysis: This EIR provides an analysis of the Project's potential traffic, noise, dust, health and safety, visual and other impacts on nearby uses, and recommends mitigation measures (where necessary) to avoid or reduce such impacts to less than significant levels where feasible. (**Consistent**)

Reclamation for Water Management

Policy 160: The County shall ensure that where quarry operations are located in areas designated as Water Management, extraction of the aggregate resource shall be allowed in the short-term. Reclamation of the land for water management and other compatible uses shall occur subject to conditions of Surface Mining Permits and Reclamation Plans and consistent with the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation or the comparable plan prepared for the Sunol Valley/San Francisco Water Department watershed lands pursuant to Policy 161 and Program 71, whichever is applicable.

> Consistency Analysis: The Project is located in an area designated as Water Management, and extraction of aggregate resources is proposed in the short-term (i.e., 30 years from the effective permit date, if approved). The proposed Reclamation Plan would allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded surface area mined to a minimum depth of 225 feet below ground surface with resulting side slope of 2:1 is expected to result in approximately 23,000 acre feet of water storage. Additional storage could be provided by mining deeper than 225 feet, as may be feasible. A discussion of the Project's consistency with the applicable SFPUC Alameda Watershed Management Plan is provided below. (**Consistent**)

San Francisco Water Department Planning Efforts

Policy 161: The County shall participate with the San Francisco Water Department (SFWD) in its planning efforts for SFWD-owned watershed lands within the Sunol Valley to ensure that future quarry activity is compatible with Sunol community interests and water management objectives.

> Consistency Analysis: Under the provision of Section 15082 of the CEQA Guidelines, the County issued a Notice of Preparation (NOP) for this EIR on October 25, 2011. That NOP was distributed to, among other parties, the San Francisco Public Utilities Commission (SFPUC). The SFPUC submitted comments on that NOP on November 18, 2011 (see Appendix B) indicating their desire for this EIR to specifically address a number of issues related to their water management objectives. Additionally, as the underlying property owner of the Project site, the SFPUC will only issue a lease to the Project applicant for operation of the Project once it has concluded that SFPUC management objectives are satisfied.

Manufacturing Uses

Policy 162: The County shall allow manufacturing uses which make extensive use of harvested aggregate to locate near sand and gravel quarries.

> Consistency Analysis: The Project proposes to add on-site manufacturing uses (i.e., the proposed asphalt batch plant and the ready-mix concrete batch plant) that make use of harvested aggregate in immediate proximity to the sand and gravel quarry. (**Consistent**)

Concurrent Mining and Agricultural Uses

Policy 163: The County shall encourage concurrent mining and agricultural uses on sites where aggregate deposits are overlain by agriculturally valuable soils to minimize the premature disturbance of such soils. To this end, the County shall consider phasing of quarry operations in the approval of Surface Mining Permits and Reclamation Plans.

> Consistency Analysis: As indicated in the Initial Study prepared in advance of this EIR, the Project site is not overlain by agriculturally valuable soils (neither prime, statewide significant or locally significant farm soils). Based on the Project's proposed mining plan, concurrent mining and agricultural uses on the site would not be compatible. (**Consistent**)

Revegetation

Policy 164: The County shall ensure that where quarry operations will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.

Consistency Analysis: The proposed Reclamation Plan for the Project would allow for use of the completed quarry pit for SFPUC water storage, planting of native plants to minimize visual impacts from Calaveras Road; and re-vegetation of stream banks along reaches of Alameda Creek and San Antonio Creek fronting the Project site in a manner that would restore habitat value. Contouring of the quarry pit to simulate a natural lake is not specifically proposed, the completed quarry pit is designed to maximize the volume of water storage available for SFPUC. (**Consistent**)

Water Conservation

Policy 165: The County shall require that water-conserving practices are incorporated into mining and reclamation operations.

Consistency Analysis: Water management at the current quarry and plant is effectively a closed-loop system, conserving water to the extent practical. As the active mining pit deepens, groundwater and underground surface water flows are encountered and this water fills up the bottom portion of the pit. In order to excavate the bottom portion of the pit and in accordance with the currently applicable NPDES permit, this water is pumped out of the active mining pit and piped to the "wash water pond" in the northwesterly portion of the site. Water from the wash water pond is then pumped to the plant to be used in the initial raw materials "washing" process. The used wash water is then pumped back out of the plant to a silt pond located in the northeasterly portion of the site. Sediment settles to the bottom of the silt pond and the water is stored, recharged into the groundwater, and/or evaporates. These water management practices would continue in a generally similar manner under the proposed Project. The Project would introduce a water clarifier system between the wash water pond and the plant to remove sediment before entering the plant processes. Additional water demands associated with the Project include the water needed for mixing concrete on-site. This water would be derived primarily from pumped groundwater from the active quarry pit, supplemented by additional SFPUC water supply sources as may be necessary. (**Consistent**)

Landscape / Visual Quality

Policy 166: The County shall require landscaping to reduce visibility of mining activity and ancillary uses during all phases of quarry operations, in addition to landscaping for final site reclamation. Landscaping should as closely as possible approximate the pre-existing natural conditions prior to surface mining.

Consistency Analysis: The current SMP-30 permit requires, and the current Project proposes to provide, landscape improvements along Calaveras Road. A 250-foot setback from Calaveras Road is currently required and will be maintained under the Project. Within this setback area, existing trees and other vegetation will remain, and new landscaping will be added. The landscape plan for this includes the construction of berms along the westerly side of Calaveras Road, to be constructed by the SFPUC from material derived from their on-going construction projects to the immediate south of the SMP-30 permit area, including the new Irvington Tunnel and San Antonio Back-Up Pipeline projects. Once the berms are constructed and in place, the Project will be responsible for implementing a detailed landscape improvement plan along these bermed areas. Landscape improvements are part of the Project's proposed Reclamation Plan, but

will be implemented during the quarrying process. The proposed Reclamation Plan does include a detailed landscape design for the bermed areas along Calaveras Road, as this design will be dependent upon final berm construction to be completed by the SFPUC. (**Consistent**)

Land Use Buffers

Program 69: The County shall amend the Surface Mining Ordinance to require permit applicants for any Surface Mining Permit and Reclamation Plan to provide appropriate buffering of quarry operations from adjacent land uses, such as setbacks, landscaping, and use restrictions.

Consistency Analysis: Although the Surface Mining Ordinance does not require specific setbacks from adjacent uses, the Project does maintain setbacks from Calaveras Road (250 feet), from Alameda Creek (100 feet), from San Antonio Creek (50 feet), from all buried utilities and pipelines (50 feet), and from transmission tower foundations (50 feet). These setbacks are consistent with the requirements of the currently effective SMP-30 permit issued by the County in 1992. (**Consistent**)

Consistency with SMARA

Program 70: The County shall amend the Surface Mining Ordinance to include reclamation guidelines consistent with the Surface Mining and Reclamation Act (SMARA).

Consistency Analysis: The proposed Project includes updating the currently effective Reclamation Plan for SMP-30 to incorporate current reclamation standards consistent with the Reclamation Standards under SMARA (pursuant to CCR §3700, et seq.). The California Department of Mines and Reclamation has final authority and will review the proposed Reclamation Plan to determine consistency. (**Consistent**)

SFWD Coordination

Program 71: The County shall work with the San Francisco Water Department to develop a land use and reclamation master plan for San Francisco Water Department-owned land in the Sunol Valley. The plan shall ensure the compatibility of the quarries with the Sunol Community during active mining and following reclamation. Opportunities for habitat preservation and enhancement and recreational uses should be explored in conjunction with reclaimed uses.

Consistency Analysis: To optimize water storage for SFPUC (thus increasing the yield and reliability of the water supply) and to address the complex mix of activities in the Sunol Valley, the SFPUC has prepared the Sunol Valley Resources Management Element, a component of their Alameda Watershed Management Plan. The Sunol Valley Resources Management Element provides a conceptual program for the future of the entire valley. In general, this program allows for the completion of existing permitted mining, with reclamation of mined pits for water storage. (**Consistent** – a more detailed analysis of the Project's consistency with the SFPUC Alameda Watershed Management Plan are further addressed below)

Watershed

ECAP contains policies specific to the issue of protecting watershed lands from the direct and indirect effects of development. These policies include the following.

Recreational Opportunities

Policy 101: The County shall encourage public water management agencies to explore recreational opportunities on watershed lands, particularly reclaimed quarries, where recreational use would not conflict with watershed protection objectives.

Consistency Analysis: Whereas public access and recreational use within the watershed is encouraged, such use would generally not be compatible with the on-going quarry and processing activities associated with the Project operations. Limited public access along the potential Alameda Creek trail alignment may be compatible during quarry operations. The ultimate potential recreational uses at the site in its reclaimed condition (primarily as a water storage reservoir for the SFPUC), will be determined by the SFPUC pursuant to preparation of the Sunol Valley Restoration Plan. The Sunol Valley Restoration Plan will be prepared by the SFPUC with financial support from quarry lease holders in the Sunol Valley, and in coordination with Alameda County and the East Bay Regional Park District, to consider long-term plans for reclaiming quarry pits and possible future public access trails through the area post-quarry activity. Public Access

Policy 102: The County shall encourage the San Francisco Water Department to provide limited public access on trail corridors through the watershed lands surrounding San Antonio and Calaveras Reservoirs, Sunol Watershed, and the Arroyo de la Laguna. The County shall work with the East Bay Regional Park District to incorporate these watershed corridors into the regional trail system, where recreational use would not conflict with watershed protection objectives.

> Consistency Analysis: The Project's Conservation Plan/Reclamation Plan provides for the accommodation of possible future public access trails through the Project along Alameda Creek as may be desired by the East Bay Regional Park District.

County Zoning Ordinance

The Project site and its surroundings are zoned "A": Agriculture. Agricultural districts are established to "promote implementation of General Plan land use proposals for agricultural and other non-urban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage such uses in places where more intensive development is not desirable or necessary for the general welfare." [4]

Surface mining activities are permitted on lands with an Agriculture zoning designation in that the County Zoning Ordinance defers permitting of surface mining activity (within any County zoning district) to the provisions of the County Surface Mining and Reclamation Ordinance (see further discussion below). Thus, the existing quarry and the expansion as proposed pursuant to the Project are **consistent** with the County Zoning Ordinance.

The Project also proposes to use a portion of the Project site that located under the SFPUC main transmission lines for storage of non-accessory construction materials (k-rail). Outdoor storage of such material is not is not a permitted use under the underlying "A" Agricultural zoning, and is not considered an accessory use to the quarry specifically permitted under the Surface Mining Ordinance. Outdoor storage of construction material would only be permitted upon specific approval of this Project's revised Surface Mining Permit for this purpose, as described included in the Project Description.

County Surface Mining and Reclamation Ordinance

As the local land use authority, Alameda County authorizes surface mining activities on unincorporated lands through the issuance of Surface Mining Permits pursuant to Alameda County Code of Ordinances,

[4] Alameda County Code of Ordinances, Title 17: Zoning, Section 17.06.010

Title 6: Health and Safety, Section 6.80: Surface Mining and Reclamation. The Project site currently operates under such a County surface mining permit (SMP-30), which was approved by Alameda County in 1992. This permit authorizes the mining of sand and gravel within 323 acres of the project site to a depth of up to 140 feet. Quarrying operations are permitted through June 1, 2021 or upon completion of reclamation, whichever occurs first.

The provisions of the County's Surface Mining and Reclamation Ordinance (Section 6.80 et. seq. of the County Ordinance Code) apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit, reclamation plan, and financial assurances for reclamation.

The County Planning Commission periodically reviews mining permits and approved reclamation plans. The timeframe for review is set by permit condition(s), with five years being the standard increment. Additionally, mining operators are required to submit an annual report to the Community Development Director and to the State Department of Conservation. These annual reports are utilized by County staff to track mining and reclamation activities.

Uses Permitted (6.80.060)

Agricultural Use

If a mining operation is being conducted in an A District, all other uses permitted pursuant to the district regulations may be conducted on the site provided such uses do not interfere with meeting any of the requirements of this chapter, and provided any such uses are not prohibited by conditions of the surface mining permit or approved reclamation plan.

> Consistency Analysis: As this provision indicates, surface mining activities are permitted with an A: Agriculture zoning district upon approval of a Surface Mining permit. The Project site is located within an A: Agriculture zoning district, and although agricultural uses would be permitted, no agricultural uses are proposed under the Project. (**Consistent**)

Accessory Uses

Sorting, crushing, reducing, refining, mixing, packaging or other processing of minerals, or the operation of an asphalt or concrete batch plant; or any operation that uses or supplies materials produced, imported or used by mining and/or processing operations or an asphalt or concrete batch plant, may be permitted in conjunction with mining operations if conducted within an A, M-1 or M-2 district, upon securing of a surface mining permit, when such uses are found by the planning commission to be an accessory use to the mining operations and when the planning commission finds that the effects of such processing, use, storage or transport of materials, including noise, odor, smoke, dust, bright lights, vibration, traffic, and production of waste, can be controlled so as to be compatible with adjacent uses and so as not to degrade natural resources.

> Consistency Analysis: Sorting, crushing and other processing of aggregate, as well as operation of an asphalt and concrete batch plant is proposed pursuant to the Project, as permitted in conjunction with mining operations conducted within an A: Agriculture zoning district. These uses are accessory to the mining operation. The environmental effects of such uses are fully analyzed in this EIR, and mitigation measures are recommended where necessary, reasonable and feasible to reduce impacts so as to be compatible with adjacent uses and not degrade natural resources. (**Consistent**)

Requirements for Mining Operations

Surface mining operations permitted under the ordinance must be conducted in compliance with a wide variety of prescribed requirements. These requirements are found in Section 6.80.210 of the ordinance, as indicated below:

Final Slope Design

Finished slopes shall conform to the requirements of Section 6.80.240E. These requirements include; a) final slopes shall be of such gradient as necessary to provide for slope stability, maintenance of required vegetation, public safety, and the control of drainage, as may be determined by engineering analysis of soils and geologic conditions and by taking into account probable future uses of the site. Final slopes shall not be steeper than two feet horizontal to one foot vertical (2:1) unless the applicant can demonstrate to the satisfaction of the planning commission that any such steeper slope will not be incompatible with the alternate future uses approved for the site; be hazardous to persons that may utilize the site under the alternate future uses approved for the site; and reduce the effectiveness of revegetation and erosion control measures where such are necessary. In no event shall the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability.

> Consistency Analysis: Final slopes of all proposed quarry operations are no steeper than two feet horizontal to one foot vertical (2:1) throughout the Project site, consistent with the ordinance requirements. As indicated in Chapter 11: Geology and Soils, proposed slope designs provide for appropriate slope stability, public safety and drainage control. Mitigation measures recommended in this EIR require preparation of detailed engineering analyses to verify all proposed slope designs for stability, and to verify that slope designs are effective in promoting revegetation and controlling erosion. (**Consistent**)

Temporary Slopes

Temporary slopes steeper than the finished slopes, in areas where finished slopes are to occur, shall be constructed and maintained in accordance with the recommendations, as approved by the planning director, or a soil engineer or a civil engineer registered in the state or an engineering geologist registered and certified in the state. Temporary slopes shall not be created or maintained in a manner that will interfere with the construction of finished slopes conforming to subsection (A)(1) of this section, and the soil engineer or engineering geologist shall make specific recommendations for the conversion of such temporary slopes to finished slopes.

> Consistency Analysis: The extraction of raw aggregate material will be achieved either by digging into the active pit with large excavators or by scraping material from the exposed surface of the active pit. Neither of these excavation processes will cause temporary side slopes that are steeper than the proposed 2:1 ratio. The only identified temporary slope specifically indicated in the Project Description is the in-quarry benched surface created as a new operations plant site under Phase II of the Project. This in-quarry bench is also designed with 2:1 side slopes of engineered fill, and will not interfere with the construction of finished slopes. Mitigation measures recommended in this EIR require the Project applicant to submit detailed engineering analyses to demonstrate that proposed side slopes of all quarry pits, benches, engineered fill, roadway designs and material stockpiles will not exceed the critical gradient and to demonstrate that the proposed Reclamation Plan does not include any slope designs that would be incompatible with the intended future use as water storage, would not be hazardous to persons that may utilize the site post-reclamation, and would not reduce the effectiveness of revegetation and erosion control measures.

Benches

Benches shall be provided where necessary to control drainage on slopes or to provide for access or public safety.

> Consistency Analysis: As excavation of the main quarry pit deepens, it is anticipated that temporary benches will be provided within the pit to enable large equipment (excavators and scrapers) to access the bottom of the pit. Mitigation measures recommended in this EIR require the Project applicant to submit detailed engineering analyses to demonstrate that all such benches, engineered fill and roadway designs will not exceed the critical gradient as determined by an engineering analysis of slope stability.

Parcel Setbacks

Unless the Planning Commission approves a lesser setback pursuant to Section 6.80.210(C)(3), surface mining excavations shall not be conducted closer than twenty-five (25) feet of the common property line of any parcel, except where the adjacent property is being mined in the same manner with respect to such line; and fifty (50) feet of the right-of-way or future width line of any street.

> Consistency Analysis: The proposed Project includes a setback of 250 for excavation along Calaveras Road (the easterly property line), a setback of 100 feet from Alameda Creek (the westerly property line), a setback of 50 feet from San Antonio Creek (the northerly property line), and a setback of a minimum of 25 feet from the southerly property line adjacent to the SFPUC properties. These setbacks meet or exceed the setback requirements of the ordinance and are consistent with previous setbacks as required pursuant to the 1992 approval of SMP-30. (**Consistent**)

Watercourse Setbacks

Mining excavations shall be set back from water courses, flood control channels, reservoirs and water conservation facilities a distance as may be determined by the Planning Commission on recommendation of Alameda County Flood Control and Water Conservation District (including the Zone 7 Water Agency) or Community Development Agency to be sufficient to protect existing or planned facilities.

> Consistency Analysis: The proposed Project includes a setback of 100 feet from Alameda Creek and a setback of 50 feet from San Antonio Creek. These setbacks from water courses are consistent with previous setback requirements established pursuant to the County's 1992 approval of SMP-30. (**Consistent**)

The Planning Commission, after receipt of a complete application and with public notice and hearing in accordance with the provisions of Article II of this Chapter, if required by the public need, may authorize setbacks less than those provided in Section 6.80.210(C)(1)(a) and (b) if the Planning Commission makes the following findings, supported by the conclusions of a geotechnical study prepared by a qualified professional licensed by the State of California:

a. The lesser setback is required by the public need, and is not related to the demand for additional mineral resource;

b. A lesser setback and any associated resultant slope are acceptable based on the specific characteristics of the location and are supported by the conclusions of the geotechnical study prepared by a qualified professional licensed by the State of California;

c. A lesser setback and any associated resultant slope will not present a risk to the adjacent property or any users thereof;

d. A lesser setback and any associated resultant slope will permit adequate access for the owner of the mined land to the permitted area both during mining and following reclamation to the end use;

e. A lesser setback and any associated resultant slope will safely accommodate any existing or planned utilities or facilities, including, but not limited to, water diversion and conveyance structures; maintenance roads, safety berms and guardrails; drainage features; and screening landscapes, where required; and

f. A lesser setback will be in the interest of, and not compromise, the public health, safety and welfare.

Consistency Analysis: The Project does not propose any lesser setbacks than provided under Section 6.80.210(c1a) and (c1b) as described above, and no authorization for lesser setbacks need be considered for the Project.

Landscape Screening

Where the planning commission determines that mining operations may conflict with visual qualities that should be maintained for adjacent areas, such operations shall be screened by the operator by the construction of appropriate landforms and planting and maintenance of appropriate landscape materials.

Consistency Analysis: As indicated in the Aesthetics chapter of this EIR (Chapter 6), the properties adjacent to the Project site have only limited visual sensitivity. Properties to the west and north (across Calaveras and San Antonio Creek) are also existing operating quarries. The Project would not conflict with the visual character of these operations. Only along the eastern boundary of the Project site, where Calaveras Road separates the site from the adjacent open space and watershed lands, are visual qualities of adjacent properties considered sensitive. The Project includes an excavation setback of 250 feet from the edge of the Calaveras Road right-of-way, within which existing trees and vegetation will be retained. The Project's Reclamation Plan indicates that portions of the 250 foot setback will be bermed as a landform screen using materials form other SFPUC construction project and planted with new landscape materials. (**Consistent**)

Fencing

Fencing for surface mines shall be designed and installed in order to preserve the health, safety and welfare of the public, including pedestrians, motor vehicles on public and private ways, and all persons and uses on adjacent lands. In areas where surface mine operations are located within wildlife movement corridors, fences shall be designed to permit passage of wildlife with minimal hazard. Fences may be of any reasonable description that fit these criteria. The fence type proposed for the surface mine shall be submitted with the mining plan for review and approval by the planning commission. Gates, the same height and type as the approved fence, shall be installed at all points of vehicular or pedestrian ingress and egress, and shall be kept locked when not in regular use.

Consistency Analysis: The Project application materials do not include a detailed fencing plan. However, the current SMP-30 site does have a short (3-4 foot high) barbed-wire fence along the Calaveras Road right-of-way (which would continue to be maintained under the Project), and the entrance to the Project site is currently gated for secured access. Additional fencing and gating requirements for the Project may be the subject of additional conditions of Project approval.

As indicated in the Biology chapter of this EIR (Chapter 9), there is potential for terrestrial wildlife species to travel through the Project site, but it is not a primary wildlife movement corridor. The quarry and former nurseries have been in operation for decades and the high levels of human activity already deter many species from making use of habitat within and in the

vicinity of the Project site. What little habitat remains within the proposed Project site is degraded through past and/or ongoing disturbance, and provides low values for wildlife. No special wildlife passages are recommended for the site. (**Consistent**)

Use of Explosives

No explosives shall be used except as authorized by the surface mining permit. When authorized, the specific times of use shall be approved by the director of public works.

Consistency Analysis: Depending on operational requirements, raw aggregate material will either be extracted by digging into the active pit with large excavators, or by scraping material from the exposed surface of the active pit using large scrapers. No use of explosives is proposed for any aspect of the Project. (**Consistent**)

Flooding

Provision shall be made to protect mining operations from overflow from adjacent streams or from slope failures caused by infiltration and seepage from surface water bodies by the construction of levees or other devices to prevent flooding. No obstruction shall be placed in stream channels without obtaining a permit allowing such obstruction from the county flood control and water conservation district.

Consistency Analysis: The Project includes the proposed installation of a slurry wall along the Project perimeter adjacent to Alameda Creek and San Antonio Creek. The intent of the slurry wall is to reduce the amount of groundwater that seeps from the adjacent creeks into the quarry basin through the alluvium. Once the slurry wall is installed, seeps from the adjacent creeks into the quarry basin will be reduced and dewatering requirements are expected to be lowered.

The 100-year flood elevation for Alameda Creek is estimated to be approximately 280 ft. msl at the south end of the Project site and 250 ft. msl at the north end of the Project site. If flood flows should exceed the crest of the mine basin, the total volume of water that could potentially enter the basin due to a breach may be in the range of up to 6,000 acre-feet. During quarry operations, the quarry basin would be capable of holding that total volume of water without overtopping into the processing area. No equipment or other obstructions are proposed to be placed within the stream channel in either Alameda Creek or San Antonio Creek. (**Consistent**)

Grading Controls

Grades in areas being mined shall be maintained so as to avoid accumulations of water that could serve as breeding areas for mosquitoes.

Consistency Analysis: All grading and erosion control performed at the Project site shall conform to the design standards and geotechnical requirements of the Alameda County Grading Ordinance, and erosion and sedimentation control plans shall be submitted to the Director of Public Works for review and approval. These standards, requirements and monitoring provisions will ensure that proper grades throughout the site are maintained during active mining operations. (**Consistent**)

Groundwater Flows

Excavations that may penetrate near or into usable water bearing strata shall not reduce the transmissivity or area through which water may flow (unless approved equivalent transmissivity or area has been provided for elsewhere), nor subject such groundwater basin or sub-basin to pollution or contamination.

Consistency Analysis: As more fully discussed in Chapter 12: Hydrology, the geologic structure of the deeper Livermore Formation in the vicinity of the Project site is generally considered to be

a poor groundwater aquifer. Groundwater within the Livermore Formation is typically limited to discrete lenses or layers of gravel. While these zones may seep into the quarry basin when exposed in the excavation, the total volume of groundwater present is limited and will diminish as the lens or layer of gravel is excavated. Most of the water which collects in the quarry pit is due to percolation of water from Alameda Creek into the alluvium. Therefore, the dewatering requirements and effects on groundwater levels in the area surrounding the Project will not change appreciably over time. (**Consistent**)

Water Storage

Nothing in this chapter shall be construed to prevent the use of mined lands for the conservation or storage of water, or for the control of flood or storm waters, by a public agency duly authorized to engage in such work, provided that any such use will not conflict with nor prevent reclamation required under an approved Reclamation Plan, and provided such use is approved by the County Flood Control and Water Conservation District and/or Public Works Agency.

Consistency Analysis: The proposed Reclamation Plan is intended to allow for use of the completed quarry pit for SFPUC water storage. At completion, the expanded and deepened quarry pit is expected to accommodate approximately 23,000 acre feet of water storage, and additional storage could be provided by mining deeper than 225 feet, as may be feasible. (**Consistent**)

Water Discharge Standards

Any waters discharged from the site to adjacent lands, streams, or bodies of water or to any groundwater body shall meet all applicable water quality standards of the Regional Water Quality Control Board and any other agency with authority over such discharges. Records of any water quality monitoring conducted in conjunction with the requirements of such agency or agencies shall be made available to the Planning Director and the Director of Public Works on request. Discharges of water to designated on-site settling ponds or de-silting basins shall not be deemed to be in violation of this chapter solely on the basis of sediment content.

Consistency Analysis: Water discharges from Project site are regulated by the RWQCB and are subject to the permitting requirements of the NPDES General Waste Discharge Requirements for Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters (Aggregate Mining General Permit). The current quarry operations (SMP-30) operate under a Notice of General Permit Coverage for Discharge issued by the RWQCB in June of 2008, which is effective until April 2013. The Project applicant will be required to obtain an updated NPDES permit for the proposed Project (Revised SMP-30), as is more fully discussed in Chapter 12: Hydrology of this EIR. (**Consistent**)

Erosion Control

During the period mining operations are being conducted, and prior to final reclamation of mined lands, the operator shall take measures to prevent erosion of adjacent lands from water discharged from the site of mining operations and the off-site discharge of sediment. Such measures may include the construction of properly designed retarding basins, settling ponds and other water treatment facilities, ditches, diking and revegetation of slopes. No discharge of sediment to off-site bodies of water shall be permitted that will result in higher concentrations of silt than existed in off-site waters prior to mining operations.

Stockpiles of overburden and minerals shall be managed to minimize water and wind erosion. The removal of vegetation and overburden in advance of surface mining shall be kept to a minimum.

Consistency Analysis: The proposed Project would continue existing water management activities as they currently occur on site. These activities include pumping groundwater and underground surface water flows encountered in the bottom of the main quarry pit (South Basin), out of the active mining pit and into the "wash water pond" in the northwesterly portion of the site (North Basin). Water from the North Basin is then pumped to the plant and used in the raw materials "washing" process. The used wash water is then pumped back out of the plant to a silt pond located in the northeasterly portion of the site (East Basin). Sediment settles to the bottom of the silt pond and the water is stored, recharged into the groundwater, and/or evaporates. Occasionally, water is discharged from the North Basin into San Antonio Creek pursuant to a NPDES General Permit for Aggregate Mining. The North Basin contains water from settling or silt removal operations, storm water runoff from the facility and groundwater pumped from the active quarry basin. Under the General Permit, the current quarry operation is allowed an average discharge rate of 0.8 million gallons per day (mgd), and a maximum discharge rate of 6 mgd. The General Permit also establishes effluent limitations and requires specific monitoring and reporting requirements to verify compliance with the discharge limits.

The Project would amend the on-site water management process by adding a water clarifier to remove silt from water pumped out of the North Basin prior to use at the plant. The combination of water storage in the North Basin and silt settlement in the East Basin will effectively prevent off-site discharge of sediment from the Project site. (**Consistent**)

Based on the Project's Reclamation and Phasing Plan, erosion control facilities such as silt fences, berms, hay bales or similar means to deter erosion will be employed. The specifics of where and when such measures will be implemented will depend upon the particular configuration of grading work being conducted at any given time. Mitigation Measures recommended in this EIR would prohibit the removal of vegetation and overburden from the 58-acre expansion site in advance of expanded surface mining into this area. (**Consistent**)

Land Use Compatibility

All activities of mining and processing minerals shall be conducted in a manner that noise, dust and bright lights do not exceed levels compatible with the uses of adjacent lands as determined by the planning commission in the issuance of the surface mining permit or as a result of its periodic review of any permit.

Consistency Analysis: The potential noise, dust, and lighting and glare impacts associated with the proposed Project are addressed in subsequent chapters of this EIR, and mitigation measures recommended where necessary and feasible to reduce any identified incompatibilities with adjacent lands. (**Consistent**)

Stockpiling of Topsoil

Topsoil suitable for use in revegetation shall be stockpiled at the site of mining operations in an amount up to that necessary for future reclamation.

Consistency Analysis: Pursuant to the County's approval of SMP-30 in 1992, topsoil from the then-proposed 45-acre expansion area in the northwest corner of the site was removed and stockpiled for future use during site reclamation. According to the approved SMP-30 Reclamation Plan, this stockpiled topsoil was determined adequate for the reclamation needs of the original SMP-30 Plan. The current Project does not increase the surface area of land that is proposed to be reclaimed to agricultural use. Instead, the currently proposed Reclamation Plan would reclaim the increased quarry pit as water storage for SFPUC, and no additional topsoil would be required. (**Consistent**)

Operating Hours

Hours during which mining operations and processing of minerals may be conducted shall be established by the planning commission in approving any permit. Such hours of operation shall be set to minimize conflict between the operations and other uses conducted in the immediate area.

> Consistency Analysis: The currently approved operating hours pursuant to SMP-30 are 6 a.m. to 11 p.m. on Monday through Saturday, with occasional Sunday and 24-hour operations. The current Project proposes to extend those operating hours up to 24-hours/day, Monday through Saturday, with occasional Sunday and 24-hour operations as necessary for project requirements. The potential noise, lighting and glare conflicts associated with these proposed operating hours are addressed in subsequent chapters of this EIR, and mitigation measures recommended where necessary and feasible to reduce any identified conflicts. (**Consistent**)

Boundary Markings

The property approved for mining operations shall be prominently and permanently marked. Where property lines cannot otherwise be determined, their location shall be established by survey by a registered civil engineer or licensed surveyor. The requirement for boundary markers may be waived by the planning commission where excavation will not occur within one thousand (1,000) feet of the property boundary.

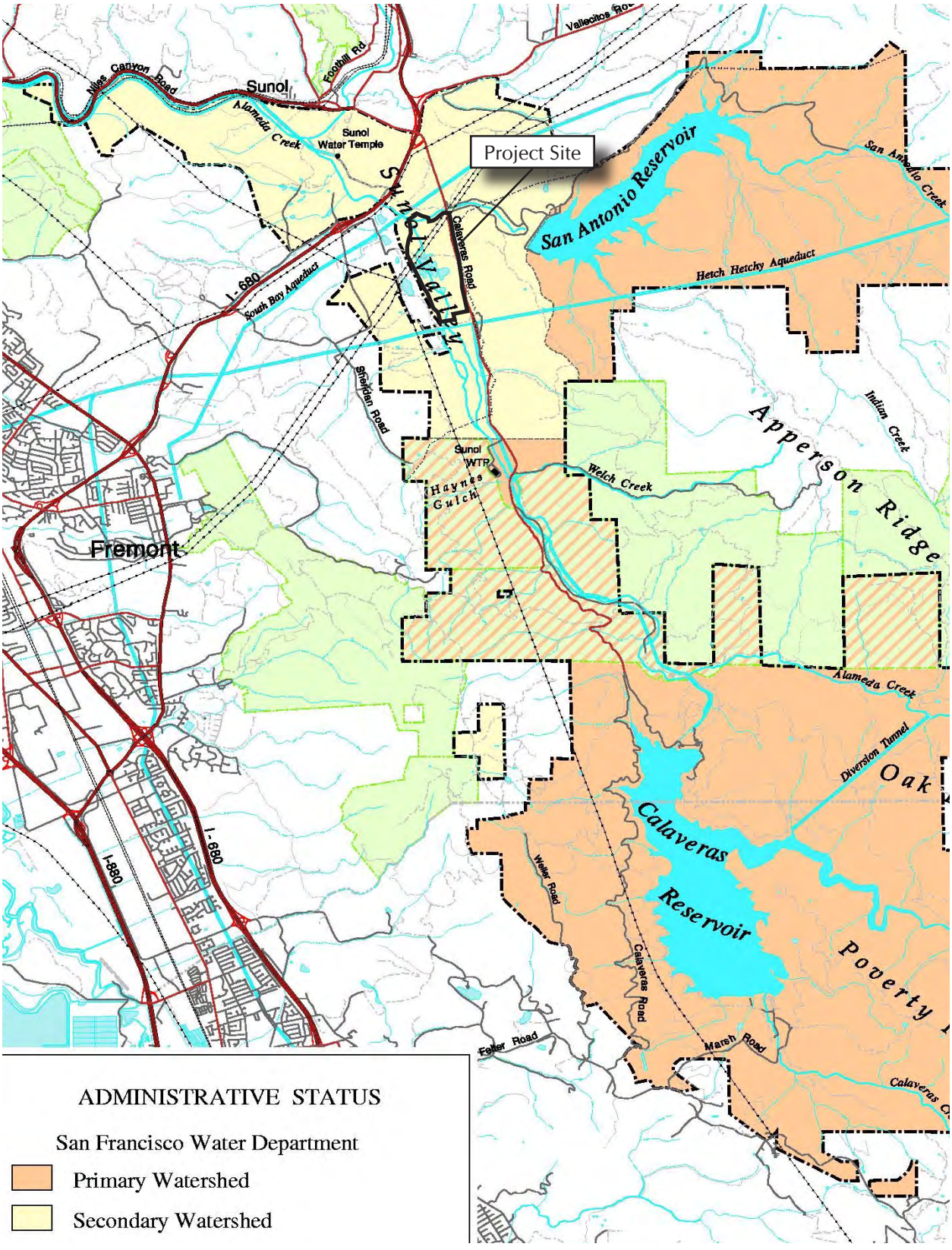
> Consistency Analysis: Upon approval of the Project, the applicant shall prominently and permanently mark the boundaries of the proposed 58-acre expansion area based on an appropriate survey of the property. (**Consistent**)

San Francisco Public Utilities Commission's Plans and Policies

Alameda Watershed Management Plan

The Project site is located within a portion of the San Francisco Public Utilities Commission's (SFPUC) Alameda Watershed lands. These SFPUC-owned lands include approximately 36,800 acres of the 47,000 acre watershed that is tributary to San Antonio and Calaveras Reservoirs, as well as lands which drain into Alameda Creek. Much of these watershed lands abut other public properties owned by the East Bay Regional Park District.

The SFPUC manages these Alameda Watershed lands in a manner to provide the best environment for the production, collection, and storage of the highest quality water for its water supply customers. The SFPUC has adopted a comprehensive and integrated resource management program, documented in the Alameda Watershed Management Plan (AWMP) to guide their management approach. Under the AWMP the majority of watershed lands (over 30,000 acres) are designated as "primary watershed". Within the primary watershed, the SFPUC's goals include maintaining and improving source water quality, maximizing water supply, and preserving and enhancing ecological resources. There are also approximately 6,000 acres of the watershed which are designated as "secondary watershed". The secondary watershed lands are defined as lands where runoff enters Alameda Creek and does not enter SFPUC reservoirs. Secondary watershed lands are therefore considered generally less sensitive in terms of water quality protection than the surrounding primary watershed lands. The Project site and other nearby properties (including other adjacent quarry operations) are located on lands designated by the SFPUC as "secondary watershed" (see **Figure 5-2**).



Alameda Watershed Management Plan, Figure 1-6

Figure 5-2
SFPUC Alameda Watershed Management Plan

Source: SFPUC, April 2001

Pursuant to the AWMP, quarry activities only occur on secondary watershed lands. SFPUC permits quarrying on these secondary watershed lands through leases, which they enter into with quarry operators, and the SFPUC earns revenue from these leases to support other watershed programs The Project site has been leased to several quarry operators and used for sand and gravel extraction for more than 50 years. The most current operator has been CEMEX, operating on a holdover basis after the term of that lease expired. On September 19, 2007, the SFPUC entered into an exclusive negotiating agreement with Oliver de Silva, Inc. (the Project applicant), which resulted in a quarry lease executed by the City and County of San Francisco on May 27, 2010. San Francisco also leases other SFPUC properties in the immediate vicinity for quarrying operations, including the Lehigh-Hansen Aggregate Quarry (SMP-24, -32 and -33) immediately adjacent to the Project site. **Figure 5-3** shows permitted SFPUC mining leases in the Sunol Valley as of April 1996.

The AWMP includes several policies which apply to the Project site and its proposed mining activity, as described below:

Water Storage/Recreation

Policy WA37: Manage the timing and location of mining in the Sunol Valley to expedite the creation of water storage facilities while minimizing the impacts to natural, cultural, and aesthetic resources, and maximizing revenues from gravel extraction and other revenue sources (e.g., increased water sales, recreation, vineyards, and nurseries).

Policy WA38: Promote the development of recreational amenities in the Sunol Valley, including water-based recreation, as compatible with future quarry water supply reservoirs.

Policy WA39: Prohibit body contact with water in the Sunol Valley reservoirs.

Policy WA40: Allow non-motorized boating and fishing in one of the Sunol Valley Reservoirs.

> Consistency Analysis: The Project's proposed Reclamation Plan is specifically intended to assist the SFPUC in creating new water storage facilities. The proposed Reclamation Plan would allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded surface area mined to a minimum depth of 225 feet below ground surface with resulting side slope of 2:1 is expected to result in approximately 23,000 acre feet of water storage. Additional storage could be provided by mining deeper than 225 feet, as may be feasible.
>
> Implementation of the water storage portion of the Reclamation Plan would not occur until such time as mining activities at the site are complete. With expansion of the mining area (the 58-acre expansion area) and the proposed deepening of the quarry pit, mining is expected to continue for perhaps another 30 years, depending upon market demand for the aggregate product. Determination of the extent of public access to the site and the potential for recreational use of the completed water storage reservoirs for active recreational use will be made by the SFPUC in coordination with Alameda County (pursuant to the preparation of the Sunol Valley Restoration Plan) once the quarry operations at the site have been completed. (**Consistent**)

Sunol Valley Resources Management Element

The Alameda Watershed Management Plan contains several chapters, reports and technical memoranda to support the SFPUC's on-going planning and management efforts. One of the chapters of the AWMP particularly relevant to the Project site is the Sunol Valley Resources Management Element. This Element addresses the existing and future functions of the Sunol Valley in a coordinated manner and strives to minimize conflicts between these functions. All activities in the Sunol Valley are intended to be compatible with the goals and policies of the Alameda Watershed Management Plan.

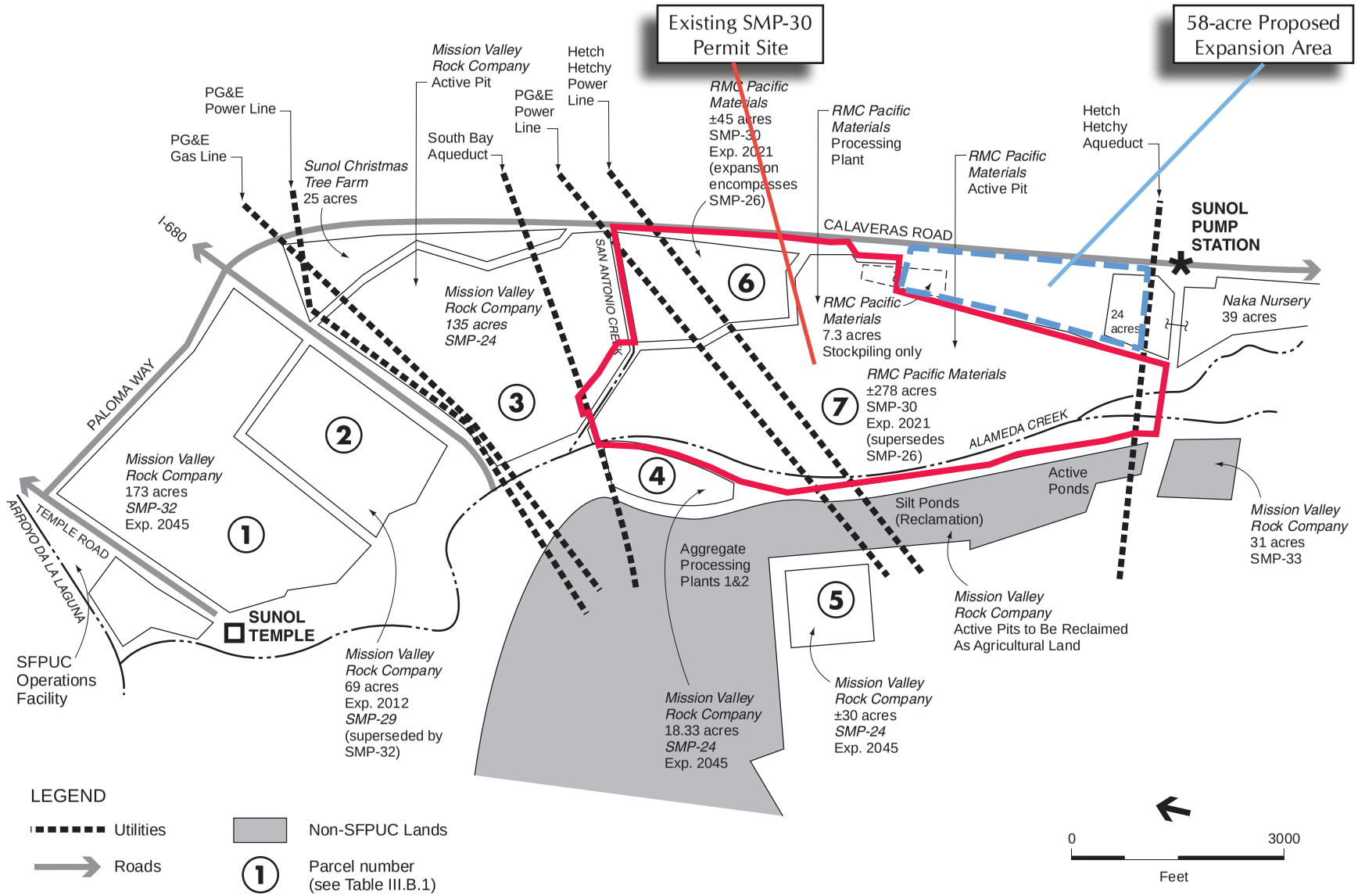


Figure 5-3
Quarry Lease Locations, Sunol Valley

Source: SFPUC, April 2001

The Sunol Valley consists of approximately 1,350 acres and is bounded generally by Paloma Way and Niles Canyon Road to the north, Calaveras Road to the east, the Sunol WTP on the south, and Alameda Creek on the west. These lands are located within the secondary watershed. The Sunol Valley is generally divided into two areas - lands north of I-680 and lands south of I-680. SFPUC owns most of the land within the Sunol Valley and currently leases most of it for a variety of ongoing activities including gravel extraction (by permit from Alameda County and lease from SFPUC), agricultural activities and plant nurseries, and recreation (i.e., the Sunol Valley Golf Course). The EPRPD Sunol Regional Wilderness is also located in the Sunol Valley. SFPUC activities and operations in the Sunol Valley include the Sunol Water Temple, SFPUC East Bay operations facilities, the Hetch Hetchy Aqueduct, and the Sunol WTP. Future functions within the Sunol Valley are envisioned to include potable and non-potable water storage, water quality protection, water release and recapture facilities, Sunol WTP operations and support facilities, gravel operations and other revenue generating activities, Alameda operations facilities, natural and cultural resources, fisheries enhancement, and potential recreation resources.

The Sunol Valley Resources Management Element provides a conceptual program for the future of the entire valley. In general, this program allows for the completion of existing permitted mining, with reclamation of the completed mine pits for water storage. Specifically, south of I-680 the program calls for some expansion of mining, which would require amendments to operating permits and leases (i.e., the proposed Project). Mining quarry pits would provide a total of 47,100 acre-feet (AF) of water storage, a portion of which would be provided by the Project. Other activities south of I-680 may include a new commercial site, an overnight nature study area south of the Hetch Hetchy Aqueduct, and trail connections to the Sunol Regional Wilderness.

Water Storage Reservoir

Specific Sunol Valley actions and guidelines applicable to the Project site are identified below.

Action sun2a (Phase 1) (Option 1) To maximize water storage following the completion of mining, work with Alameda County to amend the existing mining permits south of I-680 to achieve a maximum mining depth of 200 feet and a maximum mining footprint.

Action sun2b (Phase 1) (Option 2) To provide increased water storage following the completion of mining, work with Alameda County to amend the existing mining permits south of I-680 to increase the mining depth of existing permitted areas to 200 feet.

> Consistency Analysis: Under either of the management options described above, the proposed Project would enable the SFPUC to maximize its water storage potential. Consistent with the SFPUC's Request for Proposals which ultimately resulted in the Project applicant's lease agreement for the quarry operations, the Project seeks to increase the mining depth at the Project site from the currently approved maximum depth of 140 feet to at least 225 feet, with a potential maximum depth of 400 feet. Although these depths are greater than anticipated in the Sunol Valley Resources Management Element, they are consistent with SFPUC's more current goals to maximize water storage and are consistent with the requirements of the applicant's lease terms with the SFPUC. (**Consistent**)

Reservoir Design Guidelines

Action sun3 (Phase 3): Upon completion of mining and in preparation of the quarry pits for water storage, design the reservoirs to meet the following guidelines for maintaining high water quality:

a. Reservoirs should be piped directly to the Sunol WTP or to San Antonio Reservoir from each pit rather than piped through other pits.

b. Include multiple port inlet and outlet towers for flexibility in modifying reservoir water quality.

c. Maintain steep reservoir slopes wherever possible to reduce macrophyte growth (vegetation in the reservoirs). Exceptions to this are areas where human activity is expected and steep side slopes could cause safety concerns.

d. Plant trees to provide a barrier to airborne particulate contaminants between proximate reservoirs and I-680.

e. Maintain cutoff slurry walls constructed during mining.

Consistency Analysis: Whereas operation of the quarry pit as a water storage reservoir would not occur until such time as quarry operations are complete (mining is expected to continue for perhaps another 30 years, depending upon market demand for the aggregate product), the details of how the reservoir will ultimately operate are not, as yet, fully described. However, the Reclamation Plan as proposed would not preclude any of these specified guidelines. Piping of the reservoir directly to the Sunol WTP rather than through other pits is easily achievable given the proximity of the Project site to the WTP. Port inlet and outlet towers have not yet been located, but the design enables flexibility for multiple locations to modify water quality. The reservoir slopes are proposed at 2:1 horizontal to vertical, the maximum slope allowed pursuant to the County's Surface Mining permit regulations without a more detailed engineering analysis. Slope stability analysis at the 2:1 slope indicates that these slopes would provide an adequate factor of safety under conditions where the reservoir is full. The Reclamation Plan does include provisions for re-vegetating the stream banks along reaches of Alameda Creek. A re-vegetated Alameda Creek channel would provide a barrier between the ultimate water storage reservoir on the site and I-680 (although the adjacent Lehigh-Hanson quarry (SMP-24, -32 and -33) also lies between the Project site and I-680. Slurry cut-off walls constructed during mining operations at the site would remain. (**Consistent**)

Reservoir Design - Beaches

Action sun4 (Phase 3A): Due to the change in gradient of the valley floor, create side slopes on the pits such that there is a gradual transition to water (e.g., a beach with slope of 12:1) rather than a drop to water at the uphill edge of each pit. Where construction of beaches is not possible, construct attractive fencing to keep people from falling in.

Action sun5 (Phase 3A): Reclaim quarries with side slopes appropriate to their proposed activity. Guidelines for activities and side slopes are as follows:

a. Areas intended for human activity such as fishing and boating should be designed with a side slope of 12:1.

a. Under normal operating conditions (i.e., non-drought or emergency conditions), land adjacent to the water's edge where human activity is expected to be less intense should be contoured to 12:1 for safety reasons but, to maximize storage, may drop off rapidly to between 1.5:1 and 2:1 depending on geotechnical and slope conditions.

Consistency Analysis: Although grading of the quarry pit/storage reservoir is not shown in detail under the proposed Reclamation Plan, there is adequate land available within the setbacks provided between the pit and the adjacent creeks and roads to accommodate a more gradual 12:1 slope transitioning to the water edge.

Whether the completed quarry pit/storage reservoir will ultimately be used for human activity such as fishing and boating has yet to be determined, and will be dependent upon the determinations of the SFPUC, in coordination with Alameda County, at some point in the future. However, there is adequate land available within the setbacks provided between the pit and the

adjacent creeks and roads to accommodate a more gradual 12:1 slope transitioning to the water edge. The current quarry pit is designed to maximize water storage capacity, with side slopes of 2:1. (**Consistent**)

Water Quality/ Water Management

Action sun6 (Phase 3B): To maintain water quality during normal operations (i.e., during periods of non-emergency use), operate the Sunol Valley reservoirs according to the following guidelines:

a. Operate the reservoirs so the water is piped directly to the treatment plant from each pit.

b. Minimize bank erosion caused by fluctuating water levels and the disruption of sediment by incoming water during initial filling and during refilling following a withdrawal.

c. Replace evaporation losses annually (anticipated to be approximately 2,300 AF/yr).

d. Monitor water quality and withdraw water from the depth that provides the highest quality.

e. Annually remove macrophyte growth to reduce total organic carbon (TOC)

f. The reservoir used for fishing should be managed to favor predatory fish and minimize populations of planktivorous fish.

g. Public access reservoirs should have controls to minimize the introduction of pathogens to the reservoirs. Prohibit body contact recreation.

h. The use of copper sulfate for algae control should be avoided, but if needed should be added at the minimum effective dosage.

Action sun7 (Phase 3A): For safety reasons, suspend public access to any reservoir in the Sunol Valley, which allow public access when the reservoirs are drawn down due to drought or other emergency situation.

Action sun8 (Phase 3B): As the reservoirs are filled, collect water quality data from the influent water. This analysis should include information on phosphorus, nitrogen, and metals, as well as the more typical parameters such as TOC and suspended solids.

Action sun9 (Phase 3B) Once the reservoirs are full, a sampling program should be followed that includes intensive sampling for the first year to identify the types and timing of water quality changes that occur. The sampling program should follow the guidelines below.

a. Sampling efforts should focus on suspected problems. For instance, a depth profile of dissolved oxygen, iron, and manganese concentrations will be important during the summer, while more frequent temperature profiles should be taken in the fall as the reservoir turns over.

b. Because each reservoir will have the flexibility to supply water from several depths, the monitoring program should identify the location of the highest quality water at any given time. If the reservoirs are well characterized, it should not be necessary to manage the reservoirs to provide the highest quality water at all points at all times. For example, if algae and the associated taste and odor problems are controlled but artificial circulation is not adequate to eliminate anoxic conditions within a reservoir, water can be drawn from the epilimnion where metal concentrations are lower.

Consistency Analysis: Specific management practices for operating the water storage reservoir after quarrying activities are complete will be conducted by the SFPUC. Operation of the water storage reservoirs post-reclamation is not an element of the proposed Project. The Project as proposed would be complete once the Reclamation Plan itself has been completed (i.e., once the reservoir has been constructed, native plants are planted along Calaveras Road to minimize visual impacts, and once the stream banks along reaches of Alameda Creek and San Antonio

Creek fronting the Project site have been re-vegetated). However, the Reclamation Plan as proposed would not preclude operation of the completed quarry pit/water storage reservoir in the manner as described pursuant to these SFPUC guidelines and policies. (**Consistent**)

Action sun21 (Phase 3): Establish trail connections extending to the Sunol Regional Wilderness and also link with the trail connections established north of I-680.

Consistency Analysis: The proposed Reclamation Plan indicates possible future public access trails alignments through the Project area that may be desired by the SFPUC and the East Bay Regional Park District. The access trails (as shown on Figure 14-11 of this EIR) are part of the site's Reclamation Plan. If public access along these trails is desired by SFPUC and EBRPD during on-going quarry operations, this EIR recommends that such access be limited to the trail alignment along Alameda Creek to minimize conflicts between quarry operations and hikers/pedestrians which would otherwise occur along the Calaveras Road alignment. (**Consistent**)

Impacts and Mitigation Measures

Significance Criteria

The Project would result in a significant impact related to land use and plans if it would:

1. Physically divide an established community;
2. Fundamentally conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and result in a physical change in the environment; or
3. Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan

Physically Divide an Established Community

Impact Land Use-1: The proposed Project is not located in immediate proximity to any established community, and expansion and operation of the Project as proposed would not result in the physical division of an existing community. (**No Impact**)

The Town of Sunol is the nearest established community in the vicinity of the Project site, and is approximately two miles northwest of the Project site, westerly along Highway 84 (Paloma Road) about ¾ mile from the intersection of Calaveras Road and I-680. The only existing vehicular connection to the surrounding community is Calaveras Road. There are no established vehicular or pedestrian connections through the Project site that would link the surrounding community.

The Project site is already an established, operating quarry and no aspect of the Project would result in a division, physically or perceptually, of the Sunol community.

Mitigation Measures

None required

Land Use Compatibility / Change in Environment

Impact Land Use-2: The proposed Project would not be incompatible with surrounding land uses and would not result in a substantial land use change in the surrounding environment. (**Less than Significant**)

There is a variety of land uses types in the surrounding vicinity of the Project site:

To the immediate north across San Antonio Creek and to the immediate west across Alameda Creek is the separate Lehigh-Hanson Quarry. This is an active sand and gravel mining operation. The proposed Project is a similar land use which has been operating compatibly with it neighboring quarry for decades. There is no aspect of the proposed Project that would introduce a new land use incompatibility with the adjacent quarry.

Open SFPUC watershed lands bound the site across Calaveras Road to the east and south, the San Antonio Reservoir is approximately 4,000 feet east of the Project site, and EBRPD's Sunol Regional Wilderness is approximately 2 miles to the south. Principal access to the park is via Calaveras Road past the Project site to Welch Creek Road and Geary Road. When the currently applicable SMP-30 permit was approved by Alameda County in 1992, no land use incompatibilities with surrounding opens space were then identified. The proposed Project's expansion of quarry operations would present no greater land use incompatibilities with these surrounding open space lands than currently exist.

The SFPUC maintains a chlorination facility and the Sunol Valley Water Treatment Plant to the immediate south of the site. Other recent, current and/or planned projects and on-going land management activities in the vicinity include the Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir project, the New Irvington Tunnel project, the Alameda Siphon #4 Project, the San Antonio Backup Pipeline project, and the Upper Alameda Creek Filter Gallery project. The environmental reviews conducted for SFPUC's planned facilities did not indicate any land use incompatibilities with the current SMP-30 quarry operations, and the proposed Project would not introduce any new land use incompatibilities beyond those previously contemplated.

A private ranch residence is located to the south of the Project site. There are also two SFPUC watershed keeper residences (one near Alameda East Portal and another on Andrade Road, and two private residences on the Hanson Quarry property on Athenour Way in the more immediate vicinity of the Project. Aside from issues of noise, air quality and aesthetics (all addressed in detail in this EIR), the Project would not be incompatible with these nearby residential uses.

As indicated above, the Town of Sunol is approximately two miles northwest of the Project site. The Project site has been an operating quarry for over 50 years and the expansions of quarry operations and accessory uses would not present any land use incompatibilities with this nearby community.

Mitigation Measures

None needed

Conflicts with Land Use Plans and Policies

Impact Land Use 3: The proposed Project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (**Less than Significant**)

Conflicts between a Project and applicable land use policies do not constitute significant physical environmental impacts in and of themselves. A policy inconsistency is considered a significant adverse environmental impact only when it is related to a policy adopted for the purpose of avoiding or

mitigating an environmental effect, and if it is anticipated that the inconsistency would result in a significant adverse physical impact based on established significance criteria.

As discussed in detail in the Consistency Analysis section of this chapter of the EIR, the proposed Project would not substantially conflict with any land use policies adopted by Alameda County or the SFPUC for the purpose of avoiding or mitigating environmental effects. As a result, no significant land use impacts related to the Project's consistency with land use policies would occur. Sand and gravel quarry operations and ancillary uses as proposed by the Project are consistent with the County's General Plan land use designations, ECAP policies and applicable zoning regulations. The Project's operations and ultimate Reclamation Plan are also substantially consistent with the SFPUC's Alameda Watershed Management Plan goals, policies, actions and guidelines applicable to the Project site, as more fully discussed above.

Mitigation Measures

None required

Habitat and Natural Community Conservation Plans

Impact Land Use-4: The proposed Project would not result in a fundamental conflict with any applicable habitat conservation plan or natural community conservation plan. (**No Impact**)

There are no adopted habitat conservation plans or natural community conservation plans that apply to the proposed Project area.

Alameda Watershed Habitat Conservation Plan [5]

The SFPUC is currently preparing the Alameda Watershed Habitat Conservation Plan to provide long-term conservation measures for threatened or endangered species that could be affected by ongoing water system operations and maintenance efforts on SFPUC-owned lands in the Alameda Watershed, or by recreation, lease, and easement activities. Quarry activities are not proposed as a covered activity under that HCP, and so would not apply to the proposed Project. Actions pursuant to the Project would not conflict with the HCP. However, implementation of the Project's proposed Reclamation Plan and Conservation Plan would ensure that the proposed Project will generally be in compliance with the intent and purpose of the HCP.

East Alameda County Conservation Strategy [6]

The East Alameda County Conservation Strategy (EACCS) is a joint effort among several local, state and federal agencies intended to provide an effective framework to protect, enhance and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to focus on impacts on biological resources such as endangered and other special-status species as well as

[5] San Francisco Public Utilities Commission, " Preliminary Draft SFPUC Alameda Watershed Habitat Conservation Plan", in preparation

[6] ICF International, "Final Draft, East Alameda County Conservation Strategy:, in cooperation with Alameda County Congestion Management Agency, Alameda County Resource Conservation District, Alameda County Waste Management Authority, California Department of Fish and Game, City of Dublin, City of Livermore, City of Pleasanton, County of Alameda, East Bay Regional Park District, Natural Resources Conservation Service, San Francisco Bay Regional Water Quality Control Board, U.S. Fish and Wildlife Service and Zone 7 Water Agency, October 2010

sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS will enable local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives, and be implemented using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies can more easily address the legal requirements relevant to these species. The EACCS will not result in permits, but rather will serve as guidance for project-level permits, and the federal and state Resource Agencies are participating in the development of the EACCS with the intent that it becomes the blueprint for all mitigation and conservation in the study area.

The EACCS study area encompasses 271,485 acres, or approximately 52% of Alameda County, including the cities of Dublin, Livermore, and Pleasanton. The western boundary of the study area runs along the Alameda Creek watershed and the northern, southern and eastern boundaries follow the Alameda County line with its adjacent counties. The EACCS study area includes the watershed lands in the Alameda Creek watershed, which are also subject of the Alameda Watershed HCP described above. The EACCS study area has been divided into eighteen discrete units, or conservation zones to identify locations for conservation actions in areas with the same relative ecological function as those areas where impacts occur. The Project site is located in Conservation Zone 15.

The overall conservation priorities for Conservation Zone 15 are listed below:

- protection and restoration along Alameda Creek to conserve sycamore alluvial woodland and improve habitat value for central California coast steelhead and Alameda whipsnake
- protection of critical habitat and recovery unit habitat for Alameda whipsnake
- protection of potential breeding and movement habitat for foothill yellowlegged frog
- protection of serpentine bunchgrass grassland and northern coastal scrub/Diablan sage scrub land cover
- protection and enhancement opportunities for ponds to increase potential breeding habitat for California red-legged frog
- complete surveys in annual grassland habitat for callippe silverspot butterfly larval host /food plants and map occurrences of plant populations, and
- protection of annual grassland in area between SR 84 and San Antonio Reservoir to support potential habitat for callippe silverspot butterfly, western burrowing owl and American badger.

The Project's potential to cause impacts to these identified species or to conflict with conservation strategies for these species and their habitats are more fully addressed in Chapter 9: Biological Resources. Since the EACCS is not yet an adopted or approved plan, the draft conservation strategies do not apply to the Project. However, implementation of the Project's proposed Reclamation Plan and Conservation Plan would ensure that the proposed Project will generally be in compliance with the intent and purpose of the EACCS.

Mitigation Measures

None required

Cumulative Land Use Impacts

Cumulative Impact Land Use-5: The proposed Project, in combination with other past, present and reasonably foreseeable future projects, would not result in a cumulatively significant physical division of an existing community, would not present a cumulative conflict with adjacent land

use, would not present a cumulatively significant conflict with land use policies, and would not present a cumulatively significant conflict with any applicable habitat conservation plan or natural community conservation plan. (**Less than Significant**)

Cumulative Division of Communities

Since the Project site is already an established, operating quarry located approximately two miles southeast of the community of Sunol, its existence and continued/expanded operation would not divide this community nor contribute to any cumulative division of this community. While there are other quarry operations in proximity to the Town of Sunol (the Lehigh Hanson Quarry adjacent to the Project site and the Sheridan Quarry north of I-680 at Sheridan Road, several miles to the southwest of the Town of Sunol), these quarry operations do not cumulative divide the community, although they do represent a surrounding edge outlying the southern and western portions of the community.

Cumulative Land Use Conflicts

In addition to the Project site, there is another separate operating quarry to the immediate north across San Antonio Creek and to the immediate west across Alameda Creek (the Lehigh-Hanson Quarry). Like the Project site, the Lehigh-Hanson Quarry is an active sand and gravel mining operation which has been operating together with the Sunol Valley Quarry for decades. There are no land use incompatibilities between these two operating quarries, and together these two quarries do not result in any cumulative land use conflicts with other adjacent uses. Other chapters of this EIR address the potential cumulative effects that the two quarry operations may have on nearby land uses (see in particular the Noise, Air Quality and Aesthetics chapters), but these quarry operations do not cumulatively conflict with the private ranch residence located to the south of the Project site, nor do they cumulatively conflict with either of the two SFPUC watershed keeper residences (one near Alameda East Portal and another on Andrade Road) or the two private residences on the Hanson Quarry property on Athenour Way.

Cumulative Land Use Policy Conflicts

To ensure that cumulative quarry operations throughout the County do not divide communities or result in cumulatively adverse land use conflicts, ECAP Policy 155 provides that, except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry.

The proposed 58-acre expansion area is immediately adjacent to the existing SMP-30 quarry site, the proposed expanded activities within the current plant (the asphalt and concrete batch plants) are located within the boundaries of the existing permitted quarry, and the long-term plant site is also located within the boundaries of the existing permitted quarry. Thus, the Project is consistent with County policy regarding cumulative quarry expansions. ECAP Policy 155 would similarly apply to any and all other quarry operations in the County, thus limiting the potential for the expansion of quarries to result in cumulatively adverse land use conflicts.

The Apperson Quarry is an approximately 680-acre hard rock mining project that was approved by Alameda County in 1984 (prior to adoption of ECAP Policy 155, and thus an approved quarry, pursuant to SMP-17). However, no quarry activities have as yet commenced at the Apperson Quarry site. As lease holder for both the Project (Sunol Valley Quarry) and the Apperson Quarry, the Project applicant is considering the potential benefits associated with linking operational aspects of these two quarry projects together (see further discussion in Chapter 4: Methodology and Assumptions). However, before any such linkages between the Project and the Apperson Quarry might be implemented, future applications for further revisions to the SMP-30 permit (i.e., at the Project site) and revisions to the SMP-17 permit (the Apperson Quarry permit) would need to be filed, additional environmental review conducted, Alameda

County approvals granted, and revised leases with the SFPUC extended. No such applications have been filed and the currently proposed Project does not contemplate this possible future linkage. Thus, any assessment of cumulative land conflicts associated with such a future project would be premature and speculative at this time.

The Project applicant has entered into a private agreement with the Alameda Creek Alliance and the Center for Biological Diversity which itemizes a number of agreed-upon conditions that would apply to any future linkages between these two quarry operations.[7] These conditions would only be applicable pursuant to a subsequent sequence of environmental reviews and approvals (separate and apart from the currently proposed Project) that would be necessary if the Project applicant, at some point in the future, sought approval to continue operation of the Project's stockpile areas, aggregate processing plant, asphalt plant and ready-mix concrete plant, but for use in delivery, stockpiling and processing of aggregate material from the Apperson Quarry (SMP-17).

Since there is no current proposal which links the Sunol Valley Quarry (i.e., the Project site) to the Apperson Quarry, this EIR does not include any cumulative analysis of the Apperson Quarry project or the potential link between the two quarries. The proposed Project at SMP-30 is not dependent upon, nor does it rely on any future project approvals that would link these two quarry sites. The Project is a fully self-contained quarry with a proposed on-site expanded operations plant designed to process aggregates specifically mined from the Project site only. The Project's proposed Reclamation Plan fully describes the currently anticipated end-state for the proposed Project as being water storage for SFPUC. Furthermore, if the Project as proposed is approved, the Project applicant has agreed to defer mining at the Apperson Quarry until no earlier than 2030, and not before cessation of mining at the Project site. Given these circumstances, there would be no scenario under which the proposed Project would conduct mining operations (i.e., harvesting of raw aggregate resources) coincidentally with mining operations activity at the Apperson Quarry, and no cumulative effects associated with a linkage between the Project and the Apperson Quarry would occur.

Mitigation Measures

None required

[7] Oliver de Silva, Inc., Conservation Plan for Sunol Quarry SMP-30 Site, December 15, 2008

6

Aesthetics / Visual Quality

This chapter evaluates the proposed Project's potential impacts related to aesthetics and visual quality. This chapter describes the existing visual setting of the Sunol Valley and the existing context of the Project site, and provides an evaluation of the visual and aesthetic changes within the existing setting that would result from Project implementation. Information in this chapter is drawn from existing photographs and photo-simulations of the Project site prepared by Environmental Vision in February 2012. All other sources are referenced at the end of this EIR and/or are provided in the Appendices.

Physical Setting

This section describes the existing visual conditions at the Project site and surrounding region.

Regional Setting, Sunol Valley

The Project site sits within the base of the Sunol Valley within the central portion of Alameda County, south of Pleasanton and east of the City of Fremont. The Sunol Valley is a northward sloping valley within the Diablo Range of the Interior Coast Mountain Ranges. The major peaks and ridgelines along this range include Walpert Ridge and Pleasanton Ridge, Sunol Peak, Mission Peak, Monument Peak and Allison Peak on the western side of the valley, and Maguire Peaks on the southeastern side of the valley (see **Figure 6-1**).

The Sunol Valley trends northwest following Calaveras Creek, with east-west valleys (La Costa Valley and San Antonio Creek Valley) separated by interspersed rugged terrain. All the streams within the Sunol Valley are tributary to Alameda Creek, which flows northward through Sunol Valley to the north, where it enters Niles Canyon on its way to San Francisco Bay. Through the center of Sunol Valley, I-680 separates the valley into areas north (including the unincorporated Town of Sunol) and areas south (primarily undeveloped lands along Alameda Creek and Calaveras Road).

For the most part, the Sunol Valley and surrounding ridges are relatively remote and not accessible to, or viewed by, the general public. Large areas of open space surround the valley, including the East Bay Regional Park District's (EBRPD) Sunol Regional Wilderness located to the south and the Pleasanton Ridge Regional Recreation Area located to the north. However, sections of I-680 and State Route 84 provide opportunities for panoramic views of the valley and surrounding ridgelines. Particular features of interest include views of Calaveras Reservoir, the Sunol Water Temple, the Little Yosemite area, and the narrow and heavily forested Niles Canyon.

Source: GoogleMaps

Figure 6-1
Topographic Visual Setting of the Sunol Valley

The SFPUC owns a large portion of the land within the Sunol Valley and currently leases most of it for a variety of ongoing activities including gravel extraction, agricultural activities, plant nurseries, and utility corridors. Active aggregate mining encompasses approximately 500acres of the Sunol Valley and these uses are visually prominent. Both the SFPUC and several other companies also have visually prominent utility lines running through the Sunol Valley, which are visible from a distance:

- In the north end of the valley adjacent to I-680 is an underground PG&E gas pipeline and, adjacent to it, the PG&E overhead electrical transmission lines.
- Another set of PG&E and SFPUC overhead transmission lines crosses the valley further south through the Project site
- The South Bay Aqueduct also crosses the valley in the southern portion, immediately south of the Project site.
- The Chevron Pipeline parallels Calaveras Road through most of the valley, and then crosses the valley just south of the Project site.
- In addition to the major utility lines, the SFPUC also has a number of smaller water supply lines which run adjacent to Calaveras Road and in other locations throughout the valley.

The SFPUC also operates a number of other water supply facilities which can be seen in the Sunol Valley, including the Sunol Operations facility, the Hetchy Hetchy Aqueduct, the Sunol Water Temple, the Sunol WTP, and the Sunol Pump Station and Infiltration Galleries. Another visually prominent land use within the Sunol Valley is the Sunol Valley Golf Course located northwest of the Project site adjacent to I-680.

Despite the numerous intrusions to its setting, visual quality in the Sunol Valley is high. Long-range views of hills are a key element of views along Calaveras Road. This key visual resource is distinguished by the dramatic forms of the uplands of the Sunol and Apperson/Pleasanton ridges, with their ridgelines and rounded forms on both east and west, their tan coloration during the summer months and green coloration after the winter and spring rains. Additional visual features in Sunol Valley include the many native trees (e.g., oaks, sycamores, willows) and Alameda Creek. Together, these features create a visual setting that possesses memorable character; though only moderately intact due to existing disturbed land uses.

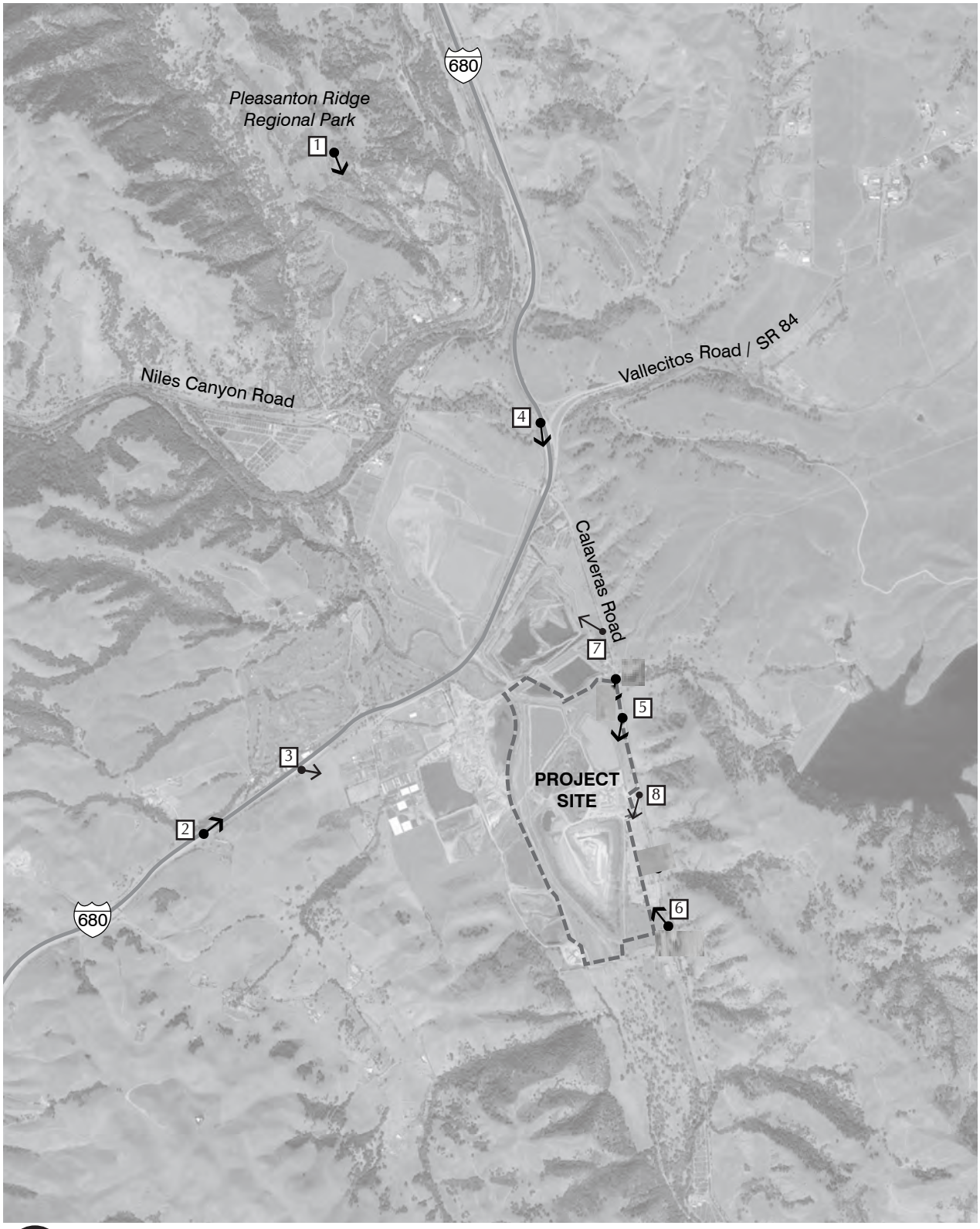
Regional Views of the Sunol Valley

Several viewpoints along I-680 and from the hillsides north of the Project site provide vantage points from where views of the Sunol Valley can be seen. In coordination with County staff, three of these more distant vantage points have been selected, and photographs from these vantage points taken (see **Figure 6-2** for the location of selected vantage points). These views are more specifically described below.

Pleasanton Ridge Regional Park

The Pleasanton Ridge Regional Park is located to the northwest of the Project site, high in the hills of the Diablo Range. Within the Regional Park, hiking trails branch out in all directions and many of these trails provide scenic outlooks across the Sunol Valley. One such trail follows the Woodland Trail from the Foothill Staging Area for about a mile, where the vegetation clears and panoramic views of the valley can be seen (see later Figure 6-3).

From this location views of the Project site are readily seen, with the East and North Basins clearly visible in the mid-ground because of their reflective water surfaces. Views of the existing operating plant equipment and quarry pit itself tend to blur into the landscape and are not readily distinguished from this distance.



Source: Environmental Vision

Figure 6-2
Key to Selected Vantage Points

I-680 Northbound, Mission Pass

As I-680 rises out of the Bay Area from the City of Fremont, it crests at Mission Pass before descending the Sunol Grade into the Sunol Valley. From the crest of the grade, views across the more northerly portion of the Sunol Valley can be seen (see later Figure 6-6). The Sunol Valley Golf Course and the Andrade Road overpass can be seen in the foreground, some of the commercial buildings along Athenour Way are visible in the mid-ground, and the hills separating the Vallecitos Valley further to the northwest form the backdrop. From this vantage point, the Project site can be seen, but none of the existing equipment at the plant site is discernible and the quarry pit and lakes cannot be detected from this distance.

As the freeway drops in elevation the valley floor becomes less visible. Views are predominantly of the mid-ground development, the larger buildings of the Lehigh-Hanson quarry and the hillsides in the backdrop (see later Figure 6-7).

I-680 Southbound at SR 84

As I-680 passes south past the City of Pleasanton, it rises up out of the Livermore Valley and into the hills of the Diablo Range before dropping back down into the Sunol Valley. At the crest between the Livermore Valley and the Sunol Valley near the intersection with State Route 84, a brief view across the southern portion of the Sunol Valley can be seen. As shown in later Figure 6-9, the majority of this view is comprised of the rising hillsides of the Mission Hills and Mount Allison in the background. The Sunol Valley is seen in the mid-ground, although the freeway structure obstructs much of the valley floor.

From this vantage point, it is difficult to discern the existing quarry operations in the valley floor, and views are also partially obstructed by the overhead power lines along the freeway. Specific views of the Project site are not distinguishable.

Project Site, Visual Setting

The Project site itself is located along Calaveras Road in the southeastern portion of the Sunol Valley, between Calaveras Road and Alameda Creek. Calaveras Road is a fairly narrow, 2-lane road which forms the eastern boundary of the Project site and is also aligned along the eastern edge of the Sunol Valley. Topography to the east of Calaveras Road rises sharply and limits long range views in the easterly direction. Calaveras Road provides the most opportunity for views from the base of the valley westward out across the valley and up to the surrounding hillsides.

The frontage of Calaveras Road, particularly along the northerly portion of the Project site is vegetated with trees and shrubs which shield views to and across the Project site to the west, and substantially obscure long-range view of the hills to the west. Clearings in the vegetation enable the Project site to be seen in the immediate foreground. Further to the south, there are far fewer trees along the roadway and views of and across the Project site are more readily seen. While Calaveras Road is a designated scenic roadway, bicyclists and motorists traveling on it are considered moderately sensitive viewers due to the relatively fleeting views from the roadway and existing sight obstructions of topography and vegetation.

In coordination with County staff, two vantage points along Calaveras Road have been selected, and photographs from these two vantage points taken (see Figure 6-2 for the location of selected vantage points). These views are more specifically described below.

Southbound Calaveras Road, south of the San Antonio Creek Bridge

From this vantage point, immediate foreground views of the Project site show materials stockpiles and quarry processing plant equipment characteristic of a quarry operations (see later Figure 6-11). The processing plant's crushing, sorting and conveyor equipment are readily seen, but do not eclipse or obstruct views of the hillsides and ridgelines across the valley to the south and east.

At the San Antonio Creek Bridge, Calaveras Road crosses under the PG&E and SFPUC overhead transmission lines, which also cross the Project site. These overhead wires and tall transmission towers are the dominant structures in the mid- ground and foreground views, and the quarry operations can be seen much lower along the mid-ground horizon. High on the distant ridgeline to the southwest, the radio and television transmission towers located on top of Monument Peak and Mount Allison can be seen.

Northbound Calaveras Road, north of the Hetch Hetchy Pipeline

From northbound Calaveras Road looking northwest, the foreground property is the Project's proposed 58-acre expansion area (see later Figure 6-12). This property is currently being used as a staging area associated with SFPUC construction projects occurring further to the south. Erosion control fencing can be seen in the immediate foreground, quarry processing plant equipment can be seen in the mid-ground, and the hillsides of the Pleasanton Ridge Regional Park are seen in the background. The processing plant's crushing, sorting and conveyor equipment and the overhead utility lines are readily seen, but do not eclipse or obstruct views of the hillsides and ridgelines across the valley to the northwest.

Regulatory Setting

Both state and local agencies provide policy direction for projects that could have adverse effects on scenic resources. This section describes the policy framework that would apply to the proposed Project.

State

Scenic Highway Program

The intent of the State Scenic Highway Program is to protect and enhance California's natural scenic beauty. The California Department of Transportation (Caltrans) provides city and county governments the opportunity to nominate eligible scenic highways and adopt corridor protection programs to obtain official scenic highway status. Local corridor protection programs are to contain land use elements that support scenic preservation along these routes. If a proposed project is within an officially designated Scenic Highway, its environmental document must discuss whether the project has the potential to affect the scenic highway and if so, whether the project is consistent with the local protection program. If a highway is listed as eligible for official designation, it is also part of the state's Scenic Highway System and care is to be taken to preserve its eligible status.

In the vicinity of the Project site, I-680 is a designated Scenic Highway. Within Alameda County, the designated Scenic Highway begins in the city of Fremont at its intersection with SR 262. The Scenic Highway continues through Alameda County including the portion of the freeway which crosses over Mission Pass and descends into the Sunol Valley. It then enters Pleasanton and interchanges with I-580 and continues past before exiting the county and entering Contra Costa County.

Alameda County

Scenic Highway Element

The County's Scenic Route Element of the County General Plan (originally adopted in 1966, most recently amended in 1994) is intended to serve as a means of continuing coordination among the planning functions of Alameda County and Caltrans in the development of a County-wide system of scenic routes, appropriate portions of which would be adopted or expanded upon by individual cities. The Scenic Route Element consists of a continuous County-wide scenic route system, and is intended to serve as a guide to local jurisdictions for development of more detailed, individual city scenic route plans to supplement the County plan. The Scenic Route Element is further intended to serve as a guide for development of city

and county legislation and programs that will protect and enhance the scenic values along routes designated in the plan and in other areas in the County visible from scenic routes. The Scenic Highway Element includes a map entitled "Proposed Scenic Roads -- Alameda County" which shows I-680 as a Scenic Highway and includes other supplemental routes deemed to be of outstanding quality or which provide access to important scenic, recreational, cultural or historic points. Included within these other supplemental routes in the vicinity of the Project are Calaveras Road and Niles Canyon Road.

Included as part of the Scenic Route Element is the overall goal to preserve and enhance natural scenic qualities in areas beyond the Scenic Corridor. As indicated in the Element, "Views from scenic routes comprise essentially all of the remainder of the county beyond the limits of the scenic corridor. The corridor is intended to establish a framework for the observation of the views beyond. Therefore, in all areas in the county extending beyond the scenic route corridors, scenic qualities should be preserved through retaining the general character of natural slopes and natural formations, and through preservation and enhancement of water areas, water courses, vegetation, and wildlife habitats. Development of lands adjacent to scenic route corridors should not obstruct views of scenic areas and development should be visually compatible with the natural scenic qualities."

East County Area Plan (ECAP)

On May 5, 1994, the Alameda County adopted the East County Area Plan (ECAP) in 1994 as an Element of its General Plan, guiding land use within the eastern portion of the County. ECAP was later modified by the passage of the Measure D Initiative. ECAP policies pertaining to visual resources and sensitive viewsheds with potential relevance to implementation of the proposed Project include the following:

Policy 105: The County shall preserve the following major visually-sensitive ridgelines largely in open space use; the ridgelines of Pleasanton, Main, and Sunol Ridges west of Pleasanton.[1]

Policy 106: Structures may not be located on ridgelines or hilltops or where they will project above a ridgeline or hilltop as viewed from public roads, trails, parks and other public viewpoints unless there is no other site on the parcel for the structure or on a contiguous parcel in common ownership on or subsequent to the date this ordinance becomes effective. New parcels may not be created that have no building site other than a ridgeline or hilltop, or that would cause a structure to protrude above a ridgeline or hilltop, unless there is no other possible configuration.

Policy 107: The County shall permit no structure (e.g., housing unit, barn, or other building with four walls) which projects above a visually-sensitive major ridgeline.

Policy 108: To the extent possible, including by clustering if necessary, structures shall be located on that part of a parcel or on contiguous parcels in common ownership on or subsequent to the date this ordinance becomes effective, where the development is least visible to persons on public roads, trails, parks and other public viewpoints. This policy does not apply to agricultural structures to the extent it is necessary for agricultural purposes that they be located in more visible areas.

Policy 109: The County shall preserve community separators largely in open space in the following locations: 1) the Resource Management area of approximately 7,400 acres separating East Dublin and North Livermore; 2) the Chain of Lakes area which separates the cities of Pleasanton and Livermore; 3) the area on Pleasanton and Main Ridges above 670 feet which separates the communities of Pleasanton, Castro Valley, and Hayward; 4) the area west of Dublin which separates the communities of Dublin and Castro Valley; and 5) the Vargas Plateau and Sheridan Road areas which separate the communities of Fremont and Sunol.

[1] This policy includes numerous other ridgelines within the County as being visually sensitive, but these other ridgelines are not relevant to this EIR as they are too far removed from the Project site.

Policy 110: The County shall require that developments are sited to avoid or, if avoidance is infeasible, to minimize disturbance of large stands of mature, healthy trees and individual healthy trees of notable size and age. Where healthy trees will be removed, the County shall require a tree replacement program which includes a range of tree sizes, including specimen-sized trees, to achieve immediate visual effect while optimizing the long-term success of the replanting effort.

Policy 112: The County shall require development to maximize views of the following prominent visual features: 1) the major ridgelines listed in Policy 105.

Policy 113: The County shall review development proposed adjacent to or near public parklands to ensure that views from parks and trails are maintained.

Policy 114: The County shall require the use of landscaping in both rural and urban areas to enhance the scenic quality of the area and to screen undesirable views. Choice of plants should be based on compatibility with surrounding vegetation, drought-tolerance, and suitability to site conditions; and in rural areas, habitat value and fire retardance.

Policy 115: In all cases appropriate building materials, landscaping and screening shall be required to minimize the visual impact of development. Development shall blend with and be subordinate to the environment and character of the area where located, so as to be as unobtrusive as possible and not detract from the natural, open space or visual qualities of the area. To the maximum extent practicable, all exterior lighting must be located, designed and shielded so as to confine direct rays to the parcel where the lighting is located.

Policy 116: To the maximum extent possible, development shall be located and designed to conform with rather than change natural landforms. The alteration of natural topography, vegetation, and other characteristics by grading, excavating, filling or other development activity shall be minimized. To the extent feasible, access roads shall be consolidated and located where they are least visible from public view points.

Policy 117: The County shall require that where grading is necessary, the off-site visibility of cut and fill slopes and drainage improvements is minimized. Graded slopes shall be designed to simulate natural contours and support vegetation to blend with surrounding undisturbed slopes.

Policy 118: The County shall require that grading avoid areas containing large stands of mature, healthy vegetation, scenic natural formations, or natural watercourses.

Policy 119: The County shall require that access roads be sited and designed to minimize grading.

Policy 120: The County shall require that utility lines be placed underground whenever feasible. When located above ground, utility lines and supporting structures shall be sited to minimize their visual impact.

SMP-30 Conditions of Approval

In November of 1992 Alameda County approved Resolution 92-32, combining the then-existing surface mining operation known as SMP-26 with a 45-acre expansion area to create the current Sunol Valley Quarry, or SMP-30. Pursuant to that Resolution, the County adopted a number of Conditions of Approval which are still currently effective, or which may have been modified over time. Those currently effective Conditions of Approval for SMP-30 which pertain to visual resources issues are listed below.

18. Height of stockpiles throughout the permit boundaries shall be restricted to two tiers, or 25 ± feet to minimize obstruction of distant views from Calaveras Road and to increase safety of on-site workers.

> Note: The Project specifically proposes to change this condition to permit materials stockpiles of 50 feet. This change is addressed in the subsequent analysis.

19. Topsoil and overburden stockpiles shall be placed in a way to make them resemble a natural non-angular landform, to the extent feasible.

20. The Oak Tree located within the 7.3 acre stockpile area located immediately south of the entrance road to the quarry along Calaveras Road shall be preserved and protected from disturbance from equipment and stockpiles An area of at least five feet beyond the drip line of the tree shall be fenced, and soil within this fenced area shall not be disturbed.

21. In order to mitigate visual impacts as indicated in "Santa Clara Sand & Gravel Expanded Initial Study and Proposal Mitigated Negative Declaration " (1992), the permittee shall prepare and implement a landscape planting, irrigation, and maintenance plan to ensure that the proposed landscape buffers provide a maximum visual filter from Calaveras Road. The plan shall, at a minimum, include the following measures:

a. The visual screen shall be dense enough to filter views from Calaveras Road;

b. Trees shall be planted, placed in containers, or a combination of planted and containers, subject to the approval of the Planning Director;

c. If trees are planted, there shall be a preference for native species (refer to "Santa Clara Sand & Gravel Expanded Initial Study and Proposed Mitigated Negative Declaration" for examples of acceptable native species, spacing between trees, size of plantings and elevation from roadway.) Different species or tree placement schemes may be used if approved in writing by the Planning Director; if alternative species are selected, they shall be non-invasive.

d. Trees shall not interfere with water or electrical transmission lines;

e. The visual screen shall terminate at the north end of the existing meadow. Evergreen oak trees (Quercus Agrifolia) shall be planted in the meadow area on 25 foot to 30 foot centers to filter the view of the office and plant, unless determined by the Planning Director to be impractical or infeasible;

f. Riparian screening shall be planted along San Antonio Creek (refer to "Santa Clara Sand & Gravel Expanded Initial Study and Proposal Mitigated Negative Declaration "for examples of native species and spacing between them). In addition to providing a visual filter from Calaveras Road, the plantings shall be selected to soften the visual effects of the stockpiles, as viewed from 1-680 and other locations to the north and west of the site, and provide a natural wildlife habitat. Species or planting schemes other than those recommended in the 1992 Mitigated Negative Declaration may be used if approved in writing by the Planning Director, and

g. A monitoring plan with an implementation schedule shall be prepared and submitted to the Planning Director for approval within 90 days of approval of SMP-30. The plan shall include the provision that planting shall be established prior to excavation of additional mining pits. The successful growth and health of trees shall be monitored by the Public Works Agency during their annual review and by the Planning Department during their five-year review, or as needed by the Planning Department to ensure its success as a visual filter; if proved unsuccessful, then permittee shall replant with the same or different species approved by the Planning Director.

Impacts and Mitigation Measures

Significance Criteria

The Project would have a significant impact on the environment if it would:

1. Have a substantial adverse effect on a scenic vista;
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state or locally designated scenic highway;

3. Substantially degrade the existing visual character or quality of the site and its surroundings;
4. Create a new source or substantial light or glare which would substantially and adversely affect daytime or nighttime views in the area;

Each of these thresholds of significance is evaluated below.

Methodology

- Due to the inherently subjective nature of evaluating aesthetic impacts, the Federal Highway Administration (FHWA) developed a visual assessment methodology premised on professional standards. The objective of the FHWA guidelines is to provide a reasonably objective analytical framework for describing the visual environment and evaluating potential impacts on aesthetic quality. The aesthetic value of an area is a measure of its "visual character" and "visual quality", combined with viewer response to it. Visual character refers to the natural and artificial landscape features that define an area or view. The basic components used to describe visual character include form, line, color, and texture. The appearance of the visual setting is described in terms of the dominance of each of these components.
- Visual quality is based on the relative degree of vividness, intactness and unity, as shaped by a particular view's visual sensitivity. Vividness is the visual power or memorability of landscape components; intactness is the visual integrity of the natural or human-created landscape and its freedom from encroaching elements; and unity is the visual coherence and compositional harmony of the landscape considered as a whole.
- Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of the views seen, distance of the viewers, and view duration. Viewer sensitivity relates to the extent of public concern for views within a particular viewshed.

This methodology has been applied to the assessment of Project impacts as discussed below.

Scenic Vistas

Impact Aesthetics-1: The Project is located in an area visible in scenic vistas from a number of surrounding vantage points. Although implementation of the Project would change existing views of the Project site from these vantage points, the Project would not substantially adversely affect these scenic vistas. (**Less than Significant**)

As indicated in the Setting section the hillsides northwest, southwest and southeast of the Project site provide vantage points from where views across the Sunol Valley, including the Project site, can be seen. One such prominent vantage point is in the Pleasanton Ridge Regional Park northwest of the Project site, high in the hills of the Diablo Range. From this location, views of the Project site are readily seen, although the distance from this vantage point to the Project site limits the extent of detail that is discernible to the viewer (see **Figure 6-3**).

Phase I

As demonstrated in **Figure 6-4**, the addition of the Project's proposed concrete and asphalt batch plants and it's proposed higher stockpiles (of 50 feet, rather than the current 25 feet) and other associated quarrying activities would be among the other existing visual elements seen from this vantage point, including other quarry operations, existing SFPUC water treatment structures and access roads. The Project's new plant equipment and expanded quarry pit would appear quite small from this vantage point due to their distance from the viewer.

Note: Visual aid is offerred to identify approximate Project location, but is not representative of the precise Project area boundary

Figure 6-3
Existing View from Pleasanton Ridge Regional Park (VP#1)

Source: Environmental Vision

Note: Visual aid is offerred to identify approximate Project location, but is not representative of the precise Project area boundary

Figure 6-4
Simulated View of the Prject Phase I from the Pleasanton Ridge Regional Park (VP#1)

Source: Environmental Vision

As with existing views from this location, the operating plant equipment and quarry pit will generally blur into the landscape and would not be readily distinguished from this distance.

- Although public concern over the sensitivity of views from this vantage point may be high, the number of viewers that enjoy views from this relatively remote location is low and the distance from the vantage point to the Project site is great, indicating that viewer response to changes in this view as a result of the Project would not be significant.
- The simulation of Phase I views also shows that the change in views from this vantage point would not result in a vivid or memorable alteration of this view, would not substantially alter the visual integrity of the overall landscape due to new encroaching elements, and panoramic views of the Sunol valley would remain visually coherent and in relative harmony with the existing landscape.
- The visual character of views from this vantage point would not be substantially altered by the Project as it would not introduce new forms, lines, colors or textures that would tend to dominate the appearance of the existing visual setting.

Based on these conclusions, the overall scenic vista across the Project site and across the Sunol Valley from this location would not be adversely affected by the Project, and Phase I impacts on scenic vistas would be less than significant.

Phase II

During Phase II of the Project, the plant operations site will be moved even further to the south, more distant from this vantage point than as shown for Phase I. Additionally, the plant site will be relocated to a bench constructed within the South Basin, with a surface elevation of approximately 50 feet below the surrounding ground surface. The greater distance and lowering of the equipment and material stockpiles into the South Basin would even further blur these features into the landscape such that they would be even less distinguishable from this distance than they would be in Phase I. Phase II of the Project would have similarly minor changes in the visual character and quality of views from this vantage point. The overall scenic vista across the Project site and across the Sunol Valley from this location would not be adversely affected by the Project, and Phase II impacts on scenic vistas would also be less than significant.

Reclamation

Once the quarry operations are completed, the Reclamation Plan calls for the quarry pit to be filled with water and used for SFPUC water storage purposes. As demonstrated in **Figure 6-5**, the water surface of the water storage reservoir will be much more visible than the operations plant and quarry pit because of the reservoir's reflective and contrasting color and smooth surface area. However, the quarry pit has been designed with an irregular perimeter rather than squared-off corners, which would make it appear more like a natural lake rather than a man-made reservoir.

- The simulation of the Reclamation Phase views shows that the change in views from this vantage point would be more vivid and memorable than the views of Phase I or Phase II, but that the alterations of this view would not substantially alter the visual integrity of the overall landscape and that the changes would be visually coherent and in relative harmony with the existing panoramic views of the landscape.
- The visual character of views from this vantage point would be changed by the introduction of new colors and textures associated with the water surface. However, these new visual elements would not dominate the existing visual setting, but would instead be visual coherent and in compositional harmony with the landscape considered as a whole.

The addition of the reservoir, although a significant change to the existing vista, is not substantially adverse or negative, and the impact is therefore less than significant.

Note: Visual aid is offerred to identify approximate Project location, but is not representative of the precise Project area boundary

Figure 6-5
Simulated View of the Completed Reclamation Plan from the Pleasanton Ridge Regional Park (VP#1)

Source: Environmental Vision

Mitigation Measures

None needed

Visual Resources from the Scenic Highway

Impact Aesthetics-2: The Project would not substantially damage scenic resources such as trees, rock outcroppings or historic buildings within a state-designated Scenic Highway. (**Less than Significant**)

As indicated in the Setting section, the Project site is visible from along the I-680 Scenic Highway. Of the more prominent vantage points along the highway, the Project site can be seen within the broader context of the Sunol Valley, and from northbound I-680 as it descends from Mission Pass southwest of the Project site (see **Figures 6-6 and 6-7**), and from southbound I-680 at the SR 84 interchange north of the Project site (see **Figure 6-9**). From these locations, views of the Project site are only partially seen and partially obstructed by intervening topography and landforms.

Phase I

I-680 Northbound

On I-680 northbound at the base of the Sunol Grade (just before the Andrade Road exit), portions of the Project site are visible in the distance, but the southerly portion is obscured by intervening landforms and vegetation. Addition of the Project's proposed concrete and asphalt batch plants and its proposed higher stockpiles would be among the other existing visual elements seen from this vantage point, as shown in **Figure 6-8**. However, the Project's features would be seen in context with other features in the built environment including the PG&E transmission towers, rural residences and commercial structures near Andrade Road, and the intervening Lehigh Hanson quarry operation. The new features at the Project site that would be most visible from this point would be the taller material stockpiles because of their larger mass. The new asphalt plant would be seen in the distant background, just over the top of the mid-ground row of vegetation and screened in this view by the transmission tower. The overall change in views from this location would not damage any scenic resources along the scenic corridor, and the panoramic views of the ridgeline in the background would be unchanged. Views of the ridgeline and the forms of the hills to the east of the Project site from the freeway would not be altered because there would be no ridgeline development or substantive alteration of hillside form, and Project features would not be so tall as to protrude into the ridgeline silhouette.

- As an interstate freeway, the number of viewers that enjoy views from the scenic highway is great. However, viewer response to changes in this view as a result of the Project is not expected to be great because of the relatively far distance from the vantage point to the Project site and the relatively short duration of time that this view is seen by motorists on the freeway. Additionally, because the Project site has been a visually apparent operating quarry for over 50 years, views across the site are not highly sensitive.
- The simulation of Phase I views also shows that the change in views from this vantage point would not result in a vivid or memorable alteration of this view, would not substantially alter the visual integrity of the overall landscape due to new encroaching elements, and panoramic views of the Sunol valley and the surrounding ridgelines would remain visually coherent and in relative harmony with the existing landscape.
- The visual character of views from this vantage point would not be substantially altered by the Project as it would not introduce new forms, lines, colors or textures that would tend to dominate the appearance of the existing visual setting.

Figure 6-6
Existing View from I-680 Northbound at Mission Pass (VP#2)

Source: Environmental Vision

Figure 6-7
Existing View from I-680 Northbound at Base of Sunol Grade (VP#3)

Source: Environmental Vision

Figure 6-8
Simulated View of Phase I from I-680 Northbound at Base of Sunol Grade (VP#3)

Source: Environmental Vision

I-680 Southbound at SR 84

At the high point where I-680 southbound crosses over SR 84, the addition of the Project's proposed concrete and asphalt batch plants and it's proposed higher stockpiles (of 50 feet, rather than the current 25 feet) and other associated quarrying activities would be among the other existing visual elements seen from this vantage point, as demonstrated in **Figure 6-10**. However, the Project's features would be seen in context with other features in the built environment including the freeway structure itself in the foreground, and the PG&E transmission towers in the mid-ground. The new features at the Project site that would be most visible from this point would be the taller material stockpiles because of their larger mass, whereas the new equipment would not be so large and the taller stacks would be too thin from this distance to be readily discernible. The overall change in views from this location would not damage any scenic resources along the scenic corridor, and the panoramic views of the Mission Peak ridgeline in the background would be unchanged. Views of the ridgeline and the forms of the hills along the Mission Peak ridgelines from the freeway would not be altered because there would be no ridgeline development or substantive alteration of hillside form.

- The simulation of Phase I views from this vantage point shows that the change in views as a result of the Project would not result in a vivid or memorable alteration of this view, would not substantially alter the visual integrity of the overall landscape due to new encroaching elements, and panoramic views of the Sunol valley and the surrounding ridgelines would remain visually coherent and in relative harmony with the existing landscape.
- The visual character of views from this vantage point would not be substantially altered by the Project as it would not introduce new forms, lines, colors or textures that would dominate the appearance of the existing visual setting.

The scenic corridor along I-680 in both northbound and southbound directions would not be adversely affected by the Project, and Phase I impacts on the I-680 scenic corridor would be less than significant.

Phase II

During Phase II of the Project, the plant operations site will be moved to the south, more distant from the I-680/SR 84 vantage point than as shown for Phase I. Additionally, the plant site will be relocated to a bench constructed within the South Basin, with a surface elevation of approximately 50 feet below the surrounding ground surface. As with views from the Pleasanton Ridge Regional Park, the greater distance and lowering of the equipment and material stockpiles into the South Basin would further reduce the visual clarity of these features in the landscape such that they would be even less distinguishable from this distance than they would be in Phase I.

From vantage points on I-680 northbound, the relocated plant site and its equipment and material stockpiles would no longer be visible, as views of the southern portion of the Project site are fully screened by intervening landforms.

The scenic corridor along I-680 in both northbound and southbound directions would not be adversely affected by Phase II operations, and impacts on the I-680 scenic corridor would remain less than significant.

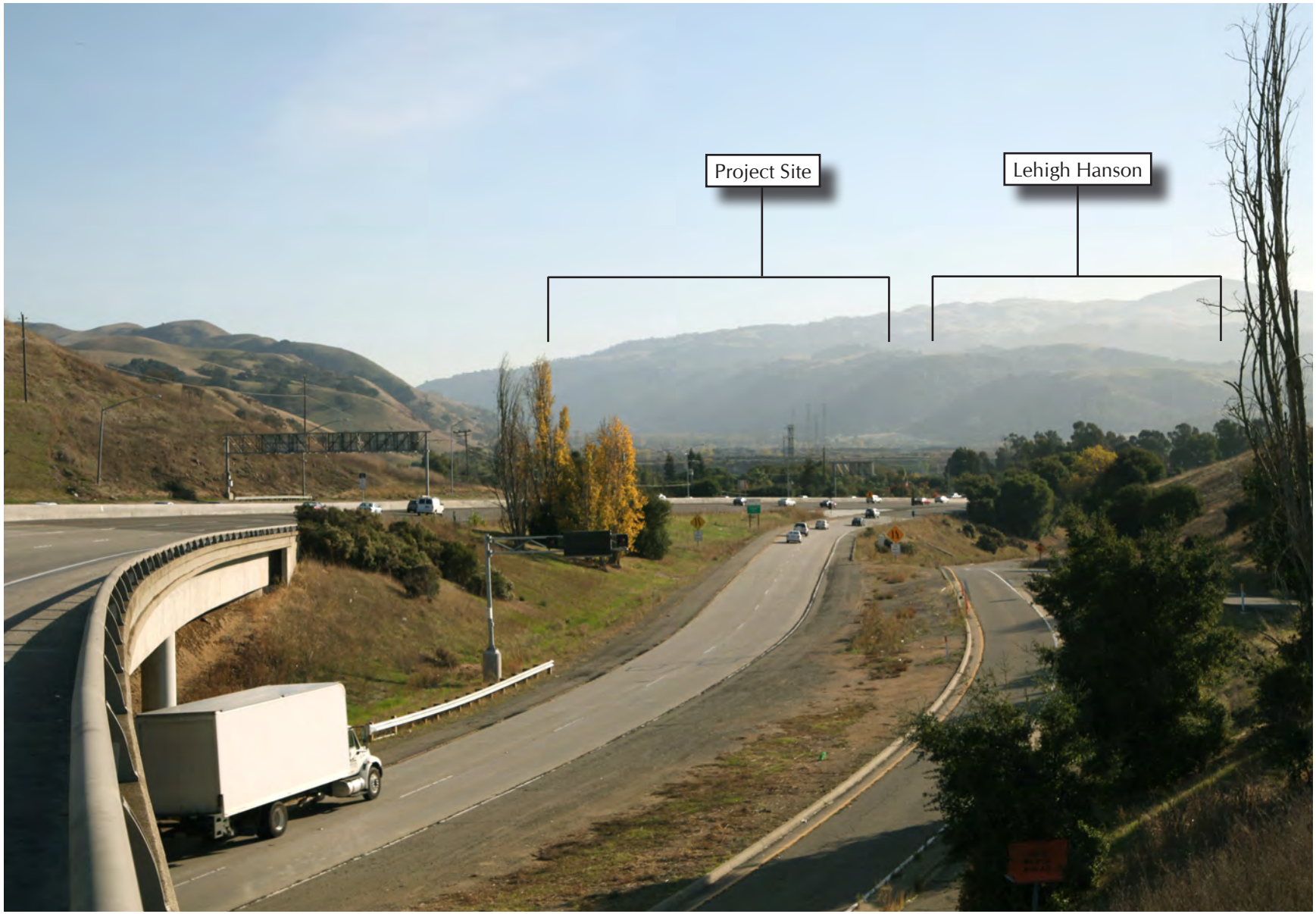


Figure 6-9
Existing View from I-680 Southbound at SR 84 (VP#4)

Source: Environmental Vision

Figure 6-10
Simulated View of Phase I from I-680 Southbound at SR 84 (VP#4)

Source: Environmental Vision

Reclamation

Once the quarry operations are completed, the Reclamation Plan calls for the quarry pit to be filled with water and used for SFPUC water storage purposes. As has been demonstrated in simulated views from Pleasanton Ridge Regional Park (see Figure 6-5), the water surface of the water storage reservoir will be more visible than the operations plant and quarry pit because of the reservoir's reflective and contrasting color and smooth surface area. However, the view from I-680 southbound is at a much lower elevation than views from Pleasanton Ridge Regional Park and the reservoir surface at the base of the valley would be substantially less visible from this vantage point. The addition of the reservoir, although a significant change to existing views from the freeway, is not substantially adverse or negative, and the impact is therefore less than significant.

From vantage points on I-680 northbound, the surface of the reclaimed quarry pit reservoir at the base of the valley floor would not likely be visible, as it would be screened by intervening landforms and vegetation.

- The visual character of views from these vantage points would be changed by the introduction of new colors and textures associated with the water surface. However, these new visual elements would not dominate the existing visual setting, but would instead be visual coherent and in compositional harmony with the landscape considered as a whole.

The scenic corridor along I-680 in both northbound and southbound directions would not be adversely affected by implementation of the final phase Reclamation, and impacts on the I-680 scenic corridor would remain less than significant.

Mitigation Measures

None needed

Visual Character and Quality of the Site

Impact Aesthetics-3: The Project would not substantially damage scenic resources along the locally designated scenic route on Calaveras Road, nor would it substantially degrade the existing visual character or quality of the site and its surroundings. (**Less than Significant**)

As indicated in the Setting section, Calaveras Road is a designated scenic roadway. Bicyclists and motorists traveling on Calaveras Road are afforded views from the roadway to and across the Project site at vantage points where there are clearings between the trees and shrubs along the Calaveras Road right-of-way. Where views of the Project site are visible, the predominant visual character in the foreground is that of an operating quarry, with its material stockpiles and conveyor equipment rising from the ground plane, and the quarry pit visible from certain locations. Across the valley and above the Project site's existing features, views of the Pleasanton ridgeline can be seen.

The existing foreground views from Calaveras Road (see **Figures 6-11A and -12A**) are dominated by nursery, quarry activities, and power lines and are not visually significant, but the long-range view of the background hills is a character-defining feature of views in the Sunol Valley.

Phase I

From southbound Calaveras Road south of the San Antonio Creek bridge, the addition of the Project's proposed concrete and asphalt batch plants and it's proposed higher stockpiles would be substantially more predominant in the foreground view than are the current operations, as shown in **Figure 6-11B**. The visual character of the site would still be characteristic of a quarry operation, but at a substantially larger scale. Even at this scale, the Phase I processing plant's crushing, sorting and conveyor equipment,

concrete batch plant and asphalt batch plant would not eclipse or obstruct views of the hillsides and ridgelines across the valley to the south and east.

From northbound Calaveras Road, north of the Hetch Hetchy Pipeline crossing, Phase I of the Project would most substantially change views of foreground property, which is the Project's proposed 58-acre expansion area (see **Figure 6-12B**). This property, currently at flat site being used as a staging area associated with SFPUC construction projects, would be excavated to a depth of at least 225 feet. Views from this vantage point would look out across this excavation to the bare side slopes of the quarry pit's westerly walls. Whereas current views of the existing plant site are primarily obscured by vegetation along the Calaveras Road right-of-way, the large stockpiles and new equipment associated with Phase I would be more readily visible. Although the quarry pit and the plant's equipment and stockpiles would be more readily seen during Phase I, they would not eclipse or obstruct views of the Pleasanton Ridge hillsides and ridgelines across the valley to the northwest.

- The level of public concern over the sensitivity of views from Calaveras Road may be mixed because, while not a heavily travelled interstate or major arterial road, the drivers and bicyclists who do use this road enjoy scenic views in nearly all directions. However, since the site has been an operating quarry for over 50 years, viewers' responses to changes in this view as a result of the Project may not see these changes as particularly substantial.
- The simulation of Phase I views from near the site shows that the change in views from this vantage point would be more vivid and perhaps more memorable due to the larger intervening stockpiles and equipment. However, Phase I of the Project would not substantially alter the visual integrity of the overall landscape because the new and larger Project elements would not encroach into the panoramic ridgeline views across the valley, which would remain visually coherent.
- Although the Project's new and larger stockpiles and equipment would be more dominant in this visual setting, the Project would not introduce new forms, lines, colors or textures other than those already present at the operating quarry that would significantly change the visual character of this setting.

While Phase I of the Project would introduce new, highly visible features into views from Calaveras Road, and these features would be substantially larger in scale than current operations, there would not be a significant change in the site's general aesthetic character (i.e., views would continue to be that of an operating quarry). These new features would not obscure long-range views of the background hills as viewed from Calaveras Road through gaps in the existing tree screen. Therefore, Phase I of the Project would have a less-than-significant impact on the visual character and quality of the site and its surroundings.

Source: Environmental Vision

Existing Conditions

Source: Environmental Vision

Phase I of Project (no SFPUC landscape berms shown)

Figure 6-11
Existing and Simularted Phase I Views from Southbound Calaveras Road Near San Antonio Creek (VP#5)

Source: Environmental Vision

Existing Conditions

Source: Environmental Vision

Phase I of Project (no SFPUC landscape berms shown)

Figure 6-12
Existing and Simulated Phase I Views from Northbound Calaveras Road Near San Antonio Creek (VP#6)

Phase II

During Phase II of the Project, the plant operations site will be moved to the south and placed on a bench constructed within the South Basin, with a surface elevation of approximately 50 feet below the surrounding ground surface. The location of the existing plant would be excavated as an expansion of the South basin quarry pit. As such, the large-scale plant operations would no longer be visible in the foreground from the vantage point at southbound Calaveras Road near the San Antonio Creek Bridge. Instead, the foreground view would look out across the top of the excavated quarry pit to the background ridgelines (see **Figure 6-13A**). The taller towers of the asphalt plant and concrete plant would be visible to the south, but would be much lower on the horizon than they were during Phase I.

From northbound Calaveras Road at the southern end of the Project site, the relocated processing plant would become immediately visible in the foreground view. In particular, the taller tower silos of the concrete batch plant would protrude above the excavated quarry pit. The visual character of the site from this vantage point would become more industrial in nature, but still characteristic of a quarry operation. Because the base elevation of the operating plant would be fifty feet below the ground surface, and road surface on Calaveras Road an additional approximately 12 feet higher than the ground, views across the relocated plant site's equipment and stockpiles would not eclipse or obstruct views of the Pleasanton Ridge hillsides and ridgelines across the valley to the northwest (see **Figure 6-14A**).

Reclamation

Once the quarry operations are completed and the quarry pit filled with water as an SFPUC water storage reservoir, all processing plant equipment and materials stockpiles will be removed. As shown in **Figures 6-13B and 6-14B**, the visual character of the Project site would be substantially changes from that of a quarry operation to a more pastoral and serene open space.

- The visual character of views from these vantage points would be changed by the introduction of new colors and textures associated with the water surface. However, these new visual elements would not dominate the existing visual setting, but would instead be visual coherent and in compositional harmony with the landscape considered as a whole.

The reservoir would be a significant change to the existing visual character of the site and would be a much different view from the Calaveras Road scenic route, but this change would not be adverse or negative, and the impact at the final reclamation Phase would be less than significant.

Source: Environmental Vision

Phase II of Project (no SFPUC landscape berms shown)

Source: Environmental Vision

Reclamation Phase of Project (no SFPUC landscape berms shown)

Figure 6-13
Simulated Views of Phase II and Reclamation Plan from Southbound Calaveras Road Near San Antonio Creek (VP#5)

Source: Environmental Vision

Phase II of Project (no SFPUC landscape berms shown)

Source: Environmental Vision

Reclamation Phase of Project (no SFPUC landscape berms shown)

Figure 6-14
Simulated Views of Phase II and Reclamation Plan from Northbound Calaveras Road Near the Project's Southern Boundary (VP#6)

Landform Berms Along Calaveras Road

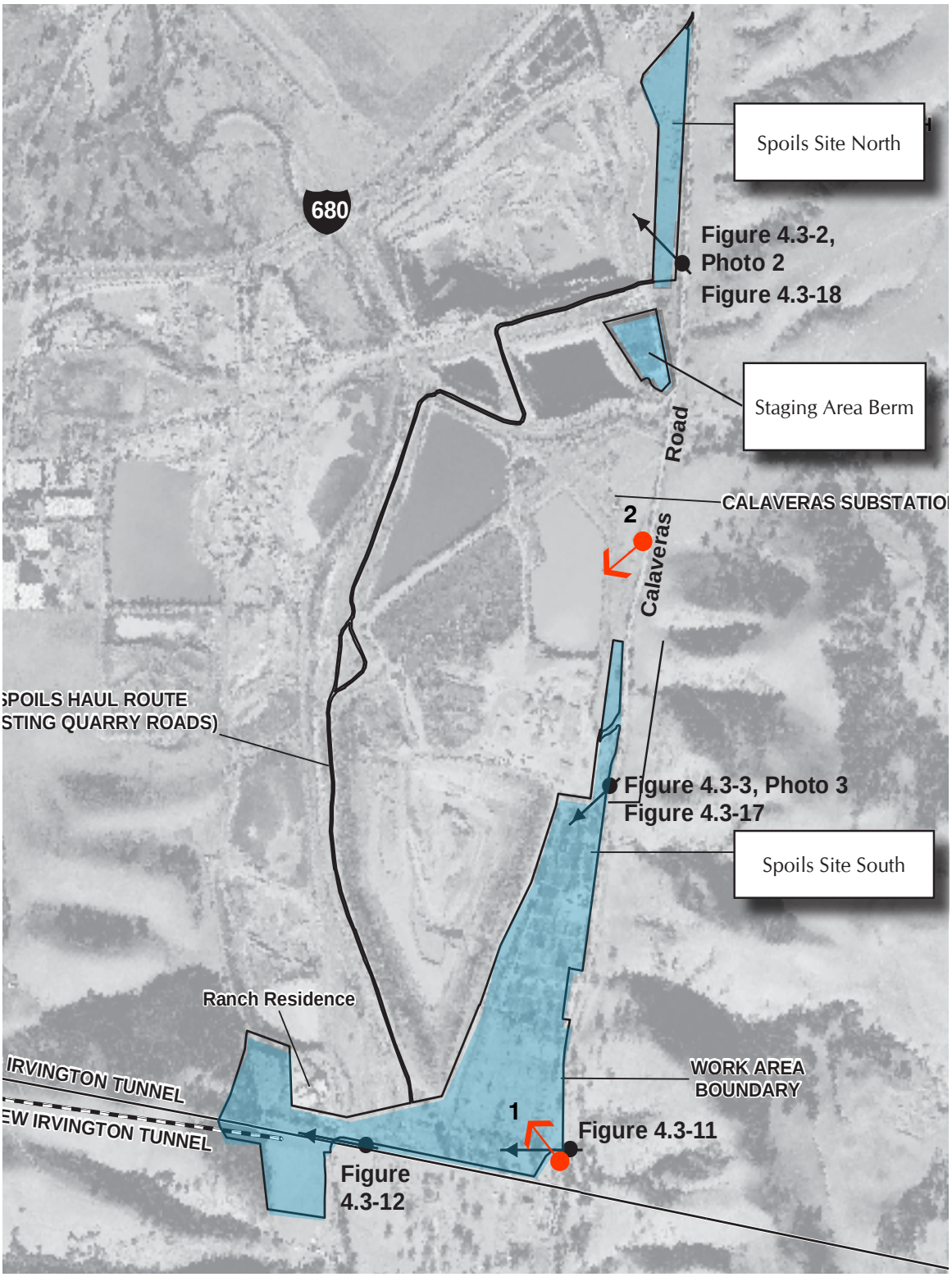
The SFPUC is currently constructing several major water supply facilities, including the new Irvington Tunnel and the San Antonio Back-up Pipeline. Excavation for these new facilities will generate large quantities of excess rock and soil (spoils). Some of the spoils material may be permanently placed on-site at these facilities where they will be used to establish staging areas, backfill excavations and restore preconstruction contours during restoration. However, the SFPUC has assumed that much of these spoils materials will be hauled from the work areas and placed within Sunol Valley as landform berms along Calaveras Road, at locations termed by the SFPUC as "spoils sites". The general locations of these "spoils sites" are shown in **Figure 6-15**. As planned by the SFPUC, these landform berms may be stacked up to a height of approximately 25 feet above Calaveras Road along the northerly portion of the Project site (approximately the height of the existing row of trees along the road right-of-way), and up to a height of 4 feet above the grade of Calaveras Road along the southerly portion of the Project site. The landform berms will ultimately be designed with an undulating top surface in order to reduce the linear character of the berm.

The impact of these landform berms on long-range views from Calaveras Road to the surrounding hills was assessed in the New Irvington Tunnel EIR[2] and the San Antonio Back-Up Pipeline Project Draft EIR.[3] Roadway elevations along Calaveras Road were compared to the proposed height of the berms to determine if existing views of the natural hills would be blocked. The lines-of-sight from Calaveras Road toward the adjacent hills across the planned berm areas was conducted using elevation data and proposed spoils locations, and the results of this analysis were used to develop visual simulations of the berm sites. The conclusions from these prior EIRs regarding the visual impacts of the berms is as follows:

- The southerly "spoils site" berms would be no higher than 4 feet above Calaveras Road. The ground elevation at this location is approximately 5 to 20 feet lower than Calaveras Road, and thus the berm would be as high as 9 to 24 feet above existing grade. The approximate eye-level height of an average adult in a typical passenger vehicle is approximately 4 feet. View elevations from a typical truck or sport utility vehicle, as well as from a typical bicycle, would be higher than 4 feet. Thus views from vehicles or bicycles along Calaveras Road would be at or above the top elevation of the 'spoil pile'. As shown in **Figure 6-16A**, the long-range views are intact and the re-vegetated berm in the foreground would not obscure those long-range views; the berm may actually improve the foreground view by matching the grassland coloration of the background views. Thus the aesthetic impact of Spoils Site South on scenic vistas and visual character would be less than significant.
- The ground elevation of Spoils Site North is approximately 0–5 feet lower than Calaveras Road. The western edge of Calaveras Road contains a nearly continuous screen of mature trees along Spoils Site North. Through limited gaps in the screening trees, the foreground and mid-ground views include quarry activity, power lines, as well as I-680, and are therefore not visually significant. In addition, the existing screen of trees substantially obscures any persistent long-range view of the background hills, and the proposed 25-foot spoils berm would obscure the long-range view of the background hills as viewed from the road through the few gaps in the existing tree screen (**see Figure 6-16B**). Nevertheless, because the long-range view is already substantially obscured, the impact of obstructing it would be less than significant.

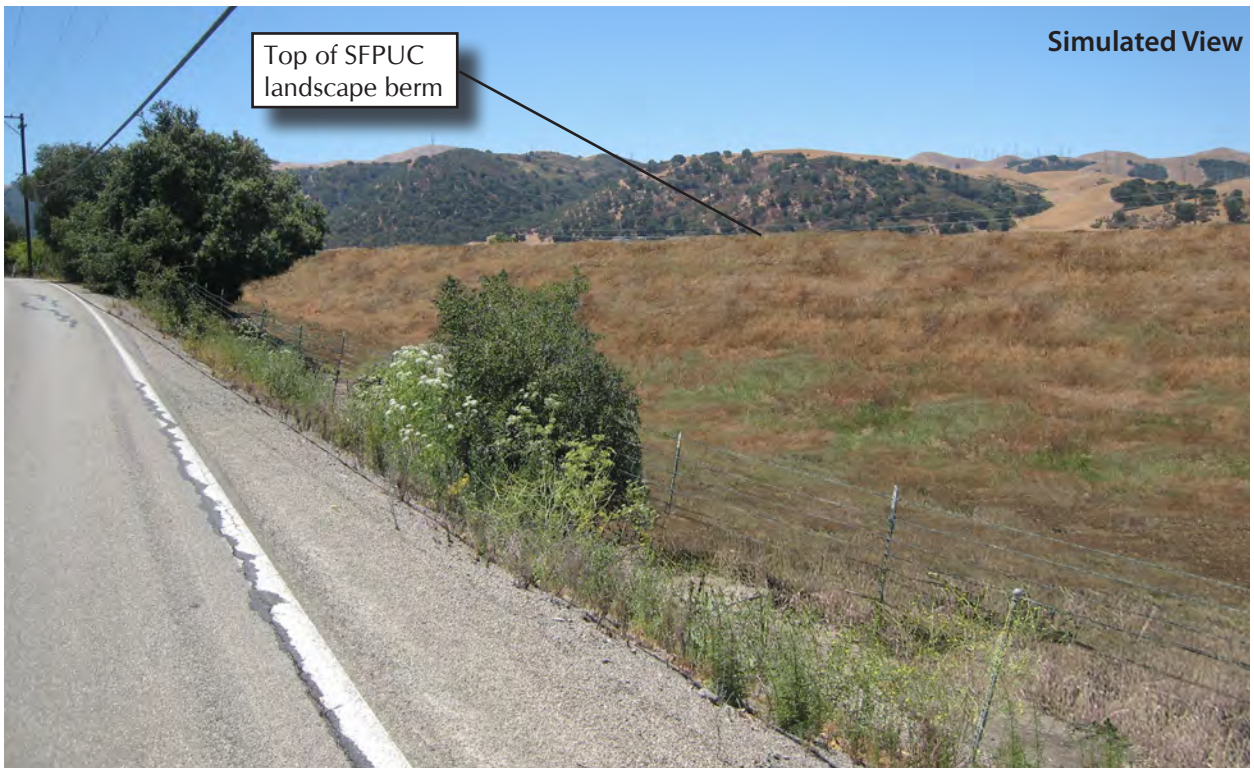
[2] SFPUC, New Irvington Tunnel Final EIR, Section 4.3: Aesthetics, November 2009

[3] SFPUC, San Antonio Back-Up Pipeline Project, Draft EIR, Section , 2012



Source: SFPUC New Irvington Tunnel Project EIR and San Antonio Pipeline Project EIR

Figure 6-15
SFPUC "Spoils Sites"



Simulation of SFPUC "spoils sites" landscape berm, Spoils Site South (VP#8)

Simulation of SFPUC "spoils sites" landscape berm, Spoils Site North (VP#7)

Figure 6-16
Simulated Views of SFPUC Landscape Berms

Source: SFPUC San Antonio Pipeline Project EIR, Environmental Vision

- Regarding visual impacts of the spoils pile on Calaveras Road itself, the proposed spoils berm would be set back approximately 40 feet from the road and would therefore not tower over the road. The height of the roadside trees is 20 to 25 feet; with the berm setback of 40 feet, its height of 25 feet would not be perceived as higher than the road trees. Therefore, overall, the permanent impacts of Spoils Site North on scenic vistas and visual character would be less than significant.

The timing for construction of these 'spoils' berms is dependent upon constructions schedules for the SFPUC projects. The New Irvington Tunnel is currently under construction and materials spoils from that project are imminent, whereas the San Antonio Back-Up Pipeline project has not yet been approved. However, it is likely that the berms along Calaveras Road may be constructed by the SFPUC at some point during Phase I of the Project. The SFPUC spoils site berms would provide screening of Phase I and Phase II operations of the Project in the southerly portion of the Project site, but are not indicated as being planned in substantial portions of the northern part of the Project site.

Mitigation Measures Included in the Project

As part of the proposed Project, the Project applicant has agreed to install landscaping on the 'spoil site' berms constructed by the SFPUC. Since the final design and placement of the berms has not yet been determined, the landscape plan has not been completed. As illustrated by the SFPUC, the landscaping is anticipated to grassland vegetation. The Project's proposed Reclamation Plan includes revegetation of disturbed surfaces with a mix of native grassland species, which could also be applied to these berms, although there is also the potential to add additional trees in areas where there are large clearings in the existing vegetation. All existing trees along the westerly Calaveras Road right-of way will be retained.

The conditions of approval for the original 1992 SMP-30 permit required the permittee to prepare and implement a Landscape Planting, Irrigation, and Maintenance Plan to ensure that the landscape buffers along Calaveras Road (including new trees) provide a maximum visual filter and to soften the visual effects of the stockpiles. The Plan includes provisions that planting shall be established prior to excavation of additional mining pits, and that the successful growth and health of trees shall be monitored by the County during its annual and 5-year reviews. If the Landscape Planting Plan has not proven to be successful, then the permittee is required to re-plant the landscape buffers. Given the changes proposed under the Project, the applicant and the County should consider re-assessing this Landscape Planting Plan to determine if additional plantings are necessary to achieve the condition's objectives of visually filtering and softening views of the site from Calaveras Road.

Conclusions

Implementation of the proposed Project would not change the general character of the Project site; it would remain as an operating quarry and associated processing plant. However, the Project would result in increasing the dominance of the industrial character of the quarry operations over the natural and other landscape features visible from Calaveras Road. Even though the Project's new equipment and taller stockpiles would be more vivid and less unified with the surrounding landscape than the current operations, the existing foreground views from Calaveras Road are not considered visually significant and these changes in the visual character would not be significant. With construction of SFPUC's planned landscape berms along Calaveras Road, certain views of the Project's encroaching elements will be blocked. The character-defining features of the hills and ridgelines on the northwestern side of the Sunol Valley will be retained, and viewed in a more coherent and harmonious manner from Calaveras Road.

Based on this analytical framework, the Project would not substantially damage scenic resources along Calaveras Road because the existing visual character and quality of the site and its surroundings in foreground views is not visually significant, and because the Project would not substantially degrade or affect the character-defining features of the hills and ridgelines in the distant views. Implementation of the

SFPUC's planned landscape berms would improve the visual character and quality of portions of the Project site during operations, and would not adversely affect the character-defining long range views.

Mitigation Measures

None needed

Light and Glare

Impact Aesthetics-4: The Project would introduce new sources of light which could substantially and adversely affect nighttime views in the area. (**Less than Significant with Mitigation**)

The currently effective permit for the SMP-30 quarry generally allows for operations to occur from 6:00 a.m. to 11:00 p.m. on Monday through Saturday, with occasional Sunday and 24-hour operations permitted. To enable safe nighttime and occasional 24-hour operations and for security purposes, night lighting of the operations plant already occurs every night. Existing light standards are standard broadcast lights with no shielding provided

Under the proposed Project, quarry and processing plant operations would be permitted 24-hours a day at the operator's discretion, and the new concrete batch plant and asphalt batch plant would require additional lighting to be installed. The Project would likely increase the number of lights at the site. Without proper design and placement, these lights could adversely affect nighttime views in the area although nighttime views are already affected by the existing lights.

Mitigation Measures

The currently effective SMP-30 permit does not include any conditions of approval related to the design or operation of night lights. However, night lighting at many other operating quarries within the County is conditioned upon a number of standard design and operational criteria. The following recommended mitigation measure is derived from the conditions of approval for some of these other operating quarries within the County:

MM Aesthetics-4: Night Lighting. The Permittee shall design and place night time lighting and security lighting so that it is no higher than necessary to illuminate the area of security concern, and the lighting shall be directed toward the area. Under no circumstances shall areas beyond the Project site boundaries be directly illuminated nor shall general lighting radiate above the horizontal, but shall be shielded to illuminate only the area of concern and to avoid light pollution off-site.

a) Any lighting placed on areas nonessential for security or active operations shall be placed on a motion detector circuit so illumination only occurs as necessary.

b) Any lighting for operations in the quarry pit shall be placed as low into the pits as possible.

c) Monitoring shall include occasional inspection of night time conditions by County staff to ensure that lighting is directed toward the area of concern and that areas beyond the site boundaries are not directly illuminated

d) The Permittee shall immediately respond to complaints about excessive night lighting.

Resulting Level of Significance

With implementation of the recommended mitigation measure, adverse effects on nighttime views would be reduced to a less than significant level.

Cumulative Aesthetic Impacts

Cumulative Impact Aesthetics-5: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects, could result in significant adverse change to scenic resources and in the scenic character of the area. (**Less than Cumulatively Significant with Mitigation**)

Other cumulative projects within the Sunol Valley include the SFPUC's Alameda Siphons Seismic Reliability Upgrade Project (Alameda Siphon No. 4), the Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project (SVWTP Project), the San Antonio Backup Pipeline (SABPL project), and the New Irvington Tunnel project, as well as the on-going Lehigh-Hanson aggregate quarry (SMP-24 and -32) immediately adjacent to the Project site. The aesthetic and visual quality of the Sunol Valley between these SFPUC projects and I-680 (including the Project site) has been substantially affected by other past and ongoing projects including the other mining operations, roadway development and other SFPUC water conveyance and treatment facilities.

The SVWTP, the SABPL and the New Irvington Tunnel projects will all place excess spoils along the area west of Calaveras Road. These spoils would not be placed higher than 25 feet from existing ground. A berm that is not higher than 25 feet would not exceed the height of existing vegetation along Calaveras Road and thus would not result in a cumulatively significant aesthetic impact from the scenic corridor. The Project could affect the aesthetics of the area west of Calaveras Road, but this area is already heavily altered by existing quarry activities and is not considered aesthetically sensitive. Thus, no cumulatively significant impact would occur.

Each of the SFPUC projects will result in overlapping construction, coincidental with quarry operations at the Project site. Similarly, on-going quarry activities at SMP-24 and -32 will be coincident with operations at the Project site. Although some of the area between the southernmost SFPUC project and the northerly boundary of the Project site is already substantially altered and thus does not retain an aesthetically significant character, the vegetation along Calaveras Road does contribute to the scenic character of this scenic route. The Project would result in additional tree removal and, although not biologically significant, the loss of these on-site trees would significantly contribute to cumulative vegetation removal in the area. The potential cumulative impact on aesthetics due to loss of vegetation in the Sunol Valley, including at the Project site, is considered significant.

Mitigation measures incorporated for the SFPUC projects require tree removal to be avoided where feasible, and new trees to be planted. Over time, implementation of these measures would restore the existing aesthetic character associated with the trees and vegetation along portions of Calaveras Road and along the Sunol Valley hills. This would reduce these other project's contribution to any cumulative impact to a less than cumulatively considerable level.

Mitigation Measures

The conditions of approval for the original 1992 SMP-30 permit required the permittee to prepare and implement a Landscape Planting, Irrigation, and Maintenance Plan to ensure that the landscape buffers along Calaveras Road (including new trees) provide a maximum visual filter and to soften the visual effects of the stockpiles. The Plan includes provisions that planting shall be established prior to excavation of additional mining pits, and that the successful growth and health of trees shall be monitored

by the County during its annual and 5-year reviews. If the Landscape Planting Plan has not proven to be successful, then the permittee is required to re-plant the landscape buffers.

Given the changes proposed under the Project an combination with other past, present and future cumulative changes in the loss of vegetation in the area, the following mitigation measure is recommended to address the cumulative loss of vegetation form along Calaveras Road.

MM Aesthetics-5: Calaveras Road Landscape Plan. The Project applicant and the County shall re-assess the Landscape Planting, Irrigation and Maintenance Plan for the landscape buffers along Calaveras Road to determine if additional plantings are necessary to achieve the condition's objectives of visually filtering and softening views of the site from Calaveras Road. If additional tree plantings determined by the County to be necessary to adequately screen and soften views, the Project applicant shall prepare, as a condition of approval of the Reclamation Plan, a detailed landscape and planting plan for the Calaveras Road landscape buffer which shall include provisions for additional tree plantings consistent with the species types and sizes as originally required pursuant to SMP-30 Condition of Approval #21.

7

Air Quality

This chapter provides an overview of the existing air quality conditions, a summary of the 2010 Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) regulations, and an analysis of the potential short-term and long-term air quality impacts associated with implementation of the Project. The methods of emissions analysis for short-term construction, long-term operations, local mobile sources, odors, and toxic air contaminants (TACs) are consistent with the current recommendations of the BAAQMD and the California Air Resources Board (ARB). Mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

Information in this chapter of the EIR is specifically derived from:

- Air Quality Technical Report, Revised SMP-30 Oliver de Silva, Inc., prepared by ENVIRON International Corporation, Emeryville, California (February, 2012)

Technical data and modeling result are included in Appendix E to this EIR. All other sources are referenced in footnotes.

Existing Physical Setting

The Project site is located in the southwestern Alameda County sub region of the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB also includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, the southern portion of Sonoma County, and the southwest portion of Solano County. The SFBAAB covers approximately 5,540 square miles of complex terrain consisting of coastal mountain ranges, inland valleys, and the San Francisco Bay. The SFBAAB is generally bounded on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range.

The climate within the SFBAAB is dominated by a strong, semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the moderating effects of the adjacent oceanic heat reservoir. Mild summers and winters, moderate rainfall and humidity, and daytime onshore breezes characterize regional climatic conditions in the San Francisco Bay Area (Bay Area). In summer, when the high-pressure cell is strongest and farthest north, fog forms in the morning and temperatures are mild. In winter, when the high-pressure cell is weakest and farthest south, occasional rainstorms occur.

Environmental Factors Affecting Air Quality

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Existing air quality conditions in the Project area are determined by such natural factors as topography, meteorology, and climate in addition to the amount of emissions that the sources of existing air pollutants release. The environmental factors that affect ambient air pollutant concentrations are discussed separately.

Temperature Inversions

Temperature inversion layers, also called thermal inversions, describe areas where the normal decrease in air temperature with increasing altitude is reversed and air above the ground is warmer than the air below it. Inversion layer thicknesses can be anywhere from under 100 feet to over thousands of feet. Thermal inversions limit the vertical dispersion of air pollutants, and can trap pollutants close to the ground. These inversions occur most often when a warmer, less dense air mass flows over colder denser air mass close to the ground. The highest air pollutant concentrations in the Bay Area generally occur during such inversions, of which there are two types: 1) subsidence inversions - a regional phenomenon that is most common in the Bay Area during summer and fall, when descending warmer air from the subtropical high pressure cell centered over the Pacific Ocean caps the cooler marine air layer nearer the surface; and 2) radiation inversions - which are more localized and more typical of winter nights in interior parts of the Bay Area where air in contact with the ground cools more rapidly than the air layer above it.

Topography and its Effect on Wind Speeds and Patterns

Low wind speed conditions limit horizontal air dispersion, and can result in the buildup of air pollutants. Poor air quality under low wind speed conditions can be especially pronounced in interior valleys, where the topography also contributes to the restriction of air movement and pollutant dispersion.

Solar Radiation and its Impact on Photochemical Pollutants

The higher intensity and longer duration of solar radiation during the Bay Area's summer months provides ultraviolet light and warm temperatures that promote the formation of secondary photochemical pollutants (e.g., ozone). Because sunlight intensity and summer temperatures are much higher in many of the Bay Area's inland valleys than near the coast, these inland areas are especially prone to photochemical air pollution. In contrast, photochemical pollutants do not usually reach significant levels anywhere in the Bay Area during the winter, when temperatures are lower and daylight hours are shorter.

As a consequence of all these factors, the parts of the Bay Area having the highest air pollution potential tend to be the inland areas, which experience higher temperatures in the summer and lower temperatures in the winter, and which are sheltered from the higher winds and more frequent fog episodes that affect the coastal areas. Also, because air pollutant levels depend on the amount of pollutants emitted locally or from upwind sources, ambient levels in inland areas are higher because they are subject to emissions transported by the prevailing winds from populous upwind areas.

Local Topography, Meteorology, and Climate[1]

The Project is located in the Southwestern Alameda County Subregion, a mostly flat area that encompasses the southeast side of San Francisco Bay from Dublin Canyon to north of Milpitas, and is bordered on the east by the East Bay hills and on the west by the bay.

This subregion is indirectly affected by marine air flow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. These sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, the more the ocean's effect is diminished. Although the climate in this region is affected by sea breezes, it is affected less so than the regions closer to the Golden Gate.

[1] Bay Area Air Quality Management District (BAAQMD). 2011 (May). California Environmental Quality Act Air Quality Guidelines

The climate of southwestern Alameda County is also affected by its close proximity to San Francisco Bay. The Bay cools the air with which it comes in contact during warm weather, while during cold weather the Bay warms the air. The normal northwest wind pattern carries this air onshore. Bay breezes push cool air onshore during the daytime and draw air from the land offshore at night.

Winds are predominantly out of the northwest during the summer months. In the winter, winds are equally likely to be from the east. Easterly-southeasterly surface flow into southern Alameda County passes through three major gaps: Hayward/Dublin Canyon, Niles Canyon and Mission Pass. Areas north of the gaps experience winds from the southeast, while areas south of the gaps experience winds from the northeast. Wind speeds are moderate in this subregion, with annual average wind speeds close to the Bay at about 7 mph, while further inland they average 6 mph.

Air temperatures are moderated by the subregion's proximity to the Bay and to the sea breeze. Temperatures are slightly cooler in the winter and slightly warmer in the summer than East Bay cities to the north. During the summer months, average maximum temperatures are in the mid- 70‘s. Average maximum winter temperatures are in the high-50's to low-60's. Average minimum temperatures are in the low 40's in winter and mid-50's in the summer.

Pollution potential is relatively high in this subregion during the summer and fall. When high pressure dominates, low mixing depths and Bay and ocean wind patterns can concentrate and carry pollutants from other cities to this area, adding to the locally emitted pollutant mix. The polluted air is then pushed up against the East Bay hills. In the wintertime, the air pollution potential in southwestern Alameda County is moderate. Air pollution sources include light and heavy industry, and motor vehicles. Increasing motor vehicle traffic and congestion in the subregion may increase Southwest Alameda County pollution as well as that of its neighboring subregions.

The closest meteorological station to the Project with BAAQMD-approved data is the Sunol station, which was located approximately 0.75 miles north of the Project site. According to BAAQMD, this station began recording data in September 1989. The database includes meteorological data suitable for regulatory modeling collected in 1993, 1994 and 2000 through 2005 at this location. Based on 2005 data, recorded January temperatures range from a minimum of 31 degrees Fahrenheit (°F) to a maximum of 61°F, and September temperatures range from a minimum of 46°F to a maximum of 93°F. The predominant wind direction and speed is from the northeast at approximately 2.9 miles per hour (mph).

On-site meteorological data (i.e., wind speed, wind direction, and temperature) has been collected at the Project site since October 1, 2010. The on-site meteorological station was installed by ENVIRON in 2010 in consultation with the BAAQMD, which approved the site, equipment, and monitoring methodologies being used. Data collected from this station was used in air dispersion modeling presented herein.

Existing Air Quality

Criteria Air Pollutants

ARB and United Stated Environmental Protection Agency (USEPA) focus on the following air pollutants as indicators of ambient air quality: ozone (O2), carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health, and because extensive health-effects criteria documentation is available for these pollutants, they are commonly referred to as “criteria air pollutants.” Health-based air quality standards have been established for these pollutants by ARB at the state level and by USEPA at the national level. These standards, which include a margin of safety, were established to protect the public from adverse health impacts resulting from exposure to air pollution. California has also established standards for sulfates,

visibility-reducing particles, hydrogen sulfide, and vinyl chloride. A brief description of each criteria air pollutant, including source types, health effects, and future trends, is provided below along with the most current monitoring station data and attainment designations for the project area. Table 7-1 below presents the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS).[2]

Ozone

Ozone (O3), or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gases (ROG) and nitrogen oxide (NOx) in the presence of sunlight. O3 formation is greatest on warm, windless, sunny days. The main sources of NOx and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines); the evaporation of solvents, paints, and fuels; and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 mph, then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. NOx emissions exhibit a different curve; emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds.

O3 levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O3 can also damage plants and trees, and materials such as rubber and fabrics.

Particulate Matter

Particulate Matter (PM) refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. $PM_{2.5}$ includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 micrometers or less. In the SFBAAB most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates.

Extended exposure to particulate matter can increase the risk of chronic respiratory disease. Some particulate matter, such as pollen, is naturally occurring. PM_{10} is of concern because it bypasses the body‘s natural filtration system more easily than larger particles, and can lodge deep in the lungs. The USEPA and the state of California revised their PM standards several years ago to apply only to these fine particles. $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

[2] BAAQMD, 2011 (May). California Environmental Quality Act Air Quality Guidelines (Appendix C), Op. cit.

Table 7-1: California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [b,c]	National Standards [a]	
			Primary [c, d]	Secondary [c, e]
Ozone	1-hour	0.09 ppm (180 µg/m3)	-	-
	8-hour	0.070 ppm (137 µg/m3)	0.075 ppm (147 µg/m3)	Same as Primary Standard
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m3)	35 ppm (40 mg/m3)	-
	8-hour	9.0 ppm (10 mg/m3)	9 ppm (10 mg/m3)	-
Nitrogen Dioxide (NO_2)[f]	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	0.053 ppm (100 µg/m3)	Same as Primary Standard
	1-hour	0.18 ppm (339 µg/m3)	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	-	0.30 ppm (80 µg/m3)	-
	24-hour	0.04 ppm (105 µg/m3)	0.14 ppm (365 µg/m3)	-
	3-hour	(-)	(-)	0.5 ppm (,300 µg/m3)
	1-hour	0.25 ppm (655 µg/m3)	0.075 ppm (196 µg/m3)	(-)
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean 24-hour	20 µg/m3 50 µg/m3	(-) 150 µg/m3	Same as Primary Standard
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean 24-hour	12 µg/m3 (-)	15.0 µg/m3 35 µg/m3	Same as Primary Standard
Lead	30-day Average	1.5 µg/m3	(-)	(-)
	Calendar Quarter	(-)	1.5 µg/m3	Same as Primary Standard
Sulfates	24-hour	25 µg/m3	No National Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m3)		
Vinyl Chloride [g]	24-hour	0.01 ppm (26 µg/m3)		

Table 7-1: California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [b,c]	National Standards [a]	
			Primary [c, d]	Secondary [c, e]
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%		

Abbreviations: µg/m3 = micrograms per cubic meter; ppm = parts per million; mg/m3 = milligrams per cubic meter

Sources: BAAQMD. Air Quality Standards and Attainment Status (online). Available: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm. Accessed August 2011.

USEPA. National Ambient Air Quality Standards (online). Available: http://epa.gov/air/criteria.html#4. Accessed Aug 2011.

ARB. 2010. State and National Ambient Air Quality Standards. Available: http://www.arb. ca.gov/research/aaqs/aaqs2.pdf. As of February 16, 2010. Accessed August 12, 2011.

Notes:

(a) National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies;

(b) California standards for ozone, CO (except Lake Tahoe), SO2 (1- and 24-hour), NO2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations;

(c) Concentration expressed first in units in which it was issued (i.e., ppm or µg/m3). Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas;

(d) National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health;

(e) National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant;

(f) On February 19, 2008, the Office of Administrative Law approved a new NO2 ambient air quality standard that lowers the 1-hour standard to 0.18 ppm and establishes a new annual standard of 0.030 ppm. These changes became effective March 20, 2008; and

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

Nitrogen Dioxide

Nitrogen Dioxide (NO_2) is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide

Carbon Monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. The single largest source of CO in the SFBAAB is motor vehicles. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 mph for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses. Even healthy

people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.

Sulfur Dioxide

Sulfur Dioxide (SO_2) is a colorless acid gas with a pungent odor. It is produced by the combustion of sulfur-containing fuels, such as oil, coal and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease. It also has potential to damage materials.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the USEPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the USEPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air have decreased dramatically.

Criteria Air Pollutant Monitoring Station Data

Criteria air pollutants are monitored at several stations within the SFBAAB. The monitoring station nearest to the Project site is at 40733 Chapel Way in Fremont; however BAAQMD closed this station on October 31, 2010. This monitoring station measured O_3, NO/NO_2, CO, $PM_{2.5}$, hydrocarbon, and also toxic air contaminants. Table 7-2 (Summary of Local Annual Ambient Air Quality in Alameda County [2008–2010]) below, summarizes the air quality data from the most recent three years (2008-2010). **Table 7-2** lists the registered concentrations and exceedances of the CAAQS and NAAQS that occurred at this monitoring station from 2008 through 2010. During this period, the station did not register any days above the national or state 24-hour PM_{10} standards. The state CO and NO_2 standards were also not exceeded in any of the last three years. The federal 8-hour and state 1-hour and 8-hour O_3 standards were all exceeded at least once in 2008, 2009 and 2010, with the exception of the federal 8-hour standard in 2009. The national 24-hour $PM_{2.5}$ standard was exceeded three times in 2009, but not in 2008 or 2010.

For comparison purposes, there is another BAAQMD monitoring station located in Pleasanton, approximately 9 miles from the site. During the years 2008 through 2010 the Pleasanton station did not register any days above the national or state 24-hour PM_{10} standards. The state CO and NO_2 standards were also not exceeded in any of those three years. The federal 8-hour and state 1-hour and 8-hour O_3 standards were all exceeded at least once in 2008, 2009 and 2010. The national 24-hour $PM_{2.5}$ standard was exceeded two times in 2008, four times in 2009, but not in 2010.

Table 7-2: Summary of Local Ambient Air Quality in Alameda County (2008-2010)[a]

Air Pollutants	Year		
	2008	2009	2010
Ozone (O3)			
Maximum 1-hour concentration measured	0.112 ppm	0.099 ppm	0.120 ppm
Days exceeding State 0.09 ppm 1-hour standard	1	4	1
Maximum 8-hour concentration measured	0.078 ppm	0.075 ppm	0.081 ppm
Days exceeding Federal 0.075 ppm 8-hour standard	1	0	1
Days exceeding State 0.070 ppm 8-hour standard	3	2	1
Respirable Particulate Matter (PM_{10})			
Annual average concentration (National/State)b (µg/m3)	18.7/ (-)	17.7/18.3	20.3/(-)
Maximum 24-hour concentration measured (National/State) (µg/m3)	37.5/38.7	31.4/33.5	41.2/42.8
Days exceeding Federal 150 µg/m3 24-hour standard	--	0	0
Days exceeding State 50 µg/m3 24-hour standard	--	0	--
Fine Particulate Matter ($PM_{2.5}$)			
Annual average concentration (National/State) (µg/m3)	9.4/9.4	9.3/(-)	(-)/(-)
Maximum 24-hour concentration measured	28.6 µg/m3	39.3 µg/m3	26.3 µg/m3
No. of days exceeding Federal 35 µg/m3 24-hour standard	0	3.1	--
Carbon Monoxide (CO)			
Maximum 8-hour concentration measured	1.43 ppm	1.2 ppm	.94 ppm
Number of days exceeding Federal/State 9.0 ppm 8-hour standard	0	0	0
Nitrogen Dioxide (NO2)			
Annual average concentration	0.014 µg/m3	0.013 µg/m3	0.011 µg/m3
Maximum 1-hour concentration measured	0.062 ppm	0.051 ppm	0.055 ppm
Days exceeding State 0.18 ppm 1-hour standard	0	0	0

Abbreviations: ppm = parts by volume per million of air; µg/m3 = micrograms per cubic meter; (-) = data not available.

Notes: (a) Data is taken from the BAAQMD Fremont monitoring station with the exception of PM_{10} data for the years 2009 and 2010. PM_{10} monitoring was discontinued in Fremont in 2008; data shown for the years 2009 and 2010 were taken at the BAAQMD Berkeley station; and (b) State and national statistics may differ for the following reasons: state statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on local conditions while national statistics are based on standard conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Source: ARB, iADAM Air Quality Data Statistic (online). Available: http://www.arb.ca.gov/adam/. Accessed November 2011.

Attainment Status

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to the CAAQS and NAAQS. Both ARB and USEPA use the type of monitoring data presented in Table 7-2 to designate an area's attainment status with respect to the CAAQS and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." The "unclassified" designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards.

The most recent attainment designations with respect to the SFBAAB are shown for each criteria air pollutant in **Table 7-3** (Attainment Status of the San Francisco Bay Area Air Basin with Respect to the California and National Ambient Air Quality Standards). With respect to the CAAQS, the SFBAAB is currently designated as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$, and as an attainment or unclassified area for all other pollutants. With respect to the NAAQS, the SFBAAB is designated as a marginal nonattainment area for ozone and as a nonattainment area for $PM_{2.5}$, and in attainment or unclassified area for all other pollutants.[3]

[3] EPA. Criteria Pollutant Area Summary Report (online). Available: http://www.epa.gov/oaqps001/greenbk/ancl2.html. Accessed August 2011

Table 7-3: Attainment Status of the San Francisco Bay Area Air Basin under California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Attainment Status	National Attainment Status
Ozone (O2)	1-hour	N	(-)
	8-hour	N	N
Carbon Monoxide (CO)	1-hour	A	A
	8-hour	A	A
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	(-)	A
	1-hour	A	(-)
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	(-)	A
	24-hour	A	A
	3-hour	(-)	(-)
	1-hour	A	A
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	N	(-)
	24-hour	N	U
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	N	A
	24-hour	(-)	N
Lead	30-day Average	A	A
	Calendar Quarter	(-)	A

Abbreviations: N = nonattainment; A = attainment; U/A = unclassified/attainment; U = unclassified; (-) = no standard

Sources:

BAAQMD. Air Quality Standards and Attainment Status (online). Available: http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm. Accessed August 2011.

ARB. 2008. Area Designation Maps/State and National, Available: www.arb.ca.gov/desig/adm/adm.htm/. Accessed June 2009.

USEPA. 2009. Region 9: Air Programs, Air Quality Maps. Available: http://www.epa.gov/region09/air/maps/maps_top.html. Accessed: May 2009.

Criteria Pollutant Emissions- Alameda County

Table 7-4 (2010 Estimated Criteria Air Pollutants Emissions Inventories by Source) summarizes the emissions inventory for criteria air pollutants within Alameda County and within the entire SFBAAB for various source categories. According to Alameda County's emissions inventory, total mobile sources

(on-road and off-road) are the largest contributor to the estimated annual average air pollutant levels of ROG, CO, NOx, and oxides of sulfur (SOx), accounting for approximately 47%, 92%, 91%, and 53% respectively, of the total inventory. Area-wide sources (e.g., solvent evaporation from equipment cleaning operations; on-site fuel combustion for space and water heating (e.g., boilers); landscape maintenance equipment such as lawnmowers and leaf blowers) account for approximately 82% of Alameda County's PM_{10} emissions and 61% of the County's $PM_{2.5}$ emissions.[4]

Although mobile source emissions constitute the majority of the 2010 criteria pollutant inventory both statewide and for Alameda County, emissions from this source category have decreased greatly since the 1970s due to more stringent federal and state emission controls on mobile sources and fuels. Examples of vehicle emissions standards include ARB's low-emission vehicle (LEV) standards,[5] ARB's heavy-duty engine standards,[6] and USEPA's corporate average fuel economy (CAFE) standards for passenger car and light duty trucks. [7] Examples of cleaner fuel standards include the elimination of lead from gasoline, and lowering of sulfur content in fuels.[8] Criteria pollutant emissions from mobile sources are projected to continue decreasing with vehicle fleet turnover to newer, cleaner models. However, while emissions from gasoline- and diesel-fueled mobile sources are showing a decreasing trend, a greater reduction in emissions from gasoline-fueled vehicles relative to diesel-fueled vehicles has increased the relative contribution of diesel sources to criteria air pollution from mobile sources.[9] As a result, current regulatory development is focusing on reducing emissions from diesel sources.[10]

Existing Air Quality

Toxic Air Contaminants

In California, TACs are defined by the ARB as those air pollutants that "may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health".[11] There are currently 189 substances that have been identified by the ARB as TACs.[12] While most TACs originate from human sources such as fossil fuel combustion or dry cleaning facilities, natural sources such as forest fires and volcanic eruptions also contribute TACs to ambient air.

The nature and magnitude of the potential health effects of TACs depends on the substance, the concentration, and the period of exposure. Some TACs cause effects in response to short-term (acute) exposure; others cause effects only after sustained exposures over weeks, months, or years. The effects

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4 ARB. Almanac Emission Projection Data (online). Available: http://www.arb.ca.gov/app/emsinv/emssumcat.php. Accessed August 2011

5 ARB. Low-Emission Vehicle Program (online), Available: http://www.arb.ca.gov/msprog/levprog/levprog.htm

6 ARB. Truck and Bus Regulation (online). Available: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm

7 EPA. Fuel Economy and Emissions Program (online). Available: http://www.epa.gov/fueleconomy/420f04053.htm

8 EPA. Transportation Fuel Program (online), Available: http://www.epa.gov/otaq/fuels/index.htm

9 ARB. 2009. The California Almanac of Emissions and Air Quality – 2009 Edition (online). Available: http://www.arb.ca.gov/aqd/almanac/almanac09/toc09.htm. Accessed August 2011.

10 http://www.arb.ca.gov/diesel/documents/rrpFinal.pdf

11 http://www.arb.ca.gov/html/gloss.htm#T

12 http://www.arb.ca.gov/toxics/id/taclist.htm

of acute exposure may be minor, such as watery eyes or respiratory irritation; or they may involve damage such as to the reproductive system or nervous system. If exposure to a sufficient concentration occurs for a sufficient period, individuals may have an increased risk of developing cancer, or a greater likelihood of experiencing non-carcinogenic chronic adverse effects. These chronic non-carcinogenic health effects may be minor, such as nasal rhinitis or respiratory irritation; or they may involve long-term damage to the immune, neurological, reproductive, respiratory, or other systems.[13]

Table 7-4: 2010 Estimated Criteria Pollutant Emissions Inventories by Source (County and Air Basin) (tons/day based on annual average)

Source	ROG	CO	NOx	SO_x	PM_{10}	$PM_{2.5}$
Alameda County						
Mobile	34.1	297.9	85.8	1.8	4.5	3.5
Stationary	19.9	4.6	5.5	1.5	3.5	2.0
Area	17.9	21.2	3.3	0.1	35.4	8.6
TOTAL	71.9	323.7	94.7	3.4	43.4	14.2
San Francisco Bay Area Air Basin						
Mobile	163.1	1387.4	345.6	14.4	19.8	15.7
Stationary	107.1	45.2	51.3	47.1	16.6	12.4
Area	89.1	163.2	17.2	0.6	179.3	53.6
TOTAL	359.2	1595.7	414.2	62.2	215.7	81.6

Abbreviations: ROG = reactive organic gases; CO = carbon monoxide; NOx = oxides of nitrogen; SOX = oxides of sulfur; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter

Note: Totals in table may not add exactly because of rounding.

Source: ARB, Almanac Emission Projection Data (online). Available: http://www.arb.ca.gov/app/emsinv/emssumcat.php. Accessed November 2011.

An example of a chronic, non-carcinogenic disorder exacerbated by air pollutants is asthma, which has been the focus of a number of recent studies. While there is only limited evidence that air pollution is the causative factor in asthma onset, there are considerable data that link air pollution to worsening of the disease. For example, living near traffic sources has been associated with both asthma occurrence and aggravation of the disease,[14] and others reported a significant increase in hospital visits as exposure to

[13] http://www.epa.gov/oar/toxicair/newtoxics.html

[14] Salam, M., Islam, T., Gilliland, F., 2008. Recent evidence for adverse effects of residential proximity to traffic sources on asthma. Current Opinion in Pulmonary Medicine, 14:3–8

traffic increased.[15] Proximity to heavy traffic has also been linked to impaired lung development in children.[16]

Unlike criteria pollutants, the release or concentrations of individual TACs are not regulated per se; however, concentrations of TACs may be regulated indirectly based on results from a health risk assessment (HRA). An HRA is a scientifically-based tool used to determine if exposure to chemicals(s) pose a significant risk to human health. **Table 7-5** summarizes the monitored concentrations of carcinogenic TACs at Fremont in 2008 and 2009, the most recent years for which data are available. The concentration of TACs indicates the potential for adverse health impacts resulting from breathing ambient air and represents baseline conditions related to toxic air contaminants.

According to the California Almanac of Emissions and Air Quality,[17] the majority of the estimated health risk from TACs in ambient air is attributed to relatively few compounds, the most dominant being particulate matter exhaust from diesel-fueled engines (DPM). The other nine TACs for which data are available that pose the greatest existing risk from breathing ambient air in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.[18]

DPM is a complex mixture of hydrocarbons, particulates, gases, and other compounds. DPM is emitted by diesel-fueled internal combustion engines, and the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Both California's Office of Environmental Health Hazard (OEHHA) and the USEPA consider DPM to be a carcinogen. Both agencies also recognize that exposure to DPM may cause non-cancer effects such as change(s) in lung function and airway inflammation.[19] DPM is a component of PM, and recent scientific data have linked prolonged exposure to PM to premature mortality, respiratory effects, and cardiovascular disease.[20]

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15 Chang, J., Delfino, R., Gillen, D., Tioa, T., Nickerson, B., Cooper, D. 2009. Repeated respiratory hospital encounters among children with asthma and residential proximity to traffic. Occup. Environ. Med 66(2):90-98

16 Gauderman, W. J., H. Vora, R. McConnell, K. Berhane, F. Gilliland, D. Thomas, F. Lurmann, E. Avol, N. Kunzli, M. Jerrett, and J. Peters. 2007. Effect of exposure to traffic on lung development from 10 to18 years of age: a cohort study. Lancet. 369. pp. 571-577.

17 ARB. 2009. Chapter 4: Air Basin Trends and Forecasts – Criteria Air Pollutants. In ARB Almanac 2009. Op. cit.

18 ARB. 2009. Appendix C: Emissions, Air Quality, and Health Risk for Ten Toxic Air Contaminants. In ARB Almanac 2009. Op. cit.

19 Office of Environmental Health Hazard Assessment (OEHHA). 1998. Findings of the Scientific Review Panel on The Report on Diesel Exhaust, as adopted at the Panel's April 22, 1998, meeting. http://www.arb.a.gov; OEHHA (2007). Air Toxics Hot Spots Program Risk Assessment Guidelines: Part II Technical Support Document for Describing Available Cancer Potency Factors. California Environmental Protection Agency (Cal/EPA). December; United States Environmental Protection Agency (USEPA). 2011 Integrated Risk Information System (IRIS). United States Environmental Protection Agency. http://www.epa.gov/iris/

20 Krewski, D., R. Burnett, M.S. Goldberg, K. Koover, J. Siemiatycki, M. Jerrett, et al. 2000. "Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality." Research Report of the Health Effects Institute; Pope, C.A., R. T. Burnett, G. D. Thurston, M. J. Thun, E. E. Calle, D. Krewski, and J. J. Godleski. 2004. "Cardiovascular Mortality and Long-Term Exposure to Particulate Air Pollution: Epidemiological Evidence of General Pathophysiological Pathways of Disease." Circulation. 109: 71-77. Pope, C.A., R.T. Burnett, M.J. Thun, E.E. Calle, D. Krewski, K. Ito, and G. Thurston. 2002. "Lung Cancer, Cardiopulmonary Mortality, and Long-Term Exposure to Fine Particulate Air Pollution." JAMA. 287: 1123-1141

Table 7-5: Ambient Concentrations of Carcinogenic TACs in Fremont

Compound	Concentration [1,2] (ppb)	Concentration [1,2] (μg/m3)
1,3 Butadiene	0.0362	0.24
Benzene	0.199	0.64
Carbon Tetrachloride [4]	0.11	0.69
Chloroform	0.018	0.09
Ethylbenzene	0.108	0.46
Ethylene Dibromide [3,4]	0.005	0.04
Ethylene Dichloride [3,4]	0.05	0.20
Toluene	0.443	1.67
Trichloroethylene	0.010	0.05
Vinyl Chloride [3,4]	0.05	0.13

Abbreviations: ppb = parts per billion; µg/m3 = micrograms per cubic meter.

Notes: (1) Data is taken from the BAAQMD Fremont monitoring station;

(2) 1,3-Butadiene, benzene, chloroform, toluene and trichloroethylene data based on an average of 26 samples. Ethylbenzene data based on an average of 31 samples. All other data are based on averages of 20 samples. Samples with concentrations below the method detection limit were assigned a value equal to one-half of the detection limit;

(3) Ethylene dibromide, ethylene dichloride, and vinyl chloride were not detected above the method detection limit in any of the samples;

(4) All data is taken from the 2009 database with the exception of ethylbenzene, ethylene dibromide, ethylene dichloride, and vinyl chloride and carbon tetrachloride data, which are taken from the 2008 database.

Source: BAAQMD, Toxic Air Contaminant Air Monitoring Data for 2008 and 2009. Available: http://www.baaqmd.gov/Divisions/Engineering/Air-Toxics/Toxic-Air-Contaminant-Control-Program-Annual-Report.aspx, Accessed November 2011.

Unlike the other TACs, no ambient monitoring data are available from ARB or BAAQMD for DPM. However, ARB has made preliminary concentration estimates for DPM. This estimate of DPM concentrations is made using ARB's emissions inventory PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies on chemical speciation of ambient air quality measurements. In the San Francisco Bay Area Air Basin, where the Project is located, ARB estimated an ambient DPM concentration of 1.6 $\mu g/m^3$ in 2000.

ARB estimated a cumulative cancer risk from the 10 TACs of 659 excess cancer cases per million people for the San Francisco Bay Area Air Basin, which in 2000 had a population of over 6.64 million people in its nine constituent counties.[21] Of this risk, DPM was estimated to contribute 480 of 659, or

[21] The San Francisco Bay Area Air Basin consists of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara Counties, and portions of both Solano and Sonoma Counties

72.8% of total risk; the TAC with the second highest risk was 1,3-butadiene at 56 (9.8%), followed by benzene at 52 (9.1%). Although diesel consumption increased between 1990 to 2000, DPM ambient concentrations and, hence, the health risk associated with DPM, decreased by 36% from 1990 to 2000 due to implementation of stringent emission standards. Further decreases in the DPM-related health risk are anticipated to occur based on additional control measures scheduled to take effect over time, as outlined in the Diesel Risk Reduction Plan.[22] Overall, ambient levels of most TACs, except para-dichlorobenzene, have decreased since 1990.[23]

Odors

Odors are not generally regarded as a physical health risk attributed to the chemical composition causing an odor. However, manifestations of a person's reaction to strong odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, headache).

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals are able to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected, and a transient odor is more likely to result in complaints than a constant one. This is caused by a phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Land uses that constitute odor sources include industrial facilities, such as asphalt batch plants, wastewater treatment facilities, and solid-waste transfer facilities. Other examples of minor sources of odors include restaurants and auto body painting establishments. In general, odor dispersal occurs relatively quickly, with noticeable effects diminishing substantially with increasing distance from the source.

Regulatory Setting [24]

Air quality within the SFBAAB is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work individually and jointly to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the SFBAAB are discussed below.

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[22] ARB. 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October. Available: http://www.arb.ca.gov/diesel/documents/rrpFinal.pdf. Accessed September 13, 2011.

[23] Ibid

[24] BAAQMD, 2011 (May). California Environmental Quality Act Air Quality Guidelines (Appendix C). Op. cit.

Criteria Air Pollutants

Federal

USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA),[25] which was enacted in 1963. The FCAA was most recently amended in 1990.[26]

The FCAA required USEPA to establish primary and secondary NAAQS. In addition, the FCAA required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. USEPA has responsibility to review all state SIPs to determine conformation to the mandates of the FCAAA, and to determine if implementation will achieve air quality goals. If the USEPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

State

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988.[27] The CCAA requires that all air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

ARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. The ARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines this data and submits the completed SIP to USEPA.

Other ARB duties include monitoring air quality, in conjunction with air monitoring networks maintained by air pollution control and air quality management districts; establishing CAAQS, which in many cases are more stringent than the NAAQS; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

Local

BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations

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[25] Clean Air Act of 1963 (77 Stat. 392, P.L. 88-206)

[26] Clean Air Act Amendments of 1990 (104 Stat. 2468, P.L. 101-549)

[27] California Clean Air Act 0f 1988 (Health and Safety Code 39000 et seq.)

concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the FCAA, FCAAA, and the CCAA.

In 2009, BAAQMD released the update to its CEQA Guidelines. This is an advisory document that provides the lead agency, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The handbook contains the following applicable components:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods available to mitigate air quality impacts;
- Information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate, topography.

Air Quality Plans

As stated above, BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. BAAQMD prepares ozone attainment plans (OAP) for the national ozone standard and clean air plans (CAP) for the California standard both in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, BAAQMD prepared the 2010 Clean Air Plan to address nonattainment of the national 1-hour O2 standard in the SFBAAB. The purpose of the 2010 Clean Air Plan is to:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the CCAA to implement - all feasible measures- to reduce ozone;
- Consider the impacts of ozone control measures on PM, air toxics, and greenhouse gases (GHGs) in a single, integrated plan;
- Review progress in improving air quality in recent years;
- Establish emission control measures to be adopted or implemented in the 2009-2012 timeframe.

Similarly, BAAQMD prepared the 2010 CAP[28] to address nonattainment of the CAAQS. The updated CAP describes current conditions, reviews the progress in reducing SFBAAB ozone levels to attain state 1-hour and 8- hour O2 standards, and describes how the proposed control strategy for the SFBAAB will fulfill the CCAA planning requirements for the state 1-hour O2 standard and mitigation requirements for transport of O2 and O2 precursors to neighboring air basins. The 2010 CAP also considers the impacts of O2 control measures on PM, TACs, and GHGs in a single, integrated plan. The control strategies include stationary source control measures to be implemented through BAAQMD regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through programs in cooperation with Metropolitan Transportation commission (MTC), local governments, transit agencies, and others.

[28] BAAQMD, 2010 (September). Bay Area 2010 Clean Air Plan. Available at: http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx. Accessed August 2011

BAAQMD Rules and Regulations

BAAQMD is responsible for limiting the amount of emissions that can be generated throughout the SFBAAB by stationary sources. Specific rules and regulations have been adopted that limit emissions that can be generated by various uses and/or activities and identify specific pollution reduction measures that must be implemented in association with various uses and activities. These rules regulate not only the emissions of the state and federal criteria pollutants, through requirements for use of best available control technology (BACT), but also the emissions of TACs, as discussed later. The rules are also subject to ongoing refinement by BAAQMD.

In general, stationary sources with air emissions are subject to BAAQMD's rules governing their operational emissions. Some emissions sources are further subject to regulation through BAAQMD's permitting process. Through this permitting process, BAAQMD also monitors the amount of stationary source emissions being generated and uses this information in developing the CAP.

Toxic Air Contaminants

Air quality regulations also focus on TACs (or in federal terminology, hazardous air pollutants [HAPs]). In general, for those TACs that may cause cancer, there is no concentration that is not estimated to present some risk. In other words, there is no threshold level below which adverse health risks, although potentially small, may not be estimated to occur. This is in contrast with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which ambient standards have been established (refer to Table 1). USEPA and ARB regulate TACs through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and T-BACT, respectively) to limit emissions. These, in conjunction with additional rules set forth by BAAQMD, establish the regulatory framework for TACs.

Federal

Title III of the FCAAA requires the USEPA to promulgate national emissions standards for hazardous air pollutants (NESHAPs), which can set different requirements for major and area sources. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources regulated under Title III of the FCAAA are considered area sources. Issuance of the emission standards occurs in two phases. The first phase consists of technology-based emission standards designed to produce a high level of emission reductions for major sources of HAPs, which are referred to as MACT standards. For area sources, the standards may be different, based on generally available control technology. In the second phase, USEPA must issue health risk-based emissions standards where such standards are deemed necessary to address risks remaining after implementation of the technology-based NESHAPs. These second-phase standards are generally referred to as "residual MACT" standards.

The FCAAA also required USEPA to issue vehicle or fuel standards containing reasonable requirements to control HAP emissions, applying at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 of the FCAAA also required the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions, including air toxics.

State

TACs in California are primarily regulated through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, or the Hot Spots Act). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research,

public participation, and scientific peer review are necessary before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. Most recently, DPM was added to ARB's list of TACs.

Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that a particular TAC. If there is a safe threshold at which there is no toxic effect from a substance, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emissions inventory and a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

After identifying DPM as a TAC, ARB adopted a comprehensive Risk Reduction Plan in 2000.[29] Pursuant to this Plan, ARB adopted diesel-exhaust control measures and stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In 2001, ARB adopted the Public Transit Bus Fleet Rule and Emissions Standards for New Urban Buses, which established emissions limits on 1985 and subsequent model year heavy-duty bus engines and vehicles for NOx, CO, non-methane hydrocarbons, PM, and formaldehyde. The emissions standards apply to all heavy-duty urban buses, including diesel-fueled buses. Therefore, the rule limits the emissions of two TACs identified by ARB: DPM and formaldehyde. In 2007, a low-sulfur diesel fuel requirement and tighter emission standards for heavy- duty diesel trucks was put into effect, to be followed in 2011 by the same standards being applied to off-road diesel equipment. Over time, the replacement of older vehicles will result in a fleet that produces substantially lower levels of TACs than the replaced vehicles. Mobile-source emissions of TACs (e.g., benzene, 1,3-butadiene, DPM) decreased significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low-Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, DPM concentrations are expected to be reduced by 75% in 2010 and 85% in 2020 from the estimated year-2000 level. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced. Emissions from heavy-duty diesel equipment associated with the Project would be required to comply with the rules outlined above.

In 2005, ARB published the Air Quality and Land Use Handbook: A Community Health Perspective, which provides guidance concerning land-use compatibility with TAC sources.[30] Although not a law or adopted policy, the handbook offers recommendations for the siting of sensitive receptors (e.g., proposed residential units) near uses associated with TACs to help limit the exposure of children and other sensitive populations to TACs. ARB received a number of comments on the handbook from air districts, other agencies, real estate representatives, and others. The comments included concern regarding whether ARB might be playing an inappropriate role in local land-use planning and whether it is valid to rely on static air quality conditions during the next several decades, in light of technological improvements; also included were expressions of support for providing information that can be used in local decision-making. ARB may modify the handbook in the future in response to these comments.

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[29] ARB, 2000 (October). Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. Stationary Source Division and Mobile Source Division. Available: http://www.arb.ca.gov/diesel/documents/rrpapp.htm. Accessed August 2011.

[30] ARB, 2005 (March 29). Air Quality and Land Use Handbook: A Community Health Perspective. Available: http://www.arb.ca.gov/ch/handbook.pdf. Accessed August 2011.

Local

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. BAAQMD limits emissions and public exposure to TACs through a number of programs. Under BAAQMD Rule 2-1 (General Permit Requirements), Rule 2-2 (New Source Review [NSR]), and Rule 2-5 (NSR of Toxic Air Contaminants), all sources that have the potential to emit TACs are required to obtain permits from BAAQMD. Permits may be granted if the sources are constructed and operated in accordance with applicable regulations, including NSR standards and ATCM. BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions, and on the proximity of the facilities to sensitive receptors. BAAQMD analyzes sources that require a permit (e.g., performs health risk assessments) based on their potential to emit TACs. If it is determined that the project's emissions would exceed BAAQMD's threshold of significance for TACs, as identified below, the source has to implement BACT for TACs (T-BACT) to reduce emissions. BAAQMD's T-BACT measures apply to sources such as petroleum and semiconductor industrial facilities, organic liquid storage tanks, solvent cleaning operations, and waste processing facilities, among others which may be found in a light industrial land use. Residential, retail, and commercial uses typically do not require T-BACT measures because of the nominal amounts of TACs generated by these uses. If a source cannot reduce the risk below the threshold of significance even after implementing T-BACT, then BAAQMD will deny the permit. BAAQMD permit requirements help to prevent problems from new emissions sources and reduce emissions from existing sources by requiring them to apply new technology when retrofitting. BAAQMD's air quality permitting process applies to stationary sources. Properties that are exposed to elevated levels of TACs from non-stationary sources and the non-stationary sources themselves (e.g., on-road vehicles) are not subject to air quality permits. Further, for reasons of feasibility and practicality, mobile sources (e.g., cars, trucks) are not required to implement T-BACT even if they have the potential to expose adjacent properties to elevated levels of TACs. Rather, emissions controls on mobile sources are subject to regulations implemented at the federal and state levels by USEPA and ARB, respectively.

Under the Community Air Risk Evaluation (CARE) program, BAAQMD aims to identify areas (referred to in this context as "priority" or "impacted" communities) with high TAC emissions and sensitive populations that could be affected by them, and to use this information to establish policies and programs to reduce TAC emissions and exposures.[31]

The main objectives of the program are to:

- Evaluate potential health risks associated with exposure to TACs from both stationary and mobile sources.
- Assess potential exposures to sensitive receptors and identify impacted communities
- Prioritize TAC reduction measures for significant TAC sources in impacted communities
- Develop and implement mitigation measures - such as grants, guidelines, or regulations - to improve air quality, focusing initially on priority communities.

The Project is not located within any of the six impacted communities identified under the CARE program.

[31] BAAQMD Care Program. Available at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CARE-Program.aspx. Accessed August 7, 2011.

Odors

Federal and State

Odors are typically considered a local air quality problem. USEPA has not established regulations that deal with the generation of odors. However, local air districts have developed rules that apply to odors. As explained below in the BAAQMD Rules and Regulations discussion, the air district enforces rules that pertain to odors.

Local

Although offensive odors rarely cause any physical harm, they can be very unpleasant and often can generate citizen complaints to local governments and BAAQMD. BAAQMD's Regulation 7 (Odorous Substances) places general limitations on odorous substances and specific emission limitations on certain odorous compounds in the SFBAAB. This regulation does not apply until the Air Pollution Control Officer (APCO) receives, within a 90-day period, 10 or more odor complaints alleging that a person or entity has caused odors at or beyond the source's property line, which are perceived to be objectionable by the complainants in the normal course of their work, travel, or residence. When this regulation becomes effective as a result of complaints, the limits specified in the regulation remain effective until such time as no complaints have been received by the APCO for 1 year. The limits specified by this regulation become applicable again if the APCO receives odor complaints from five or more complainants within a 90-day period.

Emissions Inventory and Health Risk Assessment

This section presents the Project criteria air pollutants and precursors (CAP) emissions inventory and the human health risk associated with the Project. This section also describes the methods used to estimate CAP emissions and health risk after full build out. This section begins with an explanation of the metrics used to quantify emissions, and then a description of the methodologies and models (EMFAC and OFFROAD) used to generate emission estimates. Next, the section describes how recent regulatory developments were incorporated into the emissions quantification. The following subsections provide more detail on each emission calculation. The remaining subsections describe the methodology and modeling behind the human health risk assessment

Emissions Inventory

Overall Calculation Methodology for Emissions Inventory

CAP emissions were estimated in accordance with the BAAQMD CEQA guidelines. Emissions from stationary sources were quantified based on a combination of USEPA AP-42 emission factors, vendor-provided data, California Air Toxics Emission Factor Database (CATEF), and project throughputs. CARB's equipment emissions models, EMFAC and OFFROAD, were used to estimate emissions from on-road employee and vendor vehicles and off-road construction equipment. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

Alameda County defaults were used in the EMFAC and OFFROAD model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by EMFAC and OFFROAD can be found in their User's Guides and associated appendices.

Stationary Sources

Existing stationary sources include the aggregate plant and the gas dispensing facility. Project stationary sources include the aggregate, concrete and asphalt plant and the gas dispensing facility.

- Aggregate Plant: Equipment at the aggregate plant is electrically operated, but operation of the plant, including the crushing and transferring of aggregate, will result in particulate matter emissions (PM_{10} and $PM_{2.5}$). These emissions were quantified using vendor-provided data and AP-42 emission factors. [32]
- Concrete Plant: Equipment at the concrete plant is electrically operated, but emissions of CAP and TACs (including PM_{10} and $PM_{2.5}$) from the concrete plant will result from the transfer of aggregate and sand to the storage bin, unloading of the cement and supplement to the storage silo, loading of the weigh hopper, and central batch mixing. These emissions were quantified using vendor-provided data, AP-42 emission factors, and AP-42 average concrete composition.[33]
- Asphalt Plant: Emissions of CAP and TACs from the asphalt plant will result from the filling of the drum mixer and silo, load-out from the drum mixer, hot asphalt storage tanks, and the mixing in the drum. These emissions were quantified using vendor-provided data, with emission factors from AP-42,[34,35] CATEF,[36] and provided by the vendor.
- Gasoline Dispensing Facility: Emissions will result from the gasoline dispensing facility on-site. The emissions considered in this analysis were the permit level emissions, which are an average of 0.07 lb./day or 25.6 lb./year.[37] Because these emissions represent the existing permit levels, they were assumed to be the same for the baseline and Project conditions.

Off-road Equipment

Off-road equipment emissions will result from the typical daily operation of the equipment, such as graders, loaders, tractors, scrapers, cranes, and off-road trucks. Quantification of the off-road equipment emissions was performed using OFFROAD2011 and a provided construction schedule.

Mobile Sources

Mobile source emissions will result from the typical daily operation of motor vehicles by vendors, employees, and Project delivery trucks. Quantification of the mobile source emissions was performed using EMFAC2011 and truck count dependent on throughput. Emissions estimates include running and idling emissions. For the emissions inventory, the trip length is based on the default trip length assumed

32 USEPA. 1995. AP 42, Volume I, Fifth Edition. §11.19.2 Crushed Stone Processing and Pulverized Mineral Processing.

33 USEPA. 1995. AP 42, Volume I, Fifth Edition. §11.12 Concrete Batching

34 USEPA. 1995. AP 42, Volume I, Fifth Edition. §11.1 Hot Mix Asphalt Plants.

35 USEPA. 1995. AP 42, Volume I, Fifth Edition. §1.4 Natural Gas Combustion

36 CARB. California Air Toxics Emission Factor Database (CATEF). Available online at: http://www.arb.ca.gov/ei/catef/catef.htm

37 CEMEX BAAQMD permit to operate. December 1, 2010. Plant #16195

in CalEEMod[38] for haul trips. Trip lengths used for the health risk assessment were based on the distance modeled. Duration of idling was assumed to be 5 minutes per one way trip consistent with California Code of Regulations.[39]

Fugitive Dust

Fugitive emissions of respirable particulate matter (PM_{10}) will occur from excavating the alluvial material in the quarry, truck travel on paved and unpaved roads, and material handling and wind erosion at stockpiles. Emission factors and equations to calculate these emission factors were obtained from AP-42.[40,41,42,43,44] Parameters used to calculate the emission factors, such as silt loading and moisture content, were provided or AP-42 defaults were used. Other parameters, such as precipitation days, were obtained from BAAQMD permit guidance. Activity based on project specific distances and throughput. A control efficiency from watering (once per hour) of 70%, based on BAAQMD permit guidance, was assumed on all unpaved roads where trucks and off-road equipment travel, on-site paved roads, and stockpiles. In addition, the following best management practices in place at the facility were included in the analysis:

- water spray control throughout the aggregate plant operations,
- water spray control at aggregate and sand transfer, and weigh hopper loading for the concrete plant,
- control at cement and supplement unloading to elevated storage silo for the concrete plant,
- watering stockpiles once per hour, and
- weekly street sweeping on Calaveras Road (generally from the site driveway to the San Antonio Bridge, where track-out dust is visible).

Construction Activities

Construction of the concrete and asphalt plant will occur for Phase I and when the plants are moved to the south end of the site for Phase II. Emissions from these construction phases are largely attributable to fuel use from construction equipment. Quantification of the construction emissions was performed using OFFROAD2011.

38 In September 2010, the ARB announced that its methods used to estimate the load factor for off-road equipment were incorrect and led to an overestimate of emissions by a factor of at least 33%. ARB is currently revising their emissions model, OFFROAD, which has not yet been released. In the meantime, ARB advises to reduce the load factors by a 33% to take into account this error, and this will be accounted for into the analysis whether using OFFROAD directly or CalEEMod, which is based on OFFROAD. The slides from the ARB workshop discussing this change are available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf

39 California Code of Regulations Title 13, Section 2485. Details available online at: http://www.arb.ca.gov/msprog/truck-idling/2485.pdf

40 USEPA. 1995. AP 42, Volume I, Fifth Edition. §11.9 Western Surface Coal Mining.

41 USEPA. 1995. AP 42, Volume I, Fifth Edition. §13.2.1 Paved Roads.

42 USEPA. 1995. AP 42, Volume I, Fifth Edition. §13.2.2 Unpaved Roads

43 USEPA. 1995. AP 42, Volume I, Fifth Edition. §13.2.4 Aggregate Handling and Storage Piles

44 USEPA. 1995. AP 42, Volume I, Fifth Edition. §$13._{2.5}$ Industrial Wind Erosion.

Air Dispersion Modeling

The modeling of the dispersion of the emissions through the atmosphere was performed using USEPA's recommended dispersion model, AERMOD versions 11353 and 11103.45 Air dispersion models such as AERMOD require a variety of inputs such as source parameters, meteorological parameters, topography information, and receptor parameters. When site-specific information is unknown, ENVIRON used default parameter sets that are designed to produce conservative (i.e. overestimates of) air concentrations.

Meteorological Data

To characterize the transport and dispersion of pollutants in the atmosphere, AERMOD requires hourly meteorological data from surface stations and once daily upper air data. On-site surface meteorological station and Oakland Airport upper air station were processed using the meteorological pre-processor, AERMET,46 as described in the memorandum, Meteorological Data Processing Approach for AERMOD Modeling.47

Terrain Considerations

AERMOD uses a terrain preprocessor, AERMAP,48 to determine elevations of the surrounding landscape. Data from the National Elevation Data (NED) set, available from the United States Geological Survey (USGS), was utilized to import the elevation information for sources and receptors.

Emission Rates

Emission rates used in modeling are consistent with emissions described in previous sections. Emissions were conservatively assumed to occur over 24 hours to account for the potential that operations could occur at any time during the day or night. While typical operations will occur during daylight hours, modeling them to occur over 24 hours is conservative as dispersion is typically lower during the night, which would result in higher average predicted air concentration.

Source Parameters

Sources were modeled as volume, area, and point sources. The list below describes how each Project source was modeled.

Volume sources:

- Off-road equipment exhaust
- On-road mobile vehicle exhaust
- Fugitive dust from off-road equipment and on-road mobile vehicles.

45 On November 9, 2005, the EPA promulgated final revisions to the federal Guideline on Air Quality Models, in which they recommended that AERMOD be used for dispersion modeling evaluations of criteria air pollutant and toxic air pollutant emissions from typical industrial facilities. The model can be downloaded online here: http://www.epa.gov/scram001/dispersion_prefrec.htm

46 More information on the model and the executable can be found online at: http://www.epa.gov/scram001/metobsdata_procaccprogs.htm

47 ENVIRON. 2012. Draft Meteorological Data Processing Approach for AERMOD Modeling. February

48 More information on the model and the executable can be found online at: http://www.epa.gov/ttn/scram/dispersion_related.htm

- Construction sources

Area sources:

- Fugitive dust from alluvial material handling
- Material handling and wind erosion from stockpiles
- Screening and crushing from the aggregate plant
- Fugitive dust from material transfer, loading and silo filling at the concrete plant
- Fugitive dust from loadout at the asphalt plant.

Point Sources

- Aggregate stack
- Drum mixer at the asphalt plant
- Hot oil heater at the asphalt plant.

Source parameters used are either provided, assumed in BAAQMD permits, found from aerial photographs, based on ISC guidance[49], or based on reasonable approximations.

Receptors

In order to evaluate health impacts on off-site receptors, receptors were placed at the locations of surrounding sensitive populations, including adult and child residents, schools, and day cares, as shown in **Figure 7-1**. Sensitive populations were identified using aerial maps and EIRs of other projects in the area. [50] A breathing height of 1.8 meters was assumed, consistent with BAAQMD guidance.[51] Second story receptors were simulated by adding 3 meters to the breathing height. Therefore, flagpole heights of 1.8 meters and 4.8 meters were added to the ground-level elevation at each receptor location.

Buildings

In order to evaluate the potential impact of stockpiles downwash[52] effects on point sources, the stockpiles were evaluated as buildings. The impact was simulated using EPA's building wake effect model to be used with AERMOD, called Building Profile Input Program (BPIP).[53]

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49 USEPA. 1995. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models. Volume II - Description of Model Algorithms. September.

50 Alameda County Waste Management Authority (ACWMA). Organics Processing and Development Program and Project Final Environmental Impact Report Section III. Master Responses. Available online at: http://recycle.stopwaste.org/organics/feir-pdf/feir-sectioniii.pdf

51 BAAQMD. 2011. Recommended Methods for Screening and Modeling Local Risks and Hazards

52 Turbulent eddies can be formed in the downwind side of buildings. Those eddies may cause a plume from a stack source located near the building to be drawn towards the ground much more than it would if a building or structure were not present. The effect can increase the resulting ground-level pollutant concentrations downstream of a building. The dispersion model used to evaluate the impacts of emergency generators incorporate algorithms to evaluate the effect.

53 BPIP can analyze circular buildings, but not conical or pyramidal. There would be more downwash effects with a rectangular obstruction than a conical obstruction, so rectangular buildings were conservatively used. More information on the model and the executable can be found online at: http://www.epa.gov/ttn/scram/dispersion_related.htm

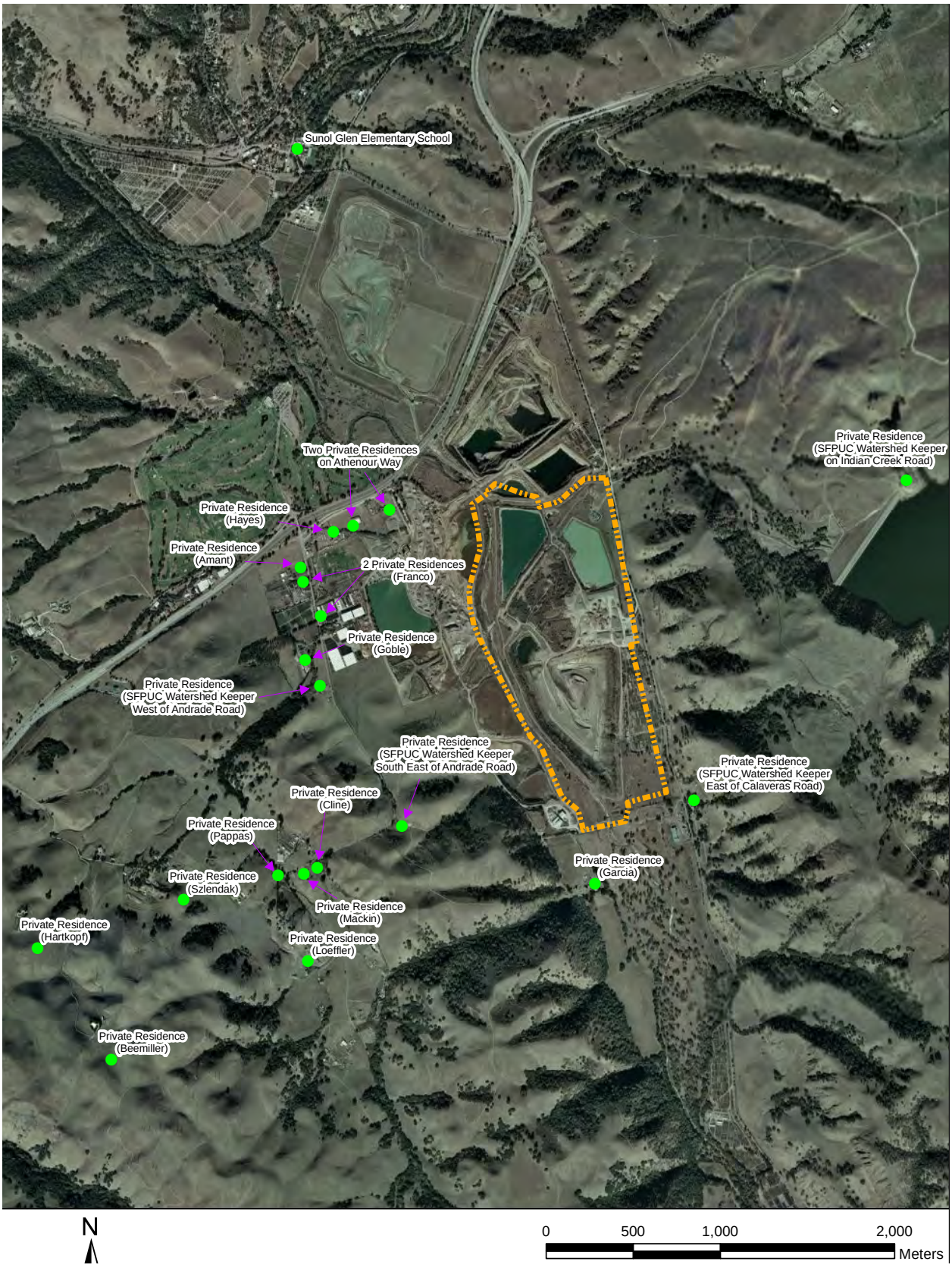

Figure 7-1
Nearby Sensitive Receptor Locations

Source: ENVIRON, Inc.

Risk Characterization Methods

As mentioned above, the potentially exposed sensitive populations are:

- Residents (Child and Lifetime);
- School child;
- Day care child.

The school and day care child will be present at Sunol Glen Elementary School, near Niles Canyon Road and Main Street in the City of Sunol.

Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure and the nature and magnitude of adverse health effects that may result from such exposure. For purposes of calculating exposure criteria to be used in risk assessments, adverse health effects are classified into two broad categories – cancer and non-cancer endpoints.

The chemicals of potential concern were identified in accordance with the indicator chemical approach that is consistent with the Cal/EPA OEHHA guidance. Diesel particulate matter (DPM) was used as a surrogate measure of carcinogen exposure for the mixture of chemicals that make up diesel exhaust as a whole for annual effects, consistent with California regulatory guidelines. Specific air toxic components from diesel exhaust were used to estimate acute effects from diesel exhaust. Air toxic emissions from other sources were identified in accordance with AP-42 emission sources and their corresponding speciation profiles, specific air toxic emission factors specified in AP-42, specific air toxic emission factors specified by CATEF,[54] and provided.

In order to compare the Project with the May 2011 BAAQMD CEQA thresholds, the estimated excess lifetime cancer risks for a resident child, lifetime resident, day care child, and school child were adjusted using the age sensitivity factors (ASFs) recommended in the Cal/EPA OEHHA Technical Support Document (TSD)[55] and the cancer risk adjustment factors (CRAFs) recommended by BAAQMD.[56]

Estimation of Cancer Risks

Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated using the chemical intake or dose at the human exchange boundaries (e.g., lungs), the chemical-specific cancer potency factor (CPF), and the age sensitivity factor.

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54 CARB. California Air Toxics Emission Factor Database (CATEF). Available online at: http://www.arb.ca.gov/ei/catef/catef.htm

55 Cal/EPA. 2009. Air Toxics Hot Spots Program Risk Assessment Guidelines: Part II Technical Support Document for Describing Available Cancer Potency Factors. Office of Environmental Health Hazard Assessment. May.

56 BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Exposure Assumptions

The exposure parameters used to estimate excess lifetime cancer risks for all potentially exposed populations were obtained using risk assessment guidelines from Cal/EPA[57] and BAAQMD,[58] unless otherwise noted.

Calculation of Intake

The dose estimated for each exposure pathway is a function of the concentration of a chemical and the intake of that chemical. The intake factor for inhalation, used to estimate intake of a chemical, is based on breathing rate (L/kg-day), exposure time (hours/24 hours), exposure frequency (days/year), exposure duration (years), and averaging time (days) for each sensitive population. The chemical intake or dose is estimated by multiplying the inhalation intake factor, by the chemical concentration in air. When coupled with the chemical concentration, this calculation is mathematically equivalent to the dose algorithm given in Office of Environmental Health Hazard Assessment (OEHHA) Hot Spots guidance.[59]

Estimation of Chronic Non-cancer Hazard Quotients/Indices

The potential for exposure to result in chronic non-cancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific non-cancer chronic reference exposure levels (RELs). When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient or HQ. To evaluate the potential for adverse chronic non-cancer health effects from simultaneous exposure to multiple chemicals, the HQs for all chemicals are summed, yielding an HI.

Estimation of Acute Non-cancer Hazard Quotients/Indices

The potential exposure to emissions of pollutants resulting in acute non-cancer effects is evaluated by comparing the estimated one-hour maximum air concentration to the chemical-specific non-cancer acute RELs. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient or HQ. To evaluate the potential for adverse acute non-cancer health effects from simultaneous exposure to multiple chemicals, the HQs for all chemicals are summed, yielding an HI.

Cumulative Health Risk Assessment

Roadway Sources

Interstate 680 and Calaveras Road are the major roadways[60] in the project vicinity. To evaluate the impacts from these roadways, BAAQMD screening tools, Highway Screening Analysis Tool and County Surface Street Screening Tables,[61] were used in accordance with BAAQMD guidance.[62]

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57 Cal/EPA. 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August

58 BAAQMD. 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

59 Cal/EPA. 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August.

60 BAAQMD defines a major roadway as a roadway with either over 10,000 vehicles per day or 1,000 trucks per day (Source: BAAQMD. 2011. Recommended Methods for Screening and Modeling Local Risks and Hazards.)

61 April 29, 2011 version. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

Other Stationary Sources

The stationary sources in the Project vicinity were identified and evaluated using BAAQMD's screening tool for stationary sources, Stationary Source Screening Analysis Tool,[63] and guidance from BAAQMD.

Other Sources

Three other significant sources were identified in the Project vicinity, which are three San Francisco Public Utilities Commission construction projects. These projects are the construction of Alameda West Portal of the Proposed New Irvington Tunnel,[64] the Calaveras Dam Replacement Project,[65] and the Alameda Siphons Seismic Reliability Upgrade Project.[66] The impact at the maximally exposed individual receptor (MEIR) identified in the report of these analyses is included in the cumulative impact of the Project.

Impacts and Mitigation Measures

Significance Criteria

State CEQA Guidelines Appendix G

The thresholds used to determine the significance of impacts in this analysis are consistent with the environmental checklist in Appendix G of the State CEQA Guidelines and guidance from BAAQMD.[67] For the purpose of this analysis, the following applicable thresholds were used to determine if implementing the Project would result in a significant impact on air quality. In accordance with the criteria listed in Appendix G, implementation of the proposed Project would have a significant effect on air quality if it would:

1. Conflict with, or obstruct implementation of, the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

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62 BAAQMD. 2011. Recommended Methods for Screening and Modeling Local Risks and Hazards

63 April 29, 2011 version. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

64 ENVIRON. 2009. Health Risk Screening Analysis of Diesel Particulate Emissions from Construction of Proposed New Irvington Tunnel. February.

65 ENVIRON. 2009. Health Risk Screening Analysis of Diesel Particulate Emissions Associated with Calaveras Dam Replacement Project. August.

66 ENVIRON. 2009. Draft Health Risk Screening Analysis of Diesel Particulate Emissions from Construction of Proposed Siphons Seismic Reliability Upgrade Project. May

67 California Natural Resources Agency. CEQA Guidelines Appendix G: Environmental Checklist Form. Available: http://ceres.ca.gov/ceqa/guidelines/Appendix_G.html. Accessed August 2011

BAAQMD CEQA Guidance

According to BAAQMD CEQA Guidelines, a project is consistent with the current CAP if it:

- supports the goals of the Air Quality Plan to safeguard public health, reduce emissions and ambient concentrations of harmful pollutants, and reduce greenhouse gas emissions;
- includes application control measures (stationary source measures, mobile source measures, transportation control measures, land use and local impact measures, and energy and climate measures) from the CAP; and
- would not disrupt or hinder implementation of any control measures in the CAP.

BAAQMD adopted revised thresholds of significance on June 2, 2010, with minor revisions in May 2011, which include quantitative thresholds for evaluating construction-related and operational emissions of criteria pollutants and precursors, TACs, and GHGs [68,69] These thresholds are summarized in **Table 7-6**.

[68] BAAQMD, 2011 (May). California Environmental Quality Act Air Quality Guidelines (Appendix C). Op. cit.

[69] The BAAQMD CEQA Guidelines are currently undergoing a legal challenge. Although there is no written decision on the lawsuit, the lead plaintiff, the California Building Industry Association (CBIA) provided a news release on the status of that lawsuit. According to the CBIA, on January 9, 2012 the Alameda County Superior Court Judge Frank Roesch said that in developing new guidelines, the BAAQMD is bound by CEQA, and must first study the potential impacts of its new rules on future growth and transportation patterns. According to CBIA, the ruling requires that BAAQMD rescind the measures and study the effects they could have on how the Bay Area grows in the future.

Table 7-6: BAAQMD CEQA Air Quality Thresholds of Significance

Criteria Air Pollutants and Precursors	Construction-Related	Operational-Related	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NOX	54	54	10
PM_{10} (equipment exhaust)	82	82	15
$PM_{2.5}$ (equipment exhaust)	54	54	10
PM_{10}/ $PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
CO (local concentration)	None	9.0 ppm (8-hour average) 20.0 ppm (1-hour average)	
Risks and Hazards for New Sources and Receptors (Individual Project)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (HI) (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Risks and Hazards for New Sources and Receptors (Cumulative Threshold)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >100 in a million (from all local sources) Increased non-cancer risk of > 10 Hazard Index (HI) (from all local sources) (Chronic) Ambient $PM_{2.5}$ increase: > 0.8 µg/m3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Acutely Hazardous Air Pollutants (Accidental Release)	None	Storage or use of acutely hazardous materials near sensitive receptors or locating sensitive receptors near stored or used acutely hazardous materials are considered significant	
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years	

Source: California Environmental Quality Act Air Quality Guidelines, BAAQMD, updated May 2011.

These thresholds of significance are meant to make the general requirements for CEQA analysis (as specified in the CEQA Appendix G Environmental Checklist Form) more specific and quantitative in relation to Bay Area air quality attainment plans. Pursuant to the BAAQMD significance thresholds (June 2, 2010), implementation of the proposed Project would have a single-source significant effect on air quality if:

- average daily construction emissions would exceed 54 pound per day (lb./day) of ROG, NOx, or $PM_{2.5}$, or 82 lb./day of PM_{10}, whereby the thresholds for PM_{10} and $PM_{2.5}$ apply to exhaust emissions only;
- applicable BAAQMD-recommended Basic Construction Mitigation Measures are not implemented during construction activities;
- operational emissions would exceed 54 lb./day or 10 TPY of ROG, NOx, or $PM_{2.5}$, or 82 lb./day or 15 TPY of PM_{10};
- the proposed new residents would be exposed to, or if the project's construction or operation would cause, an excess cancer risk level exceeding 10 in 1 million or a hazard index greater than 1.0 at the maximally exposed individual (MEI); or
- the project's construction or operational activities would generate annual $PM_{2.5}$ concentrations that exceed 0.3 micrograms per cubic meter (μg/m3).

For cumulative criteria air pollutants, BAAQMD considers a project that results in a significant project-level impact to also result in a significant cumulative criteria air pollutant impact. For cumulative risks and hazards, implementation of the proposed project would contribute to a cumulatively considerable health risk impact on air quality if it would result in:

- an excess cancer risk level of more than 100 in 1 million or a non-cancer (i.e., chronic or acute) hazard index (HI) greater than 10 from all local sources within 1,000 foot zone of influence; or
- a concentration greater than 0.8 μg/m3 annual average $PM_{2.5}$ from all local sources within 1,000 foot zone of influence.

BAAQMD's rationale for its criteria pollutant and health risk thresholds is described in Appendix D of the BAAQMD CEQA guidelines,[70] and is summarized below.

TACs are subject to both single-source and cumulative thresholds. In addition, impacts associated with TACs (and $PM_{2.5}$) must be evaluated when siting new receptors as well as when siting new sources. For TACs, the single-source and cumulative thresholds are designed to ensure that emissions do not raise the risk of cancer or non-cancer health impacts to cumulatively significant levels, for either onsite or offsite receptors. According to the BAAQMD CEQA guidelines, the single-source and cumulative cancer risk thresholds of 10.0 in one million and 100 in one million, respectively, are supported by USEPA's guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level. The single-source threshold is also consistent with the Project Risk Requirement in the BAAQMD Regulation 2, Rule 5 (for new and modified stationary sources of TACs). According to BAAQMD, the cumulative threshold is consistent with the cancer risk in the most pristine ambient air locations within the Bay Area.

An acute or chronic HI value of less than 1.0 for a single source represents a TAC concentration that is health-protective, according to BAAQMD CEQA guidelines. The cumulative chronic non-cancer HI threshold of 10 is consistent with the mandatory risk reduction levels of BAAQMD Air Toxics Hot

[70] BAAQMD, 2011 (May). California Environmental Quality Act Air Quality Guidelines (Appendix D). Op. cit.

Spots program, which provides guidance for implementing the Air Toxics "Hot Spots" Information and Assessment Act.

The BAAQMD CEQA guidelines also explain that criteria pollutant thresholds based on emission rates (e.g. NOx, ROG, PM_{10} exhaust, $PM_{2.5}$ exhaust) or concentrations (e.g. CO, $PM_{2.5}$) are designed to maintain concentrations below state and federal standards, or to prevent a cumulatively considerable contribution to the SFBAAB's existing nonattainment air quality conditions.

With respect to odors, the threshold number of complaints is based on the most stringent standards from BAAQMD Regulation 7. BAAQMD also provides guidance in the form of screening distances, to help evaluate potential odor impacts. Generally, the screening distance for land uses and operations similar to the Project (e.g., wastewater treatment plants, petroleum refineries, asphalt batch plants, chemical manufacturing, rendering plants, sanitary landfills and wastewater pumping facilities) is 2 miles.

Construction Impacts: Fugitive Dust

Impact AQ-1: Construction of the Project would not result in fugitive dust-related air quality impacts. (**Less than Significant**)

The construction period assumed for this analysis includes the construction period during which the proposed new operating plant equipment (asphalt plant and the concrete batch plant) and new structures (the small QA/QC lab and the small offices) would be constructed at the site. Each of these construction sites would only be large enough to accommodate the proposed equipment and/or structures. During the construction period, fugitive dust would be generated by site preparation, grading, operation of off-road equipment and hauling of new materials to the site.

Compliance with Regulatory Requirements

During the Project's construction efforts, the contractor would be required (pursuant to County requirements) to implement the BAAQMD's recommended "Basic" construction mitigation measures at each small construction site. According to BAAQMD's CEQA Guidelines, the following set of measures satisfy the best management practices threshold for fugitive dust:

- Water all exposed surfaces (including but not limited to parking areas, soils piles, graded areas, unpaved roads) twice daily;
- During the temporary construction of the equipment associated with the Project (e.g., asphalt and concrete batch plants) Cover all haul trucks that transport loose material (such as sand or soil);
- Use wet power vacuum street sweeper at least daily to remove visible mud or dirt truck-out from the construction site onto adjacent public roads;
- Limit all vehicle speeds at the construction site to 15 miles per hour;
- Pave all roads, driveways, and sidewalks as soon as possible, and lay building pads as soon as possible after grading, unless soil binders or seeding is used;
- Shut off equipment or limit idling time to 5 minutes or less when equipment is not in use.
- Keep equipment maintained according to manufacturer specifications, and have all equipment checked by a certified visible emissions evaluator.
- Post contact information for a representative at the lead agency for the public to use regarding dust complaints. Ensure corrective actions are implemented within 48 hours.

Compliance with these regulatory requirements would reduce the Project's emissions of fugitive dust during construction activities to a less than significant level.

Mitigation Measures

None required.

Construction Impacts: Criteria Pollutants

Impact AQ-2: Construction-related criteria air pollutant emissions from the Project would not violate an air quality standard or substantially contribute to an existing or projected air quality violation. (**Less than Significant**)

During construction of each the Project's proposed new equipment and structures, diesel-powered off-road construction equipment such as cranes, forklifts and backhoes will generate exhaust emissions of criteria pollutants and ozone precursors. To evaluate the potential impact with respect to criteria pollutant air quality standards, the total estimated construction emissions for Phases I and II were divided by the total estimated construction days to arrive at an estimate of average daily construction emissions. These average daily emissions were then compared to the construction mass emissions significance thresholds, as shown in **Table 7-7**.

Table 7-7: Average Daily Construction Emissions, Criteria Pollutants

	ROG	NOx	PM_{10} (exhaust only) (lb./day)	$PM_{2.5}$ (exhaust only)
Project Off-road Emissions	1.6	20	1.2	1.1
Exceeds Threshold?	No	No	No	No
BAAQMD CEQA Threshold of Significance	54	54	82	54

As shown in Table 7-7, average daily construction emissions would not exceed any of the CEQA thresholds for criteria pollutant mass emissions. Therefore, this impact would be less than significant.

Mitigation Measures

None needed

Construction Impacts: Toxic Air Contaminants

Impact AQ-3: Construction -related air pollutant emissions from the Project would not expose sensitive receptors to substantial concentrations of toxic air pollutants or respirable particulate matter. (**Less than Significant**)

During construction of each the Project's proposed new equipment and structures, diesel-powered off-road construction equipment such as cranes, forklifts and backhoes will generate toxic air contaminants. Health risks associated with the use of diesel-fueled construction equipment were evaluated via three steps: emissions estimation, air dispersion modeling, and risk assessment. The cancer risk and chronic non-cancer analyses are based on diesel particulate matter (DPM) concentrations. Because there is

currently no acute non-cancer toxicity value available to DPM, speciated components of diesel total organic gases (TOGs) with acute toxicity values were included in the acute non-cancer hazard analysis.

Four types of sensitive receptors were evaluated: residents (adult and child), school children, and daycare children. The results of the construction-period risk assessment, which are presented in **Table 7-8**, indicate that the Project would not result in construction-period emission of toxic air contaminants that would exceed the significance thresholds for excess cancer risk, chronic or acute non-cancer hazard indices, or $PM_{2.5}$ concentrations at sensitive receptor locations.

Table 7-8: Maximum Lifetime Excess Cancer Risk, Chronic and Acute Non-Cancer Hazard Indices, and $PM_{2.5}$ Concentration for Construction

Scenario	Excess Lifetime Cancer Risk (in a million)				$PM_{2.5}$	Chronic Hazard Index	Acute Hazard Index
	Resident Child	Resident Adult	Day Care Child	School Child	µg/m3		
Phase I	0.32	0.0034	0.091	0.067	0.0034	0.0007	0.88
Phase II	0.23	0.0024	0.057	0.042	0.0024	0.0005	0.74
Project	0.55	0.0057	0.15	0.11	0.0057	0.0012	--*
BAAQMD CEQA Threshold of Significance	10				0.3	1	1
Exceeds Threshold?	No	No	No	No	No	No	No

*As acute hazard index is the single highest hour of operation these are not additive as Phase I and Phase II construction activities will not occur concurrently.

Mitigation Measures

None needed

Operational Impacts: Criteria Pollutants

Impact AQ-4: Criteria air pollutant emissions generated during operation of the Project could violate an air quality standard or substantially contribute to an existing or projected air quality violation. (**Less than Significant with Mitigation**)

Emissions of criteria air pollutants and ozone precursors will be generated from stationary sources used for processing aggregate, asphalt and concrete; from off-road equipment used to handle these materials; and from haul trucks bringing material to and from the site.

To evaluate the potential impact with respect to criteria pollutant air quality standards, average daily and maximum annual emissions were calculated for both Phases I and II at full production capacity of 3 million tons aggregate. The maximum value from either of the Project's phases is reported below in **Table 7-9**.

Table 7-9. Average Daily and Maximum Annual Operational Criteria Pollutant Emissions at Full Production of 3 Million Tons Aggregate Per Year

Emissions Source	Average Daily Incremental Emissions (lbs./day)				Maximum Annual Incremental Emissions (tons/year)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Aggregate Plant	--	--	22	2.7	--	--	4.0	0.49
Concrete Plant	--	--	2.4	1.2	--	--	0.4	0.2
Asphalt Plant	23	26	21	11	4.2	4.7	3.9	2.1
Off Road Equipment	5	38	2.1	2	0.9	7	0.4	0.3
Mobile Sources	14	255	10	8	2.5	47	1.8	1.4
Non-Retail Gas Station	0.07	--	--	--	0.01	--	--	--
Facility, Total Incremental Emissions	42	318	58	25	8	58	11	4.6
CEQA Threshold of Significance	54	54	82	54	10	10	15	10
Exceeds Threshold?	No	**Yes**	No	No	No	**Yes**	No	No

As shown in Table 7-9, emissions of ROG, PM10 and PM2.5 will not exceed either the average daily incremental emissions threshold or the maximum annual incremental emissions threshold, but the Project's emissions of NOx would exceed both of these thresholds. The bulk of the NOx emissions will result from mobile sources which are mostly customer haul trucks taking construction materials from the site. These results are calculated assuming that the Project will begin operating at full production capacity (3 million tons per year of aggregate production) at the onset, assumed to be year 2013.

Regulatory Compliance

US EPA and California ARB emissions standards will result in a reduction in emissions (including the emission of NOx) from the on-road trucking fleet over the duration of the Project. These regulations will force a dramatic reduction in NOx emissions due to the greater prevalence of Tier 4 engines in the fleet. These new emissions standards will phase in over time, incrementally reducing NOx emissions.

For example, when the Project commences operation in 2013 the facility could produce up to 1.5 million tons of aggregate and not exceed any CAP threshold, including NOx. With implementation of ARB emission standards by year 2016 the Project could ramp up to 2.25 million tons aggregate without exceeding any CAP thresholds. With the reductions assumed pursuant to the newer emission standards by year 2020, NOx emissions would no longer exceed any CAP thresholds, even at the maximum annual production rate of 3 million tons of aggregate per year.

Conservative Assumptions

An important consideration in comparing criteria air pollutant emissions from the Project to significance thresholds is that the project's mobile source emissions will likely also be accounted for in other projects as well. The Project will provide construction materials to other projects, each of which will be subject to environmental review. These subsequent project's environmental analyses will also quantify

emissions from construction activity associated with those projects, including assumptions regarding the emissions from trucks hauling material to those project sites. In accordance with BAAQMD methods, truck trips (both to and from the Project site) have been accounted for in this analysis of the Project. However, this likely presents an over-estimate of the Project's impacts, as other projects will also be accounting for these trips in their environmental review.

Additionally, the Project proposes to co-locate both asphalt and concrete batch plants with the existing aggregate operations, thereby reducing overall truck travel lengths. Currently, aggregate and sand produced at the quarry which is to be used for the production of asphalt or concrete is hauled via truck to offsite facilities for further processing into asphalt or concrete, and then the asphalt or concrete is hauled via truck to individual construction sites. By co-locating the concrete and asphalt plants at the source of the raw aggregate materials, the intermediate truck trips to off-site processing facilities is eliminated, thereby reducing the overall transportation distance of these materials.

Mitigation Measures

Mitigation Measure AQ-4: CAP Emissions Monitoring and Reduction Plan. Within one year of Project approval, the applicant shall prepare and implement a CAP Monitoring and Reduction Plan (CAP Plan).

a) The CAP Plan shall include a complete inventory of Project-related CAP emissions to determine how the Project's emissions of ROG, NOx, PM_{10} and $PM_{2.5}$ compare to the significance thresholds applicable at that time on an annual basis.

b) If the Project's CAP emissions exceed any applicable threshold, the CAP Plan shall demonstrate how the Project will reduce or off-set remaining, un-mitigated CAP emissions. Reductions may take the form of replacing or retrofitting engines for onsite rolling stock, or reducing overall production rates at the Project site so as to not exceed the threshold. Off-site compensation, also known as offsets, can provide for the remaining difference between reduced emissions and the thresholds applicable at that time.

c) The CAP Plan will be submitted to the Alameda County Community Development Agency on an annual basis.

d) Upon approval, the operator shall implement specified measures as necessary.

Resulting Level of Significance

With implementation of the CAP Plan, Project emissions of NOx will be either reduced or off-set by an amount necessary to comply with significance thresholds that are applicable at the time of each annual review. For example, without any other reductions or off-sets the Project could commence operation in 2013 at a production rate of up to 1.5 million tons of aggregate and not exceed the currently applicable threshold for NOx. With implementation of ARB emission standards by year 2016, the Project could ramp up to 2.25 million tons of aggregate production without exceeding the currently applicable thresholds. With the reductions assumed pursuant to the newer emission standards by year 2020, NOx emissions would no longer exceed currently applicable thresholds, even at the maximum annual production rate of 3 million tons of aggregate per year.

Emissions of ROG, PM_{10}, and $PM_{2.5}$ are projected to be below the applicable thresholds, even at a production rate of 3 million tons of aggregate in 2013, and will not exceed thresholds for either lower production rates or in later years. Implementation of MM AQ-4 would reduce or off-set criteria pollutant emissions from the Project to a level of less than significant.

Operational Impacts: Toxic Air Contaminants

Impact AQ-5: Operation of the proposed Project would expose sensitive receptors to substantial concentrations of toxic air pollutants and fine particulate matter. (**Less than Significant with Mitigation**)

Health risks associated with the use of diesel-fueled off-road equipment, haul trucks and process equipment which results in emissions of toxic air contaminants (TAC) have been evaluated via three steps:

- emissions estimation,
- air dispersion modeling, and
- risk assessment.

Four types of sensitive receptors were evaluated: residents (adult and child), school children, and daycare children. The evaluation of chronic Health Indices (HI) assumes that crystalline silica is present in fugitive PM_{10}. The results of the risk assessment, assuming maximum production rates and operations at the Project of 3 million tons of aggregate per year, are presented in **Tables 7-10 and 7-11**.

Table 7-10: Maximum Lifetime Excess Cancer Risk for Operation

Scenario	Excess Incremental Lifetime Cancer Risk (in a million)					
	Phase I			Phase II		
	Lifetime Resident	Day Care Child	School Child	Lifetime Resident	Day Care Child	School Child
Project Increment (3 MM tons throughput)	2.4	2.6	1.9	14	5.3	3.9
BAAQMD CEQA Threshold of Significance	10					
Exceeds Threshold?	No	No	No	**Yes**	No	No

Incremental Cancer Risks

Phase I

As shown in Table 7-10, the estimated excess incremental cancer risk for all sensitive receptors would not exceed the BAAQMD threshold of 10 in a million. Phase I impacts would be less than significant.

Phase II

During Phase II operation, the estimated excess incremental cancer risk for the nearest sensitive receptor, assuming a lifetime resident exposure and assuming a consistent annual production rate at the Project of 3 million tons aggregate per year, is 14 in a million which exceeds the BAAQMD threshold of 10 in a million. The primary source of the excess cancer risk at this residential location is diesel exhaust from the scrapers used to excavate aggregate. This impact would be considered significant.

Chronic and Acute Non-Cancer Hazard Indices

As shown in Table 7-11, the estimated chronic and acute non-cancer hazard indices resulting from the Project, assuming a maximum production rate of 3 million tons aggregate per year under both Phases of the Project, are both below the BAAQMD Health Indices threshold of 1. Additionally, the fine particulate matter ($PM_{2.5}$) concentrations associated with direct emissions from the Project's process stationary and mobile equipment as well as haul trucks, are below significance thresholds at all sensitive receptor locations.

Table 7-11: Maximum Chronic and Acute Non-Cancer Hazard Indices, and $PM_{2.5}$ Concentrations

Scenario	Phase I			Phase II		
	$PM_{2.5}$ Concentration µg/m3	Chronic Hazard Index	Acute Hazard Index	$PM_{2.5}$ Concentration µg/m3	Chronic Hazard Index	Acute Hazard Index
Project Increment	0.11	0.18	0.30	0.08	0.19	0.5
BAAQMD CEQA Threshold of Significance	0.3	1	1	0.3	1	1
Exceeds Threshold?	No	No	No	No	No	No

Mitigation Measures

MM AQ-5: TAC Emissions Monitoring and Reduction Plan. Within one year of project approval, the applicant shall prepare and implement a TAC Monitoring and Reduction Plan (TAC Plan).

a) The TAC Plan shall include a complete inventory of Project-related TAC emissions to determine how the estimated excess cancer risks from Facility emissions compare to the significance thresholds on an annual basis.

b) If risk thresholds are exceeded, the TAC Plan shall demonstrate how the facility will reduce impacts to below thresholds, which may take the form of replacement or retrofit of engines used in one of the two scrapers such that they meet a minimum of USEPA Tier 4 interim emissions standard, or reducing overall production rates at the Project site so as to not exceed the threshold.

c) The TAC Plan shall be submitted to the Alameda County Community Development Agency on an annual basis.

d) Upon approval, the operator shall implement specified measures as necessary.

Resulting Level of Significance

Table **7-12** below shows how implementation of Mitigation Measure AQ-5 is capable of reducing excess incremental cancer risk below currently applicable thresholds. In the first example, the Project's annual aggregate throughput is limited to 2.25 million tons. At this throughput level, the estimated incremental lifetime cancer risks at all sensitive receptor locations are below the threshold for both Phase I and Phase II of the Project.

In the second example, the total aggregate throughput is maximized at 3.0 million tons per year, but one of the scrapers used in the quarry excavation process is modeled as having been retrofit to Tier 4 interim emissions standards. Under this example, estimated incremental lifetime cancer risks at all sensitive receptor locations are also below the threshold for both phases of the Project.

Implementation of MM AQ-5 would reduce TAC emissions from the Project to a level of less than significant.

Table 7-12: Maximum Lifetime Excess Cancer Risk for Operation – With Mitigation

Scenario	Excess Incremental Lifetime Cancer Risk (in a million)					
	Phase I			Phase II		
	Lifetime Resident	Day Care Child	School Child	Lifetime Resident	Day Care Child	School Child
Project Increment (2.25 MM tons throughput)	0.32	-2.2	-1.6	5.6	0.049	0.036
Project Increment (3 MM tons throughput with Tier 4 interim scraper)	0.29	-1.8	-1.6	7.6	-0.2	-0.15
BAAQMD CEQA Threshold of Significance	10					
Exceeds Threshold?	No	No	No	No	No	No

Operational Impacts: Carbon Monoxide

Impact AQ-6: Operation of the Project would not result in an increase in localized carbon monoxide concentrations that exceed state or federal standards. (**Less than Significant**)

CO concentration is a direct function of motor vehicle activity (particularly during peak commuting hours) and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels for local sensitive land uses, such as residential areas, schools, preschools, playgrounds, and hospitals. As a result, BAAQMD recommends analysis of CO emissions at a local rather than a regional level. BAAQMD provides a screening methodology based on peak hourly traffic volumes at affected intersections. If a project would contribute 44,000 vehicles per hour to an intersection, or 24,000 vehicles per hour for intersections where vertical or horizontal air mixing would be limited, this situation would represent a condition where a project could violate or contribute to a violation of ambient air quality standards for CO.

None of the affected intersections near the Project would experience more than 24,000 vehicles per hour at buildout. Therefore, the Project would not contribute to a violation of the 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm. The Project would not expose sensitive receptors to CO levels exceeding recommended levels. As a result, this impact would be less than significant.

Mitigation Measures

None needed

Odors

Impact AQ-7: Operation of the Project would not create objectionable odors affecting a substantial number of people. (**Less than Significant**)

The proposed asphalt plant may generate odorous emissions such as hydrogen sulfide, which is a distinctive and disagreeable odor at very low concentrations, below the level at which significant acute health risks would occur. To evaluate the potential significance of odor impacts from the asphalt plant, in accordance with BAAQMD guidance, the odor complaint records for two similar asphalt facilities were evaluated to determine if either facility had more than five confirmed odor complaints per year (on average) in the most recent three year period (January 1, 2008 through December 31, 2011).

The first facility, Mission Valley Rock at 7999 Athenour Way in Sunol, is located adjacent to the Project (on the northeast corner) and located closer to sensitive receptors than the Project. According to the BAAQMD, the annual asphalt throughput of the Mission Valley Rock facility is 900,000 tons per year, which is slightly lower than the proposed throughput of the Project at 1 million tons asphalt per year. Over the past three years, there have not been any odor complaints (either confirmed or unconfirmed) reported for the Mission Valley Rock facility.

The second facility evaluated was the Granite Construction Company Facility located at 1544 Stanley Boulevard in Pleasanton. This facility was chosen as the BAAQMD reports its annual asphalt production to be equivalent to that proposed for the Project (1 million tons asphalt per year) and its close proximity to sensitive receptors. Over the past 3 years, there have been six complaints filed for the facility; however, only one of those complaints was confirmed.

Based on the analysis of odor complaints for similarly size facility in similar locations with respect to nearby sensitive receptors, it is not expected that the Project will be a source of odors which would rise to the level of a significant impact (i.e., five or more confirmed complaints per year average over three years).

Cumulative Impacts

There are multiple types of sources in the project area to be considered when evaluating cumulative impacts of the Project, including onsite and offsite stationary sources, roadways, and SFPUC construction projects.

Cumulative Criteria Air Pollutants

Cumulative Impact AQ-8: Construction and operation of the Project, in combination with other past, present and reasonably foreseeable future projects, could result in significant adverse cumulative impacts on air quality (**Less than Significant with Mitigation**).

The proposed Project would result in both operational air quality impacts, generating regional emissions of criteria pollutants and their precursors in an air basin designated as nonattainment for ozone and particulate matter. The Project's emission of ROG, PM_{10}, and $PM_{2.5}$ would not exceed significance thresholds established by the BAAQMD to identify a cumulatively considerable contribution to air quality impacts in the region, but the Project would generate emissions of NOx that would exceed these cumulative thresholds.

Mitigation Measures

The Project will be required to implement Mitigation Measure AQ-4: CAP Monitoring and Reduction Plan, by which Project emissions of NOx will be either reduced or off-set by an amount necessary to comply with significance thresholds that are applicable at the time of each annual review.

Resulting Level of Significance

With the implementation of Mitigation Measure AQ-4 , the Project's contribution to cumulative criteria pollutant impacts would be reduced to a level of less than significant (i.e., less than cumulatively considerable).

Cumulative Health Risk Impact

Cumulative Impact AQ-9: Construction and Operation of the Project would not contribute to a cumulatively considerable health risk impact on air quality. (**Less than Significant with Mitigation**)

There are multiple types of sources of TAC within a 1,000-foot boundary around the Project area to be considered when evaluating cumulative health risk impacts on off-site receptors. These sources include on-site and off-site stationary sources, the adjacent Lehigh-Hanson quarry, roadways, and several SFPUC construction projects. When added to these other sources, the Project (both during construction and operation) would contribute localized emissions to the surrounding area, contributing to cumulative air quality impacts to off-site receptors that would increase cancer risks, chronic non-cancer hazards, and concentrations of $PM_{2.5}$.

Mitigation Measures

The Project will be required to implement Mitigation Measure AQ-5: TAC Monitoring and Reduction Plan, by which Project emissions of TAC will be reduced such that the estimated incremental lifetime cancer risks at all sensitive receptor locations is maintained below applicable thresholds that are applicable at the time of each annual review. Strategies for reducing TAC emissions include, but are not limited to replacing or retrofitting engines used in one of the two scrapers to meet a minimum of US EPA Tier 4 interim emissions standard, or by reducing overall production rates at the Project site.

Resulting Level of Significance

With the implementation of Mitigation Measure AQ-5, the Project's emissions, when combined with other emissions in the area, would not exceed cumulative thresholds for excess incremental cancer risk of 100 in a million, chronic non-cancer hazards index of 10, or $PM_{2.5}$ concentrations 0.8 $\mu g/m^3$. **Tables 7-13 and 7-14** show the cumulative risks and hazards resulting from two scenarios which reflect implementation of Mitigation Measure AQ-5 (i.e., either reducing Project operations to a maximum production rate of 2.25 million tons per year aggregate throughput, or maximizing production at 3 million tons per year of aggregate throughput, but with the retrofit of one of the Project's scrapers to Tier 4 interim emissions standards.

With the implementation of Mitigation Measure AQ-5 , the Project's contribution to cumulative TAC-related health risk impacts would be reduced to a level of less than significant (i.e., less than cumulatively considerable).

Table 7-13: Cumulative Excess Cancer Risk, Chronic Non-Cancer Hazard Index, and $PM_{2.5}$ Concentration with Mitigation Measure AQ-5 (at 2.25 Million Tons Aggregate Throughput)

Source	Excess Cancer Risk [b]	Chronic HI [b]	$PM_{2.5}$ Concentration [c]
	(in a million)	(-)	(µg/m3)
I-680	14	0.01	0.35
Calaveras Road	0.38	<0.002	0.01
Offsite Stationary Sources	Negligible due to distance	Negligible due to distance	0.18
SFPUC Construction Projects [a]	20	0.15	Negligible due to distance
Baseline Operations	12	0.07	0.06
Project Construction	0.25	0.0011	0.0057
Project Operation	5.6	0.12	0.05
Total Cumulative	52	0.35	0.66
CEQA Threshold of Significance	100	10	0.8
Exceeds Threshold?	No	No	No

Table 7-14: Cumulative Excess Cancer Risk, Chronic Non-Cancer Hazard Index, and $PM_{2.5}$ Concentration With Mitigation Measure AQ-5 (at 3 Million Tons and Tier 4 Interim Emissions Standards)

Source	Excess Cancer Risk [B]	Chronic HI [B]	$PM_{2.5}$ Concentration [C]
	(in a million)	(-)	(µg/m3)
I-680	14	0.01	0.35
Calaveras Road	0.38	<0.002	0.01
Offsite Stationary Sources	Negligible due to distance	Negligible due to distance	0.18
SFPUC Construction Projects [a]	20	0.15	Negligible due to distance
Baseline Operations	12	0.02	0.06
Project Construction	0.25	0.0011	0.0057
Project Operation	7.6	0.01	0.07
Total Cumulative	54	0.18	0.68
CEQA Threshold of Significance	100	10	0.8
Exceeds Threshold?	No	No	No

8

Climate Change

This chapter evaluates the proposed Project's potential impacts related to climate change. It includes a summary of the state of climate change science and the applicable regulatory setting, it describes GHG emissions estimation methods and presents the Project's GHG inventory at full build out (incorporating emission reductions associated with currently promulgated regulations), it compares the projected emission results to the applicable thresholds of significance, and presents conclusions and recommended mitigation measures. Information in this chapter of the EIR is specifically derived from technical analyses prepared by Environ International Corporation. Technical data and modeling result are included in **Appendix D** to this EIR. All other sources are referenced in footnotes citing sources listed at the end of this EIR.

Existing Physical Setting

Background on Climate Change Science

This section summarizes the scientific issues surrounding climate change and global warming. It also provides a discussion of the actions and phenomena that contribute to climate change and puts into context global, national, and state emissions of GHGs.

Global Climate Change

Global warming and global climate change are both terms that describe changes in the earth's climate. Global climate change is a broad term used to describe any worldwide, long-term change in the earth's climate. This change could be, for example, an increase or decrease in temperatures, the start or end of an ice age, or a shift in precipitation patterns. The term global warming is more specific than global climate change and refers to a general increase in temperatures across the earth. Though global warming is characterized by rising temperatures, it can cause other climatic changes, such as a shift in the frequency and intensity of rainfall or hurricanes. Global warming does not necessarily imply that all locations will be warmer. Some specific, unique locations may be cooler even though the world, on average, is warmer. All of these changes fit under the umbrella of global climate change.[1]

While global warming can be caused by natural processes, there is a general scientific consensus that most current global warming is the result of human activity on the planet.[2] This man-made, or anthropogenic, warming is primarily caused by increased emissions of "GHGs" that keep the earth's surface warm. This is called "the greenhouse effect." The greenhouse effect and the role GHGs play in it are described below.

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[1] Other definitions of "Greenhouse Effect" and "Global Warming" can be found on Merriam-Webster online: http://www.m-w.com/. A definition for "Climate Change" can be found on dictionary.com which uses Webster's New Millennium™ Dictionary of English, Preview Edition (v 0.9.6).

[2] From the IPCC "Climate Change 2007: The Physical Science Basis, Summary for Policymakers." Available online at: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf

The Greenhouse Effect

Greenhouses allow sunlight to enter and then capture some of the heat generated by the sunlight's impact from leaving the earth's atmosphere. Similarly, the earth's atmosphere acts like a greenhouse by retaining some of the heat that is generated by the sun. When solar radiation from the sun reaches the earth, much of it penetrates the atmosphere to ultimately reach the earth's surface; this solar radiation is absorbed by the earth's surface and then re-emitted as heat in the form of infrared radiation.[3] GHGs do not absorb solar radiation but do absorb infrared radiation. When the infrared radiation is absorbed by the molecules of GHGs, it is reflected in all directions. A portion of the infrared radiation is emitted back towards the surface of the earth, in effect "trapping" the heat in the atmosphere.[4] This phenomenon is referred to as the "greenhouse effect".

The earth's greenhouse effect has existed far longer than humans have and has played a key role in the development of life. Concentrations of major GHGs, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor have been naturally present for millennia at relatively stable levels in the atmosphere, maintaining hospitable temperatures on the surface of the earth. Without these GHGs, the earth's temperature would be too cold for life to exist.

In the absence of major industrial human activity, natural processes have maintained atmospheric concentrations of GHGs, and, therefore, global temperatures at constant levels over the last several centuries.[5] As human industrial activity has increased, atmospheric concentrations of certain GHGs have grown dramatically. **Figure 8-1** shows the increase in concentrations of CO_2 and CH_4 over time. As the concentrations of GHGs increase due to human activity, more infrared radiation is reflected back towards the earth, subsequently heating the surface of the earth to higher temperatures. This is the process that is described as human-induced global warming.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) began releasing components of its Fourth Assessment Report on climate change. In February 2007, the IPCC provided a comprehensive assessment of climate change science in its Working Group I Report.[6] It states that there is a scientific consensus that the global increases in GHGs since 1750 are mainly due to human activities such as fossil fuel use, land use change (e.g., deforestation), and agriculture. In addition, the report states that it is likely that these changes in GHG concentrations have contributed to global warming. Confidence levels of claims in this report have increased since 2001 due to the large number of simulations run and the broad range of available climate models.

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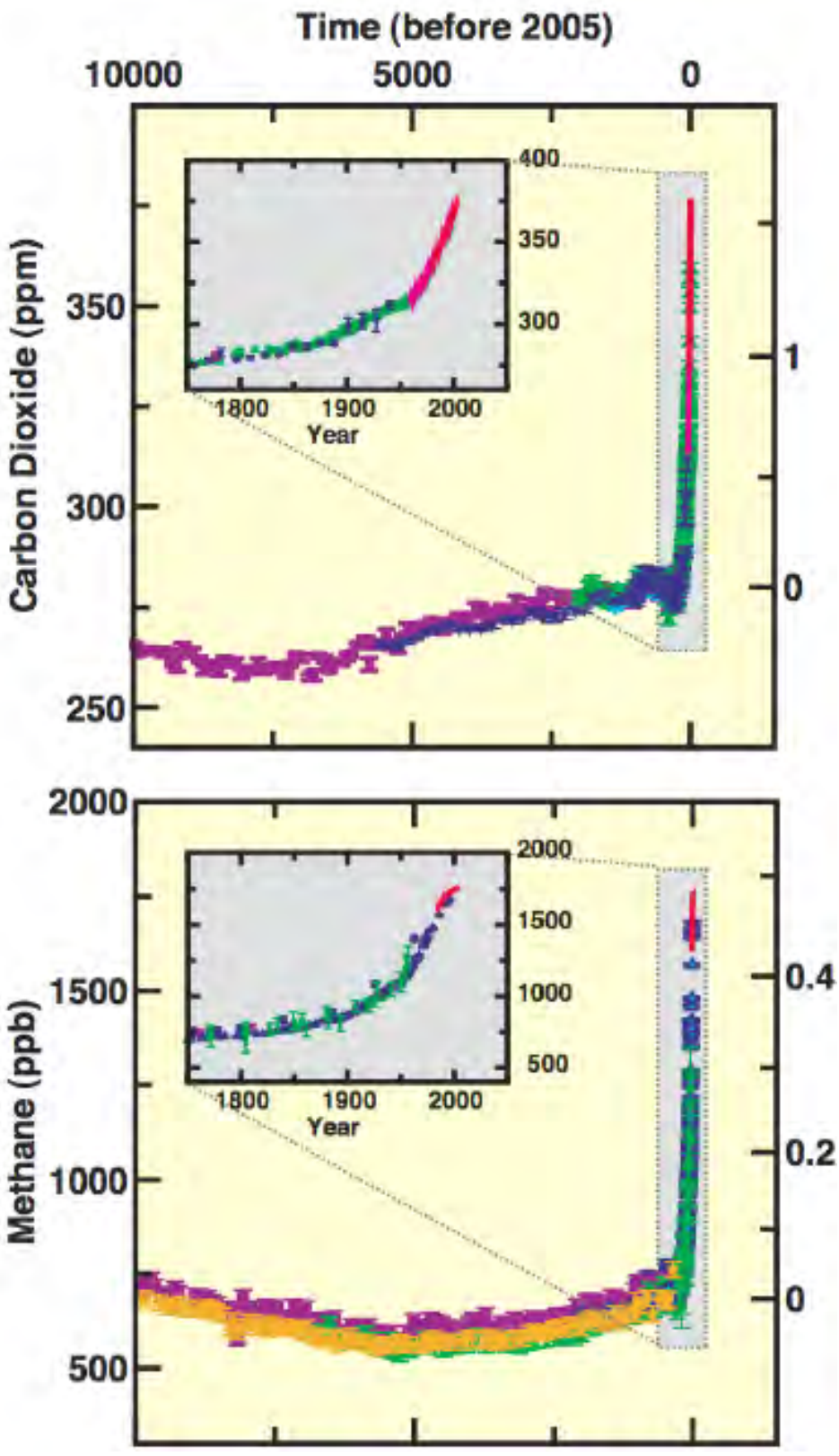
[3] All light, be it visible, ultraviolet, or infrared, carries energy.

[4] Infrared radiation is characterized by longer wavelengths than solar radiation. Greenhouse gases reflect radiation with longer wavelengths. As a result, instead of escaping back into space, greenhouse gases reflect much infrared radiation (i.e., heat) back to Earth.

[5] Examples of natural processes include the addition of GHGs to the atmosphere from respiration, fires, and decomposition of organic matter. The removal of greenhouse gases is mainly from plant and algae growth and absorption by the ocean.

[6] IPCC. 2007. IPCC Fourth Assessment Report: Climate Change 2007 (AR4): Working Groups I, II, and III Reports. Available online at: http://www.ipcc.ch/ipccreports/ar4-wg1.htm. Accessed August 2011.



Carbon dioxide and methane concentrations have increased dramatically since the industrial revolution

Figure 8-1
Increase in Concentrations of CO_2 and CH_4 Over Time

Source: Environ, 2012

Greenhouse Gases and Greenhouse Gas Emission Sources

The term "GHGs" includes gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O, and water, as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as hydrofluorocarbons (HFCs), chlorinated fluorocarbons (CFCs), and sulfur hexafluoride (SF_6). These last three families of gases, while not naturally present in the atmosphere, have properties similar to the naturally occurring GHGs, which also cause them to trap infrared radiation when they are present in the atmosphere, thus making them GHGs. These six gases comprise the major GHGs that are recognized by the Kyoto Accords (water is not included).[7] A seventh gas, nitrogen trifluoride, was recently recognized by the California Air Resources Board (ARB) as a GHG.[8] There are other GHGs that are not recognized by the Kyoto Accords or ARB, due either to the smaller role that they play in climate change or the uncertainties surrounding their effects. Atmospheric water vapor is not recognized by the Kyoto Accords or ARB because there is not an obvious correlation between water concentrations and specific human activities. Water appears to act in a positive feedback manner; higher temperatures lead to higher water concentrations, which in turn cause more global warming.[9]

The effect each GHG has on global warming is a combination of the volume of their emissions and their Global Warming Potential (GWP). GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent than CO_2, with GWPs of 21 and 310, respectively. However, these natural GHGs are nowhere near as potent as synthetic chemicals such as SF_6 and fluoromethane, which have GWPs of up to 23,900 and 6,500 respectively.[10] GHG emissions are typically measured in terms of mass of CO_2e. CO_2e are calculated as the product of the mass of a given GHG and its specific GWP.

The most important GHG in human-induced global warming is CO_2. While many gases have much higher GWPs than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States.[11] Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions and thus substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 parts per million (ppm), over 35 % higher than the pre-industrial concentrations of about 280 ppm.[12] In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its lifespan in the atmosphere of 50 to 200 years.

Concentrations of the second most prominent GHG, methane (or CH_4), have also increased due to human activities such as rice production, degradation of waste in landfills, cattle farming, and natural gas mining. In 2005, atmospheric levels of CH_4 were more than double pre-industrial levels, up to 1774 parts

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[7] This Kyoto Protocol sets legally binding targets and timetables for cutting the greenhouse-gas emissions of industrialized countries. The US has not approved the Kyoto treaty.

[8] SB 104, which directs the ARB to regulate nitrogen trifluoride (NF3) and possibly other gases found to be at least as harmful as carbon dioxide was signed into law by Governor Schwarzenegger in October, 2009.

[9] IPCC. 2001. IPCC Third Assessment Report: Available at: http://www.grida.no/climate/ipcc_tar/wg1/143.htm and http://www.grida.no/climate/ipcc_tar/wg1/268.htm. Accessed August 2011.

[10] California Climate Action Registry General Reporting Protocol - Reporting Entity-Wide Greenhouse Gas Emissions. SAR values, Appendix C. Available: http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf. Accessed August 2011.

[11] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006, U.S. Environmental Protection Agency. Available online at: http://epa.gov/climatechange/emissions/downloads/08_CR.pdf

[12] Page 2 of the IPCC "Climate Change 2007: The Physical Science Basis, Summary for Policymakers." Op. cit.

per billion (ppb) as compared to 715 ppb.[13] CH_4 has a relatively short atmospheric lifespan of only 12 years, but has a higher GWP than CO_2. Additionally, when CH_4 decomposes, it produces CO_2 and water.

Nitrous oxide concentrations have increased from about 270 ppb in pre-industrial times to about 319 ppb by 2005. Most of this increase can be attributed to agricultural practices (such as soil and manure management), as well as fossil-fuel combustion and the production of some acids. Nitrous oxide's 120-year atmospheric lifespan increases its role in global warming.

Besides CO_2, CH4, and N_2O, there are several gases and categories of gases that were not present in the atmosphere in pre-industrial times but now exist and contribute to warming. These include CFCs, used often as refrigerants, and their more stratospheric-ozone-friendly replacements, HFCs. Fully fluorinated species, such as SF6 and tetrafluoromethane (CF4), are present in the atmosphere in relatively small concentrations, but have extremely long life spans of 50,000 and 3,200 years each, making them potent GHGs.

Current and Projected Climatic Impacts of Global Warming

A strong indication that anthropogenic global warming is currently taking place is the fact that the top seven warmest years since the 1890s occurred after 1997. Furthermore, a warming of about 0.2°C per decade is projected by currently accepted models.

There is a scientific consensus that global climate change will increase the frequency of heat extremes, heat waves, and heavy precipitation events. Other likely direct effects include an increase in the areas affected by drought and by floods, an increase in tropical cyclone activity, a rise in sea level, and recession of polar ice caps. The impacts of global warming have already been demonstrated by substantial ice loss in the Arctic.[14] **Figure 8-2** shows the rise of global temperatures, the global rise of sea level, and the loss of snow cover from 1850 to the present.

Socioeconomic Impacts of Global Warming

Global temperature increases may have significant negative impacts on ecosystems, natural resources, and human health. Ecosystem structure and biodiversity will be compromised by temperature increases and associated climatic and hydrological disturbances. [15] The availability and quality of potable water resources may be compromised by increased salination of ground water due to sea-level rises, decreased supply in semi-arid and arid locations, and poorer water quality arising from increased water temperatures and more frequent floods and droughts.[16] These impacts on freshwater systems, in addition to the effects of increased drought and flood frequencies, can reduce crop productivity and food supply.

In addition to compromising food and water resources, there are other means through which climatic changes associated with global warming can affect human health and welfare. Warmer temperatures can cause more ground-level ozone, a pollutant that causes eye irritation and respiratory problems. Ranges of infectious diseases will likely increase and some areas will face greater incidences of illness and mortality associated with increased flooding and drought events.

[13] Page 4 of the IPCC "Climate Change 2007: The Physical Science Basis, Summary for Policymakers." Op. cit.

[14] Statistics from IPCC Working Group I and II Reports. Op. cit.

[15] From the IPCC Working Group II Report. Op. cit.

[16] From the IPCC Technical Paper VI: "Climate Change and Water". Available online at: http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf

Global warming trends and associated sea level rise and snow cover decrease

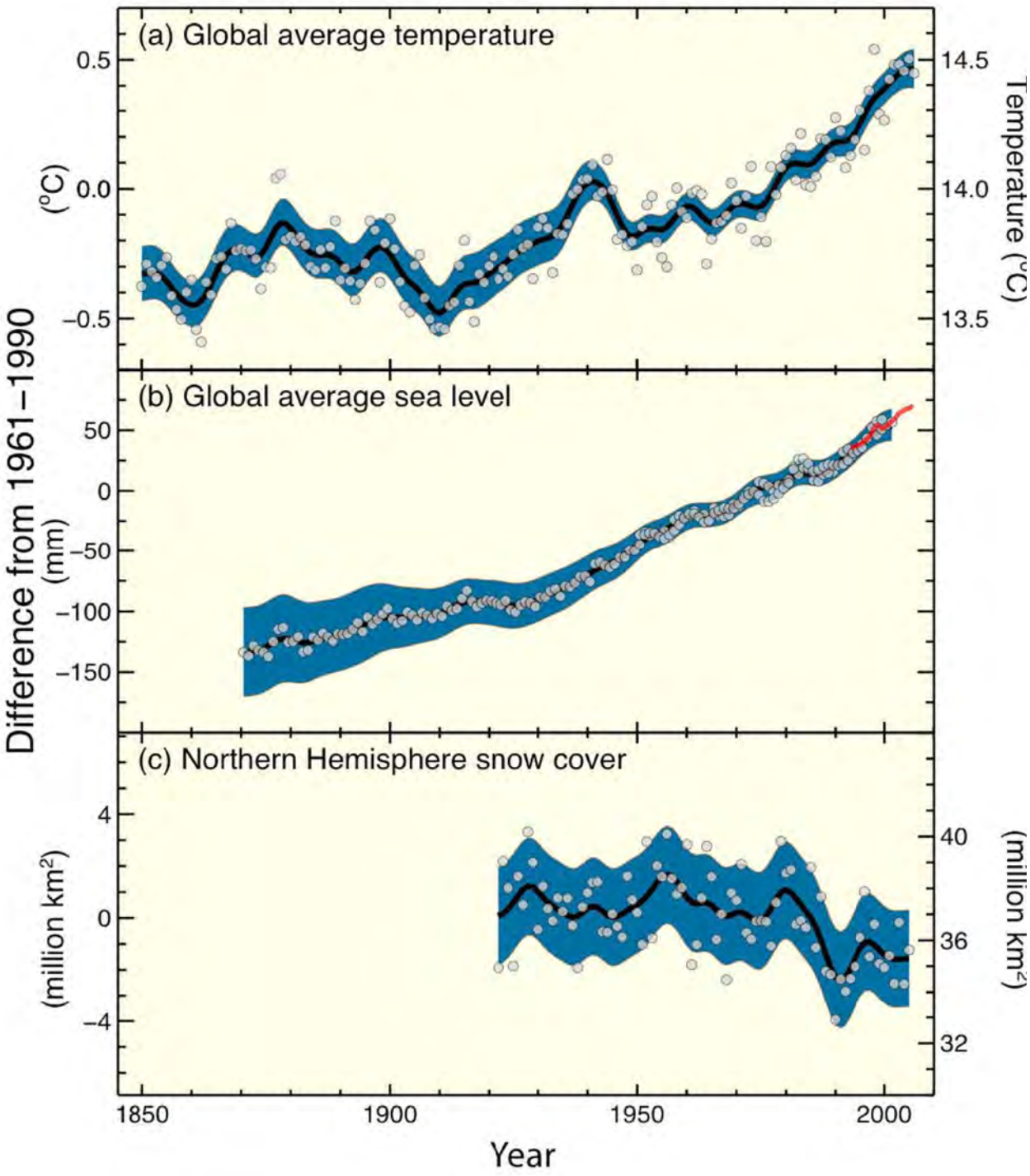

Figure 8-2
Comparison of Temperature, Sea Level and Snow Cover

Source: Environ, 2012

In its April 2007 Working Group II Report, the IPCC provided an assessment of the "current scientific understanding of the impacts of climate change on natural, managed and human systems, the capacity of these systems to adapt and their vulnerability." [17] Here, the IPCC states that, although some people will gain and some will lose because of global climate change, the overall change will be one of social and economic losses. California in particular is an area that could be negatively impacted by global warming. Global warming could alter the seasonal pattern of snow accumulation and snowmelt that serve as primary sources for California's drinking water and irrigation water supplies. The scientific community projects extensions in the periods of high forest fire risk. Climatic changes would also affect agriculture, a major California industry, which could result in economic losses. For example, the heat wave in July 2006 is estimated to have cost the California dairy industry in excess of one billion dollars.[18]

IPCC Fourth Assessment Report

It is important to recognize that the climatic conditions experienced by the Project over its designed lifetime are likely to be substantially different from those observed over the past century. Consequently, it is useful to consider the implications of changing climatic conditions for Project performance. Scenarios for 2100 modeled in the IPCC Fourth Assessment Report (FAR) include: [19]

Temperature Increase

- Low Emissions Scenario: 1.8°C (best estimate), with a range of 1.1°C to 2.9°C
- High Emissions Scenario: 4.0°C (best estimate), with a range of 2.4°C to 6.4°C

Sea Level Rise

- Low Emissions Scenario: 0.18 to 0.38 meters (range)
- High Emissions Scenario: 0.26 to 0.59 meters (range)

Potential implications for the Project include:

Due to its inland location, it is unlikely that rising sea levels will impact the Project.

Temperature: Rising temperatures could have a variety of impacts, including stress on sensitive populations (e.g., sick and elderly), additional burden on building systems (e.g., demand for conditioning), and, indirectly, increasing emissions of greenhouse gases and criteria pollutants associated with energy generation. It is not possible to reliably quantify these risks at this time.

Precipitation: Climate change is expected to alter seasonal and inter-annual patterns of precipitation. These changes continue to be one of the most uncertain aspects of future scenarios. For this Project, the most relevant direct impacts are likely to be changes in the timing and volume of stormwater runoff and

[17] From the IPCC Working Group II Report. Op. cit.

[18] *Environment News Service*, 2006 (August 4). "California Heat Wave Costs Agriculture Industry Billions." (online). Available: http://www.ens-newswire.com/ens/aug2006/2006-08-04-09.html#anchor4. Accessed August 2011.

[19] Future GHG emissions are the product of very complex dynamic systems, determined by driving forces such as demographic development, socio-economic development, and technological change. Their future evolution is highly uncertain. Scenarios are alternative images of how the future might unfold and are an appropriate tool with which to analyze how driving forces may influence future emission outcomes and to assess the associated uncertainties. They assist in climate change analysis, including climate modeling and the assessment of impacts, adaptation, and mitigation. The possibility that any single emissions path will occur as described in scenarios is highly uncertain. More information on the IPCC's selection of scenarios is available at http://www.ipcc.ch/ipccreports/sres/emission/index.htm.

changes in demand for irrigation. It is not possible to reliably quantify the implications of these changes at this time.

Wildfire: Changes in temperature and precipitation may combine to alter risks of wildfire. It is not possible to reliably quantify these risks at this time.

Water supply reliability: Changes in temperature and precipitation may also influence seasonal and inter-annual availability of water supplies. Consequently, it is reasonable to consider that climate change may affect water supply reliability.

Impacts from Climate Change

The California Natural Resources Agency (CNRA) [20] prepared a document that discusses the impacts of climate change upon California, as well as California's climate adaptation strategy. A first year progress report was subsequently published one year after release of the original document.[21] The categories below are topics emphasized in the November 2008 Executive Order (S-13-08) which called on state agencies to develop California's first strategy to identify and prepare for these expected climate impacts. Adaptation strategies are addressed in the next section of this technical report.

Rising Temperatures

CRNA described new projections by MIT modelers predict a median probability of surface warming of 5.2 degrees Celsius by the year 2100, which is much higher than previous modeling completed in 2003.[22] Researchers modeled temperature changes specifically related to California.[23] The model predicted greater temperature increases in summer than winter, and larger increases inland compared to the coast.

Tipping Elements

The CNRA emphasized "tipping elements", which bring about "abrupt changes that could push natural systems past thresholds beyond which they could not recover". According to the CNRA, there are four main events that could bring about abrupt environmental changes. Each of these four has a particular tipping temperature at which the event is likely to occur. The consequence of crossing each threshold could cause a 7 to 12 meter rise in sea level over the course of several centuries as shown in the table below.

[20] California Natural Resources Agency. 2009 California Climate Adaptation Strategy. Discussion Draft.

[21] CNRA. 2010. 2009 California Climate Adaptation Strategy – First Year Progress Report to the Governor of the State of California. Available at: http://www.energy.ca.gov/2010publications/CNRA-1000-2010-010/CNRA-1000-2010-010.PDF. Accessed 18 May 2011.

[22] Chandler, D. 2009. Climate change odds much worse than thought: New analysis shows warming could be double previous estimates. MIT News Office. May 19, 2009. Website: http://web.mit.edu/newsoffice/2009/roulette-0519.html

[23] Incorporated by reference. Moser, Susanne, Guido Franco, Sarah Pittiglio, Wendy Chou and Dan Cayan (2008). The Future is Now: An Update on Climate Change Science Impacts and Response Options for California. 2008 Climate Change Impacts Assessment Project - Second Biennial Science Report to the California Climate Action Team, CEC-500-2008-071, Sacramento, CA.

Tipping elements that could trigger abrupt environmental changes:

Additional Warming (ºF)	Environmental Change	Length of Time
1-3	Rapid Arctic sea ice melt	10 years
2-4	Irreversible melting of the Greenland Ice Sheet	300 years or more
5-9	Irreversible melting of the West Antarctic Ice Sheet	300 years or more
5-7	Amazon forest die-back	None given
6-11	Intensification of El Niño Southern Oscillation cycles	None given

Extreme Natural Events

In addition, CRNA listed extreme natural events are likely to occur, including higher nighttime temperatures and longer, more frequent heat waves overall; 12-35% decrease in precipitation levels by mid- to late-21st century; increased evaporation and faster incidences of snowmelt that will increase drought conditions, and more precipitation in the form of rain as compared to snow that will decrease water storage in California during the dry season and increase flood events during the wet season. [24]

Precipitation Changes and Rivers

CNRA also stated that climate change will intensify California's "Mediterranean climate pattern", with the majority of annual precipitation occurring between November and March and drier conditions during the summer. [25] This will increase droughts and floods and will affect river systems. One of the ways to quantify potential impacts related to river system was through calculating a rise in water temperature and its effects on fisheries resources. [26]

Sea Level Rise

CNRA states that sea level rise can cause damage to coastal communities and loss of land, which could reach tens of billions of dollars per year in direct costs and trillions of dollars of assets in collateral risk.[27] Current calculations of sea level rise from 1900 to 2000 estimate approximately 7 inches along the California coast. [28] Further, up to 55 inches of sea-level rise globally by the end of the 21st century is predicted under the "business as usual" model.

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[24] Cayan, Dan, Mary Tyree, Mike Dettinger, Hugo Hidalgo, Tapash Das, Ed Maurer, Peter Bromirski, Nicholas Graham, and Reinhard Flick (2009). Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment. PIER Research Report, CEC-500-2009-014, Sacramento, CA: California Energy Commission.

[25] Cayan, D., A.L. Luers, M. Hanemann, G. Granco, and B. Croes. 2006 (February). Scenarios of Climate Change in California: An Overview (White Paper, CEC-500-2005-203-SF). Sacramento, CA: CCCC. http://www.energy.ca.gov/2005publications/CEC-500-2005-186/CEC-500-2005-186-SF.PDF.

[26] Crossin, G.T., S.G. Hinch, S.J. Cooke, D.W. Welch, D.A. Patterson, S.R.M. Jones, A.G. Lotto, R.A. Leggatt, M.T. Mathes, J.M. Shrimpton, G. Van Der Kraak and A.P. Farrell. 2008. Exposure to high temperature influences the behavior, physiology, and survival of sockeye salmon during spawning migration. Canadian Journal of Zoology. 86(2): 127-140.

[27] Kahrl, F. and D. Roland-Holst (2008). California Climate Risk and Response. Berkeley, CA: University of California-Berkeley, Department of Agricultural and Resource Economics.

[28] Cayan, D., A.L. Luers, M. Hanemann, G. Granco, and B. Croes. 2006 (February). Scenarios of Climate Change in California: An Overview (White Paper, CEC-500-2005-203-SF). Sacramento, CA: CCCC.

Low Sea Ice Levels

The CNRA states says that substantial sea ice melting from Greenland and the West Antarctic Ice Sheet has the potential to further raise sea levels. The sea ice extent in the Western Nordic Seas (i.e., Greenland, Norway, and Iceland Seas) is at the lowest level observed in the last 800 years. The implication being that a substantial reduction in sea ice in the Arctic sea promotes alterations in atmospheric circulation and precipitation patterns that extend to the mid-latitudes (e.g., the California coast). Additionally, it was reported that the variations in sea ice extent are correlated with changes in sea surface temperatures and atmospheric and ocean heat transport from the North Atlantic.[29]

The West Antarctic Ice Sheet is a marine-based ice sheet with edges that flow into floating ice shelves. Both the main sheet and the surrounding shelves have been showing signs of shrinking and collapsing due to global warming. Researchers have tracked the fate of at least nine shelves that have receded or collapsed around the Antarctic Peninsula in the past 50 years. [30]

Ocean Chemistry

The CRNA also notes that an emerging effect from climate change may be acidification of the ocean. In turn, acidification will affect the ability of hard-shelled invertebrates to create their skeletal structures.[31] The implications of this change being major losses to shellfish industries, and shifts in food resources for ocean fisheries. The primary contributing factors were cited as increasing level of CO_2 and weather pattern shifts. Increases in CO_2 result in increased uptake by the oceans, which result in decreased pH (acidification). Weather pattern shifts change the amount of calcium carbonate being delivered by rivers from sources stored in rocks, which further exacerbates the ability of invertebrates to form calcified shells. [32]

One of the main contributing factors to CO_2, outside of human influences, is melting permafrost. When permafrost thaws, it releases carbon into soil or beneath lakes and releases CO_2 and methane into the atmosphere. Scientists are now estimating that there is more than twice the total amount of carbon stored in permafrost as there is in atmospheric carbon dioxide, and that microbial decomposition of organic carbon in permafrost "could amount to roughly half [of the CO_2 emissions] resulting from global land-use change during this century". [33,34]

http://www.energy.ca.gov/2005publications/CEC-500-2005-186/CEC-500-2005-186-SF.PDF.

[29] Fauria, M.M., A. Grinsted, S. Helama, J. Moore, M. Timonen, T. Martma, E. Isaksson, and E. Eronen. 2009. Unprecedented low twentieth century winter sea ice extent in the Western Nordic Seas since A.D. 1200. Climate Dynamics. Published online: 12 June 2009.

[30] Doyle, A. 2009. Antarctic ice shelf set to collapse due to warming. Roche, A. (ed) In Reuters UK. Thomas Reuters. January 19, 2009. Website: http://uk.reuters.com/articlePrint?articleId=UKTRE50I4G520090119

[31] Risien, J. (ed.). 2009. West Coast Regional Marine Research and Information Needs. Corvallis, Oregon: Oregon Sea Grant. ORESU-Q-09-001.

[32] Griffith, E.M., A. Paytan, K. Caldeira, T. D. Bullen and E. Thomas. 2008. A dynamic marine calcium cycle during the past 28 million years. Science. December 12, 2008.

[33] Schuur, E.A.G. et al. 2008. Vulnerability of Permafrost Carbon to Climate Change: Implications for the Global Carbon Cycle. BioScience. 58(8): 701-714.

[34] ScienceDaily. 2008. Thawing Permafrost Likely To Boost Global Warming, New Assessment Concludes. Website: http://www.sciencedaily.com/releases/2008/09/080901084854.htm

California Climate Adaptation Strategies

The CNRA[35] discusses California's climate adaptation strategy. General themes from the report regarding adaptation strategies are summarized below. The report also includes specific examples of how California may adapt to a changing climate.

A key conclusion of the report is that because climate change is already affecting California and current emissions will continue to drive climate change in the coming decades, regardless of any mitigation measures that may be adopted, the necessity of adaptation to the impacts of climate change is recognized by the state of California. The 2009 California Climate Adaption Strategy Discussion Draft begins what will be on-going process of adaptation, as directed by Gov. Schwarzenegger's Executive Order S-13-08. The goals of the strategy are to analyze risks and vulnerabilities and identify strategies to reduce the risks. Once the strategies are identified and prioritized, government resources would be identified. Finally, the strategy includes identifying research needs and educating the public.

Climate change risks are evaluated using two distinct approaches: (1) projecting the amount of climate change that may occur using computer-based global climate models and (2) assessing the natural or human system's ability to cope with and adapt to change by examining past experience with climate variability and extrapolating this to understand how the systems may respond to the additional impact of climate change. The major anticipated climate changes expected in the State of California include increases in temperature, decreases in precipitation, particularly as snowfall, and increases in sea level, as discussed above. These gradual changes will also lead to an increasing number of extreme events, such as heat waves, wildfires, droughts, and floods. This would impact public health, ocean and coast resources, water supply, agriculture, biodiversity and the transportation and energy infrastructure.

Key preliminary adaptation recommendations included in the Strategy are as follows:

- Appointment of a Climate Adaption Advisory Panel;
- Improved water management in anticipation of reduced water supplies, including a 20% reduction in per capita water use by 2020;
- Consideration of project alternatives that avoid significant new development in areas that cannot be adequately protected from flooding due to climate change;
- Preparation of agency-specific adaptation plans, guidance or criteria by September 2010;
- Consideration of climate change impacts for all significant state projects;
- Assessment of climate change impacts on emergency preparedness;
- Identification of key habitats and development of plans to minimize adverse effects from climate change;
- Development of guidance by the California Department of Public Health by September 2010 for use by local health departments to assess adaptation strategies;
- Amendment of Plans to assess climate change impacts and develop local risk reduction strategies by communities with General Plans and Local Coastal Plans; and
- Inclusion of climate change impact information into fire program planning by state firefighting agencies.

The First Year Progress Report indicates that the following measures have been taken or are in progress:

[35] 2009 California Climate Adaptation Strategy. Discussion Draft. California natural Resources Board.

- Coordination with the California Energy Commission (CEC) to fund and direct a study assessing how vulnerable California's natural, economic, and social systems are to impacts expected due to climate change;
- Commissioning of a study, expected to be completed in 2012, that will assess the risk of sea level rise in California, Oregon, and Washington;
- Identification of heat as a top risk factor that is a priority for early action;
- Creation of a stakeholder Biodiversity and Habitat group that meets bi-annually to develop a collective vision on how the Department of Fish and Game should address activities associated with climate change;
- Release of an interim guidance document to assist in a process of incorporating sea level rise estimates into planning decisions; and
- Release of the California Water Plan Update 2009, which is the state's strategic plan for water resources, as affected by climate change, among other actions.

Global, National, and California-wide GHG Emissions Inventories

Worldwide emissions of GHGs in 2008 were approximately 29.6 billion tonnes of CO_2e. [36,37] Total U.S. greenhouse gas emissions were approximately 7.1 billion tonnes of CO_2e, in 2008.[38] Approximately 79% of the GHG emissions in the US are comprised of CO_2 emissions from energy-related fossil fuel combustion. In 2008, California emitted approximately 0.478 billion tonnes of CO_2e, or about 6.7% of the US' 2008 emissions.[39]

In 2008, 85% of greenhouse gas emissions (in CO_2e) from California were comprised of CO_2 emissions from fuel combustion associated primarily with transportation and energy generation, with 3% comprised of CO_2 from process emissions. CH4 and N_2O accounted for 6% and 3% of total CO_2e respectively, and high GWP gases[40] accounted for 3% of the CO_2e emissions

[36] Sum of Annex I and Annex II countries without counting Land-Use, Land-Use Change and Forestry (LULUCF). Annex I data from United Nations Framework Convention on Climate Change (UNFCCC), 2010. Time Series Annex I: Total CO_2 Equivalent Emissions without Land Use, Land-Use Change and Forestry. Available: http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php. Accessed August 2011. For countries for which 2004 data was unavailable, the most recent year was used.

[37] UNFCCC, 2005. Sixth compilation and synthesis of initial national communications from Parties not included in Annex I to the Convention. Available: http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf. Accessed August 2011.

[38] EPA Inventory of US Greenhouse Gas Emissions and Sinks 1990-2009. Available: http://epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Executive-Summary.pdf. Accessed August 2011.

[39] California Air Resources Board. Available: http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf . Accessed August 2011. Note that 2008 is typically the most recent inventory year presented by the ARB; as such, USA- and world-wide emissions from 2008 are presented here to keep the comparison years the same.

[40] Such as HFCs and PFCs.

Potential for Reduction of GHG Emissions

In May 2007, the IPCC produced its Working Group III Report on the "scientific, technological, environmental, economic and social aspects" of reducing GHG emissions to alleviate climate change.[41] The report concluded that, even with current policies for sustainable development and mitigation of climate change, global GHG emissions will continue to grow over the next several decades.

Regulatory Setting

Climate change has relatively recently become widely recognized as a threat to the global climate, economy and population. As a result, the climate change regulatory setting – at the federal, state and local levels– is complex and evolving. This section identifies key legislation, executive orders, and seminal court cases related to climate change that are germane to the Project's GHG emissions.

Federal Actions

The Kyoto Protocol, adopted on December 11, 1997, is an international agreement that is linked to the United Nations Framework Convention on Climate Change.[42] It sets legally binding targets and timetables for cutting the greenhouse-gas emissions of industrialized countries.

Although the U.S. is not a party to the Kyoto Protocol, in 2002, President George W. Bush set a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18% by 2012.[43] The goal did not establish any binding reduction mandates. Rather, the United States Environmental Protection Agency (USEPA) began to administer a variety of voluntary programs and partnerships with GHG emitters in which the USEPA partners with industries that produce and utilize synthetic gases to reduce emissions of particularly potent GHGs.

The Bush Administration's approach to addressing climate change was challenged in Massachusetts et al. v. Environmental Protection Agency, 549 U.S. 497 (2007). In this decision, the U.S. Supreme Court held that the USEPA was authorized by the Clean Air Act to regulate CO2 emissions from new motor vehicles. [44] The Court did not mandate that the USEPA enact regulations to reduce GHG emissions, but found that the only instances in which the USEPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On December 7, 2009, the USEPA issued an "endangerment finding" under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to greenhouse gas pollution.[45] These findings provide the basis for adopting new national regulations to mandate GHG emission reductions under the federal Clean Air Act.

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[41] From the IPCC Working Group III Report. Op. cit.

[42] United Nations Framework Convention on Climate Change. Kyoto Protocol to the United Nations Framework Convention on Climate Change. Available: http://unfccc.int/kyoto_protocol/items/2830.php

[43] National Oceanic and Atmospheric Administration. 2002. President Announces Clear Skies & Global Climate Change Initiative [online]. February. Available: http://georgewbushwhitehouse.archives.gov/news/releases/2002/02/20020214-5.html.

[44] *Massachusetts et al. vs. Environmental Protection Agency* (Massachusetts), 549 U.S. 497 (2007).

[45] USEPA. 2009a. (December 18, last update). *Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act.* Washington, D.C.: USEPA. http://epa.gov/climatechange/endangerment.html

The following four sections summarize USEPA's recent regulatory activities with respect to various types of GHG sources.

Stationary Sources

Mandatory Greenhouse Gas Reporting Rule

Congress passed the "Consolidated Appropriations Act of 2008" (HR 2764) in December 2007, which includes provisions requiring the establishment of mandatory GHG reporting requirements.[46] On September 22, 2009, USEPA issued a final rule to require reporting of GHG emissions from all sectors of the United States economy. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2 equivalent (CO_2E) per year will be required to report GHG emissions data to USEPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, will be submitted to USEPA in 2011. This new program will cover approximately 85 percent of the nation's GHG emissions and apply to roughly 10,000 facilities. USEPA's new reporting system will provide a better understanding of GHG sources and will guide development of the best possible policies and programs to reduce emissions. The data will also allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective methods to reduce emissions in the future.

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The Clean Air Act established the Prevention of Significant Deterioration (PSD) and Title V programs, which apply to stationary sources that emit certain levels of regulated air pollutants (generally those pollutants for which USEPA has established ambient air quality standards and their precursors or has established emission standards). The PSD applicability thresholds are up to 250 tons per year (tpy) of an attainment pollutant, while the Title V applicability thresholds are up to 100 tpy of a regulated air pollutant. On June 3, 2010, EPA published a final rule that tailors the applicability criteria that determine whether stationary sources and modification projects become subject to permitting requirements for GHG emissions under the PSD and Title V programs of the Clean Air Act (tailoring rule). Under the tailoring rule, only the largest sources of GHGs (i.e., those responsible for 70 percent of the GHG pollution from stationary sources) would be subject to these GHG permitting requirements.

This rule establishes two initial steps of the phase-in and commits the agency to take certain actions on future steps addressing smaller sources, but it excludes certain smaller sources from PSD and Title V permitting for GHG emissions until at least April 30, 2016. Under Step 1, effective January 2, 2011, only sources currently subject to the PSD permitting program would be subject to permitting requirements for their GHG emissions under PSD. For these projects, only GHG increases of 75,000 tpy or more of total GHGs, on a CO_2E basis, would need to determine the Best Available Control Technology for their GHG emissions. Similarly for the Title V program, only sources currently subject to the program due to their criteria air pollutant emissions would be subject to Title V requirements for GHGs. During Step 2 (July 1, 2011 to June 30, 2013), PSD permitting requirements will apply to new or modified facilities that emit GHG emissions of at least 100,000 tpy CO_2E and modifications at existing facilities that increase GHG emissions by at least 75,000 tpy CO_2E. Facilities that emit 100,000 tpy CO_2E or more will be subject to Title V permitting requirements. Under Step 2, PSD and Title V permitting requirements would apply to sources generating GHG emissions at the specified levels even if they do not exceed permitting thresholds for any other pollutant.

[46] Consolidated Appropriations Act of 2008 (Consol. Appro.) 2007 (January 4). Pub. L. 110.

Mobile Sources

USEPA and NHTSA Joint Rulemaking for Vehicle Standards

In response to the Massachusetts v. USEPA U.S. Supreme Court ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the USEPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law, which requires an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. [47] EISA requires establishment of interim standards (from 2011 to 2020) that will be the "maximum feasible average fuel economy" for each fleet.[48] On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for passenger cars and light trucks in model years 2011 through 2015. The NHTSA issued a final rule for model year 2011 on March 30, 2009. [49]

On June 30, 2009, the USEPA granted a waiver for California, discussed in more detail below, for its greenhouse gas emission standards for motor vehicles. [50]

On May 7, 2010, the USEPA and the NHTSA issued a final rule regulating fuel efficiency and GHG pollution from motor vehicles for cars and light-duty trucks for model years 2012–2016.[51] On May 21, 2010, President Obama issued a memorandum to the Secretaries of Transportation and Energy, and the Administrators of the USEPA and the NHTSA calling for establishment of additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. [52] In response to this directive, on July 29, 2011, USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal greenhouse gas and fuel economy standards for model year 2017-2025 light-duty vehicles. [53] The Notice outlines the key elements of a National Program that USEPA and NHTSA plan to propose by the end of September 2011. Specifically, USEPA intends to propose standards that would be projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet wide basis. California has announced its support of this national program.[54] The final rule is currently scheduled to be issued by July 31, 2012.

Additionally, on August 9, 2011, the USEPA and the NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks, which applies to vehicles from model year 2014–

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[47] EISA. 2007. Pub.L. 110-140. 110th U.S Congress. Washington D.C. (January 4).

[48] Ibid.

[49] NHSTA. 2009. *Average Fuel Economy Standards Passenger Cars and Light Trucks Model Year 2011, Final Rule*. 75 Fed. Reg. 25324.

[50] USEPA. 2009. *California Greenhouse Gas Waiver Granted.* 74 Fed. Reg. 32744.

[51] USEPA. 2010. Light Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule. 75 Fed. Reg. 25324.

[52] White House. 2010. *Improving Energy Security, American Competitiveness and Job Creation, and Environmental Protection Through a Transformation of Our Nation's Fleet of Cars and Trucks*. 75 Fed. Reg. 29399. (May 21).

[53] Available: http://www.gpo.gov/fdsys/pkg/FR-2011-08-09/pdf/2011-19905.pdf. Accessed August 2011.

[54] ARB, 2011 (July 28). Letter from Mary Nichols, ARB Chairperson, to Roy Lahood, Secretary of NHTSA, and to Lisa Jackson, Administrator of EPA. Available: http://www.epa.gov/otaq/climate/letters/carb-commitment-ltr.pdf. Accessed August 2011.

2018.[55] USEPA and NHTSA have adopted standards for CO_2 emissions and fuel consumption, respectively, tailored to each of three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to USEPA, this program will reduce GHG emissions and fuel consumption for affected vehicles by 6% to 23%.

Additional GHG Rules and Policies

In addition to the rules and regulations developed with respect to stationary and mobile sources, discussed above, various other federal developments have occurred that aim to reduce GHGs from other sources, including land use activities.

Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007 (EISA). Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020; directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Partnership for Sustainable Communities

On June 16, 2009, the DOT, US Department of Housing and Urban Development, and USEPA announced the creation of the Partnership for Sustainable Communities (Partnership). The Partnership was formed to help improve access to affordable housing and transportation choices, and to lower transportation costs while protecting the environment.[56] In order to achieve these goals, the Partnership agencies have and will continue to incorporate the following six livability principles into federal funding programs, policies and legislative proposals:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.

[55] USEPA Office of Transportation and Air Quality. 2011. EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium-and Heavy-Duty Vehicles. Available: http://www.epa.gov/otaq/climate/documents/420f11031.pdf. Accessed August 2011.

[56] USEPA. 2009. HUD, DOT and EPA Partnership: Sustainable Communities. June. Available: www.epa.gov/smartgrowth/pdf/dot-hud-epa-partnership-agreement.pdf. Accessed September 14, 2011.

- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

In its first year, the Partnership awarded more than $400 million in grants to support livability investments, provided recommendations for the sustainable siting of federal facilities, and participated in various forums to encourage sustainable housing and transportation strategies. Going forward, the Partnership plans to continue to work with existing grantees to encourage economic growth and implementation of livability principles, and leverage off of these efforts to provide additional communities with lessons learned from these experiences, as well as improving the federal government's ability to provide additional communities with more streamlined access to Partnership programs.

CEQ NEPA Guidelines on GHGs

On February 18, 2010, the White House Council on Environmental Quality published draft guidance on the consideration of greenhouse gases and climate change for NEPA analyses.[57] It recommends that proposed federal actions that are reasonably expected to directly emit 25,000 metric tons of CO_2e/year should prepare a quantitative and qualitative NEPA analysis of direct and indirect greenhouse gas emissions.

The draft guidance provides reporting tools and instructions on how to assess the effects of climate change. The draft guidance does not apply to land and resource management actions, nor does it propose to regulate greenhouse gases. CEQ received public comment on this guidance for 90 days. Although CEQ has not yet issued final guidance, various NEPA documents are beginning to incorporate the approach recommended in the draft guidance.

Multi-State/Regional Area

The Western Regional Climate Action Initiative (WCI)

The Western Regional Climate Action Initiative (WCI) is a partnership among seven states, including California, and four Canadian provinces to implement a regional, economy-wide cap-and-trade system to reduce global warming pollution. The WCI will cap GHG emissions from the region's electricity, industrial, and transportation sectors with the goal to reduce the heat trapping emissions that cause global warming to 15% below 2005 levels by 2020. When the WCI adopted this goal in 2007, it estimated that this would require 2007 levels to be reduced worldwide between 50% and 85% by 2050. California is working closely with the other states and provinces to design a regional GHG reduction program that includes a cap-and-trade approach. ARB's planned cap and-trade program, discussed below, is also intended to link California and the other member states and provinces.

California

California has adopted various administrative initiatives and also enacted a variety of legislation relating to climate change, much of which sets aggressive goals for GHG emissions reductions within the state. However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents prepared under CEQA. In particular, the amendments to the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or thresholds

[57] Sutley, Nancy H. (Council on Environmental Quality). 2010. Memorandum for Heads of Federal Departments and Agencies: Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. February. Available: http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf

of significance, and do not specify greenhouse gas reduction mitigation measures. Instead, the CEQA amendments continue to rely on lead agencies to choose methodologies and make significance determinations based on substantial evidence, as discussed in further detail below.[58] Consequently, no State agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating any significant effects in CEQA documents.

The discussion below provides a brief overview of ARB and Office of Planning and Research (OPR) documents and of the primary legislation that relates to climate change that may affect the emissions associated with the proposed Project. It begins with an overview of the primary regulatory acts that have driven GHG regulation in California, which underlie many of the GHG rules and regulations that have been developed.

Executive Order S-3-05 (Statewide GHG Targets)

California Executive Order S-03-05 (June 1, 2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. Although the 2020 target is the core of AB 32, and has effectively been incorporated into AB 32, the 2050 target remains the goal of the Executive Order only.

Assembly Bill 32 (Statewide GHG Reductions)

The California Global Warming Solutions Act of 2006 (AB 32) was signed into law in September 2006 after considerable study and expert testimony before the Legislature.[59] The law instructs ARB to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed ARB to set a GHG emission limit based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020. Based on ARB's calculation of 1990 baseline emissions levels, California must reduce GHG emissions by approximately 28.5% below "business-as-usual" predictions of year 2020 GHG emissions to achieve this goal.

In July 2011 ARB revised its "business as usual" GHG emission estimate for 2020, in order to account for the recent economic downturn in its emission projections.[60] The estimate presented in the scoping plan (596 million metric tonnes CO_2e) was based on pre-recession, 2007 data from the Integrated Energy Policy Report. ARB has updated the projected "business as usual" 2020 GHG emissions to 545 million metric tonnes CO_2e.

The bill requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. Key AB 32 milestones for ARB's actions include the following:

[58] CNRA, 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

[59] California. 2006. *Assembly Bill 32* (2005-2006 Reg. Session) Stats. 2005, ch. 488.

[60] *ARB. 2011. Status of Scoping Plan Recommended Measures. July. http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf*

- June 30, 2007. Identification of discrete early action GHG emissions reduction measures. On June 21, 2007, ARB satisfied this requirement by approving three early action measures.[61] These were later supplemented by adding six other discrete early action measures.[62]
- January 1, 2008. Identification of the 1990 baseline GHG emissions level and approval of a statewide limit equivalent to that level and adoption of reporting and verification requirements concerning GHG emissions. On December 6, 2007, ARB approved a statewide limit on GHG emissions levels for the year 2020 consistent with the determined 1990 baseline.[63]
- January 1, 2009. Adoption of a scoping plan for achieving GHG emission reductions. On December 11, 2008, ARB adopted Climate Change Scoping Plan: A Framework for Change (Scoping Plan), discussed in more detail below.[64]
- January 1, 2010. Adoption and enforcement of regulations to implement the "discrete" actions. Several early action measures have been adopted and became effective on January 1, 2010. [65,66]
- January 1, 2011. Adoption of GHG emissions limits and reduction measures by regulation. On October 28, 2010, ARB released its proposed cap-and-trade regulations, which would cover sources of approximately 85% of California's GHG emissions.[67] ARB's Board ordered ARB's Executive Director to prepare a final regulatory package for cap-and-trade on December 16, 2010.[68]
- January 1, 2012. GHG emissions limits and reduction measures adopted in 2011 become enforceable.

As noted above, on December 11, 2008, ARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. ARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29 % below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business as usual"). The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all ARB and Climate Action Team early actions

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[61] ARB. 2007. *Summary of Board Meeting: Consideration of Recommendations for Discrete Early Actions for Climate Change Mitigation in California*. Sacramento, CA: ARB. (June 21).

[62] ARB. 2007. *Summary of Board Meeting: Public Meeting to Consider Approval of Additions to Reduce Greenhouse Gas Emissions under the California Global Warming Solutions Act of 2006 and to Discuss Concepts for Promoting and Recognizing Voluntary Early Actions.* Sacramento, CA: ARB. (October 25).

[63] ARB. 2007. California Greenhouse Gas Inventory (millions of metric tonnes of CO2 equivalent) by IPCC Category. Sacramento, CA: ARB. http://www.arb.ca.gov/cc/inventory/archive/tables/ghg_inventory_ipcc_90-04_all_2007-11-19.pdf. (November)

[64] ARB. 2008. *Climate Change Scoping Plan*. Sacramento, CA: ARB. http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. (December).

[65] ARB. 2007. *Summary of Board Meeting: Consideration of Recommendations for Discrete Early Actions for Climate Change Mitigation in California*. Sacramento, CA: ARB. (June 21).

[66] ARB. 2007. *Summary of Board Meeting: Public Meeting to Consider Approval of Additions to Reduce Greenhouse Gas Emissions under the California Global Warming Solutions Act of 2006 and to Discuss Concepts for Promoting and Recognizing Voluntary Early Actions.* Sacramento, CA: ARB. (October 25).

[67] ARB. 2010. *Proposed Regulation to Implement the California Cap-and-Trade Program.* Sacramento, CA: ARB. http://www.arb.ca.gov/regact/2010/capandtrade10/capandtrade10.htm

[68] ARB. 2010. California Cap-and-Trade Program. Final Resolution. Sacramento, CA: ARB. http://www.arb.ca.gov/regact/2010/capandtrade10/res1042.pdf

and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations will occur over the next two years, to become effective by January 1, 2012. The key elements of the Scoping Plan[69] include:

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

In 2009, a coalition of environmental groups brought a challenge to the Scoping Plan alleging that it violated AB 32 and that the environmental review document (called a "Functional Equivalent Document) violated CEQA by failing to appropriately analyze alternatives to the proposed cap-and-trade program. On May 20, 2011, the San Francisco Superior Court entered a final judgment ordering that ARB take no further action with respect to cap and trade rulemaking until it complies with CEQA.[70] ARB appealed the decision on May 23, 2011.[71] The portions of the scoping plan that do not relate to cap and trade remain valid.

Energy-Related Sources

Senate Bills 1078, 107 and SBX 1-2 (Renewable Portfolio Standards)

Established in 2002 under SB 1078,[72] and accelerated in 2006 under SB 107[73] and again in 2011 under SBX1-2,[74] California's Renewable Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33% of total retail sales by 2020. The 33% standard is consistent with the RPS goal established in the scoping plan.[75] As interim measures,

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[69] ARB. 2008. *Climate Change Scoping Plan*. Sacramento, CA: ARB. http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. (December).

[70] California Air Resources Board (ARB). 2011a. Association of Irritated Residents et al. v. California Air Resources Board (Super. Ct. San Francisco, May 20, 2011, No. CPF-09-509562).

[71] ARB. 2011b. *Update on Litigation Challenging Scoping Plan for the Global Warming Solutions Act, AB 32*. Sacramento, CA: ARB. http://docs.nrdc.org/air/files/air_11032501a.pdf

[72] California. 2002. Senate Bill 1078 (2001-2002 Reg. Session) Stats. 2002, ch 516.

[73] California. 2006. Senate Bill 1368 (2005-2006 Reg. Session) Stats. 2006, ch. 598.

[74] California. 2011. *Ass'n of Irritated Residents v. California Air Resources Board* (Super. Ct. San Francisco County, March 18, 2011, No. CPF-09-509562).

[75] ARB. 2008. *Climate Change Scoping Plan*. Sacramento, CA: ARB.

the Renewable Portfolio Standards require 20 % of retail sales to be sourced from renewable energy by 2013, and 25 % by 2016. Initially, the Renewable Portfolio Standard provisions applied to investor-owned utilities, community choice aggregators, and electric service providers. SBX1-2 added, for the first time, publicly owned utilities to the entities subject to RPS.[76] The expected growth in Renewable Portfolio Standards to meet the standards in effect in 2008 is not reflected in the "business as usual" (BAU) calculation in the AB 32 Scoping Plan, discussed below. In other words, the scoping plan's 2020 BAU does not take credit for implementation of RPS that occurred after its adoption.[77]

Senate Bill 1368 (GHG Emissions Standard for Baseload Generation)

Senate Bill 1368 (SB 1368) (September 29, 2006) prohibits any retail seller of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant.[78] This performance standard applies to electricity generated out of state as well as in the state, and to publicly owned as well as investor-owned electric utilities.

Energy Conservation Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, of the California Code of Regulations [CCR], known as "Title 24") were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Since that time, Title 24 has undergone several revisions. In general, Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

The CEC adopted the 2008 changes to the Building Energy Efficiency Standards ("2008 Title 24 standards") as a response to legislative and policy directives, including AB 32, the California Integrated Energy Policy Report, the West Coast Governor's Global Warming Initiative, and the California Green Building Initiative (Executive Order S-20-04). The updated standards represent the State's energy policy, which identifies energy efficiency as the "resource of first choice for meeting California's energy needs". [79] Moreover, they are intended to support the State's agenda of ensuring an "adequate, reasonably priced, and environmentally sound supply of energy" into the future. [80] Effective January 1, 2010, the adopted 2008 changes replaced the 2005 version of the standards ("2005 Title 24 standards") as the current standards; however, the 2005 standards are reflected in the business as usual (BAU, or 2020 No Action Taken) calculation in the AB 32 Scoping Plan, discussed below, and for the purposes of this analysis, the 2005 Title 24 standards remain the benchmark for efficiency.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards, referred to as "CALGreen". The California Green Building Standards Code (Title 24,

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http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. (December).

[76] California. 2011. *Ass'n of Irritated Residents v. California Air Resources Board* (Super. Ct. San Francisco County, March 18, 2011, No. CPF-09-509562).

[77] ARB 2008. Climate Change Scoping Plan Appendices (Appendix F). Sacramento, CA: ARB.http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf. (December).

[78] State of California. 2006. Senate Bill 1368 (2005-2006 Reg. Session) Stats. 2006, ch. 598.

[79] CEC. 2008. *Statement of Reasons for Adopting 2008 Building Energy Efficiency Standards*. Sacramento, CA: CEC. http://www.energy.ca.gov/title24/2008standards/.

[80] CEC. 2008. *Statement of Reasons for Adopting 2008 Building Energy Efficiency Standards*. Sacramento, CA: CEC. http://www.energy.ca.gov/title24/2008standards/.

proposed Part 11) was adopted as part of the California Building Standards Code (24 CCR). Part 11 which adopts certain mandatory standards for residential and nonresidential development and, as of January 1, 2011, imposes a number of requirements on California buildings, including those with respect to planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor environmental quality. The California Green Building Standards Code also contains a variety of voluntary measures, which local governments can choose to require and which would enable buildings to qualify for special recognition. In part, the purpose of the California Green Building Code is to reduce greenhouse gas emissions from buildings.

Also, the 2009 Appliance Efficiency Regulations (20 CCR 1601–1608), dated August 2009, were adopted by the CEC on December 3, 2008, and were approved by the California Office of Administrative Law on July 10, 2009. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. While these regulations are now often seen as "business as usual," they do exceed the standards imposed by all other states and reduce GHG emissions by reducing energy demand.

Mobile Sources

Senate Bill 375 (Land Use Planning)

SB 375 provides for a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. [81] SB 375 includes provisions for streamlined CEQA review for some infill projects such as transit oriented development. SB 375 will be implemented over the next several years. SB 375 also requires Metropolitan Planning Organizations (MPOs) relevant to the project area (including the Association of Bay Area Governments [ABAG]) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs) that will achieve GHG emission reduction targets set by ARB.

SB 375 is similar to the Regional Blueprint Planning Program, established by the California Department of Transportation, which provides discretionary grants to fund regional transportation and land use plans voluntarily developed by MPOs working in cooperation with Councils of Governments. On April 22, 2009, the Metropolitan Transportation Commission (MTC) adopted the 2009 Regional Transit Plan (RTP) with AB 32 goals in mind. The 2013 RTP will be its first plan subject to SB 375. The Scoping Plan, adopted by ARB in December of 2008, relies on the requirements of SB 375 to implement the carbon emissions reductions anticipated from land use decisions.

SB 375 also required ARB to appoint a Regional Targets Advisory Committee (RTAC) by January 31, 2009, to recommend factors for ARB to consider and methodologies for it to use in setting GHG emission reduction targets for each region. The RTAC must include representation from the League of California Cities, the California State Association of Counties, MPOs, developers, planning organizations, and other stakeholders. In January 2009, ARB appointed 21 members to the RTAC, from a variety of constituencies. On September 29, 2009, the RTAC released its recommendations to ARB, representing a key step in the establishment of regional targets for inclusion in sustainable community strategies.[82] The RTAC recommendations focus largely on the manner in which ARB staff should interact with various stakeholders during the target-setting process, and how staff should use empirical studies and modeling in establishing regional GHG targets.

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[81] California. 2008. *Senate Bill 375* (2007-2008 Reg. Session) Stats. 2008, ch. 728.

[82] RTAC. 2009. *Recommendations of the Regional Targets Advisory Committee Pursuant to Senate Bill 375*. http://www.onebayarea.org/pdf/Regional_Targets_Advisory_Comm_Recs.pdf

Following the release of RTAC's recommendations, ARB began the process of developing regional GHG reduction targets (Regional Targets) for the State's MPOs. On September 23, 2010, ARB adopted Regional Targets applying to the years 2020 and 2035.[83] For the area under ABAG's jurisdiction—which includes the Project—ARB adopted Regional Targets of 7% for 2020 and 15% for 2035. On February 15, 2011, the ARB's Executive Officer approved the final targets.[84] ARB filed a Notice of Decision two days later on February 17, 2011.[85] Now that ARB has adopted these Regional Targets, the MPOs must begin the process of developing SCSs that meet these Regional Targets for inclusion in their RTPs or, if it is not possible to meet the Regional Targets, MPOs must develop alternative planning strategies demonstrating how the targets will be met. The SCS for the San Francisco Bay Area is discussed in Section 3.5.

Assembly Bill 1493 (Mobile Source Reductions)

Assembly Bill (AB) 1493 required ARB to adopt regulations by January 1, 2005, to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model year 2009 and after.[86] The bill required the California Climate Action Registry (CCAR) to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by ARB in granting emission reduction credits. The bill authorized ARB to grant emission reduction credits for reductions of GHG emissions prior to the date of the enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2004, ARB applied to the USEPA for a waiver under the Federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the USEPA in December 2007. In January 2008, the State Attorney General filed a lawsuit against the USEPA challenging the denial of California's request for a waiver to regulate and limit GHG emissions from these vehicles. In January 2009, President Barack Obama issued a directive to the USEPA to reconsider California's request for a waiver, which the USEPA granted on June 30, 2009, as discussed further below.[87] As part of this waiver, the USEPA specified that ARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by the manufacturer for the 2009 model year.

Low Carbon Fuel Standard (LCFS)

Executive Order S-01-07 (January 18, 2007) requires a 10 % or greater reduction (from current transportation fuels) in the average fuel carbon intensity for ARB-regulated transportation fuels in California.[88] ARB identifies the Low Carbon Fuel Standard as a Discrete Early Action item under AB 32, and the final resolution (09 31) was issued on April 23, 2009. ARB is currently in the process of

[83] ARB. 2010. *Notice of Decision: Regional Greenhouse Gas Emissions Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375*. Sacramento, CA: ARB. http://www.arb.ca.gov/cc/sb375/notice%20of%20decision.pdf

[84] ARB. 2011. *Executive Order No. G-11-024: Relating to Adoption of Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375*. Sacramento, CA: ARB. (February)

[85] ARB. 2011. *Notice of Decision. Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375 SCH# 2010081021)*. Sacramento, CA: ARB. http://www.arb.ca.gov/cc/sb375/notice%20of%20decision.pdf. (February)

[86] California. 2002. *Assembly Bill 1493* (2001-2002 Reg. Session) Stats. 2002, ch. 200.

[87] USEPA. 2009. *California Greenhouse Gas Waiver Granted.* 74 Fed. Reg. 32744.

[88] State of California. 2007. Governor's Executive Order No. S-01-07 (January 18, 2007).

updating its Carbon Intensity Lookup Tables to add new pathways to calculate emissions from fuel sources.

CEQA Guidelines

Senate Bill 97 (CEQA Guidelines)

SB 97 required OPR to prepare amended CEQA Guidelines for submission to the CNRA regarding GHG analysis and feasible mitigation of the effects of GHG emissions as required by CEQA. The CNRA was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. These amendments became effective as of March 18, 2010. The adoption of SB 97 and subsequent CEQA amendments are widely recognized as confirmation that lead agencies are required to include an analysis of climate change impacts in CEQA documents.

CEQA Amendments

Pursuant to SB 97, OPR developed proposed amendments to the CEQA Guidelines (CEQA Amendments) for the feasible mitigation of GHG emissions and their effects, which it first submitted to the Secretary of the CNRA on April 13, 2009. After a public review and comment period, on December 30, 2009, the CNRA adopted the CEQA Amendments, which became effective on March 18, 2010.

The CEQA Amendments for Greenhouse Gas Emissions state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Amendments note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards."[89] Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[90]

In addition, Section 15064.7(c) of the CEQA Amendments specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence".[91] Similarly, the revision to Appendix G, Environmental Checklist Form, which is often used as a basis for lead agencies' selection of significance thresholds, does not prescribe specific thresholds. Rather, Appendix G asks whether the project would conflict with a plan, policy or regulation adopted to reduce GHG emissions; or generate GHG emissions

[89] CNRA. 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

[90] CNRA. 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

[91] CNRA. 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

that would significantly affect the environment, indicating that the determination of what is a significant effect on the environment should be left to the lead agency.

Accordingly, the CEQA Amendments do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Amendments emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA.[92]

The CEQA Amendments indicate that lead agencies should consider all feasible means, supported by substantial evidence and subject to monitoring and reporting, of mitigating the significant effects of GHG emissions. As pertinent to the Project, these potential mitigation measures, set forth in Section 15126.4(c), may include (1) measures in an existing plan or mitigation program for the reduction of GHG emissions that are required as part of the lead agency's decision; (2) reductions in GHG emissions resulting from a project through implementation of project design features; (3) off-site measures, including offsets, to mitigate a project's emissions; and (4) carbon sequestration measures.[93]

Among other things, the CRNA noted in its Public Notice for these changes that impacts of GHG emissions should focus on the cumulative impact on climate change. The Public Notice states:

While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CRNA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project's incremental contribution of greenhouse gas emissions is cumulatively considerable.[94]

Thus the CEQA Amendments continue to make clear that the significance of greenhouse gas emissions is most appropriately considered on a cumulative level.

Other State GHG Activities

ARB Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08 instructing California agencies to assess and prepare for the impacts of rising sea level associated with climate change.[95] Rising sea levels could have devastating effects on California's infrastructure, such as threatening the state's water supply, highways, and airports. Pursuant to S-13-08, by June 30, 2009, the CNRA must have assessed California's vulnerability to climate change impacts and outlined solutions to climate change problems. The CNRA released the 2009 Climate Adaptation Strategy on August 3, 2009. The report summarizes the latest science on how climate change could impact the state and provides recommendations on how to manage against those threats in seven sector areas.

Executive Order S-13-08 also requires the CNRA to request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report by December 1, 2010. In October 2010, the Sea-Level Rise Task Force of the Coastal and Ocean

[92] CNRA. 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

[93] CNRA. 2009. Revised Text of Proposed Guideline Amendments. Sacramento, CA: CNRA. http://ceres.ca.gov/ceqa/docs/Text_of_Proposed_Changes.pdf.

[94] CNRA. 2009. Notice of Public Hearings and Notice of Proposed Amendment of Regulations Implementing the California Environmental Quality Act. Sacramento, CA: CNRA. http://www.ceres.ca.gov/ceqa/docs/Notice_of_Proposed_Action.pdf.

[95] State of California, 2008. Governor's Executive Order No. S-13-08 (November 14, 2008).

Working Group of the California Action Team released the State of California Sea-Level Rise Interim Guidance Document, noting that the final report from the NAS is unlikely to be released until 2012.[96] The interim guidance is intended to "inform and assist state agencies as they develop approaches for incorporating [sea level rise] into planning decisions prior to the release of the NAS report and other technical reports". While Executive Order S-13-08 declares executive goals, it does not establish any binding mandates.

Local/Regional

Bay Area Air Quality Management District (BAAQMD) Policies [97]

The Bay Area Air Quality Management District is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. BAAQMD adopted its CEQA significance thresholds for greenhouse gas emissions on June 2, 2010, and presents these thresholds along with methods for evaluating compliance in its guidance document entitled, "California Environmental Quality Act Air Quality Guidelines (Updated May 2011)". [98]

Permitted stationary source emissions of GHG are subject to a 10,000 metric tonne/year significance threshold. This is based upon a determination that approximately 95 percent of all GHG emissions from new permit applications for stationary sources in the San Francisco Bay Area would be captured by this threshold.

BAAQMD's significance thresholds for land use development projects (e.g. residential and non-residential building energy use, mobile sources, area sources, and indirect sources associated with water usage) are based primarily upon a determination of what GHG-emission reductions are required from land use development projects in order to achieve AB 32's emission-reduction mandates. BAAQMD presents three different criteria for determining significance of a project's GHG emissions. Compliance with any one of these three options is sufficient to demonstrate compliance with the significance threshold; it is not necessary for a project to meet all three criteria. The first option was determined based upon an assessment of the "appropriate share" required of a land use development project under BAAQMD's jurisdiction in order to achieve AB 32's emission-reduction goals. After conducting a "gap analysis" to determine what reductions would be necessary after accounting for legislatively-mandated reductions, BAAQMD determined that a "bright line" threshold of 1,100 metric tonnes CO2e per year was appropriate for non-stationary operational emission sources. BAAQMD recognizes, however, that this threshold is based upon conservative assumptions about what GHG-emission-reduction requirements will be in place and that, in particular, as AB 32 and SB 375 are implemented, a higher threshold may be appropriate.

The second option is also based on reductions necessary to achieve AB 32's requirements. An efficiency metric based on the service population (the residential population plus the number of jobs associated with the land-uses) was determined such that, on a per service population basis, a project would be consistent with AB 32's mandates. This efficiency threshold is 4.6 tonnes per service population per year for non-stationary operational emissions.

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[96] Sea-Level Rise Task Force. 2010. Sea Level Rise Task Force of the Coastal and Ocean Working Group of the California Climate Action Team, Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust. *State of California Sea-Level Rise Interim Guidance Document.*

[97] In November 2010, California Building Industry Association (CBIA) filed a lawsuit against BAAQMD in Alameda County Superior Court challenging the adoption of the BAAQMD CEQA thresholds of significance and guidelines. In March 2011, the Court rejected BAAQMD's request for dismissal of the lawsuit.

[98] BAAQMD California Environmental Quality Act Air Quality Guidelines (updated May 2011). Available at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx. Accessed August 8, 2011.

The third option is compliance with a Qualified GHG Reduction Strategy that includes enforceable measures to reduce GHG emissions consistent with AB 32 goals or Executive Order S-03-05 targets. Such Qualified GHG Reduction Strategies must meet the requirements provided in Section 15183.5 of the State CEQA Guidelines. BAAQMD's guidance also recognizes, consistent with Section 15183.5(c) of the State CEQA Guidelines that for projects located within an area covered by an adopted Sustainable Communities Strategy or Alternative Planning Strategy under SB 375, emissions from cars and light duty trucks need not be analyzed in the environmental analysis.

Sustainable Communities Strategy (ABAG/MTC)

As discussed above, SB 375 is intended to help achieve AB 32's goals by coordinating land use and transportation planning, and funding priorities. SB 375 requires each MPO in California to develop an SCS as part of its RTP that will achieve the GHG-reduction targets required by AB 32. As required by SB 375, an SCS is being prepared for the San Francisco Bay Area (Bay Area SCS) by MTC and ABAG, in collaboration with BAAQMD and the San Francisco Bay Conservation and Development Commission (BCDC); this SCS must be finalized by March 2013.

SB 375 requires that the SCS developed by each MPO provide a strategy for achieving the reduction targets established by ARB. For the San Francisco Bay Area, the regional GHG emissions reduction targets for cars and light-duty trucks, on a per-capita basis, are 7% for 2020 and 15% for 2035. The Bay Area SCS will identify locations within the Bay Area that will collectively accommodate all economic segments of the area's projected population through 2035. It will also coordinate development of the transportation network with the projected land use patterns in order to reduce per capita passenger vehicle greenhouse gas emissions. In July 2011, ABAG/MTC approved a framework for five alternative land use scenarios that will be evaluated to develop the preferred scenario for the Bay Area SCS. These scenarios vary with respect to distribution of housing and job growth across the Bay Area, and location of growth areas relative to major transit corridors.

A draft version of the Bay Area SCS is scheduled for completion in early 2012, in order to allow sufficient time for public review prior to the final plan deadline in March 2013.[99]

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) was first established as a temporary state agency by the McAteer-Petris Act. The Commission was charged with preparing a plan for the long-term use of the Bay and regulating development in and around the Bay while the plan was being prepared. The San Francisco Bay Plan, which was completed in January 1969, includes policies on issues critical to the wise use of the Bay ranging from ports and public access to design and transportation. The Bay Plan also contains maps of the entire Bay which designate shoreline areas that should be reserved for water-related purposes like ports, industry, public recreation, airports, and wildlife refuges.

In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law. In 1977 the Commission's authority was expanded to provide special protection of the Suisun Marsh. The BCDC is also the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the Bay Plan and state law.

On October 6, 2011, the BCDC approved amendments to the Bay Plan.[100,101] The amendments address climate change by updating several sections of the Bay Plan, including Safety of Fills, Tidal Marshes

[99] Plan Bay Area (online). Available: http://www.onebayarea.org/plan_bay_area/. Accessed August 2011.

and Tidal Flats, Shoreline Protection, and Public Access, and by adding a new climate change section with new findings and policies. There are five policy goals for the approved amendments:

1. Update language on sea level rise. This current policy language recommends that new development not be approved in low-lying areas that are in danger of flooding now or in the future unless the development is elevated above possible flood levels. The amended policies allow protection from flooding, encourage innovative means of dealing with flood danger, and make it clear that local governments will determine how best to deal with development proposals inland of the Commission's jurisdiction.
2. Encourage a variety of types of projects that have regional benefits. Proposed new development will continue to be evaluated by the Commission on a case-by-case basis to determine if the benefits of a project outweigh the risk from flooding and to ensure steps are taken to deal with the flooding danger.
3. Continue to protect the Bay and other valuable natural resources within BCDC's jurisdiction.
4. Continue to protect existing tidal wetlands and, where appropriate, expand them. To accomplish this, resource protection and habitat enhancement in undeveloped low-lying areas will be encouraged, but development will not be absolutely prohibited in these areas.
5. Work with its regional partners, local governments, businesses, labor, environmentalists, investors, insurers, and the general public to develop a comprehensive regional strategy that deals with all the impacts of climate change.

Alameda County

Community Climate Action Plan

In June 2011 Alameda County Board of Supervisors approved the final draft of the Alameda County (Unincorporated Areas) Climate Action Plan, which would apply to several communities including Sunol. The plan outlines measures to reduce County wide greenhouse gas emissions by 15% by 2020, through initiatives involving transportation choices, water conservation, waste diversion, energy use, and green infrastructure. The plan is currently undergoing an environmental review pursuant to CEQA, and is intended to be incorporated into the County General Plan.

Impacts and Mitigation Measures

Significance Criteria

The Project would have a significant impact on the environment if it would:

1. Generate stationary source emissions that would exceed the "bright line" threshold of 10,000 MT CO_2e;
2. Generate emissions from sources other than stationary sources which would either:
   a) Be out of compliance with a Qualified GHG Reduction Strategy,

[100] BCDC. 2011. October 6, 2011 Commission Meeting Summary (online). Available: http://www.bcdc.ca.gov/meetings/commission/2011/10-06Summary.shtml. Accessed October 7, 2011.

[101] BCDC. 2011. Revised Staff Report and Staff Recommendation for Proposed Bay Plan Amendment 1-08 Concerning Climate Change. September 23, 2011. Available: http://www.bcdc.ca.gov/proposed_bay_plan/10-01Recom.pdf. Accessed October 7, 2011.

b) Exceed a threshold of 1,100 MT CO_2e/year, or

c) Exceed 4.6 MT CO_2e/SP/year, where SP is the service population (which in this case is the total number of employees).

Methodology

The Project's emissions are subject to two types of GHG emission thresholds; one specifically for BAAQMD permit-requiring stationary sources, and one for other non-permit, land use development-related sources. The Project's stationary sources are subject to a significance threshold of 10,000 metric tonnes of CO_2e per year. The rest of Project's annual emissions inventory (i.e., excluding stationary source emissions) was compared against the "bright line" threshold of 1,100 metric tonnes CO_2e /year. It was also used to determine the Project's compliance with BAAQMD's efficiency-based significance threshold of 4.6 metric tonnes CO_2e/service population/year, where service population is the sum of the Project's employees (the service population can also include residents, however for this Project there are no residents). Although Alameda County has approved a final draft Community Climate Action Plan for unincorporated areas of the County, at the time of publication of this Draft EIR the County does not have a qualified GHG Reduction Strategy approved by BAAQMD; hence, compliance cannot be determined by evaluating the Project's adherence to such a strategy. In addition, consistent with BAAQMD guidance, one-time construction emissions were quantified and evaluated for compliance with AB32 GHG reduction goals; however, they were not included in the annual GHG emissions inventory.

Units of Measurement: Tonnes of CO_2 and CO_2e

The term "GHGs" refers to gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O, and water; and to gases that are man-made and emitted through the use of modern industrial products, such as HFCs and CFCs. The most important greenhouse gas in human-induced global warming is CO_2. While many gases have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States.[102]

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

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

In this report, tonnes will be used to refer to metric tonnes (1,000 kilograms). Tons will be used to refer to short tons (2,000 lbs). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

Overall Calculation Methodology

GHG emissions were estimated in accordance with the BAAQMD CEQA guidelines and the CARB LGOP. Emissions from indirect energy use were quantified based on a combination of LGOP emission

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

factors and publically available data from the local utility, PG&E.[103] A combination of vendor-provided data and USEPA AP-42 emission factors were used to quantify emissions from stationary sources. CARB's equipment emissions models, EMFAC and OFFROAD, were used to estimate emissions from on-road employee and vendor vehicles and off-road construction equipment. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

Alameda County defaults were used in the EMFAC and OFFROAD model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by EMFAC and OFFROAD can be found in their User's Guides and associated appendices.

Renewable Power Requirements

A major component of California's Renewable Energy Program is the Renewable Portfolio Standard (RPS) established under SBs 1078 (Sher), 107 (Simitian), and 2X (Simitian). Under the RPS, certain retail sellers of electricity are required to increase the amount of renewable energy each year by at least 1% until they reach 20% by December 31, 2010, with a final goal of 33% by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from the Project because electricity production from renewable sources is generally considered "carbon neutral." For purposes of this analysis, it is assumed that the production of electricity from these renewable sources does not produce any net emissions of CO_2.

Vehicle Emissions Standards/Improved Fuel Economy

The two regulatory measures considered in this section are the vehicle GHG emission standards enacted under AB 1493 (Pavley) and the Low Carbon Fuel Standard (LCFS). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light duty auto – medium duty vehicle [LDA-MDV]) from 2009 through 2016, and is anticipated to reduce GHG emissions from passenger vehicles by 30% in 2016. The LCFS requires a reduction of 2.5% in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10% by 2020.

For on-road vehicle CO_2 emissions, CalEEMod™ applies Pavley I and LCFS reductions to the appropriate vehicle classes for scenario years 2011 and after, based on ARB's EMFAC model and associated post processors.

Emissions Sources Not Quantified in Inventory

Building Energy Use

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. The site's existing and proposed Project buildings are in total only approximately 4,200 square feet. Emissions associated with this building's energy use are expected to be de minimus, and therefore were not quantified as part of this evaluation.

[103] PG&E. 2008. Power/Utility Protocol (PUP) Report. Available online at: https://www.climateregistry.org/CARROT/public/reports.aspx

Solid Waste

The Project will result in the generation and disposal of limited quantities of municipal solid waste and a large percentage of this waste will be diverted from landfills by a variety of means, such as recycling and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. However, due to the limited quantities of municipal solid waste generated, GHG emissions are expected to be de minimus, and therefore were not quantified as part of this evaluation.

Water and Wastewater

The majority of estimated GHG emissions from water supply and wastewater treatment are due to the energy used to convey, treat and distribute water. Thus, these emissions are generally indirect emissions from the production of electricity to power these systems. Additional emissions from wastewater treatment include CH_4 and N_2O, which are emitted directly from the wastewater.

It is important to note that all of the process water used in facility quarry and plant operations originates from on-site sources. There is minimal use of potable water which is transported via truck and stored in tanks; however, emissions associated with transport and storage are likely to be minimal. Therefore, emissions associated with conveying, treated, and distributing imported water are expected to be deminimus, and were not quantified as part of this evaluation.

Area Sources

Area source GHG emissions result from landscaping-related fuel combustion sources, such as lawn mowers, consumer products and architectural coating. Due to the nature of the Project, there is a limited potential for GHG emissions from these sources and are therefore not included in this analysis.

Vegetation Change

Permanent vegetation changes that occur as a result of project development constitute a one-time change in the carbon sequestration capacity of a project site. However, due to the current industrial use of the facility, there is limited potential for significant GHG emissions resulting from vegetation change onsite.

Development of GHG Emissions Inventory

The Project is located within the Bay Area Air District, and the emissions inventory has been developed in accordance with BAAQMD guidelines. As recommended in the BAAQMD CEQA guidelines, the Project emissions inventory considers the following categories of GHG emissions, as applicable:

- emissions from construction activities,
- stationary source emissions,
- non-stationary off-road equipment emissions,
- indirect energy use emissions,
- mobile source emissions,
- emissions associated with water and wastewater
- emissions due to land use (vegetation) changes, and
- area source emissions, from sources such as landscaping equipment.

GHG emissions were quantified in accordance with the BAAQMD CEQA guidelines[104] and the CARB LGOP[105] based on a combination of site-specific data, electricity generation emission factor from Pacific Gas and Electric (PG&E), and emission estimation software programs developed by CARB, including the EMission FACtor model (EMFAC)[106] and the Off-road Emissions Inventory Program model (OFFROAD)[107]. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

The GHG emissions estimates contained in this report incorporate reductions in emissions from electricity generation that will occur between now and full buildout as a result of promulgated regulations. Specifically, the emissions estimated for electricity consumption assumes that there will be an increase in energy production from renewables or non-GHG producing sources given the requirements of the Renewable Portfolio Standard (RPS). This is further discussed in later in this report.

The timeframe over which GHGs are emitted varies from category to category; this is taken into consideration in the emissions inventory. For most of the categories, GHGs will be emitted every year that the development is operational. For these categories (e.g. stationary sources, buildings, mobile sources, emissions associated with solid waste disposal, embodied energy in water, and associated with wastewater treatment), the inventory includes estimates of annual GHG emissions from ongoing development operations. GHG emissions from construction are one-time events that will not be part of the development's ongoing activity.

Emissions Inventory Scope, Assumptions and Limitations

Existing levels of emissions from sources and operations that would remain in operation in the absence of the Project were excluded from, or subtracted from the inventory to determine the net change in GHG emissions. Simplifying and conservative assumptions regarding energy use were applied during the development of this GHG inventory. Lastly, legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in this report is a reflection of the guidance and knowledge currently available.

Stationary Source Emissions

Impact CC-1: The proposed Project would generate greenhouse gas emissions from stationary source equipment at levels in excess of the BAAQMD-established significance thresholds for greenhouse gas emissions. As such, the Project would generate greenhouse gas emissions that may have a significant impact on the environment. (**Less than Significant with Mitigation**)

There are no existing stationary sources of GHG emissions at the Project site.

[104] BAAQMD California Environmental Quality Act Air Quality Guidelines (updated May 2011). Available at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx. Accessed August 8, 2011.

[105] CARB. 2010. Local Government Operations Protocol. Version 1.1. May. Available online at: http://www.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf

[106] CARB. 2007. EMission FACtors (EMFAC) model. Available online at:

http://www.arb.ca.gov/msei/onroad/latest_version.htm

[107] CARB. 2007. OFFROAD2007 Model. Available online at: http://www.arb.ca.gov/msei/offroad/offroad.htm

Range of Project-Generated Stationary Source Emissions

New, Project-generated stationary source GHG emissions will result from natural gas fuel combustion and process emissions from the drum mixer and the hot asphalt oil storage tanks. These emissions were quantified using vendor-provided data and AP-42 emission factors. [108,109]

The proposed Project is expected to operate with a maximum annual production yield of up to 3 million tons of aggregate, with processing of a maximum of 1 million tons of asphalt and 250,000 cubic yards of concrete. However, it is not expected that the Project will operate at maximum capacity for several years, and even then it is not expected that the Project would operate at that maximum capacity on a regular annual basis. As such, stationary source emissions corresponding to various production levels at the plant have been evaluated, and presented below in **Table 8-1**.

Table 8-1: Stationary Source GHG Emissions

Emissions Source		Annual Emissions from Stationary Sources (tonnes CO_2e/year)		
		Asphalt Throughput (thousand tons/year)		
		333	667	1,000
Asphalt Plant	Drum Mixer	4,272	8,543	12,815
Asphalt Plant	Hot Asphalt Oil Heater	294	294	294
Facility Total Stationary Source Emissions		**4,566**	**8,837**	**13,109**
Stationary Source Emissions Threshold		**10,000**	**10,000**	**10,000**
Exceed Threshold?		**No**	**No**	**Yes**

Source: Environ 2012

The GHG emissions from stationary sources under the three different production capacities range from 4,566 MT CO_2e at a production of up to 333,000 tons/year of asphalt, to 13,109 MT CO_2e at a production of up to 1 million tons/year of asphalt. As a conservative measure, a significance determination has been made based on the highest expected asphalt production level. However, it is only the highest production level in which the stationary source threshold is exceeded. For the two lower production levels, the GHG emissions from stationary sources would be below the threshold of 10,000 MT CO_2e per year.

Mitigation Measures

MM CC-1: Stationary Source GHG Monitoring and Reduction Plan. Within one year of Project approval, the applicant shall prepare and implement a GHG Monitoring and Reduction Plan.

[108] USEPA. 1995. AP 42, Volume I, Fifth Edition. §1.4 Natural Gas Combustion

[109] USEPA. 1995. AP 42, Volume I, Fifth Edition. §11.1 Hot Mix Asphalt Plants.

a) The Plan shall include a complete inventory of Project-related stationary source GHG emissions to determine how the facility emissions compare to the significance thresholds on an annual basis.

b) If stationary source GHG emissions exceed thresholds applicable at the time of the annual review, then the Plan must demonstrate how the facility will reduce or offset remaining, un-mitigated stationary source GHG emissions.

c) Reductions may be achieved by limiting total plant production to levels that would not result in exceeding the threshold. Based on a straight-line interpolation of the asphalt plant emissions, the current stationary source threshold (10,000 MT CO_2e per year) would not be exceeded until the asphalt plant reaches a production of approximately 770,000 tons/year. On an annual basis, the output from the asphalt plant could be limited to a maximum production of approximately 770,000 tons per year, thus staying at or below the currently effective stationary source threshold.

d) Offsets may take the form of off-site compensation, also known as offsets.

e) The Plan will be submitted to the Alameda County Community Development Agency on an annual basis.

Resulting Level of Significance

Mitigation Measures CC-1(c) seeks to reduce the Project's stationary source GHG emissions to a level at or below the stationary source threshold by limiting the annual production of asphalt. It is possible (and even likely) that in certain years, this asphalt production level may not be exceeded due to market demands for the asphalt product. However, to the extent that the demand for asphalt exceeds this production limit and the applicant/operator of the plant seeks to exceed the production limit to meet this demand, the recommended GHG Reduction Plan requires that any remaining emissions not fully mitigated on-site be instead mitigated through off-site compensation. Such compensation could include the purchase of carbon credits.

For example, the Climate Action Reserve (formerly the California Climate Action Registry) is a private non-profit organization that has developed standardized GHG reduction project protocols, serves as a registry for GHG reduction projects, and tracks GHG offsets through a publicly accessible database. The Climate Action Reserve and its project protocols are recognized as voluntary early actions under AB 32. The Reserve is not an exchange and does not set, track or report on the price paid for off-set credits. Instead, buyers and sellers negotiate a price per Carbon Reserve Tonne, or CRT (one CRT is equal to one metric ton of carbon dioxide equivalent (CO_2e) emissions reductions), and then use the Reserve to transfer CRTs from one account to another. CRT futures are traded on The Green Exchange and the Chicago Climate Futures Exchange.

As another example of how carbon offset credits can be purchased on an exchange market, Bank of America Merrill Lynch and TerraPass Inc., have plans to brings to market verified carbon offsets from a portfolio of carbon reduction projects across the country. All of the offsets are expected to be compliant with the California Air Resources Board's approved standards. This program is also part of AB32, California's comprehensive program to reduce carbon emissions. According to news sources in November 2011, the first auction of these offset credits is scheduled for mid-2012.

The purchase of carbon offset credits would enable the Project to provide off-site compensation equivalent to 100% of the total operational stationary source GHG emissions in excess of the applicable threshold limit (currently 10,000 MT CO_2e/year), and would reduce the impact to a level of less than significant.

Non-Stationary Source Emissions

Impact CC-2: The proposed Project would generate greenhouse gas emissions from non-stationary sources at levels in excess of the BAAQMD-established significance thresholds for greenhouse gas emissions. As such, the Project would generate greenhouse gas emissions that may have a significant impact on the environment. (**Less than Significant with Mitigation**)

Current Condition

The facility is currently an operating aggregate quarry and plant. In year 2011, the facility generated approximately 500,000 tons per year of aggregate production. As shown in Table 8-2, at that level of production, the facility had GHG emissions of approximately 3,470 MT CO_2e per year, all of which resulted from sources other than stationary sources.

Baseline Condition

The facility has historically operated at a regularly recurring peak production of approximately 1.2 million tons of aggregate production per year. At that level of production, the facility has generated GHG emissions of approximately 8,200 MT CO_2e per year, as shown in **Table 8-2**.

Table 8-2: Annual GHG Emissions for Existing and Baseline Operations

Emissions Source		Existing (2011) Condition (tonnes CO_2e/year)	Baseline Condition (tonnes CO_2e/year)
Aggregate Plant	Electric Equipment	991	2,379
Off-road Equipment	Scrapers, Graders, Rubber Tired Loaders, Crawler Tractors, Cranes, Water Trucks	881	2,115
Mobile Sources	Vendor Delivery Trucks, Customer Haul Trucks, Employee Commute Vehicles	1,596	3,708
	Total Emissions	3,469	8,202

Source: Environ, 2012

Range of Project-Generated Non-Stationary Source Emissions

New, Project-generated non-stationary source GHG emissions will result from the electrical demands of the equipment associated with the aggregate plant, the concrete plant and the asphalt plant; as well as emissions from off-road equipment; and from mobile sources associated with haul trucks, vendor delivery trucks, and employee commute vehicles.

- Off-Road Equipment: GHG emissions will result from the typical daily operation of off-road equipment such as graders, loaders, tractors, scrapers, cranes, and off-road trucks. Quantification of the off-road equipment emissions was performed using OFFROAD.
- Mobile Sources. GHG emissions will result from the typical daily operation of motor vehicles by vendors, employees, and Project delivery trucks. Quantification of these mobile source emissions was performed using EMFAC2011.

- Equipment and Process Energy Use. Indirect GHG emissions will result from the electrical power demands associated with the aggregate plant, the concrete plant and the asphalt plant. Pacific Gas & Electric (PG&E) will supply power to the Project, and the indirect GHG emissions from electricity usage are calculated using PG&E's historical carbon intensity factors and the vendor-provided electrical demands for the individual pieces of on-site equipment.

Maximum Operational Capacity

As described above, the proposed Project is expected to operate with a maximum annual production yield of up to 3 million tons of aggregate, processing a maximum of 1 million tons of asphalt and 250,000 cubic yards of concrete per year. Under this maximum production scenario, the Project is expected to generate approximately 22, 500 MT CO_2e/year, or approximately 14,284 MT CO_2e/year more than the baseline (previous regularly recurring peak) condition, as shown below in **Table 8-3**.

Table 8-3: Project's Maximum Increase in Non-Stationary Source GHG Emissions

Emissions Source		Annual Emissions from Non-Stationary Sources (tonnes CO_2e/year)		
		Baseline	Baseline plus Project	Project Increment, Maximum Production
Aggregate Plant	Electric Equipment	2,379	7,304	4,924
Concrete Plant	Electric Equipment		518	518
Asphalt Plant	Electric Equipment		1,356	1,356
Off-road Equipment	Scrapers, Graders, Rubber Tired Loaders, Crawler Tractors, Cranes, Water Trucks	2,115	2,952	837
Mobile Sources[1]	Vendor Delivery Trucks, Customer Haul Trucks, Employee Commute Vehicles	3,708	10,357	6,649
Total Non-Stationary Source Emissions		**8,202**	**22,489**	**14,284**

Source: Environ 2012

The Project's net increase over baseline conditions for non-stationary source emissions (e.g., mobile sources and electricity use) at peak capacity is 14,284 MT CO2e per year, which exceeds the threshold of 1,100 MT CO2e/year. The bulk of these non-stationary source emissions (more than half) are associated with mobile sources, especially haul trucks which travel to the site to pick up material and then transport it to its point of use. As the proposed Project involves the production of construction materials, it is likely that many of the haul truck emissions will be accounted for as part of the environmental review of these other construction projects, resulting in "double counting." However, the haul truck emissions are accounted for as part of the proposed Project in accordance with BAAQMD guidelines.

It is not expected that the Project will operate at maximum capacity for several years, and even then it is not expected that the Project would operate at that maximum capacity on a regular annual basis. As

such, non-stationary source emissions corresponding to various production levels at the plant have been evaluated, and presented below in **Table 8-4**.

Table 8-4: Incremental Non-Stationary Source GHG Emissions at Various Operational Capacities

Project Aggregate Throughput (million tons/year)	Project Asphalt Throughput (1,000 tons/year)	Project Concrete Throughput (1,000 cubic yards/year)	Annual Incremental Emissions from Non- Stationary Sources (tonnes CO_2e/year)
1	333	83	**683**
2	667	167	**7,484**
3	1,000	250	**14,284**
Threshold of Significance			1,100

Source: Environ, 2012

GHG emissions from non-stationary sources, under three different production capacity scenarios, range from 683 MT CO_2e for 1 million tons aggregate (a decrease in emissions results from improved efficiency of equipment as compared to current conditions, and a minor increase in electrical use for the concrete and asphalt batch plant), to 7,484 MT CO_2e for 2 million tons aggregate, and 14,284 MT CO_2e for peak capacity (3 million tons aggregate). As a conservative measure, a significance determination in made on the highest expected production level. However, at the lowest production level the BAAQMD threshold is not exceeded, and for the middle production level the BAAQMD threshold is exceeded but to a lesser degree than for peak production.

Mitigation Measures

MM CC-2: Non-Stationary Source GHG Monitoring and Reduction Plan. Within one year of Project approval, the applicant shall prepare and implement a GHG Monitoring and Reduction Plan.

a) The Plan shall include a complete inventory of Project-related GHG emissions to determine how the facility emissions compare to the significance thresholds on an annual basis.

b) If GHG emissions exceed thresholds, the Plan shall demonstrate how the facility will reduce or offset remaining, un-mitigated GHG emissions.

c) Reductions may take the form of alternative fuel use or the installation of on-site alternative energy generation facilities.

d) Offsets may take the form of off-site compensation (also known as offsets).

e) The Plan shall be submitted to the Alameda County Community Development Agency on an annual basis.

Resulting Level of Significance

The GHG Monitoring and Reduction Plan recommended above should seek to reduce the Project's non-stationary source GHG emissions to the greatest extent reasonable and feasible. Emission reduction strategies may include use of bio-diesel fuels and the potential use of alternative energy sources for electrical generation. Use of biodiesel fuel is a best management practice according to BAAQMD CEQA Guidelines, and biodiesel blends (such as B20, 20% biodiesel, 80% petroleum diesel) are common. Since CO_2 emissions from the biodiesel portion of blends are biogenic, they can be excluded from the overall CO_2 inventory. Using B20 instead of petroleum diesel could reduce GHG emissions by 20% on a per mile basis. However, converting the on-site rolling stock of the on-site, large-scale mobile equipment (i.e., the scrapers, bulldozers, loaders, etc.) may prove infeasible in the short term. Such equipment is not easily obtained, may not be accompanied with adequate warranties, and may otherwise be unavailable or unsuitable for use at the Project site. Even if retro-fitting the on-site rolling stock to be capable of using such fuels in the future may be found feasible, it is not anticipated that these on-site measures will be capable of reducing non-stationary source emissions to below the threshold of 1,100 MT CO_2e/year.

Therefore, the recommended GHG Reduction Plan also requires that any mobile source emissions exceeding the threshold (currently 1,100 MT CO_2e) be mitigated through off-site compensation (or off-sets). Such compensation could include the purchase of carbon credits from an accredited "carbon bank".

This approach would result in off-site compensations equivalent to 100% of the total operational non-stationary source GHG emissions in excess of the threshold. As a practical matter, the total GHG emissions from the Project which exceed the respective applicable thresholds for stationary sources and non-stationary sources may be aggregated to calculate the Project's total excess emissions, and offset credits purchased in that amount. Implementation of these measures would reduce the impact to a level of less than significant.

Construction Emissions

Impact CC-3: BAAQMD has not provided a significance threshold for construction-related GHG emissions but requires that projects quantify and disclose such emissions. Without comparison to a significance criterion, these emissions are considered to be less than significant. (**Less than Significant**)

GHG emissions from construction phases are largely attributable to fuel use from construction equipment and worker commuting. Quantification of the construction emissions was performed using CalEEMod.[110] The Project's construction-related GHG emissions are estimated to be 63 MT CO_2e, the bulk of which are direct emissions of CO_2 (63 MT CO_2, 0.006 MT CH_4 and 0.0 MT N_2O).

Mitigation Measures

None needed

[110] In September 2010, the ARB announced that its methods used to estimate the load factor for off-road equipment were incorrect and led to an overestimate of emissions by a factor of at least 33%. ARB is currently revising their emissions model, OFFROAD, which has not yet been released. In the meantime, ARB advises to reduce the load factors by a 33% to take into account this error, and this will be accounted for into the analysis whether using OFFROAD directly or CalEEMod, which is based on OFFROAD. The slides from the ARB workshop discussing this change are available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf

Compliance with a Qualified GHG Reduction Strategy

Impact CC-4: The County does not have an approved, qualified GHG Reduction Strategy; therefore compliance cannot be determined. (**Less than Significant**)

Although Alameda County has approved a final draft Community Climate Action Plan for unincorporated areas of the County, at the time of this analysis the County's Plan has not received approval - or qualification - by the BAAQMD. Compliance cannot be determined by evaluating the Project's adherence to such a strategy.

In the absence of a Qualified GHG Reduction Strategy, significance determinations for this EIR have been based on either the threshold for stationary sources of 10.000 MT CO_2e/year, or the threshold for non-stationary sources of 1,100 MT CO_2e/year. Since the service population (number of employees) at the Project site is limited, the service population threshold of 4.6 MT CO_2e/SP/year has not been used.

Mitigation Measures

None needed

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Biological Resources

This section identifies the existing biological resources at the Project site; identifies the federal, state, and local regulations pertaining to biological resources within the region; and describes Project impacts on those biological resources as well as mitigation measures to reduce Project-related potentially significant impacts. This chapter of the EIR was prepared by ESA Associates. Information used in the preparation of this section was obtained from the following technical studies and existing documents pertaining to plant and wildlife species found in the survey area:

- the California Natural Diversity Database (CDFG, 2011),
- California Native Plant Society (CNPS) Electronic Inventory (CNPS, 2011),
- U.S. Fish and Wildlife Service (USFWS) database (USFWS, 2011),
- *Sunol Quarry Revised Surface Mining Permit Terrestrial Wildlife Habitat Assessment* (SMP-30 Habitat Assessment; ESA, 2011c),
- Revised SMP-30 Rare Plant Survey Report (ESA, 2010a), and
- standard biological literature.

Additionally, there have been a variety of biological resources reports prepared for unrelated SFPUC projects within and/or adjacent to the Project survey area. The following were reviewed for information regarding biological resources within the Project's survey area.

- Initial Study/Mitigated Negative Declaration for the San Francisco Public Utilities Commission Alameda Siphons Seismic Reliability Upgrade Project (San Francisco Planning Department, 2008b)
- Alameda Siphons Seismic Reliability Upgrade Project Biological Assessment (Irvington Partners Joint Venture, 2008)
- Final Environmental Impact Report for the San Francisco Public Utilities Commission New Irvington Tunnel Project (San Francisco Planning Department, 2009a)
- Biological Assessment New Irvington Tunnel Seismic Reliability Upgrade Project (Irvington Partners Joint Venture, 2009)
- San Antonio Backup Pipeline Botanical Survey Report (May and Associates, 2008)
- Special-status Plant Surveys for San Antonio Backup Pipeline Project (ESA+Orion, 2010a)
- SFPUC San Antonio Backup Pipeline Project Terrestrial Habitat Assessment (ESA+Orion, 2011a)

All other sources are referenced at the end of this EIR and/or are provided in the Appendices.

Physical Setting

This section describes the existing conditions at and near the Project site relevant to biological resources.

Context

Regional Context

Sunol Valley is part of the San Francisco Bay Area sub-region of the California Floristic Province (Hickman, 1993). The valley runs in a north-south direction and is surrounded by low-elevation ridges (less than 2,000 feet). The valley drains into Alameda Creek, which is the largest drainage in the Alameda Creek Watershed and the largest in the Bay Area, draining a 650-square-mile area that ultimately empties into the southern portion of San Francisco Bay.

Sand and gravel mining operations dominate much of the Sunol Valley floor and have been in operation for approximately 50 years. A commercial nursery and SFPUC facilities are also present within the valley floor. The surrounding hillsides are largely undeveloped and support cattle grazing within non-native grassland and oak woodland habitats. The hills, associated stock ponds, San Antonio Reservoir, Alameda Creek and other local creeks, and Sunol Regional Wilderness Area provide habitat for a variety of sensitive species.

Project Context

The Sunol Valley Aggregate Quarry has operated under the Alameda County approved Surface Mining Permit (SMP-30) since 1992 and has been leased to several quarry operators and used for sand and gravel extraction for more than 50 years. Sand and gravel extraction involves using heavy equipment to extract raw aggregate materials from active mining pits. The 58-acre expansion area was used as a commercial container plant nursery before it was recently vacated.

Recently, two SFPUC Water System Improvement Program (WSIP) facility improvement projects (New Irvington Tunnel (NIT) and Alameda Siphons) have been implemented in the Sunol Valley. Portions of their project footprints overlap with the Project survey area. The Alameda Siphons project was initiated in 2009 and the NIT project in 2010. Both projects include construction work and staging areas located within the southern end of the Project survey area.

Two additional SFPUC WSIP projects, the San Antonio Backup Pipeline (SABPL) and Alameda Creek Filter Gallery (Filter Gallery) projects, overlap with the Project survey area and are currently undergoing environmental review. The SABPL project includes installation of a new backup pipeline west of, and generally parallel to, Calaveras Road within the Project survey area. The Filter Gallery project includes installation of a filter gallery beneath the streambed of Alameda Creek between the PG&E gas pipeline crossing and San Antonio Creek. The Filter Gallery project area would overlap the Project survey area at the North Basin and in the ruderal and grassland habitats north of the East Basin.

Existing Environment

Habitat Types Within the Study Area

The survey area has been subject to extensive disturbance from a long history of sand and gravel mining operations and recent work for the SFPUC's Alameda Siphons and New Irvington Tunnel projects. As a result most of the land surfaces have been graded and the groundwater levels are managed for quarry operations. The majority of the survey area is developed or supports ruderal vegetation. Other habitats within the survey area include non-native grassland, willow/mulefat scrub, lacustrine, pond, freshwater marsh, and ephemeral stream (**Figure 9-1**).

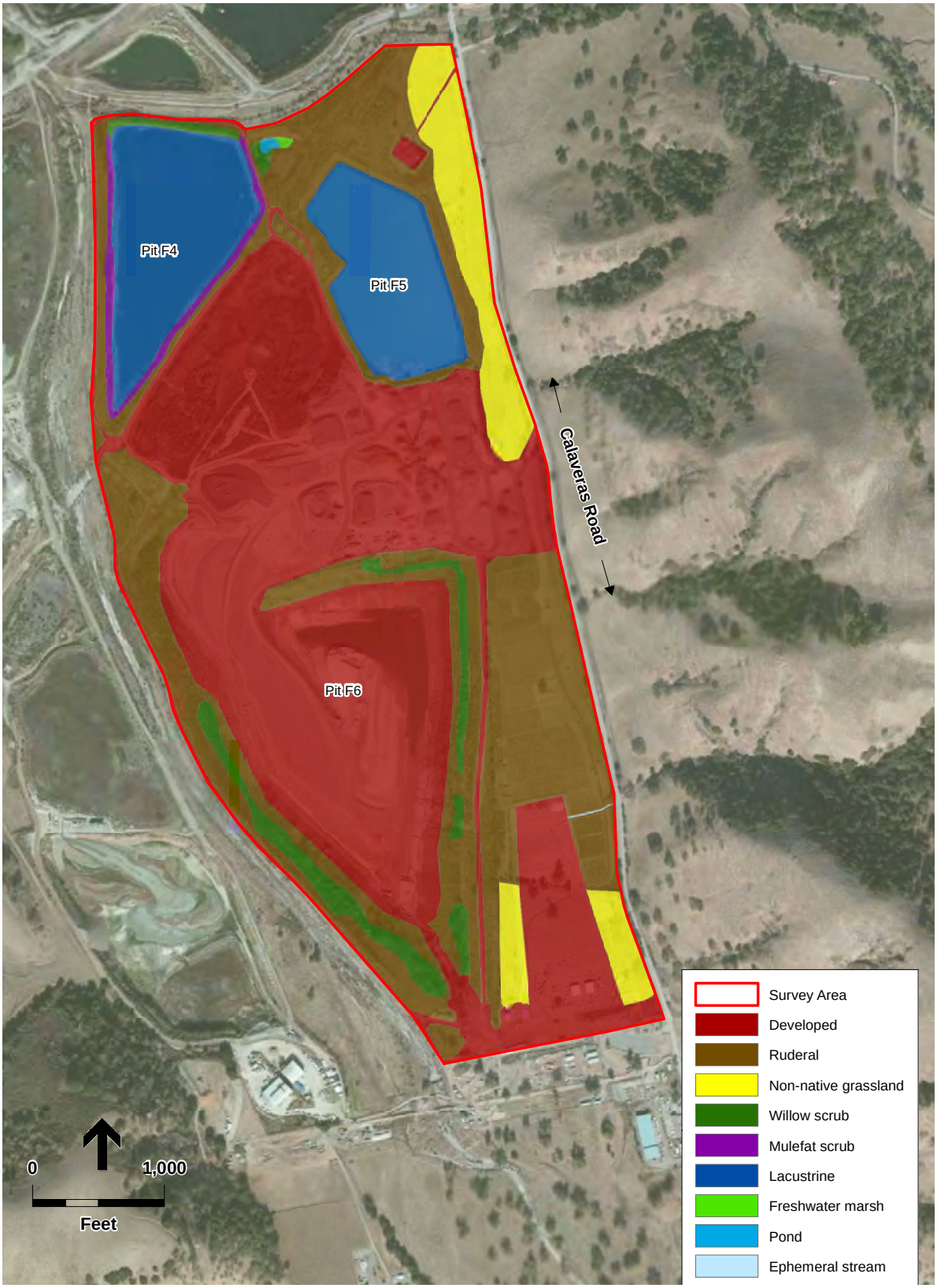


Figure 9-1
Habitat Types in the Study Area

Source: ESRI, 2011; ESA 2011

Developed Areas

The majority of the survey area is occupied by developed areas including active quarry facilities, roadways, and active SFPUC project construction sites with associated spoils disposal and staging areas. These areas are largely unvegetated and the few plants present are ruderal, invasive species such as milk thistle (*Silybum marinum*), bristly ox-tongue (*Helminthotheca echioides*) red-stem filaree (*Erodium cicutarium*), and stinkwort (*Dittrichia graveolens*). Soils in the roads and quarry sorting areas are heavily compacted from years of use and the soils within the active quarry are continually disturbed by excavation. The developed areas provide poor quality habitat for wildlife due to their general lack of vegetation, poor soil quality and continual disturbance from quarry work and recent SFPUC project construction. These areas may serve as movement corridors for common wildlife species tolerant of human presence and activity such as wild pig (*Sus scrofa*) and mule deer (*Odocoileus hemionus*) and nesting habitat for common birds such as house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), and killdeer (*Charadrius vociferous*).

Ruderal

Ruderal areas are not currently in active use, but have been subject to high levels of site disturbance in the past, generally through removal or other alteration of all native vegetation, alteration of topography, soil compaction, or the addition of other man-made features such as paving, buildings, and channelization of watercourses. Depending on the intensity and type of disturbance and time since disturbance, ruderal areas can remain relatively barren or become revegetated with primarily non-native weedy species. Within the survey area, ruderal vegetation is present in the former nurseries, the upper quarry pit slopes, roadsides, and former non-native grasslands that have been heavily invaded by a variety of aggressive weeds. Typical dominants include those weedy species found in the developed areas as well as yellow star thistle (*Centaurea solstitialis*.), Italian thistle (*Carduus pycnocephalus*), wild radish (*Raphanus sativus*), wild mustards (*Brassica nigra* and *Hirschfeldia incana*), jubata grass (*Cortaderia jubata*), and poison hemlock (*Conium maculatum*). Scattered to dense stands of native coyote brush (*Baccharis pilularis*), an early successional native scrub species common to the area, are included as part of the ruderal community. These coyote brush stands are considered ruderal because they occur in areas that have been disturbed in the past, they occur in association with other ruderal species, and support none of the plant associates typical of local intact scrub communities.

Ruderal communities do not support the diversity of wildlife that is characteristic of healthy natural communities, but many native wildlife species have adapted to ruderal areas including red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), white-crowned sparrow (*Zonotrichia leucophrys*), American goldfinch (*Spinus* [=*Carduelis*] *tristis*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*). Non-native animal species that are associated with ruderal communities include European starling (*Sturnus vulgaris*) rock dove *(Columba livia*), Virginia opossum (*Didelphis virginiana*), and Norway rat (*Rattus norvegicus*).

Non-native Grassland

Non-native grassland within the survey area is characterized by low plant diversity and a dense, generally tall cover of non-native annual grasses. In general, the grasslands are located on soils that were subject to disturbance and compaction in the past. Typical grass species found within the survey area grassland include soft chess (*Bromus hordeaceus*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum* var. *leporinum*), and Italian ryegrass (*Lolium multiflorum*). Common herbaceous associates include cutleaf geranium (*Geranium dissectum*), star thistle (*Centaurea* spp.), Italian thistle, milk thistle, red-stem filaree, wild radish, and wild mustards.

Grasslands in the survey area may support small and medium-sized mammals such as common house mouse (*Mus musculus*), California vole (*Microtus californicus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), cottontail (*Sylvilagus auduboni*), and black-

tailed jackrabbit (*Lepus californicus*).Western rattlesnake (*Crotalus viridis helleri*), Pacific gopher snake (*Pituophis catenifer catenifer*) and California king snake (*Lampropeltis getula californiae*) are commonly found in grasslands where prey is abundant. Open grasslands provide foraging habitat for raptors such as golden eagle (*Aquila chrysaetos*), white-tailed kite (*Elanus leucurus*), and red-tailed hawk.

Non-native grasslands within the survey area are located in small fragments between the developed and ruderal portions of the site. Grasslands are located in the southern portion of the survey area east of the South Basin and west of Calaveras Road. These grasslands were once used as a commercial nursery as the soil is heavily compacted and a network of irrigation pipes still occupies the site. A few isolated native trees and shrubs occur in the grassland. No ground squirrels and only a few small mammal burrows were observed in this area during reconnaissance-level surveys for the Project's Habitat Assessment on March 8, 2010 and April 14, 2011 by ESA biologists (ESA, 2011c). Small mammal populations within the survey area are therefore expected to be relatively small.

Grasslands in the northern portion of the survey area west of Calaveras Road and south of San Antonio Creek contain more friable soils than in the south and thus have a somewhat higher likelihood of support small mammals, but ground squirrel burrows were still not observed in this area during the Project's Habitat Assessment reconnaissance surveys and small mammal burrows were not abundant. A few scattered native trees and shrubs are also present in this area.

Scrub

Scrub habitat within the survey area is defined by a dominance of shrubs or shrubby, small trees. Within the survey area, scrub habitats are classified by their dominant species and include willow and mulefat scrub. Non-native grasses and ruderal vegetation occupy the understory of these habitats and they therefore do not comprise a fully functional scrub community, as they lack the vegetative and structural diversity typical of undisturbed scrub habitat in the region.

Within the survey area willow scrub is located at and above the high water line along the northern boundary of the North Basin. At this site arroyo willow (*Salix lasiolepis*) and sandbar willow (*Salix exigua*) form a dense canopy with little to no other dominant shrubs or trees. Willow scrub also occurs in a 20- to 100-foot wide band on the upper slopes of the South Basin. Arroyo willow and coyote brush are the dominant species in this area; with jubata grass as an occasional dominant.

Mulefat scrub is located at and above the high water line along the eastern and western boundaries of the North Basin. It is a very open, rather tall shrub community strongly dominated by mulefat (*Baccharis salicifolia*) with occasional coyote brush and willows.

Scrub habitats may provide foraging and nesting habitat for species that are attracted to edges of plant communities. Bird species that use the shrub canopy for catching insects include bushtit (*Psaltriparus minimus*) and Bewick's wren (*Thyromanes bewickii*). Raptors, including Cooper's hawk (*Accipiter cooperii*) and sharp-shinned hawk (*Accipiter striatus*), may forage over such areas and prey on some of these small birds as well as on small mammals and reptiles such as California ground squirrel, cottontail, and western fence lizard (*Sceloporus occidentalis*). Mammals, including striped skunk (*Mephitis mephitis*), may use this habitat for protection and foraging grounds. Other reptiles and small mammals that may occur within scrub habitats of the region include northern alligator lizard (*Elgaria coerulea*), Pacific gopher snake, and deer mouse (*Peromyscus maniculatus*).

Lacustrine

Two pits within the survey area, the North and East Basins, provide lacustrine, or open water, habitat used by waterfowl and other birds for foraging. The currently active quarry pit (the South Basin) occasionally supports standing water throughout the year, but the water levels fluctuate so frequently that it does not consistently provide lacustrine habitat and is considered developed.

Both the North and East Basins are deep (20 or more feet deep), with steep side slopes and no emergent wetland vegetation. The upland slopes of the North Basin support non-native grassland, and mulefat and willow scrub habitats. The upland slopes of the East Basin are comprised of non-native grassland with scattered coyote brush and mulefat. Brandt cormorants (*Phalacrocorax penicillatus*), mallards (*Anas platyrhynchos*), canvasback (*Aythya valisineria*), and bufflehead (*Bucephala albeola*) were observed in these lacustrine habitats in March 2010 during surveys for the Project's Habitat Assessment.

Pond

A small pond is located to the east of the North Basin. The pond receives water via seepage and pumping from the North Basin and its water level fluctuates throughout the year due to quarry operations. This feature is a perennial pond that measures about 100 feet by 150 feet at its maximum, with an unknown maximum depth that is estimated at substantially greater than 10 feet. When the pond is full it merges with the adjacent freshwater marsh habitat. At its maximum capacity the pond is about 20 percent vegetated with emergent vegetation, predominantly narrow-leaved cattail (*Typha angustifolia*) with some arroyo willow, which cover about half of the pond perimeter.

During the April 2011 survey for the Project's Habitat Assessment, Sierran treefrog (*Pseudacris sierra*) tadpoles were observed within small shallow depressions (less than six inches deep) directly adjacent to the pond, but not within the pond itself. Mosquito fish (*Gambusia affinis*) were observed in the pond at that time. Several bullfrogs (*Lithobates catesbeianus),* including a bullfrog tadpole, were observed during United States Fish and Wildlife Service (USFWS) protocol level California red-legged frog surveys of the pond (ESA, 2011d), which was the only indication of amphibian breeding within the pond. In addition, one large bass *(Micropterus sp.;* e.g., greater than 12 inches) and numerous fingerlings were observed during the protocol surveys.

Freshwater Marsh

A freshwater marsh narrowly fringes the eastern edge of the pond described above. It is dominated by cattail and bulrush (*Schoenoplectus* sp.). The small size and isolation of this freshwater marsh diminishes its habitat values for wildlife. This area does support Sierran treefrog but they do not apparently breed within the pond or marsh. The cattails may provide nesting habitat for passerines such as song sparrows (*Melospiza melodia*) and red-winged blackbirds (*Agelaius phoeniceus*).

Ephemeral Stream

One ephemeral stream channel is located in the southeastern portion of the survey area. The stream originates in the hills east of Calaveras Road and then passes underneath Calaveras Road through a culvert before entering the unvegetated rip-rapped channel on-site. During ESA's survey in 2009 for the SFPUC's San Antonio Backup Pipeline project, this channel conveyed water through to the South Basin (ESA, 2011a). However, it appears the western half of this channel has since been culverted and backfilled for the SFPUC's Alameda Siphons and NIT projects. This channel provides no habitat values for wildlife that depend on water or wetland habitats other than occasional streamflow.

Sensitive Natural Communities

Sensitive natural communities are designated as such by various resource agencies, such as CDFG, or in local policies and regulations and are generally considered to have important functions or values for wildlife or humans and/or are recognized as declining in extent or distribution and are considered threatened enough to warrant some sort of protection. For example, many local agencies in California consider protection of oak woodlands important and federal, state, and most local agencies also consider wetlands and riparian habitat as sensitive communities. The CNDDB tracks communities it believes to

be of conservation concern and these communities are typically considered sensitive for the purposes of CEQA analysis.

The CNDDB lists one sensitive natural community as occurring in the vicinity of the Project site: sycamore alluvial woodland. Sycamore alluvial woodland is mapped in two locations outside of Project boundary. One site is south of the Project boundary along Alameda Creek and the other site is east of the Project boundary along San Antonio Creek. This community type is not found within the Project boundary. Willow riparian scrub and mulefat scrub are found fringing the North and South Basins. These communities are generally considered sensitive as riparian habitat and, in this case, may be considered sensitive by the Regional Board or CDFG.

Jurisdictional Waters and Wetlands

Jurisdictional wetland delineations were conducted within the study area for the NIT, Alameda Siphons, SABPL, and Filter Gallery projects (Jones and Stokes, 2009; ESA+Orion, 2009; ESA, 2011b). The combined delineation for the NIT and Alameda Siphons projects was verified in the field by the U. S. Army Corps of Engineers (Corps) on March 28, 2007 and February 6, 2009 and the jurisdictional determination was dated April 23, 2009 (File Number 30395S). The SABPL delineation was field verified by the Corps on November 5, 2009, and the jurisdictional determination was received on July 8, 2011 (File Number 08- 00207S). The preliminary Filter Gallery delineation has not yet been verified.

The results from the delineations for the four projects include one Corps jurisdictional feature within the Project's survey area. This is the ephemeral stream discussed in Section 2.1.8. Additional wetland features, potentially regulated by the Regional Water Quality Control Board (RWQCB), were mapped within the Project's survey area during the wetland delineations conducted for the NIT, Alameda Siphons, and SABPL projects. Some of these features have since been eliminated during active quarry operations and construction of the NIT and Alameda Siphons projects. See **Figure 9-2** for locations.

Quarry pits located within the Project site do support water, but have been determined non-jurisdictional by the Corps in the verified NIT, Alameda Siphons, and SABPL delineations. They would likely not be considered waters of the State by the RWQCB as they are considered water treatment ponds.

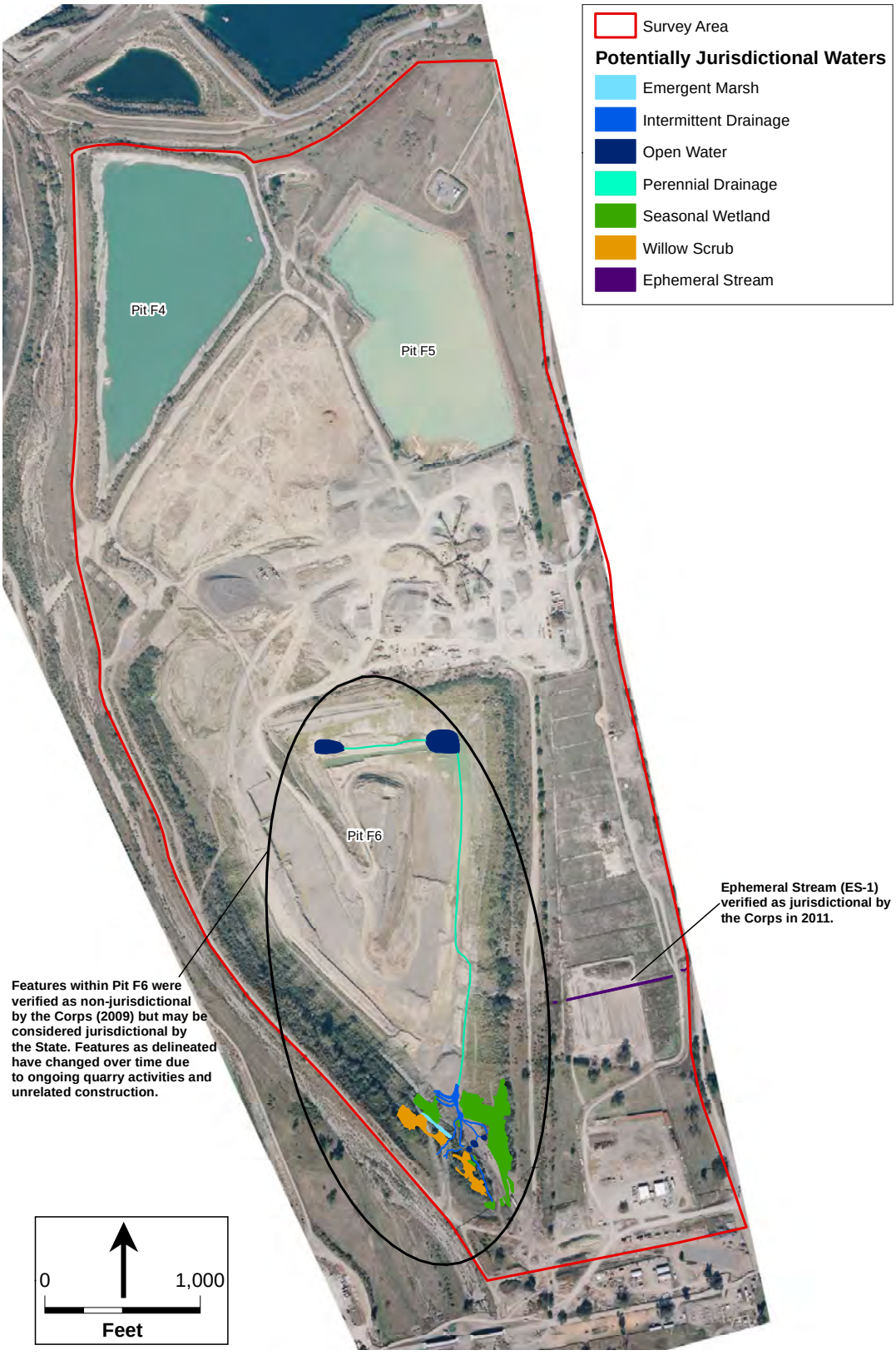


Figure 9-2
Jurisdictional Waters and Wetlands

Source: ESA, 2009 and 2011; Jones and Stokes, 2009; Oliver DeSilva, 2011; Date of aerial is October, 2011

Special Status Species

A number of species known to occur in the Project vicinity are protected pursuant to federal and/or State of California endangered species laws, or have been designated Species of Special Concern by CDFG. In addition, Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing.[1] Species recognized under these terms are collectively referred to as "special-status species." For the purposes of this EIR, special-status species include:

- Plant and wildlife species listed as rare, threatened or endangered under the federal or state endangered species acts;
- Species that are candidates for listing under either federal or state law;
- Species formerly designated by CDFG as Species of Special Concern;
- Species protected by the federal Bald Eagle Protection Act and the Migratory Bird Treaty Act (16 U.S.C. 703-711); and/or
- Species such as candidate species that may be considered rare or endangered pursuant to Section 15380(b) of the CEQA Guidelines.

Appendix E provides comprehensive lists of the special-status species that have been documented from, or have potential to occur in suitable habitat within, the survey area. These lists include occurrences documented by the CNDDB (CDFG, 2011), the CNPS Electronic Inventory (CNPS, 2011), and the USFWS database (USFWS, 2011). Based on review of the biological literature of the region, information presented in previous environmental documentation, and an evaluation of the habitat conditions of the proposed Project site, many of these species were eliminated from further evaluation because (1) the Project site does not and/or never has provided suitable habitat for the species, or (2) the known range for a particular species is outside of the Project site. See **Figure 9-3** for observations documented in the Project vicinity.

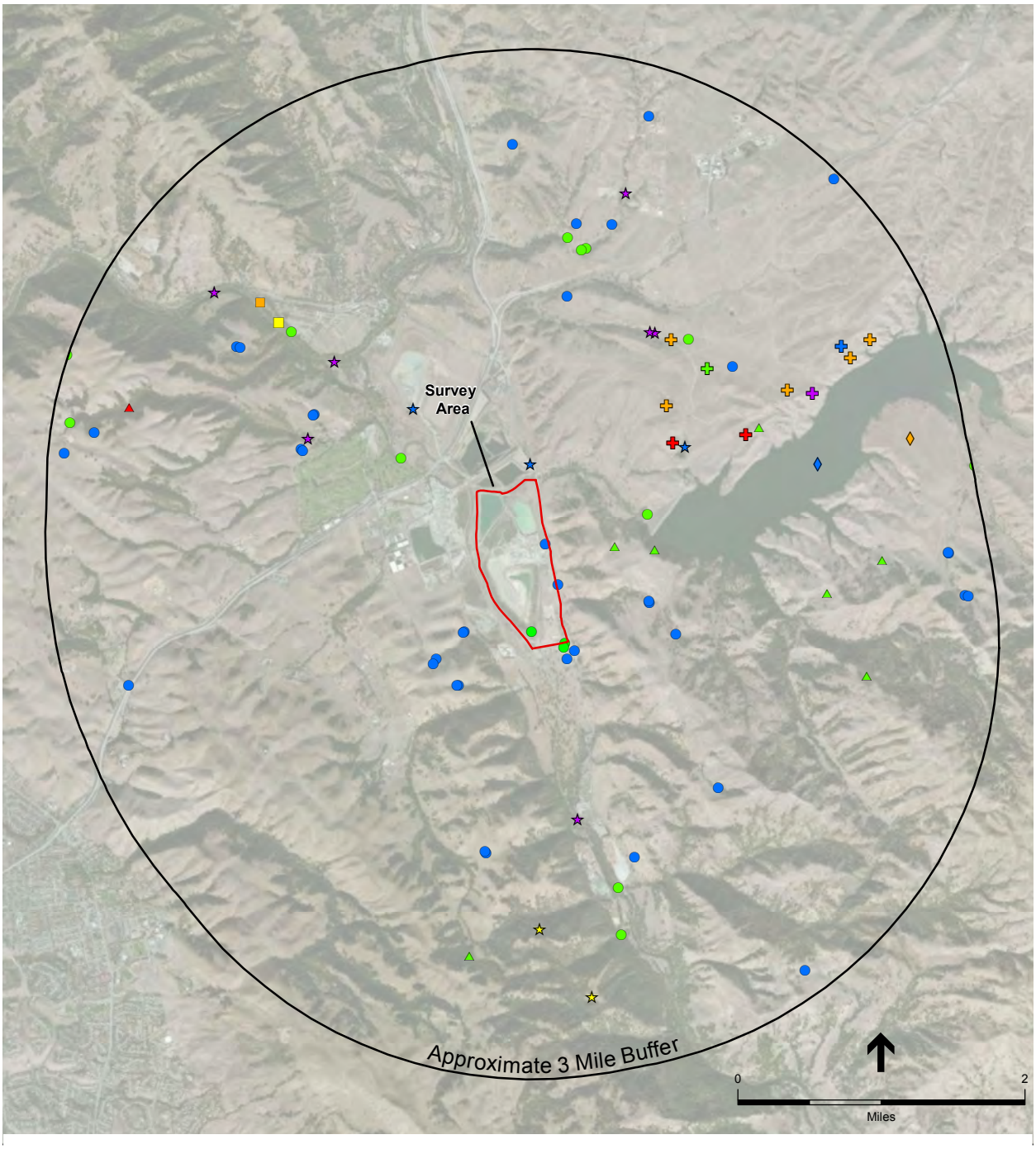
Federally and state-listed wildlife species and those with a moderate or high potential to occur in the Project area are identified in **Table 9-1** and described below. Species with a low potential to occur in the Project area are identified in Table 9-1 and Appendix E. Table 9-1 also provides the rationale for each potential-to-occur determination.

Of the special-status plants and animals presented in Table 9-1, only the following 6 species, which have been observed or determined to have a moderate to high potential to occur within the Project area, were fully considered in the impact analysis:

- California tiger salamander
- California red-legged frog
- Loggerhead shrike
- Pallid bat
- Hoary bat
- Yuma myotis bat

These species are described in further detail below.

[1] For example, vascular plants listed as rare or endangered or as List 1 or 2 by the California Native Plant Society (CNPS) are considered subject to Section 15380(b).



Source: CDFG, 2011; SFPUC, 2010

Note: Alameda whipsnake, American peregrine falcon, and pallid bat records occur within three miles of the survey area, however these locations are not shown since they are classified by CNDDB as sensitive.

Figure 9-3
Observations of Special Status Species

Table 9-1: Focused List Of Special-Status Species Considered For The Sunol Quarry Project Survey Area

Common Name Scientific Name	Listing Status USFWS/ CDFG/CNPS	General Habitat Requirements	Potential for Species Occurrence Within the Survey Area
Federal And State Listed Species Or Proposed For Listing			
Animals			
Amphibians			
California tiger salamander *Ambystoma californiense*	FT/ CT	Wintering sites occur in grasslands occupied by burrowing mammals; breed in ponds, vernal pools, and slow-moving or receding streams.	**Low to Moderate potential.** Numerous breeding locations are known within three miles of the survey area (CDFG, 2011). Breeding habitat is absent from the survey area and only limited and marginally suitable upland habitat is present in non-native grasslands within the survey area. This species has been documented within the survey area and may occasionally travel through the site.
California red-legged frog *Rana draytonii*	FT/CSC	Breed in stock ponds, pools, and slow-moving streams.	**Low to Moderate potential.** This species was documented in wetland features within and immediately south of the survey area, although these wetland features have been since been eliminated in association with the NIT and Alameda Siphons projects. This species has also been documented from several other locations within the survey area vicinity. Breeding habitat is absent from the survey area, but limited aquatic refugia and marginal upland habitat are present within non-native grasslands in the survey area. The species is expected to use the site on a transient basis only.
Reptiles			
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/CT	Typically found in scrub and chaparral habitats, but may also occur in adjacent grassland and woodland habitats.	**Low potential.** Suitable core habitat is absent from the survey area. Dispersal habitat is present in the non-native grassland on-site; however these habitats are highly fragmented, isolated, and disturbed.
Birds			
American peregrine falcon *Falco peregrinus anatum*	FD/CFP	Nests on cliffs, tall buildings, high bridges, and specially-designed towers.	**Low potential.** Suitable nesting habitat is absent from the survey area. Nesting on interior quarry pit slopes or utility towers unlikely. Known from hills surrounding San Antonio Reservoir, approximately 2.5 miles east of Calaveras Road; the exact location is suppressed by the CNDDB (CDFG, 2011).

Bald eagle *Haliaeetus leucocephalus*	FD/CE	Nest in mountainous habitats near reservoirs, lakes and rivers, usually in coniferous trees, close to permanent water.	**Low potential.** Suitable habitat is generally absent from the survey area. Large trees in the survey area could provide potential nesting habitat, but this is unlikely. There are no CNDDB occurrence records within three miles of the survey area (CDFG, 2011).
Mammals			
San Joaquin kit fox Vulpes macrotis mutica	FE/CT	Arid grasslands and open scrubland.	**Low potential.** Kit fox have been observed within the Sunol Valley (CDFG, 2011). The next nearest sighting is over 16 miles east of the Valley. Denning habitat is absent from the site and only low quality foraging and dispersal habitat is present in the non-native grasslands.
State Fully Protected/Species Of Special Concern			
Animals			
Invertebrates			
California linderiella *Linderiella occidentalis*	--/CSC	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions	**Absent**. Seasonal/vernal pool habitat absent from the Project site.
Amphibians			
Foothill yellow-legged frog *Rana boylii*	--/CSC	A year-round resident of cobble-lined streams; breeds in spring months after high water subsides.	**Absent**. Suitable habitat is absent from the survey area. This species is limited to perennial drainages.
Reptiles			
Western pond turtle *Actinemys marmorata*	--/CSC	Lakes, ponds, reservoirs, and slow-moving streams and rivers, primarily in foothills and lowlands.	**Low potential**. This species is known from Alameda Creek and San Antonio Creek (CDFG, 2011; ESA, 2011a). Aquatic habitat is marginal for the species, with none of the typical required elements, However, due to the proximity of observations, Western pond turtle may be occasionally be found in the quarry pits, the pond, or dispersing through adjacent uplands.
Coast horned lizard *Phrynosoma coronatum*	--/CSC	Sandy areas and river washes, as well as riparian woodland clearings, chaparral, and alkali flats.	**Low potential**. The closest occurrence record for this species is five miles from the survey area (SFPUC, 2010; CDFG, 2011). Sandy habitat is absent from the survey area and this species is not expected to occur within the survey area.
Birds			
Tricolored blackbird *Agelaius tricolor*	--/CSC	A colonial nester; nests in dense freshwater emergent vegetation.	**Low potential**. Documented in the Sunol Valley in the vicinity of the survey area (CDFG, 2011). In 2009, large flocks were observed within the vicinity of the survey area (ESA, 2011a). Limited and marginal breeding habitat within the survey area.

Golden eagle *Aquila chrysaetos*	--/CFP	Nests in open areas on cliffs and in large trees.	**Low potential**. Sycamores and oak trees within the non-native grassland in the southern portion of the survey area provide potential nesting habitat. Nests have been documented near San Antonio Reservoir (SFPUC, 2010). Ongoing Project construction and quarrying activity makes nesting within the survey area unlikely.
Short-eared owl *Asio flammeus*	--/CSC	Nests in grasslands, usually on the ground.	**Low potential**. Grasslands in the survey area provide limited marginal habitat for short-eared owl. There is a documented nesting site approximately three miles east of the survey area near southeastern San Antonio Reservoir (SFPUC, 2010).
Burrowing owl *Athene cunicularia*	--/CSC	Nests and forages in low-growing grasslands that support burrowing mammals.	**Low potential**. Non-native grasslands in the survey area and within a 500-foot buffer support few small mammal burrows. In 2009, ESA conducted breeding season surveys in potentially suitable grasslands east of Calaveras Road and did not observe burrowing owls or signs of burrowing owls (ESA, 2011a).
Northern harrier *Circus cyaneus*	--/CSC	Nests in coastal freshwater and saltwater marshes, nests and forages in grasslands.	**Low potential**. Limited and marginal potential nesting habitat is present in grasslands. Active quarry operations and construction activity would likely deter harrier nesting activity.
White-tailed kite (nesting) *Elanus leucurus*	--/CFP	Nests near wet meadows and open grasslands in dense oak, willow or other large tree stands.	**Low potential**. Limited nesting habitat is present in willow scrub or in the sycamore or oak trees in the non-native grassland and ruderal habitats.
Loggerhead shrike *Lanius ludovicianus*	--/CSC	Scrub, open woodlands, and grasslands.	**High potential**. Nesting habitat is present within non-native grassland and scrub habitat within the survey area.
<u>Mammals</u>			
Pallid bat *Antrozous pallidus*	--/CSC	Day roosts are mainly in caves, crevices and mines; also found in buildings and under bark. Forages in open lowland areas.	**Low to moderate potential**. Potential roosting habitat is available in larger trees such as oaks and sycamores and buildings or structures on-site.
Tule elk *Cervus elaphus nannodes*	Local protection	The San Antonio elk herd is a resident herd from hills surrounding the San Antonio Reservoir.	**Low potential**. A herd of tule elk is present in the hills east of Calaveras Road. Tule elk would not be expected to cross Calaveras Road and enter the survey area due to human presence and high levels of human activity, although there are anecdotal reports of sightings of tule elk west of Calaveras Road at the Mission Valley Rock Quarry.
Townsend's big eared bat *Corynorhinus townsendii*	--/CSC	Found in wide variety of habitats and, roosts in the open, hanging from walls and ceilings. This bat species is also sensitive to human disturbance.	**Low potential**. Potential roosting habitat is available in larger trees such as oaks and sycamores. However, this species is sensitive to human disturbance and thus unlikely to occur within the survey area

Hoary bat *Lasiurus cinereus*	--/--	Roost in dense tree foliage and prefer open habitats or habitat mosaics with access to trees for cover.	**Low to moderate potential**. Potential roosting habitat is available in larger trees such as oaks and sycamores and within willow scrub.
Yuma myotis *Myotis yumanensis*	--/--	Found in open forest and woodland habitats with nearby water sources over which they can feed. Maternity colonies are found in caves, mines buildings or crevices.	**Low to moderate potential**. Potential roosting habitat is available in larger trees such as oaks and sycamores, within willow scrub, or in buildings or structures on-site.
San Francisco dusky-footed woodrat *Neotoma fuscipes*	–/CSC	Occurs in forests with established understory. Constructs nests from woody debris.	**Absent**. Suitable habitat is absent from the survey area.
American badger *Taxidea taxus*	--/CSC	Grasslands, savannas, deserts, timberline mountain meadows.	**Low potential**. Denning habitat is absent from the survey area and foraging habitat is limited by lack of abundant small mammal activity in the survey area.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)

FE = Listed as Endangered (in danger of extinction) by the Federal Government.

FT = Listed as Threatened (likely to become endangered within the foreseeable future) by the Federal Government.

FP = Proposed for Listing as Endangered or Threatened.

FC = Candidate to become a proposed species.

FD = Federally Delisted

STATE: (California Department of Fish and Game)

CE = Listed as Endangered by the State of California

CT = Listed as Threatened by the State of California

CR = Listed as Rare by the State of California (plants only)

CSC = California Species of Special Concern

CFP = California Department of Fish and Game Fully Protected

California Native Plant Society

List 1A=Plants presumed extinct in California

List 1B=Plants rare, threatened, or endangered in California and elsewhere

List 2= Plants rare, threatened, or endangered in California but more common elsewhere

SOURCE: CDFG, 2011; USFWS, 2011

California Tiger Salamander (*Ambystoma californiense*)

Status

The central California Distinct Population Segment (DPS) of California tiger salamander is federally and state listed as threatened.

General Ecology and Distribution

California tiger salamander is principally an upland species found in annual grasslands and in the grassy understory of valley-foothill hardwood habitats in Central and Northern California. They require underground refuges (usually ground squirrel or other small mammal burrows), where they spend the majority of their annual cycle. Between December and February, when seasonal ponds begin to fill, adult

California tiger salamanders engage in mass migrations to aquatic sites during a few rainy nights and are explosive breeders (Barry and Shaffer, 1994).

During drought years when ponds do not form, adults may spend the entire year in upland environments, while juveniles may spend 4 to 5 years in their upland burrows before reaching sexual maturity and breeding for the first time (Petranka, 1998; Trenham et al, 2000). Adult California tiger salamanders readily aestivate[2] in grasslands near ponds and at great distances from breeding ponds. Adults are known to travel distances greater than 1 kilometer (0.62 mile) from breeding ponds and have been documented at distances of 2 kilometers (1.2 miles) or more (Orloff, 2007). Typical aestivation sites include the burrows of California ground squirrels and valley pocket gophers (*Thomomys bottae*).

Survey Area Occurrence

California tiger salamanders have been documented from at least eighteen pools in the surrounding foothills within three miles of the survey area boundary (CDFG, 2011; SFPUC, 2010). These pools are at distances ranging from 0.3 to 3.0 miles from the survey area boundary. In February 2011, one adult California tiger salamander was found within the survey area in the grasslands west of Calaveras Road and east of the existing processing facility (Weinberg, 2011a). It was unearthed at this site during burrow excavation for the SFPUC's NIT project. In March 2011, one adult was observed within the Alameda Siphons project work area, approximately 380 feet southeast of survey area (Weinberg, 2011b). The salamander was subsequently moved outside of the construction area. In 2009, one adult was found in a sump at the Sunol Valley Chloramination Facility approximately 500 feet south of the survey area (Brinkerhoff, 2009). Additionally, there have been two adult road mortalities documented on Calaveras Road; one just east of survey area near the entrance to the former nursery and one recorded 1.4 miles south of the survey area (CDFG, 2011). These occurrence records suggest that California tiger salamanders use the Sunol Valley floor, in the vicinity of the survey area, as a movement corridor.

A habitat assessment for California tiger salamander found that breeding habitat for the species is absent from the survey area (ESA, 2011f). The pond next to the North Basin is too deep to support breeding California tiger salamander and the continual water level fluctuation from quarry operations would further preclude breeding salamanders.

The closest known breeding pond is located approximately 0.3 mile west of the survey area. Active quarry facilities operated under SMP-24 would likely impede salamander movement from breeding ponds located west of the survey area to the survey area. Additionally, quarry facilities north of the survey area, Calaveras Road on the east side of the survey area, and active SFPUC work areas on the southern end of the survey area would limit salamander movement from active breeding ponds in the surrounding foothills to the survey area.

The majority of the survey area is developed and disturbed from active quarry operations and work for the SFPUC's NIT and Alameda Siphons projects. Some small patches of non-native grassland within the survey area do support limited small mammal populations and could provide limited suitable upland habitat for the California tiger salamander and one individual was observed in grassland habitat within the survey area. Given this observation, and the high number of California tiger observations within the vicinity of the survey area, this species may occasionally travel through the survey area and utilize the small mammal burrows within grassland habitat while dispersing, although there are few burrows of the type generally used for aestivation. This assessment is further supported by the fact that habitat modeling for the Preliminary Draft Alameda Watershed Habitat Conservation Plan (SFPUC, in prep.), did not identify any habitat at all for the species as present within the Project survey area.

[2] Aestivation is a state of dormancy similar to hibernation that occurs during summer and fall.

California Red-legged Frog (*Rana draytonii*)

Status

The California red-legged frog is federally listed as a threatened species, and is a California species of special concern.

General Ecology and Distribution

This ranid species is principally a pond frog that can be found in quiet permanent waters of ponds, pools, streams, springs, marshes, and lakes. Moist woodlands, forest clearings, and grasslands also provide suitable habitat for this species in the non-breeding season. Adult frogs seek waters with dense shoreline vegetation, such as cattails, that provide good cover, but may be found in unvegetated waters as well.

Red-legged frogs breed from January to May. Eggs are attached to vegetation in shallow water and are deposited in irregular clusters. Tadpoles grow to three inches before metamorphosing. Red-legged frogs are active year-round along the coast but inland populations may aestivate from late summer to early winter. Adults consume insects such as beetles, caterpillars and isopods, while tadpoles forage on algae and detritus.

Historically, the California red-legged frog occurred along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from Redding, Shasta County southward to northwestern Baja California, Mexico (Jennings and Hayes, 1994). The majority of California red-legged frog occurrences in the San Francisco Bay Area are from Contra Costa and Alameda Counties.

Survey Area Occurrence

California red-legged frog has been documented within the survey area. In December 2009, one California red-legged frog was observed within a small freshwater pond located at the southern tip of the South Basin (Dettman, 2009). However, this pond and other adjacent aquatic habitat have since been eliminated due to the placement of riprap on the quarry slope in association with the SFPUC's Alameda Siphons project, which is unrelated to current or proposed future mining activities at the Project site.

This species has also recently been observed in close proximity to the survey area. In February 2010, during surveys for the SFPUC's Alameda Siphons project, one California red-legged frog was observed within a seasonal wetland and one in an overflow ditch south of the South Basin and just east of Calaveras Road. Both sightings were approximately 150 feet south of the survey area (Dettman, 2010; Weinberg, 2010). The wetland and ditch have also since been eliminated in association with the Alameda Siphons project.

California red-legged frogs are also known from upstream and downstream of the survey area within and adjacent to Alameda Creek. In 1999, one adult was observed within the creek approximately 0.5 miles downstream of the survey area (CDFG, 2011). In 2002, fifteen adult frogs were observed 1.7 miles downstream of the survey area in an off-channel pond between Western Star Nursery and Alameda Creek. California red-legged frogs were not observed during USFWS protocol-level surveys conducted of the off-channel pond in 2008, 2009, or 2010, but two individuals were observed during the 2011 protocol surveys in the off-channel pond (ESA, 2008; ESA, 2009c; ESA, 2010b; ESA, unpublished data). In 1998, one juvenile was observed in Alameda Creek approximately 1.6 miles upstream of the site. The closest known breeding record is from a shallow pond located in the foothills approximately 1.3 miles northeast of the survey area; larvae were observed at that site in 2003.

A habitat assessment for red-legged frog of the small pond adjacent to the North Basin found that habitat values for the species included the presence of potential aquatic breeding habitat on the shallow eastern side of the pond and non-breeding (summer) habitat (ESA, 2011e). This feature was considered to provide moderate to high quality vegetative cover and aquatic cover for red-legged frog.

However, USFWS protocol-level surveys of the pond were conducted between April 14 and July 28, 2011 (ESA, 2011d). California red-legged frogs were not observed during the surveys and several adult bullfrogs were observed during each survey. In addition, non-native mosquito fish and bass were present. Non-native species such as bass can prey upon and ultimately eliminate California red-legged frog populations (USFWS, 2002). Overall, while California red-legged frogs are occasionally known to persist in the presence of either bullfrogs or mosquitofish (and other non-native species), the combined effects of both non-native frogs and non-native fish often leads to extirpation of red-legged frogs and other amphibians (Kiesecker and Blaustein, 1998; USFWS, 2002). Based on the negative survey findings and presence of non-native amphibians and fish, California red-legged frogs are considered absent from this pond (ESA, 2011d). This assessment and survey results are further supported by the fact that habitat modeling for the Preliminary Draft Alameda Watershed HCP, did not identify any habitat at all for the species as present within the Project survey area.

The quarry pits provide only marginal aquatic refugial habitat due to the steep side slopes and associated rapidly increasing water depth, and the presence of predatory fish. The small mammal burrows and rock and debris piles located within the fragmented and isolated grasslands provide only limited and marginal summer upland and dispersal habitat. Active quarry operations, Calaveras road, and construction for the SFPUC's NIT and Alameda Siphons projects provide barriers to movement from known California red-legged frog breeding sites into the survey area. However, since there have been several California red-legged frog observations either within or in close proximity to the survey area, the potential for this species to occur within the Project area on a transient basis cannot be ruled out.

White-tailed Kite (Elanus leucurus)

Status

The white-tailed kite is a CDFG fully protected species.

General Ecology and Distribution

White-tailed kites forage in open grasslands, meadows, farmlands, and emergent wetlands. They typically nest in oak woodlands or trees, especially along marsh or river margins, although they will use any suitable tree or shrub that is of moderate height. They are rarely found far from agricultural areas (Zeiner et al., 1988).

Survey Area Occurrence

No nesting white-tailed kite CNDDB occurrence records are documented within three miles of the survey area (CDFG, 2011). This species was not observed during the on-site reconnaissance surveys; while potential nesting habitat is present within larger sycamore or oak trees in the non-native grassland, this species is unlikely to nest there due to the high levels of human activity.

Loggerhead Shrike (*Lanius ludovicianus*)

Status

The loggerhead shrike is a California species of special concern.

General Ecology and Distribution

Loggerhead shrikes are a California semi-permanent resident species that occurs in abundance in the Central Valley and central coast where shrub habitats and open woodlands are available. Shrikes generally forage on the fringes of open habitats where suitable hunting perches are available. This species typically

hunts from dead trees, tall shrubs, utility wires and fences, impaling their prey on sharp twigs, thorns, or barbed wire.

Survey Area Occurrence

Loggerhead shrikes are known to nest throughout much of California in wooded riparian corridors and grazed lands. Shrikes are common throughout California and have a high potential to nest and forage within the ruderal, grassland and scrub habitats on-site.

Sensitive Bat Species

Status

Sensitive bat species known from the Project vicinity include Yuma myotis (*Myotis yumanensis*), hoary bat (*Lasiurus cinereus*), pallid bat (*Antrozous pallidus*) and Townsend's big-eared bat (*Corynorhinus townsendii*). Pallid bat and Townsend's big-eared bat are California species of special concern. Yuma myotis bat and hoary bat are rated 'medium' by the Western Bat Working Group. A medium rating indicates that there is a level of concern for the species that should warrant closer evaluation, more research, and conservation actions.

General Ecology and Distribution

Yuma myotis bats are often found in open forest and woodland habitats with nearby water sources over which they can feed. Maternity colonies are found in caves, mines buildings or crevices. Pallid bats are most common in open, dry habitats with rocky areas for roosting, and can be found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. Hoary bats roost in dense tree foliage and prefer open habitats or habitat mosaics with access to trees for cover. Townsend's big-eared bat is found in wide variety of habitats and roosts in the open, hanging from walls and ceilings. This bat species is also sensitive to human disturbance.

Survey Area Occurrence

Yuma myotis bats were observed approximately 2.5 miles west of the survey area in valley foothill riparian habitat (CDFG, 2011). The bats were detected in 2006 flying over a SonoBat™ acoustical detector. Pallid bat was documented within the LaCosta Valley quadrangle, but the location information is suppressed by the CNDDB due to the sensitivity of this species. There is one historical occurrence record for hoary bat within the Project vicinity. In 1941, an individual was collected near Lake Del Valle, approximately six miles east of the survey area. The closest Townsend's big-eared bat occurrence record is from approximately six miles east of the survey area in an abandoned wine cave.

Due to the sensitivity of Townsend's big eared bat to human disturbance, they have a low potential for roosting or foraging within the active quarry site. The open water of the settling ponds and quarry pits provides potential foraging habitat for Yuma myotis bats and trees and buildings and/or structures provide potential roosting habitat for Yuma myotis, hoary bat, and pallid bat.

Special Status Plant Species

No special status plant species are expected to occur with the survey area. A number of plants are identified in Appendix A as occurring within the vicinity of the survey area. Many of these species are found in plant communities, or on substrates, that do not occur within the survey area. Additionally, the majority of the survey area is characterized as developed or ruderal and supports either little to no vegetation. There are a few patches of non-native grassland located within the survey area. ESA biologists conducted a rare plant survey of the entire survey area on May 28, 2010, focusing on plant

species that may occur in grassland habitats (ESA, 2010a). No special status plant species were observed during the May 2010 survey.

Rare plant surveys were also conducted within the SFPUC's SABPL project area, which has a footprint that overlaps with the Project's survey area. Surveys for the SABPL project were carried out on ten dates, ranging from March to May, in 2008 and 2009 (May and Associates, 2008; ESA, 2009a). No special status plant species were observed within the SABPL project footprint during the 2008 to 2009 surveys.

Regulatory Setting

This subsection briefly describes federal, state, and local regulations, permits, and policies pertaining to biological resources and wetlands as they apply to the proposed Project.

Special-Status Species

Federal Endangered Species Act

The USFWS, which has jurisdiction over plants, wildlife, and most freshwater fish, and the National Marine Fisheries Service (NMFS), which has jurisdiction over anadromous fish, marine fish, and mammals, oversee implementation of the Federal Endangered Species Act (FESA). Section 7 of the FESA mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. A federal agency is required to consult with USFWS and NMFS if it determines a "may affect" situation will occur in association with the proposed Project. The FESA prohibits the "take"[3] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction throughout all or a significant portion of their range. *Threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

Under Section 9 of the FESA, the take prohibition applies only to wildlife and fish species. However, Section 9 does prohibit the removal, possession, damage, or destruction of any endangered plant from federal land. Section 9 also prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed or under petition for listing receive no protection under Section 9 of the FESA.

Section 10 of the FESA requires the issuance of an "incidental take" permit before any public or private action may be taken that would potentially harm, harass, injure, kill, capture, collect, or otherwise hurt (i.e., take) any individual of an endangered or threatened species. To offset the take of individuals that may occur incidental to implementation of the Project, the permit requires preparation and implementation of a habitat conservation plan that provides for the overall preservation of the affected species through specific mitigation measures.

[3] "Take," as defined in Section 9 of the FESA, is broadly defined to include intentional or accidental "harassment" or "harm" to wildlife. "Harass" is further defined by the U.S. Fish and Wildlife Service as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, and sheltering. "Harm" is defined as an act that actually kills or injures wildlife. This may include significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 USC, Section 703, Supplement I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and egg.

Federal Essential Fish Habitat

The Sustainable Fisheries Act of 1996 (Public Law 104-297), amended the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal Fisheries Management Plans (FMPs) and to require federal agencies to consult with the NMFS on activities that may adversely affect EFH. The Magnuson-Stevens Act requires all fishery management councils to amend their FMPs to describe and identify EFH for each managed fishery. The act also requires consultation for all federal agency actions that may adversely affect EFH (i.e., direct versus indirect effects); it does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside of EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of the activity's location. Under section 305(b)(4) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. However, state agencies and private parties are not required to consult with NMFS unless state or private actions require a federal permit or receive federal funding. Although the concept of EFH is similar to that of critical habitat under the FESA, measures recommended to protect EFH by NMFS are advisory, not proscriptive.

California Endangered Species Act

CESA (Fish and Game Code Sections 2050–2097), which is administered by the CDFG, prohibits the take[4] of plant and animal species designated by the Fish and Game Commission as either threatened or endangered in the State of California. Pursuant to the requirements of the CESA, an agency reviewing a proposed Project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the survey area and determine whether the proposed Project could have a potentially significant impact on such species. Section 2081 of CESA allows the CDFG to authorize exceptions to the state's prohibition against take of a listed species, such as for educational, scientific, or management purposes.

California Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed CDFG to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. The California Endangered Species Act (CESA) expanded upon the original NPPA and enhanced legal protection for plants. The CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

[4] *Take* in the context of CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under CESA.

California Fish and Game Code

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

The California Fish and Game Code (Sections 3511-birds, 4700-mammals, 5050-reptiles and amphibians, and 5515-fish) also allows the designation of a species as Fully Protected. California Fish and Game Code Section 2080 provides protection from take to fully protected species. Except for the take of species for scientific research, all take of fully protected species is generally prohibited, although recent changes in the law allow take authorization in conjunction with the approval of a Natural Community Conservation Plan (NCCP) that covers the Project area and activities. Fully protected wildlife species that have the potential to occur in the Project area include white-tailed kite and golden eagle.

Sensitive Natural Communities

Sensitive natural communities are identified as such by CDFG's Natural Heritage Division and include those that are naturally rare and those whose extent has been greatly diminished through changes in land use. The CNDDB tracks 135 such natural communities in the same way that it tracks occurrences of special-status species: information is maintained on each site's location, extent, habitat quality, level of disturbance, and current protection measures. CDFG is mandated to seek the long-term perpetuation of the areas in which these communities occur. While there is no statewide law that requires protection of all special-status natural communities, CEQA requires consideration of a project's potential impacts on biological resources of statewide or regional significance.

Jurisdictional Waters (Including Wetlands)

Definitions

Waters of the United States

The term "waters of the United States," as defined in the Code of Federal Regulations (33 CFR § 328.3[a]; 40 CFR § 230.3[s]), refers to:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    - which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (1) through (4);

6. Territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).
8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA (33 CFR 328.3[a][8]).

Wetlands are ecologically productive habitats that support a rich variety of both plant and animal life. The importance of wetlands has increased due to their value as recharge areas and filters for water supplies and to their widespread filling and destruction to enable urban and agricultural development. Examples of wetlands may include freshwater marsh, seasonal wetlands, and vernal pool complexes that are adjacent to waters of the U.S. In a jurisdictional sense, there are two commonly used wetland definitions, one adopted by the USEPA and U.S. Army Corps of Engineers (Corps) and a separate definition, originally developed by USFWS, which has been adopted by agencies in the State of California that have regulatory authority over wetlands. Both definitions are presented below.

Federal Wetland Definition

Under federal law, wetlands are a subset of "waters of the United States" and receive protection under Section 404 of the Clean Water Act (CWA). Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetland determination under the federal wetland definition adopted by the Corps requires the presence of three factors: (1) wetland hydrology; (2) plants adapted to wet conditions; and (3) soils that are routinely wet or flooded [33 C.F.R. § 328.3(b)]. In January 2001, the Supreme Court of the United States ruled that certain isolated wetlands do not fall under the jurisdiction of the CWA (*Solid Waste Agency of Northwestern Cook County v. United States Army Corps of Engineers et al.*).

California Wetland Definition

The CDFG and the California Coastal Commission (CCC) have adopted the USFWS Cowardin (1979) definition of wetlands. While the federal definition of wetlands requires three wetland identification parameters to be met, the Cowardin definition can be satisfied under some circumstances with the presence of only one parameter. Thus, identification of wetlands by State agencies may include areas that are permanently or periodically inundated or saturated and without wetland vegetation or soils, such as rocky shores, or areas that presume wetland hydrology based on the presence of at least one of the following: a) a seasonal or perennial dominance by hydrophytes[5] *or* b) the presence of hydric[6] soils. CDFG does not normally assert jurisdiction over wetlands unless they are subject to Streambed Alteration Agreements (CDFG Code Sections 1600–1616) or they support state-listed endangered species.

Other Waters of the U.S.

"Other waters of the U.S." refers to additional features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and

[5] A *hydrophyte* is, literally, a water loving plant, i.e., one that is adapted to growing in conditions where the soil lacks oxygen, at least periodically during the year, due to saturation with water.

[6] A *hydric* soil is one that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.

bank and an ordinary high water mark. The term ordinary high water mark refers to a line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other means appropriate to the characteristics of the surrounding areas. Examples of other waters of the U.S. include rivers, creeks, ponds, and lakes.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Regulations

The Corps and the USEPA regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the CWA. Projects that would result in the placement of dredged or fill material into waters of the United States require a Section 404 permit from the Corps. The Corps may issue either an Individual Permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. Nationwide Permits (NWPs) are a type of general permit issued to cover particular activities that would result in the deposition of fill material into waters of the United States. Nationwide Permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species (listed or proposed for listing under the FESA). In addition to conditions outlined under each Nationwide Permit, project-specific conditions may be required by the Corps as part of the Section 404 permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, an Individual Permit may be issued.

Section 401 of the CWA requires an applicant for a Corps permit to obtain state certification that the activity associated with the permit will comply with applicable state effluent limitations and water quality standards. In California, water quality certification, or a waiver, must be obtained from the Regional Water Quality Control Board (RWQCB) for both Individual and Nationwide Permits.

The Corps also regulates activities in navigable waters under Section 10 of the Rivers and Harbors Act. The construction of structures, such as tidegates, bridges, or piers, or work that could interfere with navigation, including dredging or stream channelization, may require a Section 10 permit, in addition to a Section 404 permit if the activity involves the discharge of fill.

Finally, the federal government also supports a policy of minimizing "the destruction, loss, or degradation of wetlands." Executive Order 11990 (May 24, 1977) requires that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

In recent years several Supreme Court cases have challenged the scope and extent of the Corps' jurisdiction over waters of the United States and have led to several reinterpretations of that authority. The most recent of these decisions are the case of *Solid Waste Agency of Northern Cook County* (SWANCC) *v. the Army Corps of Engineers* (January 9, 2001) and *Rapanos v. United States* (June, 2006). The SWANCC decision found that jurisdiction over non-navigable, isolated, intrastate waters could not be based solely on the use of such waters by migratory birds. The reasoning behind the SWANCC decision could be extended to suggest that waters need a demonstrable connection with a 'navigable water' to be protected under the CWA. The introduction of the term isolated has led to the consideration of the relative connectivity between waters and wetlands as a jurisdictionally relevant factor. The more recent Rapanos case further questioned the definition of "waters of the United States" and the scope of federal regulatory jurisdiction over such waters but resulted in a split decision which did not provide definitive answers but expanded on the concept that a 'significant nexus' with traditional navigable waters was needed for certain waters to be considered jurisdictional.

On June 5, 2007 the USEPA and the Corps released guidance on CWA jurisdiction in response to the Rapanos Supreme Court decisions, which can be used to support a finding of CWA coverage for a particular water body when either a) there is a significant nexus between the stream or wetland in

question and navigable waters in the traditional sense; or b) a relatively permanent water body is hydrologically connected to traditional navigable waters and/or a wetland has a surface connection with that water. According to this guidance the Corps and the USEPA will take jurisdiction over the following waters: 1) Traditional navigable waters, which are defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; 2) Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters; 3) Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and 4) Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g. they are not separated by uplands, a berm, dike, or similar feature).

The USEPA and the Corps decide jurisdiction over the following waters based on a fact-specific analysis to determine if there is a significant nexus, as defined below, to a traditional navigable water: a) Non-navigable tributaries that are not relatively permanent; b) Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and c) wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The USEPA and the Corps *generally* do not assert jurisdiction over: 1) swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow) or 2) ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The USEPA and the Corps have defined the significant nexus standard as follows:

- A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters;
- Significant nexus analysis includes consideration of hydrologic and ecologic factors including: a) volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary; b) proximity to a traditional navigable water; c) size of the watershed; d) average annual rainfall; e) average annual winter snow pack; f) potential of tributaries to carry pollutants and flood waters to traditional navigable waters; g) provision of aquatic habitat that supports a traditional navigable water; h) potential of wetlands to trap and filter pollutants or store flood waters; and i) maintenance of water quality in traditional navigable waters.

State Policies and Regulations

State regulation of activities in waters and wetlands resides primarily with CDFG and the State Water Resources Control Board (SWRCB).

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established the State Water Resources Control Board (SWRCB) and divided the state into nine basins, each with its own regional board (RWQCB). The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, while the RWQCBs are responsible for developing and enforcing water quality objectives and implementation plans.

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to enact state policies regarding water quality in accordance with Section 303 of the CWA. In addition, the act authorizes the SWRCB to issue Water Discharge Requirements for projects that would discharge to state waters.

With respect to biological resources, the SWRCB and RWQCBs have authority over any fill activities within state waters, including isolated waters or wetlands that may be outside the jurisdiction of the Corps.

Streambed Alteration Agreements

Under California Fish and Game Code Section 1602 et seq., the CDFG has jurisdictional authority over wetland resources associated with rivers, streams, and lakes. The CDFG can regulate all work under the jurisdiction of California that would: substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

In practice, the CDFG marks its jurisdictional limit at the top of the stream or lake bank or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries (as defined by CWA Section 404) sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1602 may encompass a greater area than those regulated under CWA Section 404.

The CDFG enters into a Streambed Alteration Agreement with an applicant and can request conditions to ensure “no net loss” of wetland values or acreage will be incurred. The streambed or lakebed alteration agreement is not a permit, but rather a mutual agreement between the CDFG and the applicant.

Local Regulations

East County Area Plan

On May 5, 1994, the Alameda County Planning Commission adopted the *East County Area Plan* (ECAP). The Plan was later modified in November 2000 by the passage of the Measure D Initiative. The East County encompasses 418 square miles of eastern Alameda County; it extends from the Pleasanton/Dublin ridgeline on the west to the San Joaquin County line on the east and from the Contra Costa County line on the north to the Santa Clara County line on the south. The Project site is located with the East County. ECAP policies pertaining to natural resources with potential relevance to implementation of the proposed Project include the following:

Policy 122: The County shall encourage that wetland mitigation be consolidated in areas that are relatively large and adjacent to or otherwise connected to open space. To the extent possible, these areas should be included in, adjacent to, or linked through open space corridors with lands designated as "Resource Management" that are managed specifically for the preservation and enhancement of biological resources.

Policy 125: The County shall encourage preservation of areas known to support special status species.

Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

Policy 128: The County shall ensure that, where quarries will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.

Policy 129: The County shall protect existing riparian woodland habitat present along the Arroyo Mocho, Arroyo Del Valle, Arroyo Las Positas, Arroyo de la Laguna; and Alamo, Tassajara, and Alameda Creeks. Exceptions to these requirements shall apply for those portions of the Arroyo del Valle to be excavated for water transfer Lakes A and B under the Specific Plan for the Livermore- Amador Valley Quarry Area Reclamation, which shall instead be subject to riparian habitat restoration as specified by Policies 128 and 164; and for any approved quarry operations in Regionally Significant Construction Aggregate Resource

Sector C (Arroyo Mocho) or any other streambeds, which shall also be subject to habitat restoration under Policies 128 and 164, and according to applicable State Public Resources Code requirements, to the extent that proposed reclamation specifies riparian habitat as the end use.

Policy 164: The County shall ensure that where quarry operations will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.

Alameda County Tree Ordinance

The Alameda County Tree Ordinance (Ordinance No. 0-2004-23, Chapter 12.11 of the Alameda County General Ordinance Code) applies only to trees within a county right-of-way. Alameda County does not have a tree ordinance that applies to land outside of the county right-of-way. The Alameda County Tree Ordinance requires project sponsors to obtain an encroachment permit for planting, pruning, or removing trees in the right-of-way of a county road, and to replace any removed trees.

Alameda Watershed Management Plan

The proposed Project would be constructed on SFPUC watershed lands within the Sunol Valley in unincorporated Alameda County. The City and County of San Francisco (CCSF) exerts land use control over CCSF-owned lands and has adopted the *Alameda Watershed Management Plan* (Alameda WMP) to manage these SFPUC watershed lands.

The Alameda WMP, adopted by the CCSF in 2000, includes actions and guidelines for watershed management. Those relevant to the proposed Project are summarized below.

Action veg2: Prior to planning or initiating any watershed activity, and in conjunction with the review process for proposed plans and projects, consult the SFPUC Geographic Information Systems (GIS) database, which identifies specific vegetation communities and their associated rare, threatened, endangered, and sensitive species, to determine the level of impact of the activity on sensitive vegetation communities and species. Specific communities and areas of concern in the Alameda watershed include: Sycamore Alluvial Woodland; Freshwater Marsh; Valley Oak Woodland; Serpentine Bunchgrass; Central Coast Arroyo Willow Riparian Forest; Central Coast Live Oak Riparian Woodland; Blue Oak Woodland; and Valley Needle Grassland.

Action veg3: Prior to the initiation of any watershed activity that may affect an Ecological Sensitivity Zone (ESZ, a defined area containing special-status resources), conduct surveys for special-status species and map observed occurrences in the GIS database. Update ESZ mapping based on surveys. Develop and implement effective mitigation measures to avoid and minimize adverse effects on species and their natural communities.

Action veg4: Prior to the initiation of any construction project involving grading, a grading plan shall be prepared by the project proponent and approved by appropriate SFPUC staff. Revegetation of all graded areas shall be required to the maximum extent practicable. Grading plans shall include, but not be limited to, a map of the site, prepared at a scale of 1 inch to 500 feet or greater. The map shall include contour intervals of at least 5 feet, including: pre-project land contours; post-construction land contours (finished grade); location of all areas to be graded, with cut banks and fill slopes delineated; and estimated dimensions of graded areas. A narrative description of the proposed grading activity shall include: its purpose; an estimate of the total volume of material to be moved; a description of the height of all cut banks and fill slopes (may be delineated on the map); a description of the provisions to be used for compaction, drainage and stabilization of graded areas; a description of all plant materials used to revegetate exposed slopes and banks, including type of species, number of plants, size and location (may be delineated on the

map), and a description of irrigation provisions or other measures necessary to ensure the survival of plantings; and a description of any other interim or permanent erosion control measures to be utilized.

Action wil1: Prior to planning or construction, and in conjunction with the review process for proposed plants and projects, conduct site-specific review of new structures, linear facilities, parking lots, roads, or trails to be located in any habitat to avoid and minimize adverse impact on wildlife, their movement, and habitat. Where new facilities are needed and/or construction is required, adhere to the following guidelines:

a. Consolidate siting of linear facilities, such as trails and utility corridors, to the periphery of the watershed.

b. Design projects to maintain connectivity between habitat types.

c. Minimize stream crossings and locate facilities outside of High Water Quality Vulnerability Zones (WQVZs).

d. Avoid disturbance to bird nests during construction. Follow all stipulations of Title 14 – Forest Practice Act when performing tree removal, including the identification of active nest sites and establishment of required buffers around those sites. Nests discovered during pre-construction surveys should be flagged and avoided until the nests are abandoned or young have fledged.

Action wil2: Conduct comprehensive (if broad-based activity) or site-specific surveys of affected habitats to more completely determine the presence or absence of listed or sensitive taxa. When making decisions related to watershed activities that may affect a high ESZ, develop and implement effective mitigation measures to avoid and minimize adverse effects on species and habitat. Specific requirements and guidelines include:

a. Clear deadwood and perform timber operations outside of bird breeding season, or conduct bird nesting surveys prior to operations.

b. Prevent disruption to any breeding areas encountered during surveys or operations.

c. Evaluate old structures (barns, buildings, tunnels) or disturbed areas to determine if they are being used by species with specialized habitat needs (e.g., bats, owls, nesting raptors) prior to conducting restoration and/or demolition.

Action wil3: Identify and protect primary wildlife movement corridors such as riparian corridors, and accommodate wildlife passage when designing fencing, culverts, stream crossings, and underpasses.

Action wil4: Relocate or eliminate unnecessary infrastructure and facilities as opportunities arise in an effort to reduce fragmentation and disruption of terrestrial habitat over the long term.

Action wil10: Institute seasonal prohibition of activities during breeding periods and enact appropriate mitigation measures (e.g., buffer zones, restricted access) to adequately protect special-status or sensitive species in the absence of site-specific surveys.

Action aqu1: Prior to undertaking or constructing any non-water dependent facility or watershed activity, conduct site-specific review in conjunction with the review process for proposed plans and projects (Actions des1 and des2) to ensure that the facility or activity is not located within a high WQVZ. If feasible, relocate the activity or facility to an alternative upland site. If no feasible site exists, follow best management practices (BMPs) as set forth in Alameda WMP Appendix C-6 and minimize stream crossings.

Action fis1: Maintain access for fish species of concern from reservoir to upstream spawning grounds in streams tributary to San Antonio and Calaveras Reservoirs by eliminating unnecessary artificial barriers, creating fish passage structures, and allowing sufficient flows (where regulated) during critical breeding periods.

Action fis4: Where stream alterations and diversions exist or cannot be avoided, consult with the CDFG regarding installation of fish screens and/or fish passage structures to prevent entrapment and mortality.

SMP-30 Conditions of Approval

In November of 1992 Alameda County approved Resolution 92-32, combining the then-existing surface mining operation known as SMP-26 with a 45-acre expansion area to create the current Sunol Valley Quarry. Pursuant to that Resolution, the County adopted a number of Conditions of Approval which are still currently effective, or which may have been modified over time. Those currently effective Conditions of Approval for SMP-30 which pertain to biological resources issues are listed below.

41. Maintain a 100 foot buffer zone as measured from the top of the Alameda Creek bank adjacent to the project area (right bank looking downstream) for all quarry activities and a 50 foot buffer zone as measured from the top of the San Antonio Creek bank adjacent to the project area (looking downstream).

All final and reclaimed banks and bare soil areas shall be planted with native grassland grass and forb species to the extent feasible;

a. A qualified professional familiar with native grassland establishment shall recommend a seed mix, rates and methods of application, methods for preparation of soil, and the best time of year for planting. The selected seed mix should take into account that hydrophilic species will be needed closest to the water's edge and more xeric species will be required at the top of bank;

b. A qualified professional familiar with native plant community enhancement shall recommend a native tree and shrub planting scheme for the entire bank area of San Antonio Creek between Calaveras Road and Alameda Creek. The resulting riparian community shall be self-supporting and composed of native vegetation appropriate for the region. Tree selection and density should be able to accommodate the variety of mammal and bird species that still move along this travel route. The permittee shall guarantee tree and shrub establishment for five years. The planting plan shall be approved by the Planning Director (Alameda County) and monitored by the Planning Department;

c. The reclamation plan shall specify the amount of vegetative cover and density, plant health, reproduction, and species diversity required for adequate reclamation. The permittee shall evaluate the success of reclamation treatments and refine the reclamation plan as requested by Alameda County Planning Department. Existing information about plant species diversity at the site shall be used as baseline information to compare reclamation success.

Other Conservation Plans

Two additional biological resource conservation plans for areas in which the Project site is located are currently being prepared. These plans are not yet approved or adopted, but are identified here for informational purposes.

Alameda Watershed Habitat Conservation Plan

The SFPUC is currently preparing the Alameda Watershed Habitat Conservation Plan to provide long-term conservation measures for threatened or endangered species that could be affected by ongoing water system operations and maintenance efforts on SFPUC-owned lands in the Alameda Watershed, or by recreation, lease, and easement activities.

East Alameda County Conservation Strategy

The East Alameda County Conservation Strategy (EACCS) is a joint effort among several local, state and federal agencies intended to provide an effective framework to protect, enhance and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting

process for impacts resulting from infrastructure and development projects. The EACCS is intended to focus on impacts on biological resources such as endangered and other special-status species as well as sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS will ultimately enable local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives, and be implemented using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies will be able to more easily address the legal requirements relevant to these species. The EACCS will not result in permits, but rather will serve as guidance for project-level permits, and the federal and state Resource Agencies are participating in the development of the EACCS with the intent that it becomes the blueprint for all mitigation and conservation in its study area. The EACCS study area encompasses 271,485 acres, or approximately 52% of Alameda County, including the cities of Dublin, Livermore, and Pleasanton. The western boundary of the study area runs along the Alameda Creek watershed and the northern, southern and eastern boundaries follow the Alameda County line with its adjacent counties. The EACCS study area includes the watershed lands in the Alameda Creek watershed, which are also subject of the Alameda Watershed HCP described above.

Impacts and Mitigation Measures

Significance Criteria

Appendix G of the CEQA *Guidelines* indicates that a project would have a significant effect on the environment if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS;
3. Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources.
6. Conflict with any applicable habitat conservation plan or natural community conservation plan.

The following sections of the CEQA *Guidelines*, which expand and define some of the terms used in the criteria presented above, were also considered when using the criteria to determine impact significance.

- CEQA *Guidelines* Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or wildlife community, substantially reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory.

- CEQA *Guidelines* Section 15380 further provides that a plant or wildlife species, even if not on one of the official lists, may be treated as "rare or endangered" if, for example, it is likely to become endangered in the foreseeable future.
- CEQA *Guidelines* Section 15382 identifies a significant effect on the environment as a "…substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

Impact Assessment Methodology

Potential impacts resulting from implementation of the proposed Project elements were evaluated based on field reconnaissance surveys performed by qualified ESA biologists and a review of the following sources:

- Existing resource information and aerial photographs of the Project site and surrounding area;
- Data presented in the CNDDB (CDFG, 2011), CNPS *Electronic Inventory of Rare and Endangered Vascular Plants of California* (CNPS, 2011), and USFWS (2011) for the La Costa Valley and Niles USGS 7.5 minute topographic quadrangles, which include the survey area and vicinity;
- Standard biological references (e.g., Holland, 1986; Hickman, 1993; Zeiner et al., 1988; Sawyer-Keeler Wolf, 2009; Sibley, 2001);
- Surveys and environmental documents including specific information on species or habitats found in the survey area such as the *Sunol Quarry Revised Surface Mining Permit Terrestrial Wildlife Habitat Assessment* (ESA, 2011c), *Draft Revised SMP-30 Rare Plant Survey Report* (ESA, 2010a), *Sunol Quarry Revised SMP-30 California Red-legged Frog Protocol Survey Report* (ESA, 2011d), *Sunol Quarry Revised SMP 30 California Red-legged Frog Habitat Assessment Report* (ESA, 2011e), *Sunol Quarry Revised SMP-30 California Tiger Salamander Habitat Assessment Report* (ESA, 2011f), *Initial Study/Mitigated Negative Declaration for the San Francisco Public Utilities Commission Alameda Siphons Seismic Reliability Upgrade Project* (San Francisco Planning Department, 2008b), *Alameda Siphons Seismic Reliability Upgrade Project Biological Assessment* (Irvington Partners Joint Venture, 2008), *Final Environmental Impact Report for the San Francisco Public Utilities Commission New Irvington Tunnel Project* (San Francisco Planning Department, 2009a), *Biological Assessment New Irvington Tunnel Seismic Reliability Upgrade Project* (Irvington Partners Joint Venture, 2009), *San Antonio Backup Pipeline Botanical Survey Report* (May and Associates, 2008), *Special-status Plant Surveys for San Antonio Backup Pipeline Project*, (ESA+Orion, 2010a), and *SFPUC San Antonio Backup Pipeline Project Terrestrial Habitat Assessment* (ESA+Orion, 2011a);
- Other available literature regarding the natural resources of the area.

Once site surveys were completed and all sources reviewed, a list was prepared of special-status species that were observed or had the potential to occur in the survey, due to the presence of the basic habitat types that they inhabit (Table 1). Species were designated as follows:

- Low Potential for occurrence if: (1) their known current distribution or range is outside of the survey area, (2) only limited or marginally suitable habitat is present within the Project area, (3) their specific habitat requirements (e.g., serpentine grasslands, as opposed to grasslands occurring on other soils) are not present, or (4) they are presumed, based on the best scientific information available, to be extirpated from the Project area or region.
- Moderate Potential for occurrence if there is low to moderate quality suitable habitat within the survey area or immediately adjacent areas, even though the species was not observed during biological surveys.

- High Potential for occurrence if (1) moderate to high quality habitat is present within the survey area and (2) the survey area is within the known range of the species.

For the analysis presented below, impacts resulting from implementation of the proposed Project were considered to be significant if they had the potential to:

- Have a substantial adverse effect on special-status species that were found to have moderate or high potential to occur;
- Result in the fill of or otherwise cause degradation of potentially jurisdictional waters;
- Have a substantial adverse effect on areas designated as a sensitive natural community in this EIR;
- Otherwise exceed the significance criteria outlined above

The environmental baseline used to determine significance in this section is based on existing conditions at the time of the notice of preparation (NOP) for the Project. The difference between the existing quarry and processing operations pursuant to the SMP-30 permit as approved by Alameda County in 1992 and the proposed Project; and the difference between regulatory conditions as they existed in 1992 and as they will exist in the foreseeable future are the context of the analysis of the following impacts. This EIR considers the effects of the proposed Project as it differs from the baseline condition.

Since the Project is will be implemented in three phases (Phase I, Phase II, and the Reclamation Plan), the following discussion analyzes effects of each phase of the proposed Project.

Special-Status Species

Impact Bio-1: The proposed Project could have a substantial adverse effect on special-status species. (**Less than Significant with Mitigation**)

As previously discussed, no special-status plants are known to occur within or adjacent to the Project area. Therefore, this impact discussion focuses on special-status animal species.

Potential Impacts, Phase I

Implementation of the initial construction of Phase I of the proposed Project may have potentially significant impacts to California tiger salamander, California red-legged frog, and special status bird and bat species if they are present within the Project area. Expansion of the quarry would permanently impact approximately 3.8 acres of marginal to low quality upland dispersal habitat for California tiger salamander and California red-legged frog.

California Tiger Salamander and California Red-Legged Frog

Implementation of initial construction of Phase I would expand the quarry into non-native grassland, willow scrub, ruderal and developed areas and add new asphalt and concrete batch plants into existing active quarry sites. Phase I would occur in areas that potentially provide low quality aquatic and low quality upland habitat for California red-legged frog and low quality upland habitat for the California tiger salamander. The North and East Basins contain low quality California red-legged frog aquatic habitat. Phase I would not expand into either the North or East Basins but grading, vegetation removal, or other activities may occur adjacent to these pits. Non-native grasslands within the survey area provide potential low quality upland refugia and movement habitat for the California tiger salamander and California red-legged frog. Quarry expansion of the South Basin in Phase I would permanently impact approximately 3.8 acres of non-native grassland habitat. The non-native grassland area that would be impacted is considered low quality for California tiger salamander and California red-legged frog because of its compacted soils, the scarcity of small mammal burrows, and its location within active

quarry operations and SFPUC project construction. Willow scrub, ruderal and developed areas do not provide suitable upland refugia habitat for the California tiger salamander and California red-legged frog. Aquatic habitat in the North and East Basins provides low quality habitat for red-legged frog. Willow scrub is located within the walls of an active quarry pit and is heavily disturbed, as are the ruderal and developed areas.

As noted previously in the Setting, California tiger salamander and California red-legged frog have been observed in close proximity to the proposed work areas and have a low potential to travel through the Project site on a transient basis. Ecological studies of population dynamics are often based on a "source-sink" model, where some habitats cannot support a steady or increasing population on their own (sink habitats), and are supplied by local migration, or dispersal, from habitats that are self-supporting (source habitats) (Pulliam, 1988). Because sink populations cannot support reproduction rates greater than mortality rates, these areas are often of lower habitat value or isolated from other source populations. A specific type of sink habitat is considered an *ecological trap*, or a poor-quality habitat that nonetheless attracts individuals of a species based on evolutionary cues; these cues can be based on habitat attributes common to poor and high-quality habitats, such as the presence of water (Battin, 2004; Kristan, 2003; Schlaepfer et. al., 2002). Unlike habitat sinks, ecological traps are inherently detrimental to the existence of local populations. Ecological traps also model habitat choice, a variable not directly addressed by source-sink population models (Kristan, 2003). While ecological traps can occur under solely natural conditions, studies of human-disturbed habitats are increasingly finding circumstances resulting in ecological traps for wildlife species (Schlaepfer et. al., 2002). Previously studied ecological traps include: predation of passerine bird nests at forest edges because preferred high-quality habitats typically occur in a mix of forested and open areas; mortality of grassland bird nests due to agricultural activities in fields with favorable vegetation structure for nesting; and mortality of manatees attracted outside of their typical habitat range by warm water effluent from power plants (Schlaepfer et. al., 2002).

Within the Project area, both the California red-legged frog and California tiger salamander have the potential to occur as transient species, based on local occurrence data and the presence of low-quality upland and aquatic habitat. The Project area, however, should be considered a population sink for both these species. Breeding habitat for either species is not present within the Project area, indicating that species occurrences within the Project area consist of transient individuals. Furthermore, aquatic habitats in the Project area have characteristics typical of an ecological trap. Both California red-legged frogs and California tiger salamander follow evolutionary cues to locate aquatic habitat for breeding, which could include movement toward quarry ponds and other aquatic features within the quarry study area; however, presence of aquatic predators and fluctuating water levels prevent successful reproduction in these habitats and in turn prevent establishment of self-sustaining populations. Bullfrogs, which can outcompete California red-legged frogs for food, disrupt reproductive cycles of red-legged frogs and California tiger salamanders, and directly prey on earlier life stages of frogs and tiger salamanders (Pearl et. al., 2004) have been observed in several ponds. Invasive fish, also observed, often prey on frog and salamander larvae. While these two species may be attracted to aquatic habitats in the Project site, current conditions are considered detrimental for dispersing individuals and preclude establishment or persistence of successful populations.

If special status amphibians were present, site grading, clearing, and preparation for implementation of initial construction of Phase I could directly injure or kill individuals by crushing them or their burrows. Trenches left open during the night could trap and kill California tiger salamander and California red-legged frog. Noise, vibration, traffic, and other construction activities could affect movement of California tiger salamander and California red-legged frog or cause injury or mortality to individuals. Degradation of water quality in adjacent aquatic features (including the North and East Basins) during construction could result in injury to or mortality of California red-legged frog.

Once the quarry pit expansion has been completed and the new asphalt and concrete batch plants have been installed, quarry operations would be conducted in a similar manner to existing operations and

would not differ significantly from baseline site conditions. Therefore, quarry operations would not result in any new impacts to California red-legged frog or California tiger salamander.

Permanent loss of the non-native grassland habitat within the quarry expansion area and direct injury or mortality of either of these species would be considered a potentially significant impact.

Nesting Birds and Bats

Expansion of the quarry area as part of Phase I could result in removal of nesting habitat for special status birds (including loggerhead shrike) and other birds protected by the Migratory Bird Treaty Act and the California Fish and Game Code as well as foraging and roosting habitat for bats (including Yuma myotis, hoary bat, and pallid bat).

Within the quarry expansion area and site of the new asphalt and concrete batch plants, special status birds have potential to nest in trees and shrubs located along Calaveras Road, in trees in the non-native grassland, and in the willow scrub within the walls of the South Basin. Bats may potentially roost in large tree crevices or in abandoned quarry facilities or structures in the quarry expansion area or new facility construction area. Special status bird and bat species are sensitive to human activity and noise from construction activity with 500 feet of an active nest or maternity site (for bats) could disrupt breeding of these species. Removal of nesting or roosting sites or construction activity within 500 feet of an active nest would be a potentially significant impact.

Once the quarry has been expanded and the new facilities have been added, the quarry would operate in a similar manner to the baseline operations and would not be expected to impact special status birds or bats.

Potential Impacts, Phase II

As described below, implementation of Phase II of the proposed Project may have potentially significant impacts on California tiger salamander, California red-legged frog, and special status bird and bat species if present within the Project area.

California Tiger Salamander and California Red-Legged Frog

Phase II would occur in areas that provide potential low quality aquatic habitat for the California red-legged frog. Phase II includes the incorporation of the North Basin and the adjacent pond into a single larger water storage basin, this action would temporarily disturb the aquatic habitats within the North Basin and the adjacent pond. However, there would be no permanent impacts to aquatic habitat and the incorporation of the two aquatic features would result in a net increase of aquatic habitat by approximately two acres. If California red-legged frogs are present in either aquatic feature during construction of the larger water storage basin, construction activities would affect the frogs and would be a potentially significant impact.

Phase II would also include building a bench within the southern end of the South Basin, moving the quarry operations onto that bench, and quarrying out the remainder of the South Basin. All of these activities would occur within existing quarry operational areas. Implementation of Phase II would not occur within California tiger salamander or California red-legged frog upland refugia habitat. However, California tiger salamander or California red-legged frog have low potential to move through the entire Project site on a transient basis. If an individual is present within the Project area, construction activities associated with moving the quarry facilities into the southern end of the South Basin could affect individuals and result in a potentially significant impact.

Nesting Birds and Bats

Similar to Phase I, implementation of Phase II may impact potential nesting or roosting habitat for birds and bats. Trees and shrubs within the vicinity of the North Basin and the adjacent pond may be disturbed during construction of the larger water storage basin. Additionally, as part of Phase II a bench will be constructed within the southern end of the South Basin and quarry facilities will be relocated to this site If nesting birds or roosting bats are present within 500 feet of these impact areas, construction would result in a potentially significant impact.

Potential Impacts, Reclamation Plan

Overall, implementation of the Reclamation Plan would have a positive impact on California tiger salamander, California red-legged frog, and special status bird and bat species by increasing the habitat quality on-site. Initial efforts of the Reclamation Plan may temporarily increase the amount of noise, human activity, and traffic within the Project site and could have a potentially significant impact on special status species.

California Tiger Salamander and California Red-Legged Frog

One option of the Reclamation Plan is to backfill the East Basin following completion of quarry operations. The East Basin contains low quality California red-legged frog aquatic habitat. If frogs are present within the East Basin and the pit is backfilled, construction activities could affect California red-legged frog and would be a potentially significant impact. Additionally, fill of the East Basin would result in the permanent loss of potential low quality California red-legged frog habitat. The expanded South Basin will be used for water storage under the Reclamation Plan. The new pit will create over 200 acres of open water aquatic habitat and will mitigate for any potential loss of habitat at the East Basin.

Prior to implementation of the Reclamation Plan, the entire area would be utilized for quarry operations and would not contain suitable upland refugia for the California tiger salamander, California red-legged frog, or Alameda whipsnake. As part of the Reclamation Plan, quarry equipment and facilities would be removed from the Project site and all remaining upland areas would be revegetated with erosion control grasses. The South and North Basins would be used as water storage and the East Basin would be potentially filled and revegetated. Upon removal of quarry operations and restoration of the site, the site would have an overall increase in habitat value for California tiger salamander and California red-legged frog. There would be a decrease in the amount of noise, light, and human presence on-site and an increase in the extent of aquatic habitat and non-native grassland.

Similar to Phase I and Phase II, there would be potential for impacts to California tiger salamander and California red-legged frog during equipment and facilities removal and site restoration. Although there would not be any upland refugial habitat on-site, California tiger salamanders and California red-legged frogs are known from the vicinity of the Project site and have potential to travel through the work area. Construction associated with backfilling of the East Basin, removing quarry equipment and revegetating the upland areas could affect California tiger salamander, or California red-legged frog, if individuals are present. This would be considered a potentially significant impact.

Nesting Birds and Bats

Similar to Phase I and Phase II, implementation of the Reclamation Plan may affect nesting birds or roosting bats. If nesting birds or roosting bats are present within areas to be reclaimed, or within any areas where quarry facilities are removed, construction activities in these areas could affect the reproductive success of nesting birds, disturb roosting bats, or result in mortality due to nest or roost destruction, and result in a potentially significant impact.

Mitigation Measures Proposed as Part of the Project

The proposed Project includes measures protective of natural and biological resources that are or will be required as permit or lease conditions. These measures include maintaining consistency with the original 1992 conditions of approval for the SMP-30 permit, implementation of the Project's proposed Reclamation Plan, and compliance with SFPUC lease terms and implementation of the *Conservation Plan for Sunol Quarry SMP-30 Site*. Both the Reclamation Plan and the Conservation Plan require extensive restoration of upland and riparian habitat within and adjacent to the Project site.

Conditions of Approval, SMP-30

Consistent with the conditions of approval for the original 1992 SMP-30 permit approvals, the current Project maintains conditions protective of natural resources, including the following:

- The Project maintains a 100 foot buffer zone as measured from the top of the Alameda Creek bank adjacent to the Project area (right bank looking downstream) for all quarry activities, and a 50 foot buffer zone as measured from the top of the San Antonio Creek bank adjacent to the Project area (looking downstream).
- Pursuant to the proposed Reclamation Plan, all final and reclaimed banks and bare soil areas shall be planted with native grassland grass and forb species to the extent feasible

Reclamation Plan

Implementation of Project's Reclamation Plan would compensate for permanent impacts to non-native grassland within the expansion area. The Reclamation Plan includes restoration of riparian vegetation along both banks of Alameda Creek and San Antonio Creek adjacent to the Project site, as well as restoration of upland habitat where it remains within the Project area. Restoration of up to approximately 23 acres of riparian habitat along the creek banks would create higher value habitat than the non-native grassland area that will be permanently impacted by quarry expansion.

Plant species intended to be used in revegetation are to be commercial erosion control species that have a high rate of success on surfaces created from processed quarry fines. A locally supplied erosion control seed mix with success guaranteed by the supplier will be used. Anticipated seed mixes will contain annual barley, Blando and California brome, annual fescue and wildflower mix. Consistent with state Surface Mining and Reclamation Act requirements, test plots of planted surfaces will be used to confirm that the recommended application rate and specific seed mix meets the intended surface stabilization for erosion control. Revegetation success will be monitored over a period of at least two years Monitoring data will include a list of the species present, plant cover and composition estimates, and an evaluation of erosion control effectiveness. Performance standards to be met prior to release of financial assurances shall include cover value of 75 percent and a species diversity of two species.

SFPUC Lease Terms / Conservation Plan

The lease agreement between Oliver de Silva (ODS, the Project applicant) and the SFPUC contains requirements that include environmental enhancements and measures to minimize water losses from Alameda Creek, to compensate for permanent impacts to non-native grassland within the expansion area, and to aid in the restoration of a viable steelhead trout run to Alameda Creek. The lease agreement (which will be approved upon certification of this EIR and approval of the Project by the County) and the Conservation Plan between ODS, the Alameda Creek Alliance (ACA), and the Center for Biological Diversity (CBD), was entered into with the intent to fully mitigate for impacts to biological resources resulting from the proposed Project. The Conservation Plan contains avoidance, conservation, and mitigation measures as detailed below. While the focus of these measures is on enhancing habitat for steelhead in Alameda Creek and its tributaries, they will also improve habitat in Alameda and San Antonio Creeks for CRLF, CTS, foothill yellow-legged frog, and western pond turtle, as well as for

birds, bats, and other species that rely upon riparian habitat. Lease conditions and Conservation Plan measures include:

- Participation in and Contribution of Funding to Local and Regional Habitat Planning and Restoration Efforts.
    - ODS will coordinate with PG&E and provide funding to modify a gas pipeline crossing of Alameda Creek in the Sunol Valley Reach that provides a barrier to upstream fish passage. This Project may include removal of all infrastructures from the Alameda Creek streambed or may maintain infrastructure in the creek with a fish ladder installed for steelhead migration.
    - ODS will contribute funds to the development of the Sunol Valley Restoration Plan, which is being developed to guide restoration, conservation, and monitoring efforts along the Sunol Valley Plan Reach[7] of Alameda Creek. The SVRP will provide a framework for coordinating various restoration and conservation opportunities associated with several projects, including the proposed Project, the Calaveras Dam Replacement project, and the Alameda Watershed Habitat Conservation Plan. The plan will examine restoration opportunities to benefit the common and special status species found in the Alameda Watershed.
    - Not later than one year after approval of the Project, ODS will fund a study of Alameda Creek geomorphology to determine the need for stabilization and reconfiguration of the creek within the entire gravel quarry reach of Alameda Creek in the Sunol Valley. At this time ODS will also hire a consultant to develop a streambed restoration and revegetation plan for this reach.
    - ODS will restore stream habitat and biological function through restoration of approximately 8,720 linear feet on Alameda Creek, 3,130 linear feet on San Antonio Creek, and up to approximately 23 acres of riparian vegetation on both banks of Alameda and San Antonio Creeks adjacent to the quarry. According to the Conservation Plan, revegetation is to occur within two years of approval of the Project's lease, and/or commensurate with the Sunol Valley Restoration Plan implementation schedule. Watering, monitoring, and replacement of vegetation will be conducted until 2030, if needed, in order to promote establishment and maintain vegetation in good condition.
    - Contribution of funding towards the lower Alameda Creek fish passage projects at the Alameda County Flood Control Bart weir and the Alameda County Water District upper rubber dam. Implementation of these projects will restore access to the upper Alameda Creek watershed for anadromous steelhead trout.
- Minimize Water Loss from Alameda Creek.
    - ODS will minimize percolation losses of water from Alameda Creek and San Antonio Creek to the Project's quarry pits through installation of bentonite cutoff walls to eliminate flow through shallow alluvium strata into the pits. The cutoff wall along Alameda Creek would be approximately 7,800 feet long at an estimated depth of 35 to 45 feet. A second 2,300 foot long cutoff wall would be installed along San Antonio Creek if determined necessary.
- Preconstruction Surveys for California red-legged Frog and California Tiger Salamander. ODS will hire a qualified biologist to conduct pre-construction surveys within and adjacent to the Project site to ensure that no red-legged frogs or tiger salamanders are present within the mining site, equipment areas, or along roads used to access the site. These surveys shall be shared with the Conservation Groups (ACA and CBD) at the time that ODS submits the surveys to the public agencies.

[7] The Plan Reach runs from just below the Alameda Creek Diversion Dam to the site of Niles Dam, which was removed four years ago.

- Surveys shall be completed for all life cycle stages of CRLF (e.g., egg masses, tadpole, juveniles, and adults) that may occur within or adjacent to the Project area.
- Surveys will be completed for all life cycle stages of CTS, appropriately timed with respect to salamander activity and proposed construction activities.
- The name and credentials of a biologist qualified to act as a construction monitor shall be submitted to the USFWS for approval at least 15 days prior to commencement of work.
- The USFWS-approved biologist shall conduct pre-construction surveys within aquatic habitat in the Project area, at least two weeks prior to the onset of construction activities.
- If adult CRLF or CTS tadpoles or eggs are found within the construction disturbance zone, the USFWS-approved biologist shall contact the USFWS to determine if moving any of these life stages is appropriate. If the USFWS approves moving the animals, the approved biologist shall be allowed sufficient time to move them from the construction sites before work activities begin. If no CRLF or CTS are detected during these surveys, construction-related activities may proceed without further requirements for the protection of individuals.
- The USFWS-approved biologist will remove and destroy from within the Project
- area any individuals of non-native species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible.
- Exclusionary fencing, such as silt fences, shall be installed around all construction areas that are within 150 feet of or adjacent to documented CRLF or CTS habitat. Once fencing is in place, it shall be maintained by ODS until completion of construction within or adjacent to the exclosure.
- ODS will implement a worker education program regarding special-status amphibians in the vicinity of the Project site, and will implement a vehicle speed limit on all internal roads within and adjacent to the Project site during winter, to reduce the likelihood of road kill of migrating amphibians.

- Preconstruction Surveys for Breeding Birds. In order to avoid disturbance of the nests of raptors or special-status passerine bird species, which are protected under CA Fish and Game Code Section 3503, the following measures shall be adhered to:
  - No more than two weeks prior to any construction or initiation of mining activities under the proposed Project, a qualified wildlife biologist will conduct preconstruction surveys of all potential bird nesting habitat within the Project area. These surveys shall be shared with the Conservation Groups. If construction activities (i.e., ground clearing and grading, including removal of trees or shrubs) are scheduled to occur during the non-breeding season (September 1 through January 31), no measures are required. If construction activities are scheduled to occur during the breeding season (February 1 through August 31), the Project proponent will implement the following measures to avoid potential adverse effects on any special-status birds which may occur:
  - If active nests are found during preconstruction surveys, the Project proponent will create a no-disturbance buffer (acceptable in size to the CDFG) around nests of special-status birds during the breeding season, or until it is determined that all young have fledged. Typical buffers are 250 feet for passerine nesting birds and 300 feet for raptors. The size of these buffer zones and types of construction activities restricted in these areas may be further modified in coordination with the CDFG and will be based on existing noise and human disturbance levels at the Project site. Nests initiated during construction are presumed to be unaffected, and no buffer would be necessary.

- If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the no-disturbance buffer for active nests may be removed.

- Worker Awareness Training. ODS will implement a worker education program regarding special-status amphibians in the vicinity of the Project site, and will implement a vehicle speed limit on all internal roads within and adjacent to the Project site during winter, to minimize the potential for road kill of dispersing amphibians.

Mitigation Measures

In addition to those measures included as part of the Project, the following additional mitigation measures are recommended to reduce potential impacts to sensitive species to a level of less than significant.

MM-Bio-1a: General Measures: ODS shall ensure that the following general measures are implemented as part of quarry operations and by the construction contractor(s) as applicable to minimize or avoid impacts on biological resources:

a) Construction contractor(s) shall minimize the extent of the construction disturbance as much as feasible.

b) Prior to the start of construction, the construction contractor, in coordination with a qualified biologist, shall install 4-foot-tall fencing at the limits of construction, and outside the driplines of all trees to be retained that are located within 50 feet of any grading, road improvements, underground utilities, or other construction activity. A qualified biologist and ODS must first approve any encroachment into these fenced areas. The contractor shall maintain the temporary fencing until all construction activities are completed. No construction activities, parking, or staging shall occur within the fenced areas.

c) Project-related vehicles shall observe a 15-mile-per-hour speed limit on unpaved roads in the work area, or as otherwise negotiated with the applicable regulatory agencies.

d) ODS and construction contractors shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be collected daily from the Project site and placed in a closed container, from which garbage shall be removed weekly.

e) Construction personnel shall not feed or otherwise attract fish or wildlife in the Project area.

f) No pets or firearms shall be allowed in the Project area.

g) Staging areas shall be located at least 50 feet from aquatic areas.

h) If vehicle or equipment fueling or maintenance is necessary, it shall be performed in designated staging areas.

i) At individual construction sites (not the quarry) where excavations may require dewatering, intakes shall be screened with a maximum mesh size of 5 millimeters.

MM-Bio-1b: Construction Monitoring and Protocols. At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation-removal activities, a USFWS- and CDFG-approved biologist shall conduct on-site monitoring for the presence of

California tiger salamander and California red-legged frog in the area where ground disturbance shall occur as follows:

a) Exclusion fencing shall be inspected to ensure it does not have any tears or holes, that the bottoms of the fences are still buried, and that no individuals have been trapped in the fences.

b) Any California tiger salamander and California red-legged frog along and outside the fence shall be closely monitored until they move away from the construction area.

c) All open trenches or holes and areas under parked vehicles shall be checked for the presence of California tiger salamander and California red-legged frog.

d) All excavated or deep-walled holes or trenches greater than 2 feet in depth shall be covered at the end of each workday using plywood or similar materials, or escape ramps shall be constructed of earth fill or wooden planks. Before such holes are filled, they shall be thoroughly inspected for trapped animals.

e) Project personnel shall be required to immediately report any harm, injury, or mortality of a special-status species during construction (including entrapment) to the construction foreman or biological monitor, and the construction foreman or biological monitor shall immediately notify ODS. ODS shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California and/or to the local CDFG warden or biologist (as applicable) within one working day of the incident. ODS shall follow up with written notification to the USFWS and/or CDFG (as applicable) within five working days of the incident. All observations of federally and state-listed species shall be recorded on CNDDB field sheets and sent to the CDFG by ODS or representative biological monitor.

f) While it is not necessary that the biological monitor stay on-site for the entire day, the monitor shall remain on-call in case any of these animals are discovered and it is necessary to move them. ODS shall designate a representative as the point of contact in the event that a California tiger salamander and California red-legged frog is discovered on-site when the biological monitor is not present.

g) If the biological monitor or construction personnel find any of these species within the work area, construction activities shall cease in the immediate vicinity of the individual until: (1) the USFWS and/or CDFG are contacted and/or the animal has been removed from the construction area, in accordance with permits, by a USFWS- and CDFG-approved biologist and released near a suitable burrow or other suitable habitat within 0.25 mile of the construction area, or (2) the animal moves away from the construction area on its own.

h) Once all initial ground-disturbing activities are completed, the biological monitor shall perform spot checks of the Project area at least once a week for the duration of construction to ensure that any exclusion fencing is in good order, trenches are being covered if left open overnight (or escape ramps provided), Project personnel are conducting checks beneath parked vehicles prior to their movement, and all other required biological protection measures are being followed.

MM Bio-1c: Conduct Preconstruction Surveys for Special Status Bats and Implement Avoidance and Minimization Measures. Not more than one week prior to tree removal or removal of- any abandoned structure, a qualified biologist (i.e., one familiar with the identification of bats and signs of bats) shall survey the tree or structure to be removed in the Project area for the presence

of roosting bats. Bats may be present any time of the year. The biologist shall thoroughly search trees or structures that provide appropriate habitat (trees with foliage or cavities or that are hollow) for the presence of roosting bats or evidence of bats.

a) If no roosting bats or evidence of bats are found, the removal of trees or structures may proceed.

b) If bats are found or evidence of use by bats is present, the biologist shall map and mark the tree or structure with flagging. ODS shall ensure that the trees or structures are not removed until the CDFG has been consulted for guidance on measures to avoid and minimize disturbance of the special-status bats. Measures may include monitoring trees or structures and excluding bats from a tree or structure until it is removed and/or timing tree or structure removal and use of a construction buffer to avoid disturbance of young before they are able to fly.

Resulting Level of Significance

With implementation of all measures included as part of the proposed Project (including maintaining consistency with the original 1992 conditions of approval for the SMP-30 permit, implementation of the Project's proposed Reclamation Plan, and compliance with SFPUC lease terms and implementation of the Conservation Plan for Sunol Quarry), impacts to sensitive species would be substantially avoided.

With implementation of additional recommended Mitigation Measures Bio-1a through MM-Bio-1c described above, these impacts would be reduced to less-than-significant levels. (**Less than Significant**)

Riparian Habitat and Other Sensitive Natural Communities

Impact Bio-2: The proposed Project could have a substantial adverse effect on riparian habitat or other sensitive natural communities. Specifically, implementation of Phase I and Phase II of the proposed Project would permanently remove approximately 8.75 acres of willow scrub and 0.65 acres of mulefat scrub. This effect would be fully compensated for through measures incorporated into the Project. (**Less than Significant**)

Willow scrub along the walls of the South Basin and mulefat scrub along the walls of the North Basin are considered riparian habitat and, as such, may be considered to be waters of the State by the Regional Board and CDFG. These habitat patches are not supported by a creek or stream, but in the South Basin willow scrub is sustained by groundwater seepage from quarry pit walls and in the North Basin mulefat and willow scrub are sustained by high surface and ground water. While these habitats are located within active quarry facilities and are not pristine riparian habitats, they do have a low potential to support nesting birds and other wildlife that are tolerant of human activity.

During implementation of Phase I of the proposed Project, willow scrub along the eastern wall of the South Basin would be removed during pit expansion. Further excavation of the South Basin during Phase II would remove willow scrub along the western wall of the pit. Also as part of Phase II, mulefat and willow scrub along the walls of the North Basin would be removed as the pit is combined with the adjacent pond and willow scrub and freshwater marsh would be removed from the pond. Removal of mulefat and willow scrub, if it is considered to be riparian habitat, would be a significant impact.

Mitigation Measures Incorporated into the Project

The proposed Project includes implementation of the Conservation Plan and Reclamation Plan. These Plans include restoration of riparian habitat on both banks of Alameda and San Antonio Creeks adjacent

to the proposed Project as well as financial support of restoration of Alameda Creek in the Sunol Valley and a Sunol Valley Restoration Plan.

Execution of the Conservation Plan and Reclamation Plan would compensate in full for permanent impacts to willow and mulefat scrub within the proposed Project site. Willow and mulefat scrub that would be removed within the quarry pits is characterized as low quality habitat. These habitats are only present in narrow fringes around the quarry pit walls and are surrounded by ruderal habitats and subject to active quarry disturbance. Riparian habitats on Alameda and San Antonio Creeks that would be restored as part of the Conservation Plan are generally isolated from human disturbance and are supported by creek flow. They currently already provide higher values for wildlife than habitats surrounding active quarry pits and, upon restoration, would be more diverse and have enhanced values for terrestrial and aquatic wildlife.

With implementation of the Project's proposed Conservation Plan and Reclamation Plan, impacts to riparian habitats from the proposed Project would be less than significant.

Mitigation Measures

None needed

Wetlands

Impact Bio-3: The proposed Project could have a substantial adverse effect on federal or state protected wetlands. This effect would be fully compensated for through regulatory compliance and measures incorporated into the Project. (**Less than Significant**)

The existing excavation in the South Basin has intercepted groundwater flow associated with Alameda Creek; this water seeps out of the upper quarry slopes at the southern end of the pit, in some cases forming small channels. The wetland delineation for the NIT and Alameda Siphons projects identified several small perennial and/or intermittent drainages, as well as seasonal wetlands, willow scrub wetlands, and emergent marsh at the southern end of the South Basin. All of these waters were verified as non-jurisdictional by the Corps because they were created in dry lands, incidental to construction or excavation activities for the purpose of obtaining fill, sand, or gravel and, are located within an active mining operation. It is possible, but not expected, that they would be considered waters of the State by the Regional Board or CDFG. Similarly, the open waters of the North and East Basins are not considered to be federal or State jurisdictional (ESA, 2010).

Because these waters are located in an active quarry pit they have been subject to repeated disturbance over time and, consequently, flow paths and wetland size have varied over time as well. Additionally, fluctuations in the amount of water in the South Basin itself periodically inundate and later expose certain features. Recent work in association with the Alameda Siphons project re-routed the siphons overflow discharge pipeline into the southern end of the South Basin and placed approximately an acre of riprap along the slope as an energy dissipater, which eliminated a number of the channels and wetlands delineated in 2008. A wetland assessment to determine the current conditions has not been carried out.

An ephemeral stream (ES-1) is located within the Project's proposed expansion area. This is the only federal water located within the Project area. This stream was verified as jurisdictional by the Corps as part of the wetland delineation for the SFPUC's SABPL project. The stream begins in the hills to the east of Calaveras Road and was channelized and culverted through the nursery that formerly occupied part of the Project's proposed expansion area, to a discharge point on the slopes of the South Basin. The stream is unvegetated and lined with riprap and therefore does not support potential aquatic habitat for special status species. Within the survey area ES-1 is approximately 730 linear feet and 0.13 acre in area. As of

October 26, 2011, approximately 460 linear feet of ES-1 within the Project area had been apparently culverted and backfilled in association with the SFPUC's NIT and Alameda Siphons projects. It is assumed that the impacted area will be restored to its original condition at the conclusion of those projects.

Potential Impacts

Phase I

If wetlands and/or waters are still present at the southern end of the South Basin when Phase I of the Project is implemented, expanded excavation may result in their permanent elimination. This would be considered a significant impact if these waters are considered jurisdictional by the State.

When the quarry is expanded during Phase I, the length of ES-1 extending from the South Basin to a point approximately 250 feet west of Calaveras Road (a distance of approximately 480 linear feet) would be removed. Removal of ES-1, a jurisdictional water of the U.S., would be considered a significant impact.

Phase II

Phase II includes the consolidation of the North Basin and a small pond to the east, which supports minor areas of willow scrub and freshwater marsh. These actions will result in the removal of these wetlands, which may be considered jurisdictional by the State permitting agencies but would not be considered jurisdictional by the Corps as they are used in ongoing quarry operations.

Reclamation Plan

At the time of reclamation it is expected that there will be no jurisdictional waters present within the Project area. Therefore, the Reclamation Plan will have no additional impacts on jurisdictional waters.

Regulatory Compliance

The proposed Project would be required to comply with the requirements of the Corps Section 404 permit, RWQCB Section 401 permit, and CDFG Streambed Alteration Agreement. Terms and conditions of these permits are intended to minimize Project impacts on jurisdictional waters and compensate for temporary and permanent losses. After approval of the Project by the County and in association with Project wetland permitting, an updated wetland assessment will be funded by ODS and carried out in order to determine current extent of any potentially jurisdictional waters if required by permitting agencies. If necessary, ODS will prepare an updated wetland delineation to inform the permitting process.

Mitigation Measures Incorporated into the Project

The proposed Project includes implementation of the Conservation Plan and Reclamation Plan. These Plans include restoration of riparian habitat on both banks of Alameda and San Antonio Creeks adjacent to the Project area, as well as financial support of restoration of Alameda Creek in the Sunol Valley and a Sunol Valley Restoration Plan.

With Project regulatory compliance, implementation of the Project's proposed Reclamation Plan and participation in and contribution of funding to local and regional habitat planning and restoration efforts pursuant to the proposed Conservation Plan, temporary and permanent losses of federal and State waters, if any, would be fully compensated for. These measures would result in restoration of up to approximately 23 acres of riparian habitat and enhancement of 8,720 linear feet of stream on Alameda Creek and 3,130 linear feet of stream on San Antonio Creek. Therefore, impacts to federal and/or state protected wetlands from all phases of the proposed Project would be considered less than significant.

Mitigation Measures

None needed

Migratory Corridors and Nursery Sites

Impact Bio-4: The proposed Project would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (**Less than Significant**)

The Project site does not contain habitat for any resident or migratory fish. The majority of the survey area is currently used for quarry operations or is part of an active construction site. While there is potential for terrestrial wildlife species to travel through the Project site, it is not a primary wildlife movement corridor. The quarry and former nurseries have been in operation for decades. High levels of human activity including noise, lights, machinery, and heavy trucks used for quarry operations and construction already deter many species from making use of habitat within and in the vicinity of the Project area for breeding or other purposes. In addition, what little habitat remains within the Project site is degraded through past and/or ongoing disturbance and provides low values for wildlife.

As noted earlier in this EIR, the existing Sunol Quarry likely operates as a sink for local special status amphibian populations and aquatic habitat present may present an ecological trap for red-legged frog and tiger salamander that disperse onto the site. While the construction phases of Phase I and Phase II would temporarily increase the amount of activity and disturbance on-site, overall ongoing quarry operations would not vary substantially from current operations and their impacts on wildlife are expected to be similar to those that currently occur. Therefore, this impact is considered less than significant.

Mitigation Measures

None required

Conflict with Local Policies or Ordinances

Impact Bio-5: The proposed Project could conflict with local policies or ordinances protecting biological resources, but compliance with the Alameda County Tree Ordinance, and implementation of the Project's proposed Reclamation Pan and Conservation would provide for consistency with such plans and policies. (**Less than Significant**)

The relevant policies and ordinances protecting biological resources in the Project area include the Alameda County Tree Ordinance, Alameda Watershed Management Plan (AWMP), and the East County Area Plan (ECAP).

Regulatory Compliance

Alameda County Tree Ordinance

The Alameda County Tree Ordinance (Ordinance No. 0-2004-23, Chapter 12.11 of the Alameda County General Ordinance Code) requires project sponsors to obtain an encroachment permit for planting, pruning, or removing trees in the right-of-way of a county road, and to replace any removed trees. Dozens of trees are located within the Calaveras Road right of way within the Project boundary. The proposed Project has been designed to maintain a 250-foot setback from Calaveras Road and would avoid most trees located within the county right-of-way. However, during implementation of Phase II, two new access roads will be created between Calaveras Road and the Project site. Impacts to trees

within the Calaveras Road right of way during the creation of the two new access roads would be potentially significant.

The proposed Project would comply with the Alameda County Tree Ordinance and obtain an encroachment permit for planting, pruning, or removing trees in the right-of-way of a county road, and would replace any removed trees. Compliance with the Alameda County Tree Ordinance would reduce impacts to trees within the Calaveras Road right of way to less than significant.

Alameda Watershed Management Plan

Among other things, the Sunol Valley Resources Element of the AWMP provides a blueprint for management of ongoing mining and reclamation in the Sunol Valley by providing a conceptual program for the future of the entire valley. The program calls for reclamation of completed quarry pits as water storage. The AWMP EIR and the Plan itself considered the potential effects of changes in gravel mining operations on natural resources in the Sunol Valley on a programmatic basis. Management actions in the Plan and mitigation measures in the EIR were put forward to mitigate potential impacts resulting from changes in gravel mining operations to less-than-significant levels.

The proposed Project is expected to be compliant with the AWMP through compliance with SFPUC lease conditions and the Mitigation Measures proposed herein.

East County Area Plan

The proposed Project would comply with policies established in the ECAP that pertain to biological resources. Specifically, Policy 122 encourages the consolidation of wetland mitigation areas in areas that are relatively large and adjacent to or otherwise connected to open space. The Conservation Plan, which is part of the proposed Project, includes restoration of riparian habitat along Alameda Creek and San Antonio Creek. These two Creeks connect with Sunol Regional Wilderness and the open space surrounding San Antonio Reservoir.

Policy 125 encourages preservation of areas known to support special status species.

> The Project site does not contain high quality special status species habitat. Some special status species have potential to occur within the Project area, but would not be expected to breed on-site.

Policy 126 encourages no net loss of riparian and seasonal wetlands.

> Implementation of the Project's proposed Conservation Plan and Reclamation Plan would fully mitigate for permanent impacts to riparian habitat and jurisdictional waters as a result of Phase I and Phase II of the proposed Project.

Policies 128 and 164 ensure that where quarries are reclaimed as open space, reclamation plans are designed to restore biological value.

> The Project's proposed Reclamation Plan includes revegetation of all upland areas remaining at the time of reclamation, which would improve the biological value over existing and future conditions while the quarry is operational. In addition, the Reclamation Plan is expected to include some creation of wetlands in association with reclamation of the quarry pits as water storage features, which will enhance the value of these features for common, as well as special status wildlife.

Compliance with the Alameda County Tree Ordinance, and implementation of the Project's proposed Reclamation Plan and Conservation Plan and will ensure that the proposed Project will not conflict with local plans or policies.

Mitigation Measures

None required

Conflict with an Applicable Habitat Conservation Plan

Impact Bio-6: The proposed Project would not conflict with an applicable habitat conservation plan or natural community conservation plan. (**No Impact**)

There are no adopted habitat conservation plans or natural community conservation plans that currently apply to the Project area.

Regulatory Compliance

SMARA

The California Surface Mining and Reclamation Act (SMARA), Article 9, Section 3703 does contain performance standards by which wildlife and wildlife habitat are to be protected. In accordance with those standards:

Rare, threatened or endangered species or species of special concern, and their respective habitat, shall be conserved. If avoidance cannot be achieved, mitigation shall be proposed in accordance with the provisions of CEQA. CESA, Fish and Game Code and the federal Endangered Species Act.

> As indicated under Impact Bio-1 above, impacts to sensitive species would be substantially avoided through implementation of all measures included as part of the proposed Project and implementation of additional recommended Mitigation Measures Bio-1a through MM-Bio-1c would reduce such impacts to less-than-significant levels.

Wildlife habitat shall be established on disturbed land in a condition at least as good as that which existed before the lands were disturbed by surface mining operations.

> As indicated under Impact Bio-2 above, execution of the Project's proposed Conservation Plan and Reclamation Plan would compensate in full for permanent impacts to willow and mulefat scrub habitat within the Project site, and riparian habitats on Alameda and San Antonio Creeks that would be restored already provide higher values for wildlife than habitats surrounding active quarry pits and, upon restoration, would be more diverse and have enhanced values for terrestrial and aquatic wildlife.

Wetland habitat shall be avoided. Any wetland habitat impacted as a consequence of surface mining operations shall be mitigated at a minimum of one to one ratio for wetland habitat acreage and wetland habitat value.

> As indicated under Impact Bio-3 above, the Project will be required to comply with all regulatory requirements pertaining to wetlands. The Project's proposed Reclamation Plan and participation in and contribution of funding to local and regional habitat planning and restoration efforts pursuant to the proposed Conservation Plan would fully compensate for any temporary or permanent loss of federal and State waters, if any. These measures would result in restoration of up to approximately 23 acres of riparian habitat and enhancement of 8,720 linear feet of stream on Alameda Creek and 3,130 linear feet of stream on San Antonio Creek. Impacts to federal and/or state protected wetlands from all phases of the proposed Project would be considered less than significant.

Alameda Watershed Habitat Conservation Plan

The SFPUC is currently preparing the Alameda Watershed Habitat Conservation Plan to provide long-term conservation measures for threatened or endangered species that could be affected by ongoing water system operations and maintenance efforts on SFPUC-owned lands in the Alameda Watershed, or by recreation, lease, and easement activities. Quarry activities are not proposed as a covered activity, so the HCP would not apply to the proposed Project and, therefore, actions under the Project would not conflict with the HCP.

However, implementation of the Project's proposed Reclamation Plan and Conservation Plan should ensure that the proposed Project will generally be in compliance with the intent and purpose of the HCP.

East Alameda County Conservation Strategy

The East Alameda County Conservation Strategy (EACCS) is a joint effort among several local, state and federal agencies intended to provide an effective framework to protect, enhance and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to focus on impacts on biological resources such as endangered and other special-status species as well as sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS will enable local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives, and be implemented using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies can more easily address the legal requirements relevant to these species. The EACCS will not result in permits, but rather will serve as guidance for project-level permits, and the federal and state Resource Agencies are participating in the development of the EACCS with the intent that it becomes the blueprint for all mitigation and conservation in the study area.

The EACCS study area encompasses 271,485 acres, or approximately 52% of Alameda County, including the cities of Dublin, Livermore, and Pleasanton. The western boundary of the study area runs along the Alameda Creek watershed and the northern, southern and eastern boundaries follow the Alameda County line with its adjacent counties. The EACCS study area includes the watershed lands in the Alameda Creek watershed, which are also subject of the Alameda Watershed HCP described above. The EACCS study area has been divided into eighteen discrete units, or conservation zones to identify locations for conservation actions in areas with the same relative ecological function as those areas where impacts occur. The Project site is located in Conservation Zone 15.

The overall conservation priorities for Conservation Zone 15, and the Project's general compliance with these strategies, is discussed below:

Protect, restore and conserve sycamore alluvial woodland, and improve habitat value for central California coast steelhead and Alameda whipsnake along Alameda Creek:

> The CNDDB indicates that sycamore alluvial woodlands are present south of the Project boundary along Alameda Creek and east of the Project boundary along San Antonio Creek, but not found within the Project boundary. The Project's proposed Conservation Plan would ultimately enhance habitat along Alameda Creek and San Antonio Creek as more diverse and with enhanced value for terrestrial and aquatic wildlife. Implementation of the Project's Conservation Plan would contribute toward enhancing habitat for steelhead in Alameda Creek and its tributaries, and improving habitat in Alameda and San Antonio Creeks for CRLF, CTS, foothill yellow-legged frog, and western pond turtle, as well as for birds, bats, and other species that rely upon riparian habitat.

Protect critical habitat and recovery unit habitat for Alameda whipsnake:

As indicated in the Setting section, the Project site has a low potential for the occurrence of Alameda whipsnake as suitable core habitat is absent. Although dispersal habitat is present in the non-native grassland, these habitats are highly fragmented, isolated, and disturbed.

Protect potential breeding and movement habitat for foothill yellowlegged frog:

As indicated in the Setting section, there is no potential for occurrence of this species at the Project site as suitable habitat is absent. This species is limited to perennial drainages.

Protect serpentine bunchgrass grassland and northern coastal scrub/Diablan sage scrub land cover:

As indicated in the Setting section, no special status plant species or sensitive vegetative communities occur with the Project area. The majority of the Project site is characterized as developed or ruderal and supports little to no vegetation other than a few patches of non-native grassland.

Protect and enhance opportunities for ponds to increase potential breeding habitat for California red-legged frog:

As indicated Under Impact Bio-1 above, the ultimate removal of quarry operations and restoration of the site pursuant to the Reclamation Plan would have an overall increase in habitat value for California red-legged frog. There would be a decrease in the amount of noise, light, and human presence on-site and an increase in the extent of aquatic habitat and non-native grassland.

Complete surveys in annual grassland habitat for callippe silverspot butterfly larval host /food plants and map occurrences of plant populations:

As indicated in the Setting section, the majority of the Project site is characterized as developed or ruderal and supports little to no vegetation other than a few patches of non-native grassland.

Protect annual grassland in area between SR 84 and San Antonio Reservoir to support potential habitat for callippe silverspot butterfly, western burrowing owl and American badger: :

As indicated in the Setting section, the non-native grasslands in the Project site and within a 500-foot buffer support few small mammal burrows that could support western burrowing owl. A 2009 breeding season survey in potentially suitable grasslands east of Calaveras Road did not observe burrowing owls or signs of burrowing owls. Additionally, denning habitat for the American badger is absent from the Project area and foraging habitat is limited by lack of abundant small mammal activity.

Since the EACCS is not yet an adopted or approved plan, the draft conservation strategies do not apply to the Project. However, implementation of the Project's proposed Reclamation Plan and Conservation Plan would unlikely conflict and would more likely be compliance with the intent and purpose of the EACCS.

Mitigation Measures

None required

Cumulative Impacts

Impact Bio-7: Quarry expansion and reclamation under the Project, in combination with past, present, and reasonably foreseeable future projects in the site vicinity, could potentially have a

cumulatively considerable impact on biological resources. However, once the Project's proposed Conservation and Reclamation Plans are fully implemented, local habitat will be considerably improved for special status species. Proposed funding of planning efforts and restoration of habitat that contributes to regional enhancement of values for special status as well as common wildlife provides compensation for the Project's specific impacts as well as for the Project's contribution to cumulative impacts. (**Less than Significant**)

This analysis evaluates whether the impacts of the proposed Project, together with the impacts of other cumulative projects, would result in a cumulatively significant impact on special-status species, wetlands and other waters of the U.S., or other biological resources protected by federal, state, or local regulations or policies (based on the significance criteria and thresholds presented earlier). This analysis then considers whether the incremental contribution of the Project to this cumulative impact would be considerable. Both conditions must apply in order for the Project's cumulative effects to rise to the level of significance. The geographic context for analysis of cumulative impacts on biological resources encompasses the Sunol Valley with respect to vegetation and habitat and a five mile radius from the Project area with respect to wildlife. The distribution of special-status wildlife species that were considered for the Project spans much of the state of California, and sensitive communities and wetlands characterized in the study area are similarly present throughout the state. However, based on the magnitude of Project impacts as well as what would be considered "standards of practicality and reasonableness" as directed by CEQA Guidelines §15130(b), a regional context of biological resources is appropriate.

Impacts from all phases of the proposed Project are considered in this cumulative assessment, as Project-level impacts potentially contributing to cumulative impacts could occur during implementation of any of the Project's phases. The temporal nature of impacts produced by other projects in the vicinity of the Project site was considered, as impacts from other projects may not occur simultaneously with impacts from the proposed Project, and could affect whether these impacts are cumulative.

Potential impacts on biological resources that may occur as a result of implementation of the proposed Project include: removal of low-quality habitat for California tiger salamander and California red-legged frog; injury or mortality to special status species during initial construction of the three phases of the proposed Project; removal of nesting bird habitat and impacts to nesting birds during the breeding season; injury, mortality, or disturbance of roosting, breeding, or hibernating bats; removal of willow and mulefat scrub habitat; removal of federal and state jurisdictional waters; and removal of trees within the Calaveras Road right of way. This EIR analysis either finds no significant impact or presents mitigation measures that would support a conclusion of "less than significant with mitigation" for all potentially significant impacts on biological resources.

The hillsides surrounding the Project site to the east and west are largely undeveloped and provide habitat for a variety of special status species. The majority of the Project site has operated as active aggregate mining facility for approximately 50 years. Original installation of quarry facilities removed native habitat that supported special status species. Active quarry operations, including sand and gravel extraction, plant operations, water management, and sand and aggregate production have significantly prohibited wildlife movement through the Project site. Recent onsite habitat assessment and survey results and ongoing construction monitoring for unrelated projects shows that the Project site does not support breeding populations of special status amphibians. In fact, the Project site may operate as a sink for local amphibian populations. The proposed Project would expand the quarry into areas outside of existing quarry operations, however these areas have been used as commercial plant nurseries for several decades and provide only marginal habitat for special status species or common wildlife. Several SFPUC WSIP projects have been implemented or are scheduled for implementation (NIT, Alameda Siphons, SABPL, Filter Gallery). These projects have also disturbed or will disturb habitat within the Project site or the immediate vicinity. Temporary and permanent impacts of the cumulative projects may combine to be considered cumulatively significant.

Despite many projects in the area potentially contributing to existing cumulative impacts, the Project's incremental impact is not considered to be cumulatively considerable. The current impact analysis has shown that implementation of the Project would result in less-than-significant impacts on biological resources within and in the vicinity of the Project area. The continuation of activities that have already had a long-standing effect on habitat quality and species movement is not a new impact nor will it be of significantly increased magnitude to be considered a significant change over current operations. When considered relative to the existing state of biological resources in the Project area, the Project (including implementation of the proposed Conservation Plan and Reclamation Plan) would add only a minor, incremental contribution to cumulative impacts on biological resources. Implementation of the Conservation Plan and Reclamation Plan, maintaining consistency with conditions of approval from the 1992 SMP-30 permit, and implementation of all other mitigation measures recommended in this EIR will prevent or reduce the magnitude of all Project-specific impacts. Once the Conservation and Reclamation Plans are fully implemented, local habitat will be considerably improved for special status species, as lacustrine, riparian and grassland habitats will be more abundant. In addition, the funding of planning efforts and restoration of habitat that contributes to regional enhancement of values for special status as well as common wildlife, including those species that may be affected by the Project through habitat conversion, provides compensation for the Project's specific impacts as well as for the Project's contribution to cumulative impacts.

Mitigation Measures

None required

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Geology and Soils

This section evaluates the proposed Project's potential impacts related to geology and soils. This section describes the existing geologic conditions at and in the vicinity of the site, and evaluates the extent to which the Project as proposed may affect or be affected by geologic conditions. Information in this section is drawn from geologic investigations and technical studies prepared for the Project by Benchmark Resources and Berlogar Geotechnical Engineers. All other sources are referenced at the end of this EIR.

Physical Setting

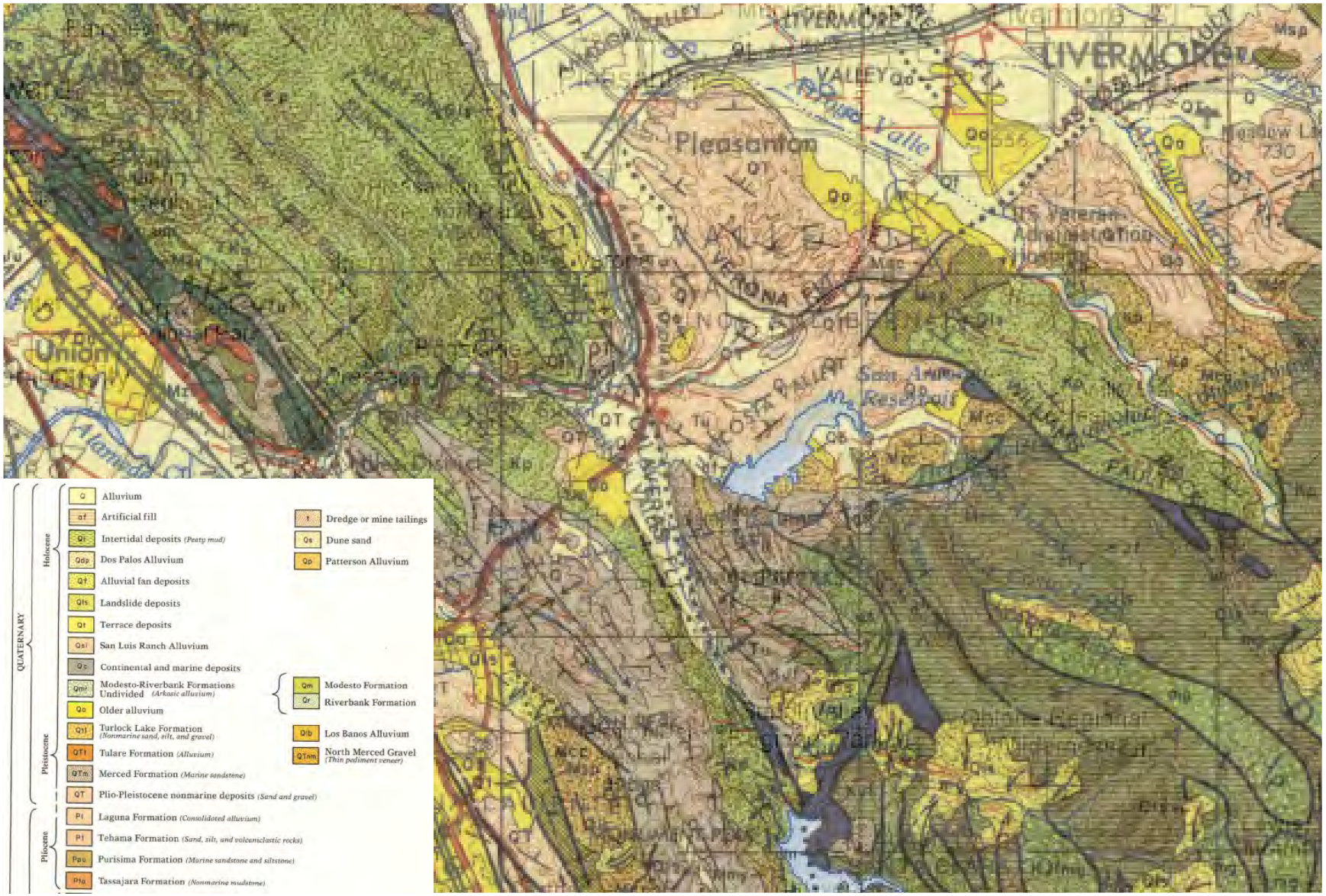
Geologic Structure

The geologic unit underlying the Project area consists of Pleistocene-era and later un-consolidated non-marine sediments of un-differentiated Quaternary alluvium (see **Figure 10-1**). This alluvium is composed of inter-bedded gravel, sand, silt, and clay. From the late-Pleistocene disturbance until the present time, stream erosion of the surrounding highlands and deposition of the erosion products in the valley depressions has continued, resulting in the Quaternary alluvium now preserved in Sunol Valley as well as in the Livermore, Vallecitos and La Costa Valleys.

Early in the period of alluvial deposition, large streams entering the Livermore depression from the south, and crossed Livermore Valley from east to west primarily along the southern border. These streams joined at the northwest corner of the valley and flowed out through San Ramon Valley to empty into the ancestral Sacramento River in the area now occupied by Suisun Bay. The ancient outlet through San Ramon Valley was probably largely controlled by movement along faults associated with the Calaveras system. The southern streams were able to deposit coarse alluvium because of their large drainage area and partly because the Livermore Formation gave them a ready-made source of gravel. During periods when the northwest outlet of the valley was open and the stream gradient steep, the southern streams, particularly ancestral Arroyo del Valle, were able to deposit gravel over nearly the entire floor of the valley. Great sheets of clean gravel thus gradually accumulated as the streams worked their way back and forth over the valley floor.

At some point during this geologic period, the outlet from Livermore Valley abandoned its ancient course to the north and established its present southwest outlet along Arroyo de la Laguna and through Niles Canyon to South San Francisco Bay. Movement along the Calaveras fault system probably caused uplift or landslides that blocked the northern outlet. This change probably took place as a result of regional up-warping along the northern outlet in the San Ramon area and as a result of stream capture by a tributary to Alameda Creek along the Calaveras fault zone. The present stream outlet from Livermore Valley was probably established during a time when the uppermost gravel layer, called the upper aquifer, was being deposited.[1]

[1] *Livermore and Sunol Valleys - Evaluation of Ground Water Resources*, Appendix A: Geology, University of California, Davis, October 18, 1966



Source: California Department of Conservation, sfsj/sfsj.html

Figure 10-1
Regional Geology

Seismicity

The Project site is located in a region of active seismicity. Active faults in the region include the San Andreas, Hayward, Calaveras and Greenville Faults. The nearest of these faults is the Calaveras Fault, passing immediately adjacent to the Project site along its eastern boundary at Calaveras Road, as shown on **Figure 10-2**. The Calaveras Fault is identified by the California Department of Mines and Geology as active. An Alquist-Priolo Special Studies Zone for fault rupture has been delineated along this fault, as shown on **Figure 10-3**.

Compilation of Northern Calaveras Fault Data

Substantial geologic investigations and data gathering efforts along the Calaveras Fault have been undertaken, and much of this information has been collected in a technical report entitled, "*Digital Compilation of Northern Calaveras Fault Data for the Northern California Map Database*".[2] The goal of this technical report was to compile geologic data on the active northern portion of the Calaveras fault, building upon previous work, in an effort to adequately document the current understanding of the fault and to help define fault-related hazards. The information presented below has been extracted from this technical report.

The Calaveras Fault is generally believed to consist of three primary sections including the Northern, Central, and Southern sections. The Northern Calaveras Fault extends from Danville on the north to the southern end of Calaveras Reservoir on the south, a length of approximately 28 miles. The Northern Calaveras Fault has been further interpreted as including several sub-sections based on differing fault characteristics. The Sunol Valley sub-section strikes north-northwest and consists primarily of a single fault strand located immediately west of Calaveras Road. The Sunol Valley subsection of the fault extends from the narrow southern end of the Sunol Valley occupied by Alameda Creek, northward to the Highway 680 crossing (approximately 5.3 miles long). It is this sub-section which passes immediately adjacent to the eastern boundary of the Project site. The fault characteristics along the Sunol Valley sub-section are moderately well defined on the basis of several detailed fault-rupture hazard analyses conducted since 1995. Overall, the fault has a relatively linear trace which is near but west of the eastern valley margin. In the narrow southern part of the valley the fault has an en echelon pattern of left-stepping north/northwest striking strands which transition with the more prominent left-stepping pattern that characterizes the fault further to the south in the Calaveras Reservoir area.

The location of the Sunol Valley sub-section of the fault is known based on prominent vegetation lineaments, springs, trench excavations, and observations of deformation. Between the Sunol Valley Water Treatment Plant and the Hetch Hetchy Aqueduct, detailed mapping of surface deposits and fault strands shows a fairly linear and simple fault consisting of a single primary strand. At the Hetch Hetchy Aqueduct fault crossing, detailed analyses reveals that the fault is within an approximately 100-foot wide zone that is about 230 to 328 feet west of Calaveras Road. Northward from the Alameda Siphons (adjacent to the Project site) the fault remains west of Calaveras Road in a generally linear alignment, but may have local minor left or right step-overs. The northern end of the Sunol Valley sub-section is at the Highway 680 crossing, where the primary fault strand enters an area of substantial topographic relief.

The Northern section of the Calaveras Fault is largely considered to be the section most likely to generate a large or moderate earthquake in the foreseeable future, capable of generating an earthquake with a magnitude greater than 6.75 on the Richter scale (>M 6.75).

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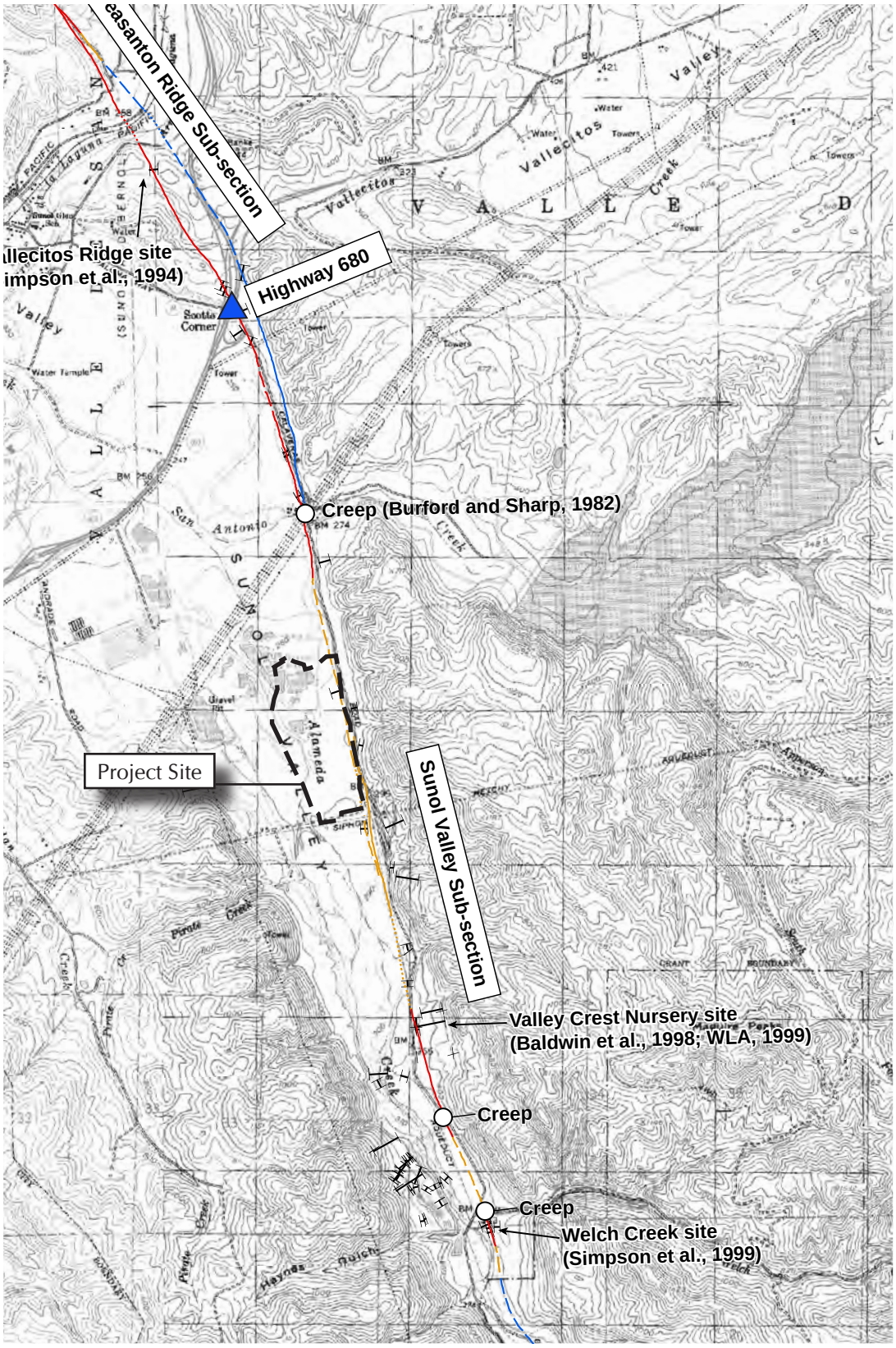
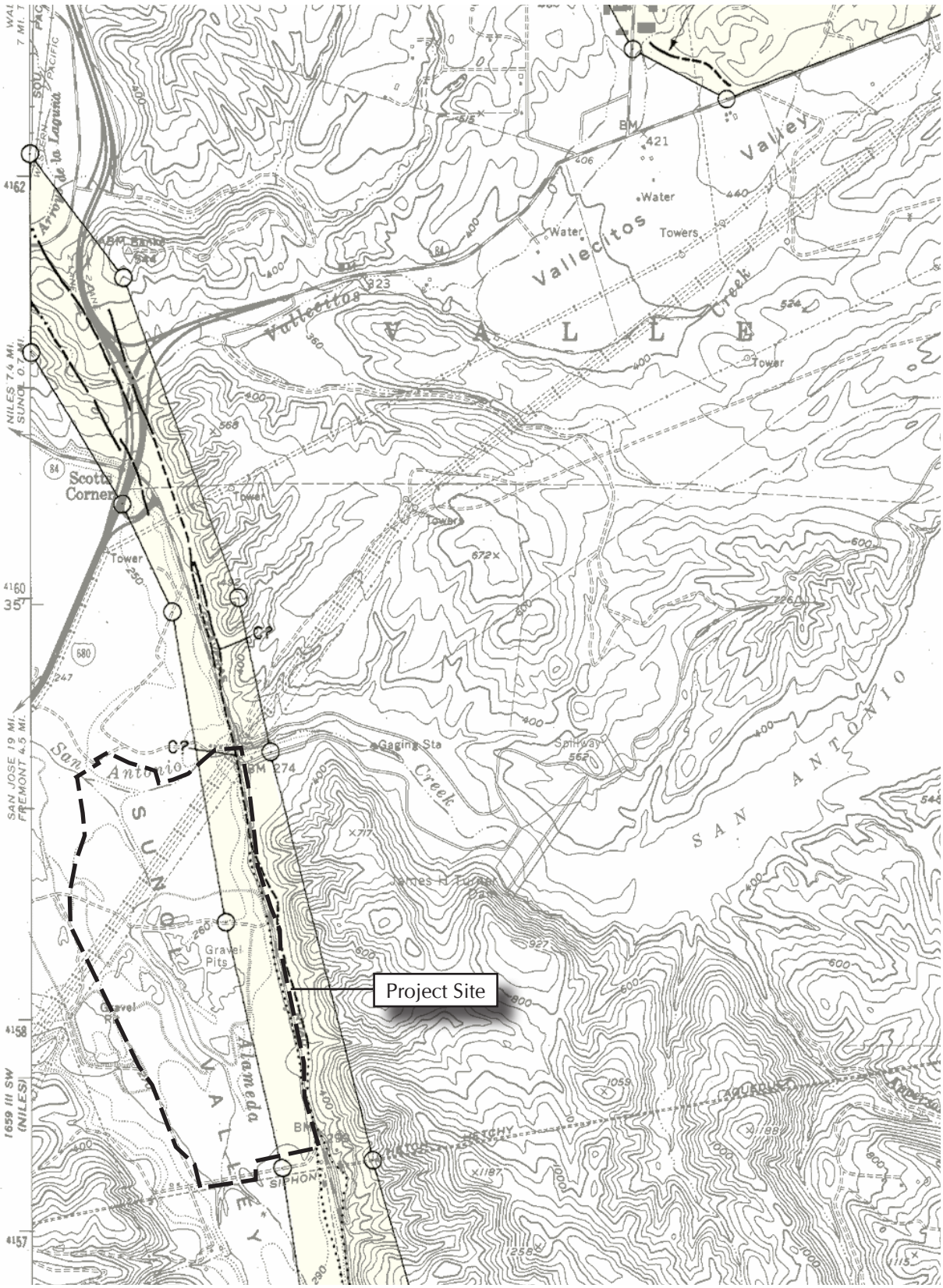
[2] *Digital Compilation of Northern Calaveras Fault Data for the Northern California Map Database*: Collaborative Research with William Lettis & Associates, Inc., and the U.S. Geological Survey. Principal Investigators: Keith I. Kelson and Sean T. Sundermann. , U. S. Geological Survey, National Earthquake Hazards Reduction Program Award Number 05HQGR0023, October 2007



Source: William Lettis & Associates, Inc., and the U.S. Geological Survey, compilation

Figure 10-2
Calaveras Fault Location, Sunol Valley Sub-section



State of California Special Studies Zones, La Costa Valley Quadrangle
Source: California Division of Mines and Geology

Figure 10-3
Calaveras Fault, Alquist-Priolo Special Studies Zone

According to earthquake hazard mapping efforts complied by ABAG, the Project site's location adjacent to the Northern Calaveras Fault is subject to severe intensity levels of earthquake shaking potential (modified Mercalli scale intensity of IX). Because it is located near a major active fault, the Project site will likely, on average, experience stronger earthquake shaking more frequently. ABAG estimates that the Northern Calaveras Fault has an approximately 12% probability of a characteristic earthquake occurring between 2002 and 2031, and a 2.4% chance of an earthquake of M 6.7 or greater occurring between 2007 and 2036 (during the Project's operating lifetime).

Soils

The U.S. Department of Agriculture Soil Conservation Service has mapped soil types throughout the County, with results complied in the Alameda County Soils Survey. According to the Soil Survey, the native soils within the Project site, including the 58-acre expansion area, are mapped as "Yolo loam over gravel, 0 to 3 percent slope". These soils have an erosion hazard (estimated risk of erosion if cultivated or heavily grazed) corresponding to "slight". This indicates that the native soils are not naturally prone to substantial erosion. However, with quarrying of the site and the on-site processing of quarried materials, the potential for erosion is exacerbated.

Regulatory Setting

Federal, state, and local agencies regulate activities that could pertain to geology and soils issues in the Project area. This section describes the regulatory framework that would apply to the proposed Project.

State

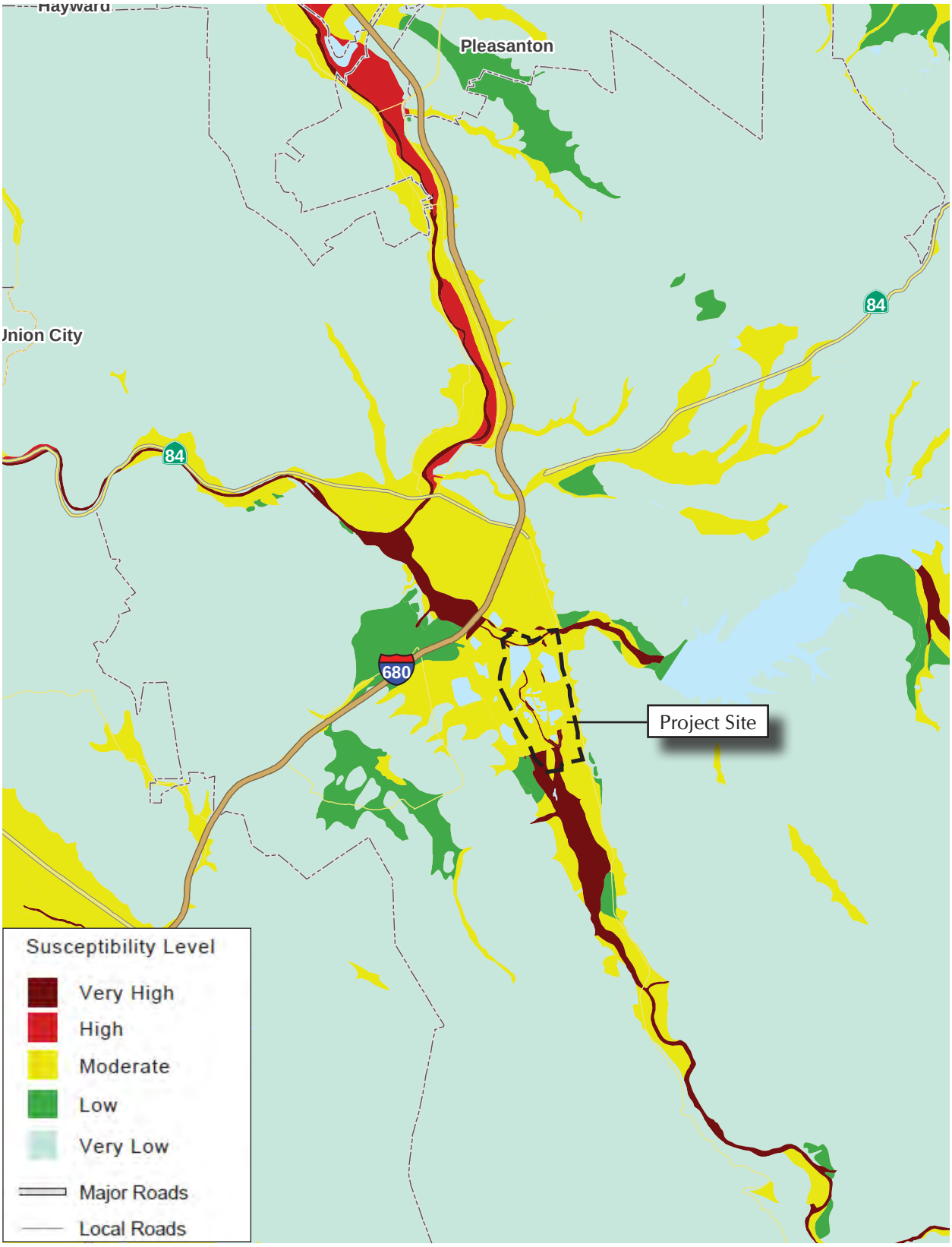
Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a Seismic Hazard Zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design.

The Project site is located within an area for which Seismic Hazard Zones for liquefaction and landslides are planned but not yet mapped. However, according to the Association of Bay Area Government's (ABAG) Liquefaction Hazard Map (see **Figure 10-4**) the Project is located in an area generally considered "moderately" susceptible to earthquake-induced liquefaction, although Alameda Creek is considered "highly susceptible" to liquefaction.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was signed into law December 22, 1972, went into effect March 7, 1973 and is codified in the Public Resources Code as Division 2, Chapter 7.5. The purpose of this Act is to prohibit the location of most structures for human occupancy across the traces of active faults and to thereby mitigate the hazard of fault rupture. This law initially was designated as the Alquist-Priolo Geologic Hazard Zones Act, but was renamed the Alquist-Priolo Special Studies Zones Act effective May 4, 1975 and the Alquist-Priolo Earthquake Fault Zoning Act effective January 1, 1994. The original designation "Special Studies Zones" was changed to "Earthquake Fault Zones".



Source: William Lettis and Associates, Inc., and USGS (http://quake.abag.ca.gov)

Figure 10-4
Liquefaction Susceptibility

Under the Act, the State Geologist is required to delineate Earthquake Fault Zones along known active faults in California. Cities and counties affected by the zones must regulate certain development projects within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. The State Mining and Geology Board provides additional regulations to guide cities and counties in their implementation of the law.[3]

The provisions of the Alquist-Priolo Earthquake Fault Zoning Act are applicable to any project (as defined in Section 2621.6, below) which is located within a delineated earthquake fault zone, upon issuance of the official earthquake fault zones maps to affected local jurisdictions

2621.6. (a) As used in this chapter, "project" means either of the following:

a. Any subdivision of land which is subject to the Subdivision Map Act, (Division 2 (commencing with Section 66410) of Title 7 of the Government Code), and which contemplates the eventual construction of structures for human occupancy.

b. Structures for human occupancy, with the exception of either of the following:

   i. Single-family wood-frame or steel-frame dwellings to be built on parcels of land for which geologic reports have been approved;

   ii. A single-family wood-frame or steel-frame dwelling not exceeding two stories when that dwelling is not part of a development of four or more dwellings.

c. A "structure for human occupancy" is any structure used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year.

Based on this definition, the only portions of the Project that would be considered a "project" or a "structures for human occupancy" would be the existing scale/office building, the proposed Quality Control lab, and the proposed new exit scale and small office building, and these same structures as relocated during Phase II. The quarrying and processing facilities (i.e., the conveyors, sorters and batch plant equipment) would not be subject to the definition of a "project" under the terms of the Alquist-Priolo Act.

3603. Specific Criteria: The following specific criteria shall apply within earthquake fault zones and shall be used by affected lead agencies in complying with the provisions of the Act:

a. No structure for human occupancy, identified as a project under Section 2621.6 of the Act, shall be permitted to be placed across the trace of an active fault.

b. Furthermore, as the area within fifty (50) feet of such active faults shall be presumed to be underlain by active branches of that fault unless proven otherwise by an appropriate geologic investigation and report prepared as specified in Section 3603(d) of this subchapter, no such structures shall be permitted in this area.

c. No change in use or character of occupancy, which results in the conversion of a building or structure from one not used for human occupancy to one that is so used, shall be permitted unless the building or structure complies with the provisions of the Act.

d. Application for a development permit for any project within a delineated earthquake fault zone shall be accompanied by a geologic report prepared by a geologist registered in the State of

[3] California Department of Conservation, California Geological Survey, *Fault-Rupture Hazard Zones In California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Ma*ps, by William A. Bryant and Earl W. Hart, Interim Revision 2007

California, which is directed to the problem of potential surface fault displacement through the project site, unless such report is waived pursuant to Section 2623 of the Act. The required report shall be based on a geologic investigation designed to identify the location, recency, and nature of faulting that may have affected the project site in the past and may affect the project site in the future. The report may be combined with other geological or geotechnical reports.

e. A geologist registered in the State of California, within or retained by each lead agency, shall evaluate the geologic reports required herein and advise the lead agency.

f. One (1) copy of all such geologic reports shall be filed with the State Geologist by the lead agency within thirty (30) days following the report's acceptance. The State Geologist shall place such reports on open file.

California Building Code

Published by the International Conference of Building Officials (ICBO), the Uniform Building Code is a widely adopted model building code in the United States. The California Building Code incorporates by reference the 1997 Uniform Building Code (UBC) with necessary California amendments. These amendments include significant building design criteria that have been tailored for California earthquake conditions (CBSC, 2001). The California Building Code is contained in Title 24 of the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code (CBSC, 2005). Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards.

The Project site is located within Seismic Zone 4. Of the four seismic zones, Zone 4 is expected to experience the greatest effects from earthquake ground shaking and therefore has the most stringent requirements for seismic design.

Surface Mining and Reclamation Act

An objective of the State of California's Surface Mining and Reclamation Act (SMARA) was to create a mineral lands inventory by designating certain areas of the State as being important for the production and conservation of existing and future supplies of mineral resources. Pursuant to Section 2790 of the Surface Mining and Reclamation Act, the Mining and Geology Board has designated certain mineral resource areas to be of regional significance. The purpose of this designation is to provide local agencies, such as Alameda County, with information on the location, need and importance of mineral resources and to assure that this information is considered in local land use decisions. Construction aggregate was the first mineral commodity selected by the state for the regionally significant designation due to its importance throughout the construction industry. Construction aggregate is used in Portland cement concrete, asphalt, railroad ballast, stucco, road base and fill. The availability of aggregate deposits and their proximity to markets are critical factors in the strength of the overall economy.

The Project site and much of the surrounding areas (which are currently in active quarrying operations) have been designated by the Mining and Geology Board as being a "Regionally Significant Construction Aggregate Resource Area". The Project site is designated MRZ-2(a), by the California Department of Conservation. This designation indicates that there is a high likelihood that significant aggregate deposits are present.

Local – Alameda County

Alameda County Surface Mining Ordinance

The Alameda County Surface Mining Ordinance, which regulates sand and gravel operations in the County, includes slope stability requirements that are applicable to all mining and reclamation projects in the County. These regulations, applicable to the Project, including the following:

119.3(e): All finished slopes constructed during mining and reclamation shall not be steeper than two feet horizontal to 1 foot vertical (2:1) unless the applicant can demonstrate to the satisfaction of the Planning Commission that any steeper slope would not be incompatible with alternate future uses, would not be hazardous to persons that may utilize the site under alternative future uses, or would not reduce the effectiveness of revegetation and erosion control measures. In no event should the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability.

119.0(a2): Temporary slopes shall be constructed and maintained as approved by the Director of Public Works, in accordance with the recommendations of a soils engineer or a civil engineer registered in the State of California or an engineering geologist registered and certified in the State of California.

119.0(h1): During mining operations, measures shall be taken to prevent water and sediment discharge from the site that could result in erosion of adjacent lands. Such measures may include the construction of retarding basins, settling ponds, ditches, dikes and the revegetation of slopes.

119.0(h2): Stockpiles of overburden and sand and gravel shall be managed to minimize water and wind erosion.

119.0(h3): The removal of vegetation and overburden in advance of surface mining shall be minimized.

119.0(j): Topsoil suitable for use in revegetation shall be stockpiled at the mining site. An adequate quantity of topsoil shall be preserved to complete all necessary reclamation.

SMP-30 Conditions of Approval

In November of 1992 Alameda County approved Resolution 92-32, combining the then-existing surface mining operation known as SMP-26 with a 45-acre expansion area to create the current SMP-30 Sunol Quarry. Pursuant to that Resolution, the County adopted a number of Conditions of Approval which are still currently effective, or which may have been modified over time. Those currently effective Conditions of Approval for SMP-30 which pertain to issues of geology and soils are listed below

8. Grading and erosion control shall conform to design standards (Sections 7-115.0 through 7415.19) and geotechnical requirements (Sections 7414.2 through 7-114.10) of Alameda County Grading Ordinance No. 82-1 7. An annual erosion and sedimentation control plan shall be submitted to the Director of Public Works prior to July 1 of each year.

18. Height of stockpiles throughout the permit boundaries shall be restricted to two tiers, or $25\pm$ feet to minimize obstruction of distant views from Calaveras Road and to increase safety of on-site workers.

32. Should any problems develop regarding slope stability, erosion control, ground water or related matters, an Engineering Geologist shall prepare an investigation detailing the problem and possible solutions to be approved by the Planning Director.

33. If an earthquake occurs on the Calaveras Fault in the proximity of the project site, the permittee shall inspect the quarry for potential slope failures prior to allowing employees to resume work in the quarry pits.

41. Mining shall not occur within 100 feet of the banks of Alameda Creek, and not within 50 feet of San Antonio Creek.

45. Cut or fill slopes above seepage or groundwater levels shall be no steeper than 2:1 (horizontal to vertical). Fill slopes shall be constructed of pit materials and compacted to a relative compaction of 90%. Cut slopes below groundwater level shall be no steeper than 2:1. Cut slopes, where the groundwater level has been lowered causing seepage through the slope, shall be no steeper than 4:1. The Permittee may request modification of these gradients at any time during the term of the permit. The request shall explain the reason for the proposed change and shall, at a minimum, be accompanied by; a) evidence that the property owner agrees with the proposed changes; and b) an engineering and geotechnical report that demonstrates that the new slope gradients will be safe, stable and otherwise consistent with the intent, standards and requirements of the ACSMO. The Community Development Director, after consultation with the Public Works Agency, may modify these gradients consistent with the ACSMO.

51. Recommendations contained in the slope stability analysis (Geomatrix, 1990) that are pertinent to the 45-acre expansion site, including those summarized below, shall be incorporated into the project, as determined appropriate and approved by the Alameda County Public Works Agency:

a. To enhance slope stability, all roads and benches on the quarry slopes shall be constructed in accordance with recommendations of Geomatrix's 1990 report entitled "Geotechnical Study to Evaluate Slope Inclinations for the Santa Clara Sand and Gravel Quarry, Proposed 45-Acre Parcel, Sunol, California." Roads shall be a minimum of 15 feet wide with 1:1 side slopes and shall not be formed by cutting into the permanent quarry slopes unless otherwise approved by the Community Development Director.

b. A qualified professional shall inspect the stability of cut slopes and fill slopes constructed for roads. Inspections shall take place either annually or as deemed necessary by the Community Development Agency. The permittee shall repair or otherwise remedy identified problems including those identified during the annual and five ¬year review of the Surface Mining Permit, such as recurring slope stability problems or the need for slope maintenance on- or off-site.

53. A qualified professional shall monitor topsoil stripping and stockpiling to determine that soil erosion or slope stability problems are being remedied as per the recommendations of the agronomist's report, at a frequency to be determined by the Public Works Agency. Inspection shall continue periodically (frequency to be determined by a qualified professional) until vegetation has been established and proven to be adequately self-sustaining on stockpiled soils The re-application of topsoil and revegetation process shall also be inspected by a qualified professional during site reclamation.

54. A setback of not less than 50 feet from the edge of the quarry slope to all buried utilities and pipelines shall be maintained.

55. A setback of 50 feet shall be provided from the top of the quarry slope to the transmission tower foundations. Alameda County Public Works Agency shall monitor the stability of the slopes in their annual review, or as needed.

58. The permittee shall provide and maintain a 50-foot buffer zone measured southward from the top of the San Antonio Creek upper bank along the 45-acre mining area. Before any grading begins on site, a temporary barrier fence shall be erected along the edge of the 50-foot buffer zone and remain in place throughout the active mining phase. The barrier fence shall have a limited number of access points and personnel shall be informed by the permittee that the 50-foot buffer zone shall not be entered except as approved by the County of Alameda

Impacts and Mitigation Measures

Significance Criteria

The project would have a significant impact on the environment if it would:

1. Expose people or structures to substantial risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or Seismic Hazards Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publications 42
    - Strong seismic ground shaking
    - Seismic-related ground failure, including liquefaction
    - Landslides
2. Result in substantial soil erosion or the loss of topsoil
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse
4. Be located on expansive soil, as defined in Table 18 - 1-B of the Uniform Building Code (1994), creating substantial risks to life or property
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.

Geologic Risk of Fault Rupture

Impact Geo-1: The Project could potentially expose people or structures to substantial risk of loss, injury, or death involving rupture of the Calaveras Fault. (**Less than Significant with Mitigation**)

The Project site is located in a region of active seismicity. The Calaveras Fault passes immediately adjacent to the Project site along its eastern boundary at Calaveras Road, as shown on Figure 10-2. The Calaveras Fault is identified by the California Department of Mines and Geology as active and an Alquist-Priolo Special Studies Zone for fault rupture has been delineated along this fault, as shown on Figure 10-3. Occupancy of any structure that may be placed across the trace of this active fault could expose people working in that structure to substantial risk.

As indicated in the Setting section, substantial geologic investigations and data gathering efforts along the Calaveras Fault have been undertaken, and collected in a technical report entitled, "*Digital Compilation of Northern Calaveras Fault Data for the Northern California Map Database*". According to this technical report, the Sunol Valley sub-section of the Calaveras Fault strikes north-northwest and consists primarily of a single fault strand located immediately west of Calaveras Road, immediately adjacent to the western boundary of the Project site. The fault characteristics along the Sunol Valley sub-section are moderately well defined on the basis of several detailed fault-rupture hazard analyses conducted since 1995. Based on prominent vegetation lineaments, springs, trench excavations and observations of deformation, detailed mapping shows that this fault is a fairly linear and simple fault consisting of a single primary strand. At the Hetch Hetchy Aqueduct fault crossing, detailed analyses reveals that the fault is within a 30-meter wide zone that is about 70 to 100 meters west of Calaveras

Road. Northward from the Alameda Siphons (adjacent to the Project site) the fault remains west of Calaveras Road in a generally linear alignment, but may have local minor left or right step-overs.

Based upon these detailed mapping efforts, it is unlikely that any structures located on the Project site would be placed across the trace of this fault. Only if a local, as-yet undiscovered step-over fault trace were to cross Calaveras Road at the precise location of a proposed structure would this hazard occur.

Regulatory Requirements

Portions of the proposed expanded plant site and portions of the relocated plant site (Phase II) are located within the delineated Alquist-Priolo Special Studies Zone. However, the only structures that are part of the proposed Project that would be considered "structures for human occupancy" (i.e., a structure used or intended for supporting or sheltering any use or occupancy which is expected to have a human occupancy rate of more than 2,000 person-hours per year) would be the scale/office building, the quality control lab and the new weigh station, and the relocation of each of these structures during Phase II of the Project.. These buildings would not exceed two stories in height nor would they be part of a development of four or more dwellings, and thus would not constitute a "project" under the terms and definitions of the Alquist-Priolo Act. Therefore, the provisions of the Act would not apply to the Project.

All new buildings, remodeled building and other structures at the Project site would be required to comply with the California Building Code, including those amendments specifying building design criteria specifically tailored for California earthquake conditions.

Mitigation Measures

MM Geo-1: Structure-Specific Geologic Investigation. Prior to construction of any structures intended for human occupancy (i.e., expected to be occupied for more than 2,000 person-hours per year) within the Alquist-Priolo zone, a detailed geologic investigation of the structure location shall be prepared by a geologist registered in the State of California. This report shall address the potential for surface fault displacement at the structure site, based on a geologic investigation designed to identify the location, recent activity and nature of faulting that may have affected the structure site in the past and may affect the structure site in the future. If, based upon the findings of the geologic investigation, the site of the proposed structure is underlain by an active fault trace, the structure shall be located at least 50-feet away from such an active fault trace.

Resulting Level of Significance

Implementation of Mitigation Measure Geo-1 would reduce the risk that any occupied structure within the Project site may be placed across the trace of an active fault, thus exposing people working in that structure to substantial risk, to a less than significant level.

Seismically Induced Ground Shaking and Liquefaction

Impact Geo-2: The Project could potentially expose people or structures to substantial risk of loss, injury, or death involving groundshaking and liquefaction. However, implementation of slope stability design measures incorporated into the Project would reduce the extent potential earthquake-induced hazards resulting from strong groundshaking and ground failure to a less than significant level. (**Less than Significant**)

The Project site is located in a region of active seismicity. Active faults in the region include the San Andreas, Hayward, Calaveras and Greenville Faults. The northern section of the Calaveras Fault is

largely considered to be the section most likely to generate a large or moderate earthquake in the foreseeable future, capable of generating an earthquake with a magnitude greater than 6.75 on the Richter scale (>M 6.75). ABAG estimates that the Northern Calaveras Fault has an approximately 12% probability of a characteristic earthquake occurring between 2002 and 2031, and a 2.4% chance of an earthquake of M 6.7 or greater occurring between 2007 and 2036.

Strong groundshaking caused by a large earthquake could create potential hazards to workers and equipment, and could result in earthquake-induced slope failure, transmission tower foundation damage and seismically induced flooding.

Measures Incorporated into the Current Project

All mined and fill slopes within the Project will be excavated/filled at a design angle of 2:1, consistent with the Alameda County Surface Mining Ordinance requirements, the recommendations of the 1990 Geomatrix report, and current recommendations (Benchmark Resources and Berlogar, 2010). Additional setbacks from roads, underground pipelines, transmission towers and creeks are included as part of the Project design. Implementation of these slope stability design measures and setback requirements would reduce the extent of slope damage and other potential impacts resulting from strong groundshaking.

Regulatory Requirements

As part of its 1992 approval of Surface Mining Permit SMP-30 and adoption of the 1992 MND, Alameda County found that the project sponsor had agreed to implement mitigation measures, and that those mitigation measures had been incorporated as conditions for approval of that project, which would eliminate or reduce seismic hazard impacts to a less than significant level. Included as part of those mitigation measures/conditions of approval for the SMP-30 project, the following additional condition related to seismic hazards is still currently applicable to the Project site:

33. If an earthquake occurs on the Calaveras Fault in the proximity of the project site, the permittee shall inspect the quarry for potential slope failures prior to allowing employees to resume work in the quarry pits.

Mitigation Measures

None needed.

Implementation of the slope stability design measures and setback requirements of the Project as proposed, together with on-going compliance with the conditions for approval from the 1992 Surface Mining Permit SMP-30 would reduce the extent of slope damage and other potential impacts resulting from strong groundshaking to a less than significant level.

Slope Instability

Impact Geo-3: Slope failure could affect cut slopes created by quarry excavations and could affect fill slopes constructed for roads, levees, the backfilled bench at the long-term processing facility, and stockpiles. Slope failure could damage internal and external roads, buried utilities and pipelines, transmission tower foundations or on-site structures. However, design considerations incorporated into the Project adequately address potential slope failure issues, as discussed below. Based on the Project design, this impact would be less than significant. (**Less than Significant with Mitigation**)

The potential for slope failure is related to the ability of sub-surface soils to maintain their slope during excavation, and to the stability of final cut and fill slopes. Slope failure can occur under a dynamic condition such as an earthquake, but can also occur under static conditions related to the forces of gravity

as may be further exacerbated by erosion or increased moisture content. Slope failure can occur if slope gradients are too steep (i.e., if they exceed factors of safety), if they become highly eroded, or if they undercut a road or structure. Slopes failure could result in vertical settlement of the slope wall and/or down-slope movement of material along the slope.

Excavation Slopes

If the slopes of the excavation pit are not designed to meet adequate safety standards, the quarry walls could slide and result in a significant hazard to workers and equipment within the pit. Additionally, the Project proposes (in Phase II) to backfill the southern portion of the Main Basin after it has been quarried to its maximum depth. The backfill will create a bench or plateau which will become the long-term site for the relocated processing plant (i.e., the scales, the crushing equipment, the concrete batch plant and the asphalt plant). If the slope of this backfill is not designed to meet adequate safety standards, the bench could undergo vertical settlement resulting in a significant hazard to workers and equipment within the processing plant area.

Stockpile Height

The Project proposes to increase the height of material stockpiles from 25 feet as allowed pursuant to the currently effective permit (SMP-30), to 50 feet.

When bulk granular material (i.e., sand and gravel) is stockpiled on a horizontal ground surface, a conical pile will form. The internal angle between the surface of the pile and the horizontal surface is known as the angle of repose and is related to the density, surface area and shapes of the particles, and the coefficient of friction of the material. Material with a low angle of repose forms flatter stockpiles than material with a high angle of repose. Generally, the angle of repose for dry sand is approximately 34 degrees, the angle of repose for fine gravel and sand is approximately 25 to 30 degrees, and the angle of repose for loose dry gravel is 35 to 40 degrees. No matter how tall the stockpile is constructed, a stockpile of similar material will retain its angle of repose and will generally be stable to any height.

Failures in stockpiles are generally due to the effects of water and/or vibration. Strong vibration, particularly in very fine dry sand, can cause it to flow like a fluid (soil liquefaction). Soil liquefaction is relatively common during earthquakes, but it can also happen under the foundations of vibrating machinery. Additionally, when material is removed from the toe of a stockpile, the higher material will collapse down the face of the pile, retaining the angle of repose and maintaining stockpile stability. If the material does not flow easily due to moisture, freezing, or compaction, there is danger of over-steepening or undercutting the pile. This can result in the unexpected fall or collapse of the slope. The hazard becomes greater as stockpile height increases, especially when the pile becomes higher than the reach of the loader.

Regulatory Requirements

Alameda County Surface Mining Ordinance

The Alameda County Surface Mining Ordinance, which regulates sand and gravel operations in the County, includes slope stability requirements that are applicable to all mining and reclamation projects in the County. These regulations, applicable to the Project, require that all finished slopes constructed during mining and reclamation shall not be steeper than two feet horizontal to 1 foot vertical (2:1), unless the applicant can demonstrate to the satisfaction of the Planning Commission that any steeper slope would not be incompatible with alternate future uses, would not be hazardous to persons that may utilize the site under alternative future uses, or would not reduce the effectiveness of revegetation and erosion control measures. In no event should the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability. Furthermore, temporary slopes shall be constructed and maintained as approved by the Director of Public Works, in accordance with the

recommendations of a soils engineer or a civil engineer registered in the State of California or an engineering geologist registered and certified in the State of California.

Currently Applicable Conditions of Approval

As part of its 1992 approval of Surface Mining Permit SMP-30 and adoption of the 1992 MND, Alameda County found that the project sponsor had agreed to implement mitigation measures, and that those mitigation measures had been incorporated as conditions for approval of that project, which would eliminate or reduce hazard related to slope failure to a less than significant level. Included as part of those mitigation measures/conditions of approval for the SMP-30 project, the following conditions related to slope stability are still currently applicable to the Project site:

18. Height of stockpiles throughout the permit boundaries shall be restricted to two tiers, or 25± feet to minimize obstruction of distant views from Calaveras Road and to increase safety of on-site workers.

Note: The Project proposes to increase the maximum permitted height of stockpiles to 50 feet.

32. Should any problems develop regarding slope stability, erosion control, ground water or related matters, an Engineering Geologist shall prepare an investigation detailing the problem and possible solutions to be approved by the Planning Director.

41. Mining shall not occur within 100 feet of the banks of Alameda Creek, and not within 50 feet of San Antonio Creek.

45. Cut or fill slopes above seepage or groundwater levels shall be no steeper than 2:1 (horizontal to vertical). Fill slopes shall be constructed of pit materials and compacted to a relative compaction of 90%. Cut slopes below groundwater level shall be no steeper than 2:1. Cut slopes, where the groundwater level has been lowered causing seepage through the slope, shall be no steeper than 4:1. The Permittee may request modification of these gradients at any time during the term of the permit. The request shall explain the reason for the proposed change and shall, at a minimum, be accompanied by; a) evidence that the property owner agrees with the proposed changes; and b) an engineering and geotechnical report that demonstrates that the new slope gradients will be safe, stable and otherwise consistent with the intent, standards and requirements of the ACSMO. The Planning Director, after consultation with the Public Works Agency, may modify these gradients consistent with the ACSMO. [4]

51. Recommendations contained in the slope stability analysis (Geomatrix, 1990) that are pertinent to the 45-acre expansion site, including those summarized below, shall be incorporated into the project, as determined appropriate and approved by the Alameda County Community Development Agency:

a. To enhance slope stability, all roads and benches on the quarry slopes shall be constructed in accordance with recommendations of Geomatrix's 1990 report entitled "Geotechnical Study to Evaluate Slope Inclinations for the Santa Clara Sand and Gravel Quarry, Proposed 45-Acre Parcel, Sunol, California." Roads shall be a minimum of 15 feet wide with 1:1 side slopes and shall not be formed by cutting into the permanent quarry slopes unless otherwise approved by the Community Development Director.

[4] The Annual Progress Report for the RMC Pacific Materials Sunol Plant (SMP-30) prepared by Spinardi Associates, November 2002 indicates that; "As part of the SMP-30 application, the permittee submitted a geotechnical report entitled Geotechnical Study to Evaluate Slope Inclinations for the Santa Clara Sand and Gravel Quarry, Existing Quarry Areas, Sunol, California (Geomatrix Consultants, Inc. October 1990). That report recommended 2:1 (horizontal to vertical) slopes throughout the existing 285-acre parcel. The County retained Berlogar Geotechnical Consultants to review that report. Berlogar responded to the County with a letter dated May 28, 1993 approving the proposed slope recommendations.

b. A qualified professional shall inspect the stability of cut slopes and fill slopes constructed for roads. Inspections shall take place either annually or as deemed necessary by the Community Development Agency. The permittee shall repair or otherwise remedy identified problems including those identified during the annual and five ¬year review of the Surface Mining Permit, such as recurring slope stability problems or the need for slope maintenance on- or off-site.

54. A setback of not less than 50 feet from the edge of the quarry slope to all buried utilities and pipelines shall be maintained.

55. A setback of 50 feet shall be provided from the top of the quarry slope to the transmission tower foundations. Alameda County Community Development Agency shall monitor the stability of the slopes in their annual review, or as needed.

58. The permittee shall provide and maintain a 50-foot buffer zone measured southward from the top of the San Antonio Creek upper bank along the 45-acre mining area. Before any grading begins on site, a temporary barrier fence shall be erected along the edge of the 50-foot buffer zone and remain in place throughout the active mining phase. The barrier fence shall have a limited number of access points and personnel shall be informed by the permittee that the 50-foot buffer zone shall not be entered except as approved by the County of Alameda

Slope Stability Design Measures Incorporated into the Project

Based on the Project's Mine Plan and Cross Sections (see **Figure 10-5**), all mined slopes within the Project will be excavated at a design angle of 2:1, consistent with the Alameda County Surface Mining Ordinance requirements, the recommendations of the 1990 Geomatrix report, and current recommendations (Benchmark Resources and Berlogar, 2010).

Generally, a slope is considered stable if the resisting forces exceed the driving forces. Expressed mathematically, the ratio of resisting forces (i.e., forces keeping the slope stable, such as friction and material cohesion) versus driving forces (forces tending to destabilize the slope, such as gravity) is defined as the factor of safety (FS). A factor of safety of 1:1 (FS1) or greater generally indicates that under static (i.e., non-earthquake) conditions, a slope will remain stable.

Active Quarry Pit Slope Design:

The proposed quarry pit slope is based on a slope stability analysis. The analysis assumed a "worst-case" static condition wherein the water level within the pit is assumed to be 20 feet deep at the top of the quarry (a conservative assumptions because groundwater levels within the pit are likely much deeper), and the phreatic surface was varied such that it sloped down the quarry face and day-lighted 40 feet below the top of the quarry, and another scenario where it day-lighted near the bottom of the quarry pit. Based on these "worst-case" variables, the slope stability analysis indicates that at the designed 2:1 slope, the resulting factor of safety is greater than 1.5 (FS1.5), with a phreatic surface day-lighting 40 feet below the top of the quarry pit slope, thus exceeding the safe slope stability factor of 1.[5]

The quarry pit slope design is consistent with the design requirements incorporated as conditions of approval for the 1992 SMP-30 permit (see Regulatory Setting, above). When approving SMP-30 in 1992, Alameda County found that these setback requirements would eliminate or reduce hazards related to slope failure to a less than significant level. Current geo-technical investigations (Berlogar, 2011) confirm these prior recommendations and conclusions.

[5] Benchmark Resources, 2010 and Berlogar, 2010

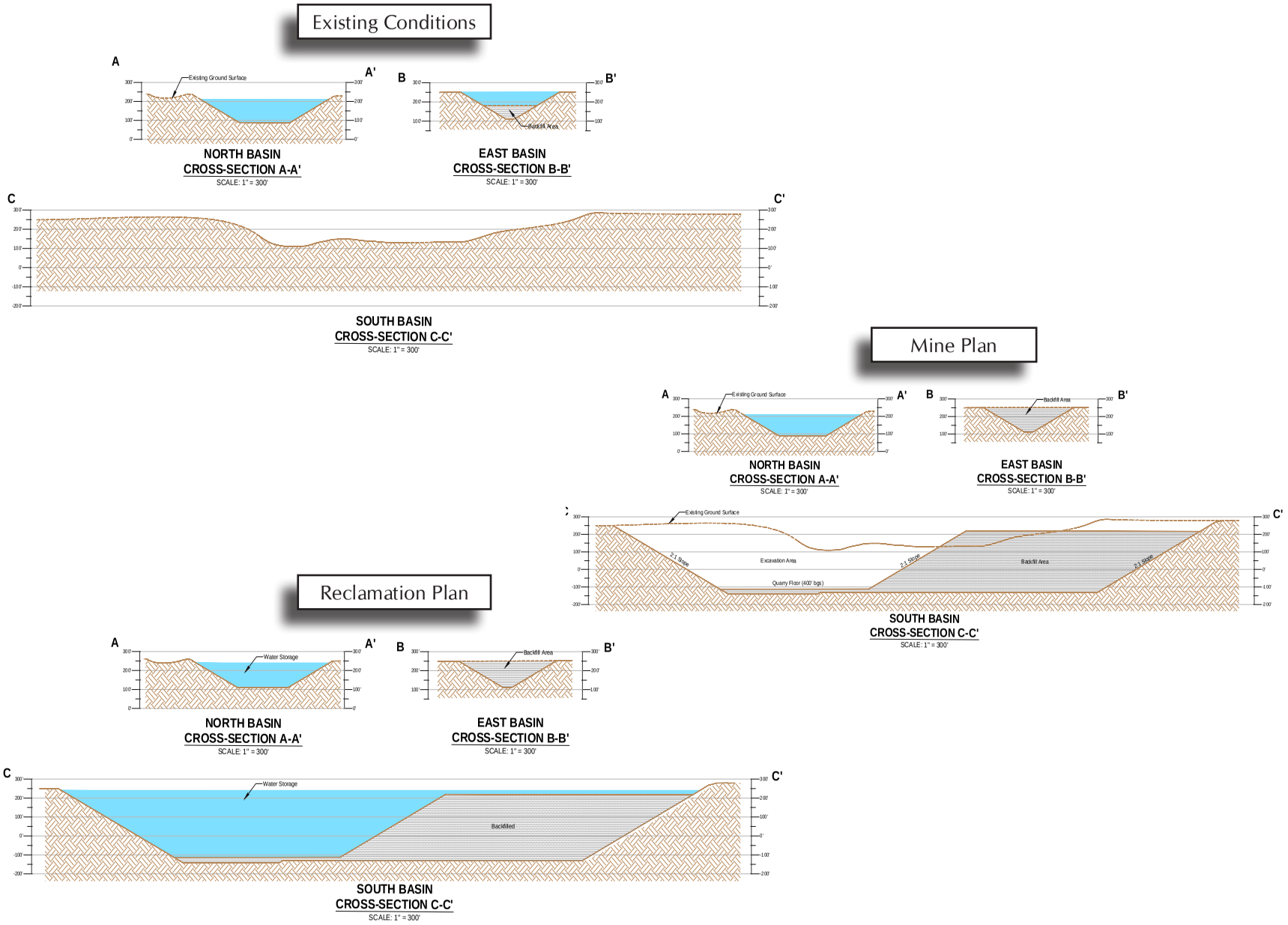


Figure 10-5
Project Mine Plan, Cross Section of Side Slopes

Source: Benchmark Resources

Fill Slope Design

As part of Phase II of the Project, a long-term processing yard will be created in the southern end of the South Basin (the primary mining pit). To create a surface for this future processing yard, mining waste will be placed back into the South Basin, creating a bench. This backfilled bench will be filled and compacted at a design angle of 2:1, consistent with the Alameda County Surface Mining Ordinance requirements and current geotechnical report recommendations. The slope stability analysis indicates that at the designed 2:1 slope, the resulting factor of safety is greater than 1.5, exceeding the safe slope stability factor of 1.[6]

Reclamation/Water Storage Design

Long-term slope stability analyses after quarrying activities have been completed and the quarry pits filled with water has also been conducted. This analysis assumed that the quarry pits will be filled with water to approximately 40 feet below the top of the pit. The slope stability analysis for use of the quarry pit as long-term water storage found that the planned 2:1 slopes of the quarry pit would be stable, with a resulting factor of safety greater than 2 (FS>2), exceeding the safe slope stability factor of 1.[7]

Slope Setbacks

As a measure of additional safety to ensure that potential slope failure would not undercut or otherwise adversely affect structures, roads, and other site features, setbacks from the top of slopes are included as part of the Project design. As indicated in the Project's Mine Plan (see **Figure 10-6**), the Project will maintain and provide for the following setbacks:

- A 50 foot buffer zone/setback is provided between the top of the San Antonio Creek upper bank and the top of slope of the North Basin. A further setback from San Antonio Creek currently exists and will continue to be maintained from the edge of the East Basin settling pond.
- A 100 foot buffer zone/setback is provided between the top of the Alameda Creek upper bank and the top of slope of the North Basin and the expanded South Basin.
- A 50 foot setback is provided between the PG&E transmission tower foundations and transmission lines, and the top of slope of both the North Basin and the South Basin. Although the East Basin settling pond is currently located under the existing transmission lines, the slopes of the East Basin (which will be maintained into the future) provide a 50 foot setback from all PG&E transmission tower foundations.[8]
- A 50 foot setback is maintained between the underground San Antonio Pipeline just west of Calaveras Road and the top of slope of the East Basin. This 50 foot setback is also provided from the top of slope of the expanded South Basin, including that portion of the South Basin comprised of the 58-acre expansion site.
- The existing Corral Hollow 36" underground water transmission pipeline is currently located between the existing top of slope of the South Basin and the 58-acre expansion area. Under the proposed Project, the Corral Hollow pipeline will be relocated out of the planned South Basin expansion area to a new alignment adjacent to the San Antonio Pipeline near Calaveras Road. A 50 foot setback is provided between the relocated Corral Hollow Pipeline and the top of slope of the expanded South Basin.

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[6] Ibid

[7] Ibid

[8] Prior issues regarding slope stability adjacent to two of the transmission towers was previously resolved in the field by constructing a 25-foot wide berm along the slope adjacent to the tower.

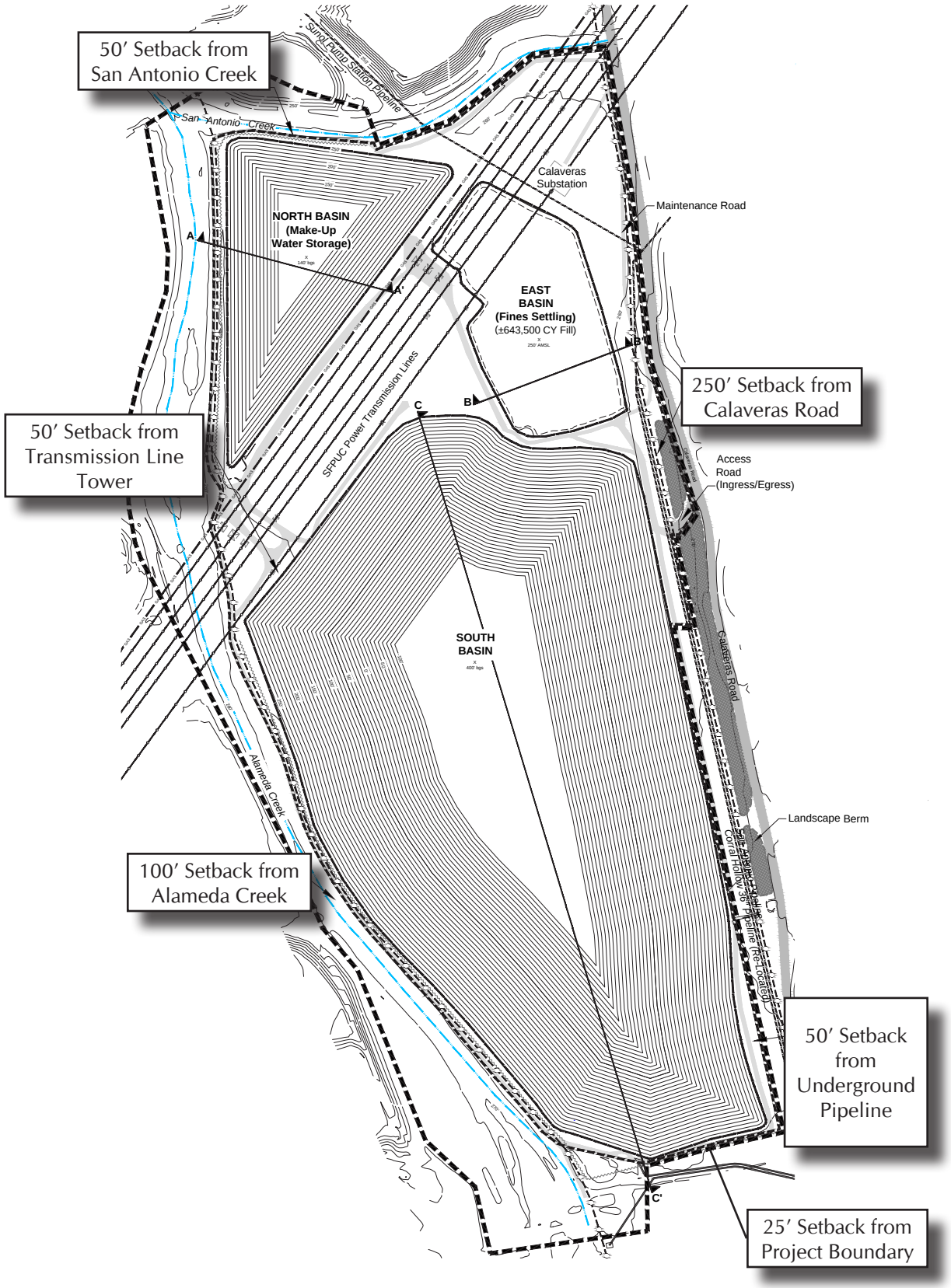

Figure 10-6
Project Mine Plan, Proposed Setbacks

Source: Benchmark Resources

- A 50 foot setback is maintained between the underground gas pipeline just northwest of the PG&E transmission lines and the top of slope of the North Basin.
- Additionally, with expansion of the South Basin into the 58-acre expansion site, the Project's design establishes a 250-foot setback from the edge of right-of-way of Calaveras Road to the top of slope of the expanded South Basin.

Each of the Project's design setbacks is consistent with the setback requirements incorporated as conditions of approval of the 1992 SMP-30 (see Regulatory Setting, above). When approving SMP-30 in 1992, Alameda County found that these setback requirements would eliminate or reduce hazards related to slope failure to a less than significant level. Current geo-technical investigations (Benchmark, 2010) confirm these prior recommendations and conclusions.

Mitigation Measures

Although current geo-technical investigations have confirmed that the Project's proposed design measures (e.g., slope designs and setbacks) would eliminate or reduce hazards related to slope failure, further detailed engineering analyses in the form of an updated geotechnical study should be provided by the applicant to more fully address the detailed design of the side slopes of all quarry pits, benches, engineered fill, roadway designs and material stockpiles.

MM Geo-3a: Engineering Analysis. The Project applicant shall submit an updated detailed engineering analysis to demonstrate that proposed side slopes of all quarry pits, benches, engineered fill, roadway designs and material stockpiles will not exceed the critical gradient as determined by an engineering analysis of slope stability. Such report shall be prepared by a soils engineer or a civil engineer registered in the State of California or an engineering geologist registered and certified in the State of California.

a) In no event should the steepness of any slopes exceed the critical gradient as determined by the engineering analysis.

b) The engineering analysis shall also demonstrate that the proposed Reclamation Plan does not include any slope designs that would be incompatible with the intended future use as water storage, would not be hazardous to persons that may utilize the site post-reclamation, and would not reduce the effectiveness of revegetation and erosion control measures.

MM Geo-3b: Annual Review. Based on the recommendations of the Project geologists, an annual review of the stability of cut slopes is recommended to determine if exposed conditions indicate that the proposed quarry slopes should be modified.

MM Geo-3c: Managing Stockpile Height. If a stockpile significantly higher than the reach of the loader begins to become over-steepened or undercut, immediate action is required. Material should be bumped over the crest and the pile worked down from above until the slope approaches the original angle of repose. [9] The safest methods of trimming material off a stockpile to reduce its height are to use a bucket conveyor, a grab on an overhead crane, a dragline, or a walkway that will enable workers to probe material off the top of the pile manually. Where it is necessary to use a front-end loader at the face of a stockpile, some of the basic safety measures recommended are:

[9] Stockpiling for Safety, U.S. Department of Labor, Mine Safety and Health Administration . Safety Manual Series SM 27, Revised 2001.

a) Limit the height of the worked faces to the maximum reach height of the machines working the stockpile.

b) Maintain angled faces and prevent steep, high faces from forming.

c) Where front-end loaders have to carry out undercutting in front of high faces, a cab should be fitted to enclose an operator overhead and on at least three sides. This will trap enough air for an operator to breathe in case the machine becomes buried in a sudden fall of material. A cab can also provide protection from falling material which may not bury the operator but still be heavy enough to cause injury.[10]

Resulting Level of Significance

Based on these analyses, slope conditions at the Project site both during active mining and after reclamation are expected to be stable (i.e., slopes would exceed a factor of safety of greater than 1:1). The proposed slope designs for all cuts and fills and the setbacks provided as part of the Project shall be thoroughly reviewed and confirmed pursuant to the Engineering Analysis pursuant to MM Geo-3a. These measures, together with implementation of annual reviews and appropriate stockpile management practices as recommended under MM Geo-3b and -3c would reduce the risk of slope failure at the Project site to a less than significant level.

Soil Erosion

Impact Geo-4: Soil erosion could occur at the Project site if proper drainage and erosion control measures are not provided. Excessive soil erosion could create gullies, undercut slopes and cause slope failure. Soil erosion can also affect surface water quality (see Hydrology and Water Quality chapter). (**Less than Significant with Mitigation**)

The U.S. Department of Agriculture Soil Conservation Service has mapped soil types throughout the County, with results complied in the Alameda County Soils Survey. According to the Soil Survey, the native soils within the Project site, including the 58-acre expansion area, are mapped as "Yolo loam over gravel, 0 to 3 percent slope". These soils have an erosion hazard (estimated risk of erosion if cultivated or heavily grazed) corresponding to "slight". This indicates that the native soils are not naturally prone to substantial erosion. However, with quarrying of the site and the on-site processing of quarried materials, the potential for erosion is exacerbated.

Regulatory Requirements

Alameda County Surface Mining Ordinance

The Alameda County Surface Mining Ordinance includes erosion control requirements that are applicable to all mining and reclamation projects in the County. These regulations, applicable to the Project, include requirements for the prevention of water and sediment discharge from the site resulting in erosion of adjacent lands. Such measures may include the construction of retarding basins, settling ponds, ditches, dikes and the revegetation of slopes. The ordinance also requires that stockpiles of overburden and sand and gravel be managed to minimize water and wind erosion, that removal of vegetation and overburden in advance of surface mining be minimized, and that topsoil suitable for use in revegetation be stockpiled at the mining site. An adequate quantity of topsoil shall be preserved to complete all necessary reclamation.

[10] Safety Guide For Handling Of Loose Materials, published by the Department of Labor, New Zealand, 1980

In compliance with these requirements, the Project includes settling ponds, the revegetation of slopes and bare land, and management plans for material stockpiles to minimize water and wind erosion. Topsoil from the previous 45-acre expansion site approved in 1992 that is suitable for reuse in reclamation has been stockpiled at the site and will be used in revegetation plans for the Project.

Currently Applicable Conditions of Approval

As part of its 1992 approval of Surface Mining Permit SMP-30 and adoption of the 1992 MND, Alameda County found that the project sponsor had agreed to implement mitigation measures, and that those mitigation measures had been incorporated as conditions for approval of that project, which would eliminate or reduce erosion hazard impacts to a less than significant level. Included as part of those mitigation measures/conditions of approval for the SMP-30 project, the following conditions related to erosion control are still currently applicable to the Project site:

8. Grading and erosion control shall conform to design standards (Sections 7-115.0 through 7415.19) and geotechnical requirements (Sections 7414.2 through 7-114.10) of Alameda County Grading Ordinance No. 82-1 7. An annual erosion and sedimentation control plan shall be submitted to the Director of Public Works prior to July 1 of each year.

53. A qualified professional shall monitor topsoil stripping and stockpiling to determine that soil erosion or slope stability problems are being remedied as per the recommendations of the agronomist's report, at a frequency to be determined by the Public Works Agency. Inspection shall continue periodically (frequency to be determined by a qualified professional) until vegetation has been established and proven to be adequately self-sustaining on stockpiled soils The re-application of topsoil and revegetation process shall also be inspected by a qualified professional during site reclamation.

Measures Incorporated into the Current Project

Water Management

As currently occurring at the active mine, the Project will continue current practices for management of water encountered and used in the quarrying and processing operations in a manner to control erosion. As the mining pit deepens, groundwater and underground water flows will be encountered. In accordance with the currently applicable NPDES permit, this water is pumped out of the active mining pit and piped either to the operations plant to be used in the initial raw materials "washing" process, or to the North Basin for storage. Used wash water is then pumped back out of the plant to a silt pond (East Basin) where sediment settles to the bottom of the East Basin and the water is stored, recharged into the groundwater, and/or evaporates. Occasionally during high water events, water is released from the North Basin into Alameda Creek to control overflow.

Surface Erosion Control during Quarrying

Based on the Project's Reclamation and Phasing Plan, temporary erosion control facilities such as silt fences, berms, hay bales or similar means to deter erosion will be employed. The specifics of where and when such measures will be implemented will depend upon the particular configuration of grading work being conducted at any given time.

Reclamation

The basins created by quarry activities are planned to be used in the long-term as managed water storage basins. As such, no revegetation or erosion control measures would occur within the basins, as such measures would conflict with post-reclamation use. However, all surfaces surrounding the basins will be scarified and de-compacted as necessary for revegetation to control erosion. Plant species to be used in revegetation will be commercial erosion control species that have a high rate of success on surfaces

created from processed fine quarry wastes. A locally-supplied erosion control seed mix with success guaranteed by the supplier will be used. Test plots consisting of planted surfaces will be used to confirm the recommended application rate and specific mix meets the intended surface stabilization for erosion control.

Mitigation Measures

In addition to the continued implementation of existing SMP-30 conditions of approval related to erosion, the following additional mitigation measures are recommended to minimize erosion hazards for the current Project:

MM Geo-4a: NPDES Stormwater Permits. The Permittee (Project operator) shall be responsible for obtaining any necessary amendments and/or updates to the currently applicable NPDES permit for water management within the Project.

MM Geo-4b: The removal of vegetation and overburden from the 58-acre expansion site shall occur no more than one month prior to commencement of excavation and raw aggregate harvesting activities from the expansion of the quarry pit into this area.

Resulting Level of Significance

With compliance of all regulatory requirements of the Alameda County Surface Mining Ordinance, continued application of currently applicable conditions of approval related to the 1992 SMP-30 approved project, and the addition mitigation measures recommend above (Geo-4a and -4b) potential impacts related to soil erosion would be reduced to a less than significant level.

Expansive Soils

Impact Geo-5: As a quarry operation and processing plant, there is no concern that expansive soils would create substantial risks to life or property. (**No Impact**)

Pursuant to the Project, topsoil, underlying soils, sand and gravel will be removed as part of the quarry operation. Expansive soils do not present a hazard to either quarry operations or plant processing of harvested materials.

Mitigation Measures

None required

Soils Unsuitable for Wastewater Treatment

Impact Geo-6: The Project does not pose any issues related to soils that are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water. (**No Impact**)

The current plant site utilizes a small septic tank/leach field for disposal of wastewater generated at the office, and there are on-site portable toilets for use at the plant site. As quarry operations expand into the current plant site, the existing septic tank will be removed and the leach field decommissioned so that this area can be quarried. Future plans for wastewater disposal will rely on portable toilets with truck-out waste removal and holding tanks that will be pumped on a regular basis.

Mitigation Measures

None required

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Hazards and Hazardous Materials

This section evaluates the proposed Project's potential impacts related to hazards and hazardous materials. This section describes the existing hazardous conditions at the Project site and its vicinity, identifies applicable hazardous materials and hazardous waste regulations applicable to the Project, and evaluates the extent to which development of the Project as proposed may affect or be affected by hazards and hazardous materials. Information in this section is drawn from:

- an Environmental Data Resources, Inc. (EDR) *Radius Map™ Report and Search of Available Environmental Records*, Sunol Valley Aggregate Quarry, 6527 Calaveras Road, Sunol, CA 94586. Inquiry Number: 3224207.2s, December 13, 2011.

All other sources are referenced at the end of this chapter of the EIR and/or are provided in the Appendices.

Physical Setting

This section describes the existing conditions at the site relevant to hazards and hazardous materials.

Definition of Hazardous Materials and Hazardous Wastes

Hazardous Material

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

The California Code of Regulations (CCR) defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either:

- cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness; or
- pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10).

Hazardous Waste

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxicity, ignitability, corrosivity, and reactivity (CCR, Title 22, Chapter 11, Article 3), which are defined in the CCR, Title 22, Sections 66261.20- 66261.24.

On-Site Environmental Cases

The Project site has been identified on a list of hazardous materials sites as compiled pursuant to Government Code Section 65962.5 (Cortese List). The incidences associated with the Project site are described below.

CEMEX, Open Case – Site Assessment

As recently as December 9, 2011, an environmental case (a contamination, spill or incident as reported to a governmental agency pursuant to applicable regulatory requirements) was opened at the Project site by the Alameda County Department of Environmental Health (DEH). No records are currently available for this case, but correspondence with the County DEH representative indicate that this case actually occurred in 2010 (prior to transfer of the SFPUC lease to the Project applicant), that contamination of concern was identified – a diesel spill, and that immediate action to clean up the incident occurred. The Site Assessment notation on the San Francisco Regional Water Quality Control Board (RWQCB) Geotracker website[1] indicates that site characterization, investigation, risk evaluation, and/or site conceptual model development is either occurring at the site, but that such actions have not yet been cleared and certified by the responsible agency (Alameda County DEH).

Although this spill and clean-up action occurred prior to the Project applicant's lease agreement, the applicant has completed a soils analysis of the spill location. According to the soil sample data collected by the applicant (see **Appendix F**), a total of six soil samples collected to a depth of 6 inches below ground surface indicate that diesel (Total Petroleum Hydrocarbons, or TPH) levels in the soil at the spill location range from 16 to 48 mg/kg. This is compared to Environmental Screening Levels (ESLs) of 85 mg/kg.[2]

The identified ESL is for chemicals commonly found in soil and groundwater at sites where releases of hazardous chemicals have occurred, and were developed to address environmental protection goals presented in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan; San Francisco Bay Area Regional Water Quality Control Board; RWQCBSF 2006). The ESLs are considered to be conservative. Under most circumstances, and within certain limitations, the presence of a chemical in soil, soil gas or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant, long-term (chronic) threat to human health and the environment. Based on the result of the soils analyses conducted by the applicant, the diesel spill that occurred in 2010 at the Project site has been cleaned up to levels below the corresponding screening level, with no residual threat to the environment. However, this conclusion has not been officially reached by the County DEH, the lead agency responsible for this case.

RMC Lonestar, Case Closed in 1992

In February of 2001, an environmental case at the Project site was opened by the Alameda County DEH under their Clean Up Program. Records do not indicate that any potential contaminants of concern were identified and the case was immediately closed on February 16, 2001. No regulatory actions were entered for this case, and no clean up action reports exist.[3]

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[1] CEMEX, #T10000003431, Alameda County Case #: RO0003085, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000003431

[2] ESL based on Look-Up Table A-2, for Shallow Soil Screening Levels (<3m bgs) at Commercial/Industrial Land Use, where groundwater is a current or potential drinking water resource, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, prepared by California Regional Water Quality Control Board, Revised May 2008.

[3] RMC Lonestar, #SLT2O343233, Alameda County Case #: RO0002651,

Santa Clara Sand and Gravel, Case Closed in 1989

In January of 1989 an environmental case at the Project site was opened by the Alameda County DEH under their Clean Up Program. Records indicate that the potential contaminants of concern identified for this case included waste oil, motor oil and hydraulic/lubrication fluids that may have affected the underground aquifer. Although no regulatory actions were entered and no clean up action reports are shown, records do indicate that site assessment began immediately in January of 1989 and the case was closed on December 31, 1989. [4]

Off Site Environmental Cases

The location of the following off-site environmental cases as reported in the EDR database search are shown on **Figure 11-1**.

SFWD Filtration Plant, Case Closed in 1992

In October of 1988 an environmental case immediately south of the Project site at the SFWD Filtration Plant site (8653 Calaveras Road) was opened by Alameda County DEH and the San Francisco RWQCB. Records indicate that the contaminant of concern identified for this case was a leaking underground storage tank (LUST) containing diesel that affected the underlying soil. Although no regulatory actions were entered and no clean up action reports are shown, records do indicate that site assessment began immediately in October of 1988 and the case was closed on December 31, 1992. [5]

Mission Valley Rock, Open – Monitoring

In June of 1996 an environmental case at the Mission Valley Rock Quarry site (7999 Athenour Road), northwest of the Project site and across Alameda Creek, was opened by Alameda County DEH and the San Francisco RWQCB. An asphalt plant is within the central portion of the 588-acre property currently owned by Hanson Aggregates. Alameda Creek is approximately 1,000 feet east of the asphalt plant site. Records indicate that the contaminant of concern identified for this case was a leaking underground storage tank (LUST) containing diesel that affected the underlying soil.

The asphalt plant has been in operation since approximately 1980. Operation from 1980 to 1996 included the use of two 10,000-gallon diesel fuel USTs and one 2,000-gallon gasoline UST with fuel dispenser used to fuel company vehicles. During the removal of these three USTs in June 1996, petroleum hydrocarbon contamination was observed in the tank pit excavation. Various site investigation activities including approximately 17 soil borings and the installation and sampling of 29 groundwater monitoring wells were conducted on the site and in the surrounding area to define the nature and extent of contamination. The site investigations indicated that petroleum hydrocarbons are present in soil and groundwater in the area of the underground storage tanks and that a plume of petroleum hydrocarbons dissolved in groundwater extends over an area roughly 400 feet long and 200 feet wide around the area of the former USTs. An air injection system was installed at the site in January and February 2008 to inject air into the subsurface to enhance biodegradation of petroleum hydrocarbons. The air injection system was operated on a pilot basis in 2008 and then operated on a full time basis from April 6, 2009 up until July 15, 2010. Quarterly groundwater monitoring was conducted at the site from June 1998 until December 2010. The groundwater monitoring data indicate that a plume containing dissolved petroleum

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https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SLT2O343233

[4] Santa Clara Sand and Gravel, #T0600101196, Alameda County Case #:RO0003058, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101196

[5] SFWD Filtration Plant, #T0600101218, Alameda County Case #: Ro0003057, and San Francisco Bay RWQCB (Region 2) Case #: 01-1323, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101218

hydrocarbons is generally stable and not migrating outside the area of the site. Based on trends in concentration, water quality is expected to be restored within an acceptable time frame by natural attenuation processes. The nearest water supply wells are more than 1,000 feet from the edge of the plume and are not expected to be impacted by the plume. Site investigation and cleanup activities have been completed and it does not appear that the fuel release presents a risk to human health for nearby residents or site workers. Site management requirements will be put in place to prevent potential future exposure to residual subsurface contamination. Alameda County DEH is considering potential closure of the fuel leak case and is currently seeking public review and comment on the potential closure of the fuel leak case. [6]

Chevron Sunol Pipeline, Open – Site Assessment

In August 2005 an environmental case approximately 1 mile south of the Project site at the Chevron Sunol Pipeline site (2793 Calaveras Road) was opened by Alameda County DEH. Records indicate that the contaminant of concern identified for this case was a leaking gasoline pipeline that affected the underlying aquifer used as a drinking water supply.

The pipeline leak resulted in high concentrations of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylene (BTEX), which are volatile aromatic compounds typically found in petroleum, in shallow soils on the hillside below the pipeline release. Remediation efforts have included a soil vapor extraction (SVE) at the site to remove contaminant mass in the source area, and quarterly groundwater monitoring to assess the effects of seasonal groundwater fluctuations. Although additional remediation will likely be required to address the remaining contamination in the source area, the concentrations of petroleum hydrocarbons in groundwater west of Calaveras Road appear to be decreasing (at least partially due to natural attenuation processes). The current status of this case remains Open, with on-going site assessment, remediation and monitoring. [7]

Sunol Tree Gas, Open – Site Assessment

In April of 2002 an environmental case approximately 1 mile northwest of the Project site at the Sunol Tree Gas Station site (3004 Andrade Road) was opened by Alameda County DEH and the SFRWQCB. Records indicate that the contaminant of concern identified for this case was a leaking underground gasoline storage tank (LUST) that affected the underlying aquifer and nearby well used for drinking water supply.

A fuel release from this site has affected a water supply well on an adjacent property. The fuel release was discovered during removal of five USTs on April 12, 2002. Site investigation activities have been conducted at the site since 2002, and a pilot study using ozone sparging has been conducted. Source control is feasible but has not been performed. Monitoring is on-going to assure that the treatment system is functioning properly on the impacted well at adjacent site.[8]

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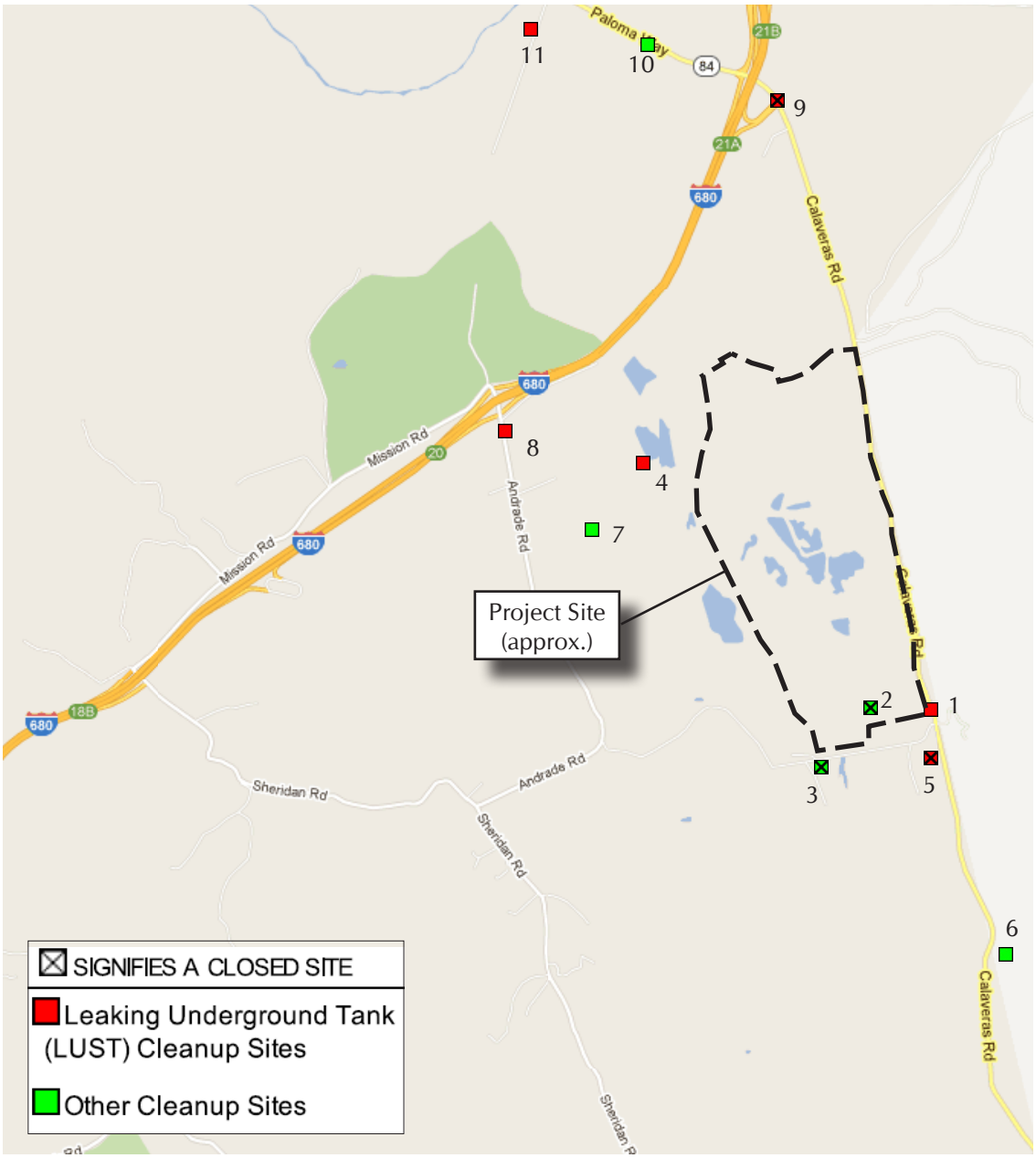
[6] Mission Valley Rock & Asphalt, #T0600102092, Alameda County Case #: RO0000207, and SF RWQCB (Region 2) Case #: 01-2276, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600102092

[7] Chevron Sunol Pipeline, #SL0600100443, Alameda County Case #: RO0002892, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL0600100443

[8] Sunol Tree Gas, # T0600114064, Alameda County Case #: RO0002448 and SF RWQCB (Region 2) Case #: 01-3506, https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600114064



Source: RWQCB https://geotracker.waterboards.ca.gov

1.	Cemex	Open - Site Assessment
2.	Santa Clara Sand & Gravel	Case Closed
3.	RMC Lonestar	Case Closed
4.	Mission Valley Rock & Asphalt	Open - Verification Monitoring
5.	SFPUC Filtration Plant	Case Closed
6.	Chevron Sunol Pipeline	Open - Site Assessment
7.	Y Equipment Rental	Open - Site Assessment
8.	Sunol Tree Gas	Open - Site Assessment
9.	SFWD San Antonio Pump Station	Case Closed
10.	SFWD	Open - Inactive
11.	SFPUC Sunol Yard and Pump St.	Open - Site Assessment

Figure 11-1
Environmental Cases and Incidents at Project and Vicinity

Regulatory Setting

This section presents the regulations and regulatory agencies with potential jurisdiction over hazards and hazardous materials which may be applicable to the proposed Project.

Federal

Environmental Protection Agency (EPA)

The U.S. EPA is the federal agency responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials and hazardous waste. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The legislation includes the Resource Conservation and Recovery Act of 1976 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The U.S. EPA provides oversight for site investigation and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) regulates hazardous waste from the time that waste is generated through its management, storage, transport, and treatment, until its final disposal (42 USC 6901 et seq.). RCRA gives the US Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. Facilities that generate more than 100 kilograms per month of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste, must be registered in accordance with the Resource Conservation and Recovery Act (RCRA) (Title 42, U.S. Code, Sections 6901 et seq.)

The US EPA has authorized the California Department of Toxic Substances Control (DTSC) to administer the RCRA in California (see below under State).

Comprehensive Environmental Response, Compensation and Liability Act [9]

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over five years, $1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA establishes prohibitions and requirements regarding closed and abandoned hazardous waste sites, it provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. The law authorizes two kinds of response actions; short-term removals where actions may be taken to address releases or threatened releases requiring prompt response; and long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priorities List (NPL).

[9] http://www.epa.gov/superfund/policy/cercla.htm

CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Oil Pollution Prevention

This regulation (40 CFR 112) establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related facilities into waters of the United States. The regulation applies to facilities engaged in, among other activities, storing, processing, using, or consuming oil and oil products and requires that a spill prevention, control, and counter-measures (SPCC) plan be prepared.

Occupational Safety and Health Administration

Worker health and safety is regulated at the federal level by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). Federal occupational safety and health regulations contain provisions for managing hazardous materials. The Occupational Safety and Health Act of 1970 (OSHA) as amended by 29 USC 651–678 and 29 CFR 1910, promotes worker safety, worker training, and worker right-to-know. OSHA establishes regulatory requirements primarily by promulgating standards for occupational safety and health. Employers are required to train a team of employees to applicable OSHA standards, to respond to accidental releases of hazardous materials, and, as appropriate, to retain on-call contractors to respond to accidental releases of hazardous materials. Workers at hazardous waste sites (or workers coming into contact with hazardous wastes that might be encountered during excavation of contaminated soils) must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR 1910.120).

Mine Safety and Health Administration

The Mine Safety and Health Act of 1977 (Public Law 91-173, as amended by Public Law 95-164) provides that Mine Safety and Health Administration inspectors shall inspect each surface mine at least two times a year and each underground mine at least four times a year to determine the following: (1) compliance with health and safety standards or with any citation, order, or decision issued under the Mine Safety and Health Act and (2) whether an imminent danger exists. If violations of safety or health standards are found, inspectors will issue citations to the mine operators.

State

California Environmental Protection Agency, Department of Toxic Substance Control (DTSC)

The California Environmental Protection Agency (Cal EPA) is charged with developing, implementing and enforcing the state's environmental protection laws that ensure clean air, clean water, clean soil, safe pesticides and waste recycling and reduction. The Cal EPA's Department of Toxic Substance Control (DTSC) regulates hazardous waste in California primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning. Permitting, inspection, compliance, and corrective action programs of DTSC ensure that people who manage hazardous waste follow state and federal requirements.

Environmental Health Standards for the Management of Hazardous Waste

The State of California's hazardous waste regulations are located in the California Code of Regulations (CCR), Title 22 Social Security, Division 4.5, Environmental Health Standards for the Management of

Hazardous Waste. All hazardous waste in California is regulated under state statutes and regulations Most hazardous waste falls into two types in California: waste also regulated by the federal government under the Resource Conservation and Recovery Act; and waste regulated by California law alone. If a business generates more than 1 kilogram of RCRA acutely hazardous waste per month or more than 100 kilograms of other RCRA waste per month, they must have a federal ID number. If the business generates 100 kilograms or less of RCRA waste or one kilogram or less per month of acutely hazardous waste, and meet certain other requirements, they are exempt from having a federal ID number and are called conditionally exempt small-quantity generators.

Unified Program

The Unified Program is authorized by the California Health and Safety Code (Chapter 6.11, Sections 25404-25404.8) and the CCR (Title 27, Division 1, Subdivision 4, Chapter 1, Sections 15100–15620). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of those environmental and emergency response programs under the various state and federal hazardous waste laws and regulations. The Unified Program was established by California Senate Bill 1082 in 1993. Regulations were written to implement and enforce this law and the first Certified Unified Program Agencies (CUPAs) were certified in 1996.

The DTSC's Enforcement and Emergency Response Program (EERP) administers technical implementation of the state's Unified Program, and oversees the hazardous waste generator and onsite waste treatment surveillance and enforcement program carried out by local Unified Programs. The EERP is intended to protect public health and the environment through inspection, monitoring, training, and investigative activities that secure effective, measurable levels of compliance with state and federal hazardous waste laws and regulations. The EERP is a consolidation of six environmental programs including: [10]

Environmental Justice

The Environmental Justice Enforcement Initiative identifies and addresses public health and environmental impacts in environmental justice communities, and ensures that the public and stakeholders are involved, empowered, and informed regarding their environmental justice issues, concerns, and enforcement.

Compliance Assistance and Enforcement

Monitors hazardous waste handlers, transfer, storage, treatment, and disposal facilities for illegal activity, monitors registered hazardous waste haulers, and takes appropriate action against violators of hazardous waste requirements.

Office of Criminal Investigations

Prevents and investigates violations of California's Hazardous Waste Control Laws for the safety of the public and protection of the environment.

Emergency Response Program

This program provides protection of public health and the environment from acute exposure to hazardous materials by conducting emergency response actions.

[10] http://www.dtsc.ca.gov/HazardousWaste/Compliance_and_Enforcement.cfm

Universal and Electronic Waste

This effort safeguards against the discard of universal wastes (hazardous wastes that contain mercury, lead, cadmium, copper, and other substances hazardous to human and environmental health) in solid waste landfills.

Financial Assurance

This program assures that commercial hazardous waste management facilities have adequate financial resources to cover both sudden accidental liability and the long term costs of facility closure.

The Unified Program is implemented at the local level by government agencies certified by the Secretary of Cal. EPA. These local agencies are known as Certified Unified Program Agencies, or CUPA. See discussion below regarding the local Alameda County CUPA.

California Health and Safety Code

Business Plan Program

The California Office of Emergency Services (OES) established the Business Plan Program (California Health and Safety Code, Chapter 6.95, Article 1, Sections 25500–25520; CCR, Title 19, Division 2, Chapter 4, Sections 2620–2734) to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials, and to satisfy community right-to-know laws. This is accomplished by requiring businesses that handle hazardous materials above specified quantities to prepare a Business Plan that includes an inventory hazardous materials, a site map, an emergency plan, and to implement a training program for employees.

California Accidental Release Prevention (Cal ARP) Program

The Cal ARP Program was established to prevent accidental releases of those substances determined to potentially pose the greatest risk of immediate harm to the public and the environment (California Health and Safety Code, Chapter 6.95, Article 2, Sections 25531–25543.3; CCR, Title 19, Division 2, Chapter 4.5, Sections 2735–2785). The Cal ARP Program is intended to mitigate the effects of an accidental release, should one occur, by requiring an emergency response program. The Cal ARP Program affects businesses that store or use certain hazardous materials in excess of threshold quantities that might seriously affect the community if released. It requires preparation of a risk management plan, an assessment of the offsite hazard potential, and the implementation of a program to minimize the risk of release.

Aboveground Petroleum Storage Act (APSA) Program

On January 1, 2008, CUPAs were vested with the responsibility and authority to implement the APSA Program (Assembly Bill 1130), as provided by California Health and Safety Code, Chapter 6.11, Sections 25404-25404.8. This includes the requirement to prepare a Spill Prevention Control and Countermeasure (SPCC) Plan, to conduct periodic inspections to assure compliance and to implement an SPCC plan in compliance with CFR, Title 40, Part 112.

Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Program

The Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Program was established to comply with California Health and Safety Code, Chapter 6.5, Sections 25100–25250 and CCR, Title 22. The DTSC is responsible for ensuring that the hazardous waste generator program is implemented consistently throughout the state. The DTSC implements the hazardous waste generator program through the state's hazardous waste program and the Unified Program. A hazardous waste generator is defined as any person (including commercial and nonprofit entities) whose act or process

produces hazardous waste. The hazardous waste generator program applies to facilities that generate, treat, store, accumulate, handle, recycle, and dispose of hazardous waste.

Spills and Contamination Notification Requirements

The California HSC 25507(a) and 19 California Code of Regulations (CCR) 2703 (California's basic hazardous materials release reporting requirements) state; "A handler must, upon discovery, immediately report to the CUPA and California Emergency Management Agency (Cal EMA) any release or threatened release of a hazardous material if there is a reasonable belief that the release or threatened release poses a significant present or potential hazard to human health and safety, property, or the environment. There is no quantitative reportable quantity stated, and this threat/hazard-based reporting requirement applies regardless of whether the release enters a waterway or escapes the facility."

California Water Code (CWC) 13272 and California Government Code 8670 requires reporting to Cal EMA or the Regional Water Quality Control Board (RWQCB) of discharges into or onto waters of the state and marine waters of 'any amount' of oil (a 42-gallon threshold is stated in the statutes, but the statute-referenced California Oil Spill Contingency Plan requires any amount be reported).

HSC 25270.8 (APSA) requires reporting to Cal EMA and the Unified Program Agency (CUPA) of a spill of 42 gallons of petroleum or greater that would be required to be reported under CWC 13272. This requirement adds the CUPA and Cal EMA to the already required reporting of petroleum spills into waters of the state. Pursuant to CWC 13272, the California Oil Spill Contingency Plan contains a lower spill reporting threshold ("any amount") than that stated in the statute (42 gallons), the lower threshold is the enforceable threshold.

Federal Clean Water Act section 311 and 40 CFR 110.10 require reporting to the National Response Center of any discharge of oil to navigable waters that causes a sheen upon the water, deposits a sludge upon the shoreline or violates a water quality standard. Essentially, any amount of petroleum could cause a sheen, and in California, the State Water Resources Control Board (SWRCB) has determined that due to the drain discharge locations, storm drains generally are considered navigable waters.

40 CFR 112.4 (federal SPCC rule) requires facility owners/operators to report specified information to the US EPA Regional Administrator within 60 days if the facility has discharged more than 1,000 gallons of oil to navigable waters or adjoining shorelines in a single discharge or discharged more than 42 gallons of oil to navigable waters or adjoining shorelines in each of two discharges occurring within any twelve-month period.

Uniform Fire Code

Two sections of the California Fire Code (CFC) deal with Hazardous Materials Management Plans and Hazardous Materials Inventory Statements (which are the equivalent of Hazardous Materials Business Plans), CFC, Sections 2701.5.1 and 2701.5.2. State law recognizes the need to ensure that first responders have the information they need to safety respond to emergencies as well as the need to make providing this information as streamlined as possible. Therefore, local fire agencies can require information in addition to the state requirements for HMBPs be included in HMPB submittals. Local fire agencies can require submission of a HMBP when the quantities present do not exceed the state HMBP thresholds but do exceed CFC permit thresholds, some of which are lower than the state levels.

CUPAs are required to provide HMBPs to local fire agencies within 15 days of receipt and confirmation.

California General Industry Safety Order

The California General Industry Safety Order requires that all employers in California prepare and implement an Injury and Illness Prevention Plan, which should contain a code of safe practice for each job category, methods for informing workers of hazards, and procedures for correcting identified

hazards, and requires that all employers in California prepare and implement an Emergency Action Plan. The Emergency Action Plan designates employee responsibilities, evacuation procedures and routes, alarm systems, and training procedures. The Safety Order also requires that all employers in California prepare and implement a Fire Prevention Plan to specify areas of potential hazard, persons responsible for maintenance of fire prevention equipment or systems, fire prevention housekeeping procedures, and fire hazard training procedures. Facilities involved in the use, storage, and handling of hazardous materials are required to prepare a Hazard Communication program. The purpose of the Hazard Communication program is to provide methods on safe handling practices for hazardous materials, ensure proper labeling of hazardous materials containers, and ensure employee access to Material Safety Data Sheets (MSDS).

Cal/OSHA

Worker health and safety in California is regulated by the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA). California standards for workers dealing with hazardous materials (including hazardous wastes) are contained in CCR Title 8 and include practices for all industries (General Industrial Safety Orders), and specific practices for construction, and hazardous waste operation and emergency response (CCR Title 8, Section 5192). Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

Regional

The following regional and local agencies have regulatory authority over the proposed Project's management of hazardous materials and waste on the site.

San Francisco Bay Regional Water Quality Control Board

The Project site is located within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board. The Water Board provides for protection of State waters in accordance with the Porter-Cologne Water Quality Act of 1969. The Water Board can act as lead agency to provide oversight for sites where the quality of groundwater or surface waters is threatened, and has authority to require investigations and remedial actions.

Bay Area Air Quality Management District

The BAAQMD has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products (which is the responsibility of U.S. EPA and CARB). BAAQMD is responsible for preparing attainment plans for non-attainment criteria pollutants, control of stationary sources, and the issuing of permits for activities including asbestos demolition/renovation activities (District Regulation 11, Rule 2).

Local – Alameda County

Department of Environmental Health, Certified Unified Program Agency (CUPA)

The Hazardous Materials / Waste Program for waste generation was established by the County Board of Supervisors in 1985 and recognized by the State of California Department of Toxics Substances Control (DTSC) through a Memorandum of Understanding. The Alameda County Department of Environmental Health (DEH) is a Certified Unified Program Agency (CUPA) and is the administrative agency that coordinates and enforces numerous local, state, and federal hazardous materials management and environmental protection programs in the County. The CUPA administers the following programs:

Hazardous Materials Business Plan Program

Chapter 6.95 of the Health and Safety Code establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP's). HMBP's contain basic information on the location, type, quantity, and health risks of hazardous materials and/or waste. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material and/or waste or an extremely hazardous material in quantities greater than or equal to 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70. HMBPs are required to include the following components, or modules:

- a Hazardous Materials Inventory and Chemical Description for each hazardous material (hazardous substances and hazardous waste) handled at the facility,
- a Site Plan (public document) and Storage Map (confidential document),
- an Emergency Response Plan, and a Contingency Plan (for facilities that generate 2,200 pounds or more of hazardous waste per month, or accumulate more than 13,200 pounds of hazardous waste on-site at any one time). The Contingency Plan identifies the duties of the facility Emergency Coordinator and location of emergency equipment, and includes reporting procedures for the facility Emergency Coordinator to follow after a hazardous materials incident.
- a summary of record keeping procedures, and
- a written Employee Training Plan.

Hazardous Waste Generator Program

The Hazardous Waste Generator Program regulates businesses that generate any amount of a hazardous waste. Proper handling, recycling, treating, storing and disposing of hazardous waste are key elements to this program.

Underground Storage Tank Program

The Underground Storage Tank (UST) Program regulates the construction, operation, repair and removals of UST systems used to store hazardous materials and/or waste.

California Accidental Release Program

The California Accidental Release Program (Cal ARP) requires any business that handles more than threshold quantities of an extremely hazardous substance to prepare a detailed engineering analysis of the potential accident factors present at a business and to develop a Risk Management Plan (RMP). The RMP is implemented by the business to prevent or mitigate releases of regulated substances that could have off-site consequences through hazard identification, planning, source reduction, maintenance, training, and engineering controls.

Tiered Permitting Program

The Tiered Permitting Program regulates the onsite treatment of hazardous waste.

Aboveground Storage Tank Program

Facilities with a single tank or cumulative aboveground storage capacities of 1,320 gallons or greater of petroleum-based liquid product (gasoline, diesel, lubricants, etc.) must develop a Spill Prevention Control and Countermeasure Plan (SPCC). An SPCC plan must be prepared in accordance with the oil pollution prevention guidelines in the Federal Code of Regulations (40 CFR, 112), and shall provide a

detailed engineering analysis of the potential for release from oil-filled equipment, and describe the measures (such as secondary containment and emergency response) that must be implemented to reduce the release potential. This plan must include procedures, methods, and equipment at the facility to prevent discharges of petroleum from reaching navigable waters. A Registered Professional Engineer must certify an SPCC plan and a complete copy of the plan must be maintained on site.

SMP-30 Conditions of Approval

The only existing condition of approval for the current SMP-30 mining operation relevant to potential hazards is as follows:

31. An annual fire plan shall be prepared and filed with the State Division of Forestry to mitigate fire hazards

Impacts and Mitigation Measures

Significance Criteria

The project would have a significant impact on the environment if it would:

1. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
4. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
5. Be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project area;
6. Be located within the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the project area;
7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
8. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Project Site Located on a List of Hazardous Material Sites

Impact Haz-1: Although the proposed Project is located on a site that is included on a list of hazardous material sites (i.e., hazardous waste facilities or hazardous waste properties) compiled pursuant to Government Code Section 65962.5, the available records indicate that all previous environmental cases are closed or remediated, and thus would not create a significant hazard to the public or the environment. (**Less than Significant**)

The EDR® search of available environmental records (see **Appendix F**) conducted for the Project site indicates that the Project site is listed in several databases for hazardous sites. As indicated in the Setting section of this chapter, each of these environmental records indicates that either the environmental cases reported to these databases are closed and no further action is required, or that information has been developed which indicates that the currently open case has been fully remediated to below Environmental Screening Levels. With these case closures and remediation, no significant hazards to the public or the environment are anticipated to occur under the proposed Project, and the impact would be less than significant.

Mitigation Measures

None required

Accidental Release of Hazardous Materials

Impact Haz-2: The Project could create a significant hazard to the public or environment through upset or accident conditions releasing hazardous materials used in the mining and plant operations. Compliance with applicable regulations will minimize the potential for accidental release of hazardous materials and will reduce the hazards to the public and the environment through upset or accident conditions to less than significant levels. (**Less than Significant**)

Hazardous Materials That Are Routinely Used

Hazardous Materials Currently Present

Several hazardous materials are currently used and will continue to be stored and used within the Project site, including petroleum-based oils, lubricants, and solvents. Currently, the Project site contains two above-ground storage tanks, one containing gasoline and one containing diesel. The Project proposes to remove the gasoline storage tank but to retain one existing 12,000 gallon above-ground diesel storage tank for on-going use at the plant.

Additional petroleum-based fuels and oils are used to operate on-site trucks, vehicles and certain plant equipment and for routine maintenance. A limited quantity of lubricants and solvents used for maintenance and repair of equipment may be stored in service vehicles or in a dedicated storage area. Currently permitted mining operations already use and store such materials, and it is unlikely that the expansion of the quarry would necessitate any greater use or storage requirements for these materials than is currently present.

At the plant site, the washers, crushers and conveyor systems are electrically powered, and so do not rely on diesel fuels. However, oils, lubricants and solvents are required for routine maintenance of this equipment.

Additional Hazardous Material - Project

The proposed asphalt plant will include the use of various hazardous materials, including asphaltic oil, diesel fuel, liquid propane, oil emulsions, motor and hydraulic oil, waste motor oil, acetylene and oxygen (compressed gases), and hydrated lime.

Continued on-site storage of diesel fuel for trucks, excavators or other mobile equipment is proposed, and a mobile fuel truck will bring fuel from this tank to fuel and service rolling stock and equipment. The mobile fuel truck will carry a limited amount of petroleum products, be equipped with quick-connect couplings and automatic shut-off valves to prevent spills, and will also carry appropriate absorbent materials to contain and recover spillage.

Mobile service trucks will conduct some maintenance, but major repair and rebuild of on-site equipment will be conducted within a dedicated maintenance area or off-site.

Potential Upset or Accident Conditions

The transport, transfer, and use of hazardous substances (either those currently used on site, or those added as a result of the proposed Project) could result in their accidental uncontrolled release. These substances could be released in areas that could result in contamination to soils or surface waters if not properly controlled and cleaned-up. For example, during refilling fuel tanks, diesel or gasoline fuels could be spilled. Similarly, asphalt oil and concrete additives could be spilled during unloading or during use. Processing equipment and vehicles would be maintained onsite, and their failure (including ruptured oil or fuel lines) could result in accidental releases to the environment. Limited amounts of materials such as oils and lubricants would be stored at the site for maintenance of processing equipment, and improper handling or storage of materials could result in inadvertent releases that could contaminate soil, runoff to surface water or surface impoundments, or evaporate and thus reduce air quality.

In the production of asphalt, liquid asphalt would be sprayed onto heated aggregate material, mixed to its final consistency, and then stored in storage silos. The proposed Project includes one above-ground storage tank for asphaltic oil storage and another propane fuel storage tank for heating the asphalt and/or drying and heating the aggregate for use in the asphalt plant. These aboveground storage tanks (ASTs) could potentially impact the Project site and Alameda Creek and San Antonio Creek if ruptured during an upset condition. The heated oil would also have a reduced viscosity and could impact the ground surface and the adjacent creeks if released.

Additionally, in the event of a significant storm, all non-contained on site materials could potentially be released into the environment (including into Alameda Creek and/or San Antonio Creek) if not properly stored.

Compliance with Existing Regulations

Emergency Response Plan/Contingency Plan

Pursuant to existing regulations (see Regulatory Setting, above), the Project applicant will be responsible for preparing an updated Hazardous Materials Business Plan (HMBP) to address potential hazards to the public and the environment associated with increased transport, use and/or storage of hazardous materials. The HMBP shall be submitted to the Alameda County Department of Environmental Health and must be deemed complete prior to issuance of the revised Surface Mining Permit (Revised SMP-30). In addition to other requirements, the HMBP must include an Emergency Response Plan/Contingency Plan, a Spill Response Plan, and an Emergency Evacuation Plan. The Contingency Plan must identify the duties of a facility Emergency Coordinator and the location of emergency equipment, and include reporting procedures for the facility Emergency Coordinator to follow after a hazardous materials incident, should one occur.

California Accidental Release Program

If the Project handles more than the threshold quantities of extremely hazardous substances, then pursuant to the California Accidental Release Program, the applicant will be responsible for preparing a detailed engineering analysis of the potential accident factors present, and to develop a Risk Management Plan (RMP). If required, the RMP will be implemented by the Project operator to prevent or mitigate releases of regulated substances that could have off-site consequences through hazard identification, planning, source reduction, maintenance, training, and engineering controls.

Above Ground Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC)

The Project applicant shall be required, pursuant to 40 C.F.R. § 112.7(b), to prepare a Spill Prevention Control and Countermeasure (SPCC) plan to provide appropriate containment and/or diversionary structures or equipment to prevent a discharge from all above-ground storage tanks (ASTs). The containment system must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. The containment structure may include dikes, berms, or retaining walls sufficiently impervious to contain oil; curbing; culverts, gutters, or other drainage systems; weirs, booms, or other barriers; spill diversion ponds; retention ponds; or sorbent materials. Additional discharge prevention measures must include procedures for routine handling of products; discharge or drainage controls; countermeasures for discharge discovery, response, and cleanup; and methods of disposal of recovered materials in accordance with applicable legal requirements.

RWQCB Permit Requirements

The Storm Water Pollution Prevention Plan (SWPPP) required for the project (see the Hydrology and Water Quality Section) shall include emergency procedures for incidental hazardous materials releases. The procedures shall include necessary personal protective equipment, spill containment procedures, and training of workers to respond to accidental spills/releases.

Additional Mitigation Measures

Compliance with applicable regulations will minimize the potential for accidental release of hazardous materials and will reduce the hazards to the public and the environment through upset or accident conditions to less than significant levels.

The following additional mitigation measures are recommended to further reduce this impact:

MM Haz-2a: Above Ground Storage Tanks. The Project shall not include any underground storage tanks, and only above-ground storage tanks that have been approved by the U.S. EPA shall be used for storing petroleum products and other regulated substances. Any new above-ground tanks shall be double walled and meet all ballistic and flame impingement requirements in CFC Article 79. The containment structures shall not be equipped with any valves or drains.

MM Haz-2b: Fuel Delivery Requirements. All delivery, maintenance, and repair trucks containing petroleum products will be required to comply with the California Department of Transportation's regulations for transport of hazardous materials. All trucks carrying petroleum products shall be equipped with quick-connect couplings and automatic shut-off valves to prevent spills, and shall carry appropriate absorbent materials to contain and recover spillage.

MM Haz-2c: Comprehensive Fire Protection Plan. The Project applicant shall engage a Fire Protection Engineer to perform a Code analysis and submit a Comprehensive Fire Protection Plan for the proposed Project for review by the County Fire Marshall. The submittal shall include an evaluation of the Project's compliance with the Uniform Fire Code requirements relating to storage of hazardous materials (including aboveground tanks), the need for fire

suppression system, alarm systems, storage of flammable or combustible materials, containment basins around hazardous materials, and compliance with hazardous materials regulations. Hazardous materials at the proposed asphalt plant shall be specifically considered in the review.

In addition, the following mitigation measure pertaining to Hydrology and Water Quality would reduce hazards to the public and the environment through upset or accident conditions related to storm water discharge and flood conditions:

MM Hydro-1: Chemical Release Prevention. To prevent the inundation of the processing area and the potential release of hazardous materials to water in the basin (once the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl) due to a 100-yr storm event, one or more of the following measures shall be taken:

a) Bulk storage for Portland cement, asphalt oil, fuels, and other chemicals shall be maintained outside of the basin perimeter. Only those materials needed for daily operations shall be stored and maintained in the processing area once it is relocated to the south end of the basin. If reliable weather predictions call for the potential for a 100-year storm event, or a series of events that could potentially yield equivalent flood flows, then all hazardous materials shall be removed from the processing area; or

b) The processing area should not be relocated to the south end of the basin until sufficient excavation has been completed such that the basin volume below the elevation of the processing area (approximately 220 ft. msl) is greater than at least 6,000 acre-feet. At a volume of 6,000 acre-feet, the basin would be capable of holding the total volume of water that could potentially enter the basin due to a breach during a 100-year storm, without overtopping into the processing area.

Resulting Level of Significance

Compliance with all applicable regulatory requirements and incorporation of recommended mitigation measures would reduce this impact to less than significant

Routine Transport, Use, and Disposal of Asphalt-Related Hazardous Materials

Impact Haz-3: Asphalt Plant Operations. The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, particularly as pertaining to the asphalt plant operations. Compliance with applicable regulations will minimize significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials to less than significant levels (**Less than Significant**)

Routinely Used Hazardous Materials

Hazardous materials used as part of daily operations or for maintenance of on-site equipment and vehicles would primarily include fuels (diesel, gasoline, and natural gas), asphalt oil, motor oils, automatic transmission fluids, paints and thinners, hydraulic fluids, lubricating grease, bottled oxygen and acetylene, cleaning solvents, lubricating grease, brake fluids and antifreeze. Most of these hazardous materials would be limited to factory-supplied containers of 55-gallon drums or less. These hazardous materials would be stored within designated maintenance areas in accordance with state and local regulations. However, it would be necessary to transport many of these chemicals to on-site locations for repair or maintenance of equipment and/or vehicles. The use of chemicals at localized areas presents the

greatest risk of accidental spills, but routine use of such chemicals would not be expected to create a significant hazard to the public or the environment.

Operation of the mobile equipment would require on-site use of fuels. On-site storage of fuels would be necessary for refueling of vehicles (e.g., diesel). The primary on-site heating source would be natural gas or propane. Fuels would also be transported to service various on-site vehicles, particularly the equipment used for aggregate mining. The Project will comply with applicable regulations regarding fuel use.

Asphalt Truck Coating

It is common practice for truck operators hauling asphalt to coat the truck beds with diesel fuel prior to loading asphalt at an asphalt plant. The operators commonly use Hudson sprayers to spray diesel fuel on the trailer bed surface to aid in dumping the asphalt at the construction site. This practice is unsafe due to potential fire hazards from the improper use of diesel fuel. This practice also frequently results in the ground surface at the entrance to the asphalt plant to become contaminated from excess diesel fuel running off the truck bed as it proceeds to the asphalt plant. The contaminated soil could also result in the contamination of storm water flowing over the contaminated soil. This condition could also present a potential threat to ground water if significant amounts of diesel fuel are released to the soil.

Use of Explosives

No explosives will be used for quarrying or any other activities at the Project site. No storage or use of explosive materials would occur.

Compliance with Existing Regulations

Hazardous Materials Business Plan Program[11]

Pursuant to Chapter 6.95 of the Health and Safety Code, the Project will be required to prepare a Hazardous Materials Business Plan (HMBP). The HMBP shall contain basic information on the location, type, quantity, and health risks of hazardous materials and/or waste used or generated by the Project, along with a Hazardous Materials Inventory and chemical description for each hazardous material (hazardous substances and hazardous waste) handled at the facility, a site plan, a summary of record keeping procedures, and a written Employee Training Plan. The HMBP will ensure the safe routine use of hazardous materials through the proper handling, recycling, treating, storing and disposing of hazardous materials and waste.

RWQCB Best Management Practices (BMPs)

The Project will be required to submit a Best Management Practices (BMPs) Plan with its Notice of Intent to obtain coverage under the Regional Water Quality Control Board's General Aggregate Mining Permit, to update the BMPs plan annually, and to implement a BMPs plan. The purpose of the BMPs plan is to control and abate the discharge of pollutants (including hazardous wastes) from the facility to surface waters, and to achieve compliance with Best Available Technology Economically Achievable (BAT) or Best Conventional Pollutant Control Technology (BCT) requirements, and with applicable water quality standards (see also the Hydrology and Water Quality chapter of this EIR).

[11] A HMBP is required of business that use, handle, or store a hazardous material and/or waste or an extremely hazardous material in quantities greater than or equal to 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70.

The Project will also be required to submit for approval a Storm Water Pollution Prevention Plan (SWPPP), which is also required to include Best Management Practices for the handling and storage of hazardous materials during construction to minimize the potential for releases to occur (see the Hydrology and Water Quality Section). All use, storage, transport and disposal of hazardous materials during construction activities shall be performed in accordance with existing local, state, and federal hazardous materials regulations.

Additional Mitigation Measures

Compliance with applicable regulations will minimize significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials to less than significant levels.

The following additional mitigation measures are recommended to further reduce this impact:

MM Haz-3a: Prohibited Truck Spraying. During operations, the asphalt plant operator shall not allow the loading of any trucks that have had their beds sprayed with diesel fuel or any other petroleum hydrocarbon-containing liquid.

a) Annual inspections will be conducted by the County Certified Unified Program Agency (CUPA, administered by County Environmental Health) to ensure that soil contamination has not occurred at the site due to spraying of truck beds with diesel fuel or other petroleum hydrocarbon-containing liquids.

b) Suitable bio-degradable surfactants are available on the market that shall be utilized by the truck operators (if desired) to prevent the asphalt from sticking to the beds of the truck beds.

MM Haz-3b: Best Management Site Practices. The Project site equipment and servicing materials shall be maintained in a neat and orderly manner to aid in accounting for and detecting potential sources of contamination;

a) Non-functional equipment, scrap metal, construction debris, used batteries and tires, and similar objects shall be removed from the site on a regular basis and disposed of at appropriately licensed facilities;

b) Best Management Practices specific to the storage of spare equipment such as heavy equipment parts, conveyor belts, tires and other replacement or extra equipment pieces shall be established pursuant to the Project's SWPPP to ensure that runoff from storage areas does not result in surface water contamination. Spare parts containing petroleum products (i.e., lubricants, hydraulic oil, etc.) shall be stored using Best Management Practices (BMPs) to prevent contamination of soil or storm water runoff; and

c) Storage areas shall be inspected by the Operator monthly. Any petroleum leaks shall be documented and cleaned up. Leaking equipment shall be repaired. Inspection and monitoring documentation shall be retained for a minimum of five years and be available to County staff during site inspections.

MM Haz-3c: Reclamation Requirements. Upon completion of mining and processing operations at the Project site and pursuant to implementation of the Reclamation Plan, all hazardous materials and above ground storage tanks shall be removed and the site shall be cleaned of hazardous material.

a) Prior to closure of any above ground storage tank used to hold hazardous material, the Project applicant shall obtain a tank closure permit from the County DEH and shall comply with all applicable tank closure guidelines.

b) The Project applicant shall obtain a closure permit for all above ground hazardous materials storage facilities.

c) Fuel tanks and other hazardous materials containers shall be transported by licensed haulers to an approved disposal or recycling facility in accordance with all applicable laws and regulations.

d) Any reported releases of hazardous substances which may have occurred during Project operations shall be fully remediated according to the corrective actions proscribed by the identified lead agency, and a case closure letter from the lead agency obtained.

Resulting Level of Significance

Compliance with all applicable regulatory requirements and incorporation of recommended mitigation measures would reduce this impact to less than significant.

Hazardous Materials or Emissions Near a School

Impact Haz-4: The Project would not emit hazardous emissions or acutely hazardous materials, substances, or waste within a one-quarter mile of an existing or proposed school. (**Less than Significant**)

As described above, compliance with existing regulatory requirements and additional recommended mitigation measures mitigation measures would reduce the potential emission of hazardous materials, substances, or waste from the Project site. Further, the Project is not located within one-quarter mile of an existing or proposed school. The nearest school, the Sunol Glen Elementary School, is approximately 1 mile to the northwest.

Mitigation Measures

None required

Naturally Occurring Asbestos

Impact Haz-5: The proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials including transport, use or disposal of asbestiform minerals. (**No Impact**)

According to the US EPA and the Agency for Toxic Substances and Disease Registry, potential health effects of exposure to asbestos can include asbestosis, mesothelioma, and lung cancers. There are increasing concerns regarding the potential health effects attributable to exposure to naturally-occurring asbestos (NOA), which occurs as an accessory mineral in some rocks (for example, tremolite in metamorphosed carbonate rocks, chrysotile in serpentinite rocks), or as an impurity in some other industrial minerals.

Coarse and fine aggregate samples from the Project site have been tested according to ASTM C136-06 Standard Test methods for Sieve Analysis of Fine and Coarse Aggregates, and ASTM C295-03 Standards for petrographic Examination of Aggregates for Concrete. The results of these analyses indicate that both coarse and fine aggregates from the Project site do contain chlorite/serpentine

particles, but that no asbestiform minerals were detected in either sample by petrographic examination.[12] Based on this analysis, there is no significant health risk associated with naturally occurring asbestos at the Project site.

Mitigation Measures

None needed

Inconsistency with an Airport Master Plan / Airport Safety

Impact Haz-6: The proposed Project would not result in inconsistency with an airport master plan. The proposed Project would not result in a safety hazard for people residing or working at the site. The site is not located within an airport land use plan area or where such a plan has not been adopted within 2 miles of a public airport or public use airport. (**No Impact**)

The Project site is not located in an area under an airport master plan or an airport land use plan. Therefore, the proposed Project would not result in an inconsistency with an airport master plan. The Site is not located in an area under an airport master plan or an airport land use plan, or within 2 miles of an airport, or near a private airstrip. Therefore, the Proposed Project would not require the review of an airport land use commission, and would not result in a safety hazard for people residing or working at the site associated with public airports.

Mitigation Measures

None required.

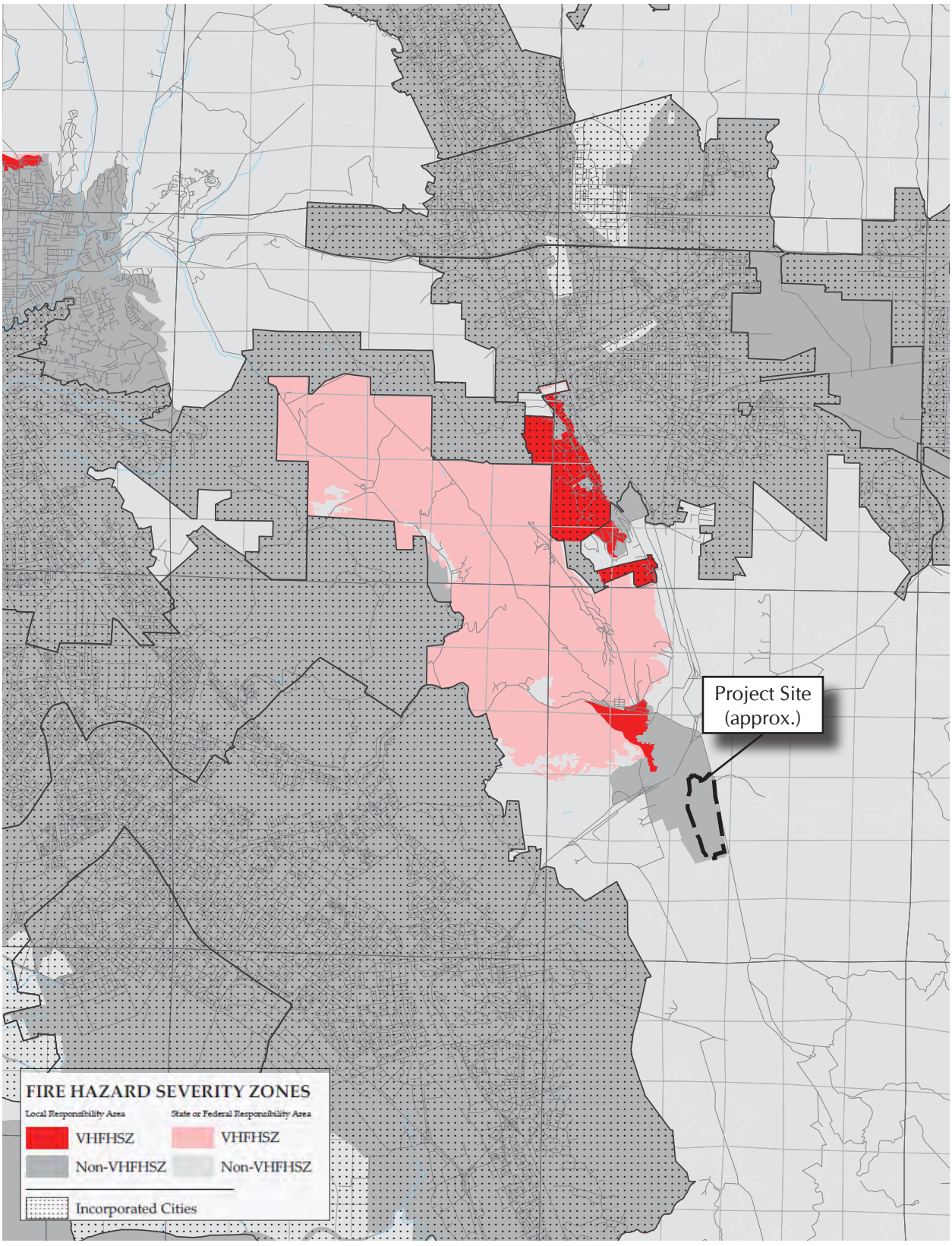
Wildland Fires

Impact Haz-7: The proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wild lands are adjacent to urban areas or where residences are intermixed with wild lands. (**Less than Significant**)

The climate of the Sunol Valley is characterized by long, dry, hot summers which promote the potential for ignition. Fire events also pose hazards to persons and property. In particular, the grasslands and sloping terrain of the surrounding watershed increase the likelihood of fire, as grass is easily ignited and slopes cause fire to move more rapidly. Approximately three-fourths of the surrounding Alameda Watershed is used for cattle grazing, which reduces the grassy fuels somewhat.

As shown on **Figure 11-2**, the Project site is not located in an area designated as a "High Fire Hazard Severity Zone" within either the State Responsibility Area (SRA) or the Local Response Area (LRA), as designated by the State Department of Forestry and Fire Prevention. There are only a few areas within the LRA that fall into a Very High Hazard Severity Zone and these areas can be found in and around the Hillcrest Knoll Area and near Sunol (but not south of I-680 at the Project site).

[12] Micro-Chem Laboratories, transmittal memo to ConcreteRX, regarding Petrographic Examination of Concrete Aggregates, January 12, 2010



Source: California Department of Forestry and Fire Protection

Figure 11-2
Fire Hazard Severity Zones

However, activities at the Project site such as the use of heavy equipment and the heating of asphalt could result in fires that could be difficult to contain.

Policy Compliance – Alameda Watershed Management Plan

The SFPUC Alameda Watershed Management Plan contains several polices and action measures intended to protect the watershed form the dangers of fire hazards. As a lessee within SFPUC properties, the Project would need to cooperate with and comply with these policies and action measures:

Action fir2 (Phase 1): Install a total of nine dry hydrants into reservoirs or other water sources to reduce the complexity of long-distance water shuttle operations. The dry hydrants shall be installed at the following locations: east of Calaveras Road, in the first drainage north of Hetch Hetchy Aqueduct at approximately 900 feet elevation.

Action saf7 (Phase 1B): Develop and periodically revise an Emergency Response Plan which includes procedures for the following types of emergency situations:

A. Toxic spills and leaks.

B. Gas and water pipeline damage.

C. Damaged electric transmission and distribution lines.

D. Fire.

E. Flooding/inundation.

F. Geologic and soil-related disturbances.

G. Human injury incidents/accidents.

Guidelines for emergency response procedures include:

A. Assess adequacy of elapsed time between emergency occurrence and notification of SFPUC staff.

B. Coordinate emergency response with non-SFPUC agencies (e.g., Alameda and Santa Clara Counties, OES).

C. Collect information on all accidents that occur on the watershed, including type of injury, date, time, location, conditions, and activity, as well as injured party (e.g., SFPUC employee or recreationist, scientist, etc.).

D. Evaluate all accidents to determine areas which may require modifications for safety reasons.

Action saf8 (Phase 1B): Periodically conduct emergency response practice drills for the seven types of emergency situations (see Action saf7). Guidelines include:

A. Assessment of response time.

B. Coordination of practice drills with non-SFPUC agencies.

C. Evaluation of drill to identify areas for improvement.

Action saf9 (Phase 1B): Periodically evaluate and update the safety and security program, as necessary.

Regulatory Compliance

The currently effective Surface Mining Permit (SMP-30) includes a condition of project approval that requires an annual fire plan to be prepared and filed with the State Division of Forestry to mitigate fire hazards.

Additional Mitigation Measures

The following additional mitigation measure (derived from Impact Haz-2 above) is also are recommended to further reduce wildland fire hazards:

MM Haz-7: Comprehensive Fire Protection Plan. The Project applicant shall engage a Fire Protection Engineer to perform a Code analysis and submit a Comprehensive Fire Protection Plan for the proposed Project for review by the County Fire Marshal. The submittal shall include an evaluation of the Project's compliance with the Uniform Fire Code requirements relating to storage of hazardous materials (including aboveground tanks), the need for fire suppression system, alarm systems, storage of flammable or combustible materials, containment basins around hazardous materials, and compliance with hazardous materials regulations. Hazardous materials at the proposed asphalt plant shall be specifically considered in the review.

Resulting Level of Significance

Compliance with all applicable regulatory requirements and incorporation of recommended mitigation measures would reduce this impact to less than significant.

12

Hydrology and Water Quality

This section evaluates the proposed Project's potential impacts related to hydrology and water quality. This section describes the existing hydrology and water quality conditions in the vicinity of the site and evaluates the extent to which development of the Project as proposed may affect hydrology and water quality. Information in this section is drawn from:

- *Hydrology and Water Quality Analysis Report* for the SMP-30 Revised Use Permit, Alameda County, California, prepared by EMKO Environmental, Inc. (October 12, 2011),
- *Notice of General Permit Coverage for Discharge from RMC Pacific Materials (CEMEX), Sunol Aggregate Plant Located at 6527 Calaveras Road, Sunol, Alameda County, CA*, under the Requirements of Order No. R2-20080011, NPDES Permit No. CAG982001 (Aggregate Mining, Sand Washing, and Sand Off-Loading General Permit), California Regional Water Quality Control Board, San Francisco Bay Region, (June 26, 2008)

All other sources are referenced at the end of this chapter of the EIR and/or are provided in the Appendices.

Physical Setting

This section describes the existing conditions at the site relevant to hydrology. Climate and precipitation, surface water, groundwater, and water-quality conditions are addressed.

Climate and Precipitation

The general climate of the Project area is classified as Mediterranean, characterized by semi-arid temperatures with seasonal rainfall. Warm summers and mild winters typify local climatic conditions. Precipitation is confined mainly to the "wet" season which lasts from late fall (late October) to early spring (early April) (Department of Water Resources 1975). The fair and dry weather in summer is created by a migratory high-pressure system over the northern Pacific Ocean, which minimizes summer storm activity.

General meteorological data for the Project site is presented in **Table 12-1**. The average high temperature ranges from 57 degrees Fahrenheit (°F) in January and December, to 89°F in July and August. The average low temperature ranges from 37°F in January and December, to 55°F in July and August. The seasonal temperature variations can be much larger. For example, the record high temperature is 115°F (in 1950) whereas the record low temperature is 18°F (in 1961 and 1990). The average annual precipitation in the Project vicinity is approximately 14.82 inches per year. Within the Alameda Creek watershed upstream from the Project site, where elevations reach over 3,000 feet mean sea level (ft. msl), the mean annual precipitation is in the range of 23inches to 24 inches per year (URS Consultants, 2008).

Evaporative loss of water is estimated through several parameters. The pan evaporation rate is the rate at which water will evaporate from a standard (Class A) pan used for making such a measurement. The average annual pan evaporation rate for the Project area is approximately 56.5 inches per year. The measured pan evaporation rate is used to approximate other water-loss terms such as the lake evaporation rate and the evapotranspiration rate. The lake evaporation rate is the rate at which water evaporates from

surface-water bodies, such as lakes or ponds, and is typically less than the pan evaporation rate. In the Project area, the lake evaporation rate is assumed to be approximately 0.7 times the pan evaporation rate, or approximately 39.6 inches per year (Department of Water Resources 1975, 1986). The evapotranspiration rate is the amount of rainfall and applied water (e.g. for irrigation or dust control) that is lost to both surface evaporation and transpiration from plant surfaces. In the Project area, the evapotranspiration rate is reported to be 43.9 inches per year (Jones, 1999).

Table 12-1: General Meteorological Data

Temperature and Meteorological Data Parameters	Jan	Mar	May	Jul	Sep	Nov
Average High Temperature	57	65	77	89	86	65
Average Low Temperature	37	42	48	55	53	42
Mean Temperature	47	54	63	72	70	53
Record High Temperature	75	88	104	112	115	90
Record Low Temperature	18	22	32	36	35	23
Average Precipitation	2.99	2.47	0.43	0.03	0.24	1.88
Average Annual Precipitation	14.82					
Pan Evaporation	56.5					
Lake Evaporation	39.6					

Notes: Temperature in degrees Fahrenheit; precipitation and evaporation rates in inches per year.

Sources: www.weather.com; Department of Water Resources (1979)

Surface Water Conditions

As shown in **Figure 12-1**, there are two main surface water drainages on or adjacent to the Project site:

- Alameda Creek, which flows along the western Project boundary, and
- San Antonio Creek, which flows along the northern Project boundary.

In addition, there are several basins on the Project site used for water storage and settling ponds.

Alameda Creek Watershed

The Alameda Creek watershed encompasses approximately 700 square miles from San Francisco Bay to eastern Alameda County. Upstream from the Project site, the watershed includes undeveloped land in the Sunol and Ohlone Regional Wilderness Preserves, and SFPUC watershed lands. Flows in upper Alameda Creek are diverted to Calaveras Reservoir, such that flows in Alameda Creek along the Project site are controlled by diversions and dam releases upstream.

Figure 12-1
Surface Hydrological Features, Project Area

Calaveras Dam was completed in 1925 on Calaveras Creek, upstream of the confluence with Alameda Creek. Total capacity of the reservoir is 96,850 acre-feet. In 2001, the Department of Safety of Dams (DSoD) directed SFPUC to reduce the storage in the reservoir to 40 percent of full capacity due to seismic safety concerns. SFPUC is replacing Calaveras Dam with a new rock and earth-fill dam capable of withstanding the maximum credible earthquake of magnitude 7.25. The Final EIR for the dam replacement project was issued in January 2011. Construction of the new dam began in summer 2011 and is expected to be complete in 2015. At that time, the reservoir will be capable of holding its full design capacity without concern about seismic safety. Based on the determination by DSoD, the reduced storage in the reservoir is currently protecting downstream structures and people from potential impacts due to failure of Calaveras Dam. When the replacement dam is completed in 2015, it will meet applicable seismic safety criteria and prevent loss from failure of the dam.

Alameda Creek Stream Flows

The United Stated Geological Survey (USGS) maintains two stream gauges on Alameda Creek upstream of the Project site. Gauge 11173510 is located on Alameda Creek below the confluence with Calaveras Creek, approximately 4.5 miles south of the Project site. The watershed area above this gauge is approximately 139 square miles. Alameda Creek discharge has been recorded since October 1, 1995.[1] Gauge 11173575 is located on Alameda Creek below the confluence with Welch Creek, approximately 1.5 miles south of the Project site. The watershed area above this gauge is approximately 149 square miles. Alameda Creek discharge has been recorded since October 1, 1999. [2]

Figure 12-2A shows the average daily discharge in Alameda Creek at both of the gauges described above. Dry season flows are typically less than one cubic foot per second (cfs). In several years, the creek has been dry for part of the summer or fall. Peak flows occur for a very short period in March or April of each year. The peak discharges varies appreciably depending on the rainfall patterns each winter. For example, the maximum average daily flow recorded on upper Alameda Creek since 1995 (which occurred on March 26, 2011) and was 1,740 cfs. In contrast, the minimum peak average daily flow occurred in 2001, at only 75 cfs.

SFPUC is in the process of improving Calaveras Dam to allow greater storage and to maintain minimum flows of five (5) to 12 cfs, in conjunction with the Upper Alameda Creek Filter Gallery project.

San Antonio Creek Stream Flow

The USGS also maintains Stream Gauge 11174000 along San Antonio Creek, approximately one-half mile east of Calaveras Road. The watershed area above this gauge is approximately 37 square miles. Average daily discharge for Gauge 11174000 has been reported intermittently since 1912, as shown in **Figure 12-2B**. Prior to completion of San Antonio Dam in 1964, the peak average daily discharge reported in San Antonio Creek was 1,460 cfs (on January 3, 1916). Since completion of San Antonio Dam, the peak average daily discharge reported in San Antonio Creek was 445 cfs (on April 5, 2006). The peak flow in 2011 has been 223 cfs (on March 26, 2011).

[1] The data and related information for this gauge are available at http://waterdata.usgs.gov/ca/nwis/uv/?site_no=11173510&agency_cd=USGS&amp

[2] The data and related information for this gauge are available at: http://waterdata.usgs.gov/ca/nwis/uv/?site_no=11173575&agency_cd=USGS&amp

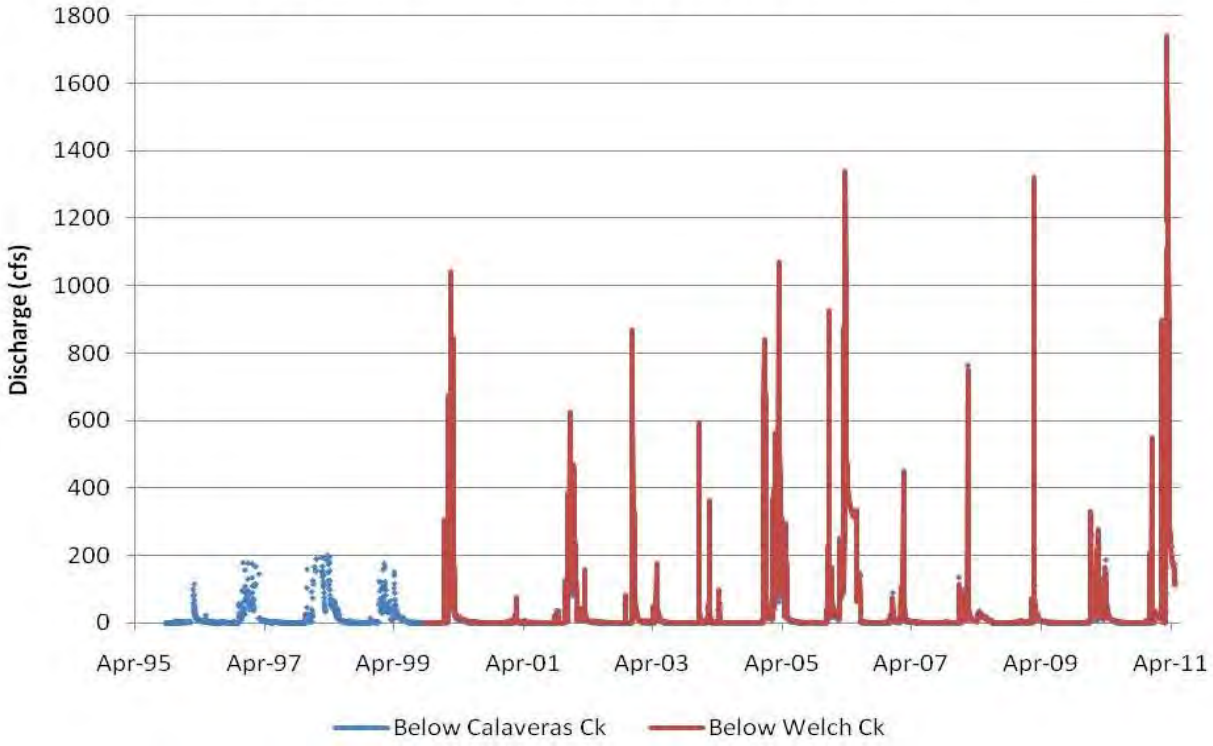


Figure 12-2A: Average Daily Discharge, Alameda Creek, 1995 - present

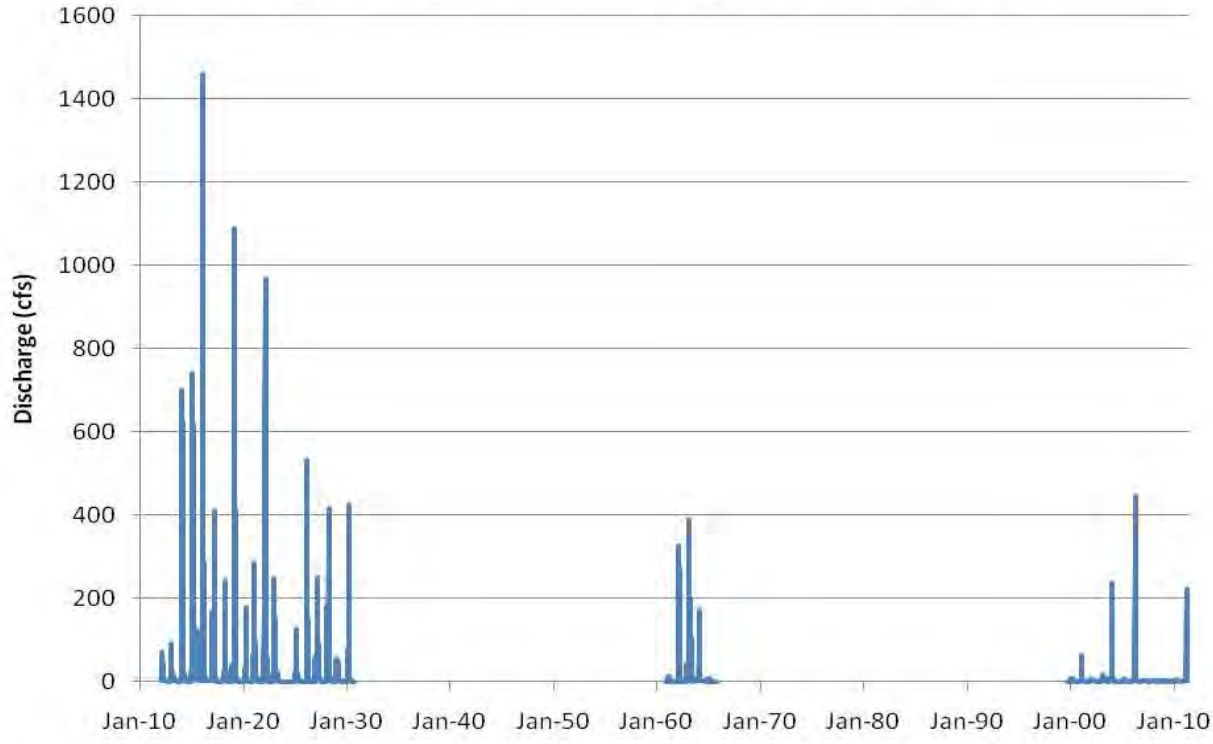


Figure 12-2B: Average Daily Discharge, San Antonio Creek, 1912 - present

Figure 12-2
Average Daily Discharge in Alameda and San Antonio Creeks

Source: USGS Stream Guage Data, from EMKO

Alameda Creek Flood Flows

Sometime after 1981, the stream channel of Alameda Creek was relocated to its current position. In August 2009, the Federal Emergency Management Agency (FEMA) completed a new Flood Insurance Study (FIS) of Alameda County. **Figure 12-3** shows the August 2009 FEMA Flood Insurance Rate Maps (FIRMs) for Alameda Creek in the vicinity of the Project.[3] The August 2009 FEMA FIRM maps are based on the North American Vertical Datum of 1988 elevations (NAVD 88). The projected 100-year floodplain is at an approximate elevation of 283 ft. msl at the south end of the Project site, and can be extrapolated to an approximate elevation of 253 ft. msl at the north end of the site along San Antonio Creek (using NAVD 88). The topographic maps used for the Project, however, are based on the National Geodetic Vertical Datum of 1929 (NGVD 29) elevations, which are 2.78 feet lower than the NAVD 88 elevations. Thus, on the Project's topographic maps, the projected 100-year flood elevations would be approximately 280 ft. msl at the south end of the site, and 250 ft. msl at the north end of the site.

The peak flows in Alameda Creek at the south end of the site have been estimated by Water Resources Engineering (2006) and URS Consultants (2008). For the 100-year flood event, the predicted peak flow within Alameda Creek is 15,754 cfs in the Water Resources Engineering (2006) study, and 13,190 cfs in the URS Consultants (2008) study. URS Consultants (2008) also estimated the peak flow during the 50-year and 20-year flood events to be 11,300 cfs and 8,660 cfs, respectively. Based on the modeling results from these studies, the 2011 peak flow of 1,740 cfs is approximately equivalent to a two-year return period flood event. The studies conducted by Water Resources Engineering (2006) and URS Consultants (2008) took reservoir storage and releases at Calaveras Dam into consideration in estimating the peak flood flows. The methods described by Alameda County Public Works Agency (2003) indicate that the 100-year return period, 24-hour duration storm (100-year storm) has a total rainfall depth of approximately 3.9 inches at the Project site, and up to approximately 5.8 inches in the Alameda Creek watershed upstream from the Project site. Based on these values, the total runoff from a 100-year storm may be in the range of 7,000 acre-feet (AF) to 12,000 AF.

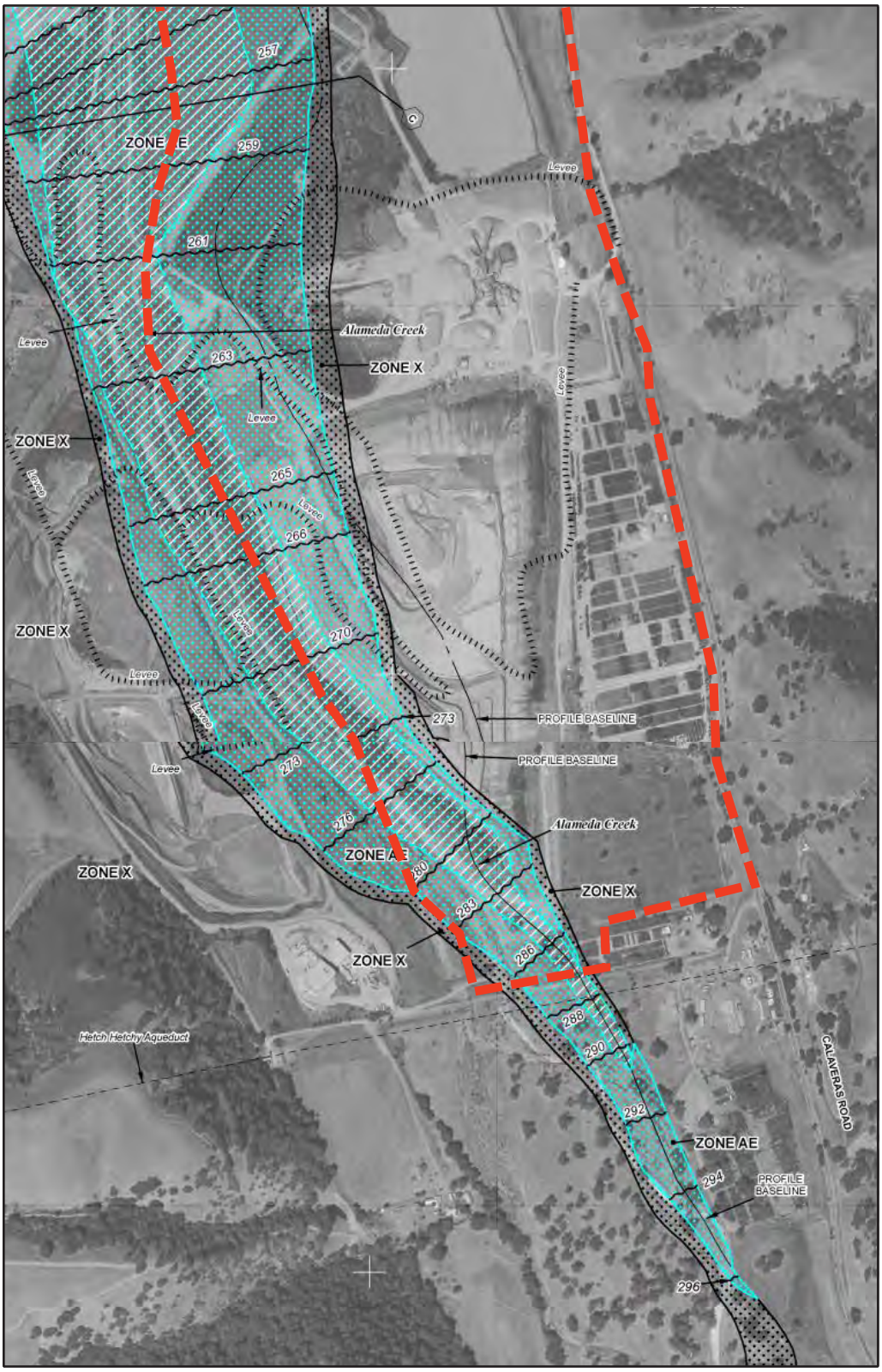
On Site Water Basins

As shown on **Figure 12-1**, there are two features referred to as the North Basin and the East Basin in the northern part of the site. The North Basin receives water pumped from the quarry basin and is used as water storage for make-up water for aggregate processing and dust control. Dewatering rates from the main quarry basin may vary from 1,000 gallons per minute (gpm) up to 2,500 gpm during dry periods and normal rainfall years. Current dewatering rates in 2011 were approximately 10,000 gpm due to the very high rainfall, and from additional inflow from a new overflow pipe and trench installed by SFPUC at the south end of the basin.

During periods of high rainfall or elevated dewatering requirements, excess water is discharged at the northwest corner of the North Basin to San Antonio Creek or to Alameda Creek, pursuant to NPDES General Permit No. R2-2008-0011 as issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The East Basin is used as a settling basin to remove fines in the process water.

[3] FEMA, Flood Insurance Rate Maps, Panels 06001C0486G and 06001C0478G



Source: FIRM Panel Numbers 06001C0478G and 06001C0486G

Figure 12-3
FEMA Flood Insurance Rate Maps

Groundwater Conditions

Information on groundwater conditions in the vicinity of the Project have been obtained from numerous sources including Treadwell and Rollo (1991, 2001), URS Corporation (2008, 2009), Luhdorff & Scalmanini (2009), and Jones & Stokes (2009).

Bedrock in the Sunol Valley area consists of the Cretaceous Great Valley Sequence and the Jurassic-Cretaceous Franciscan Formation. Sediments within Sunol Valley consist of the Plio-Pliestocene Livermore Formation and Recent alluvium. The Livermore Valley Formation consists of gravels, sandstone, and mudstone that were deposited in an alluvial fan environment. This formation is several hundred feet thick in the Project area. The Recent alluvium consists of coarse gravels and sand deposited by Alameda Creek and its tributaries, such as San Antonio Creek. The alluvium averages approximately 40 to 60 feet thick. It is difficult to distinguish the alluvium from the Livermore Formation visually, although the Livermore Formation tends to be more indurated and contains a higher percentage of fine material.

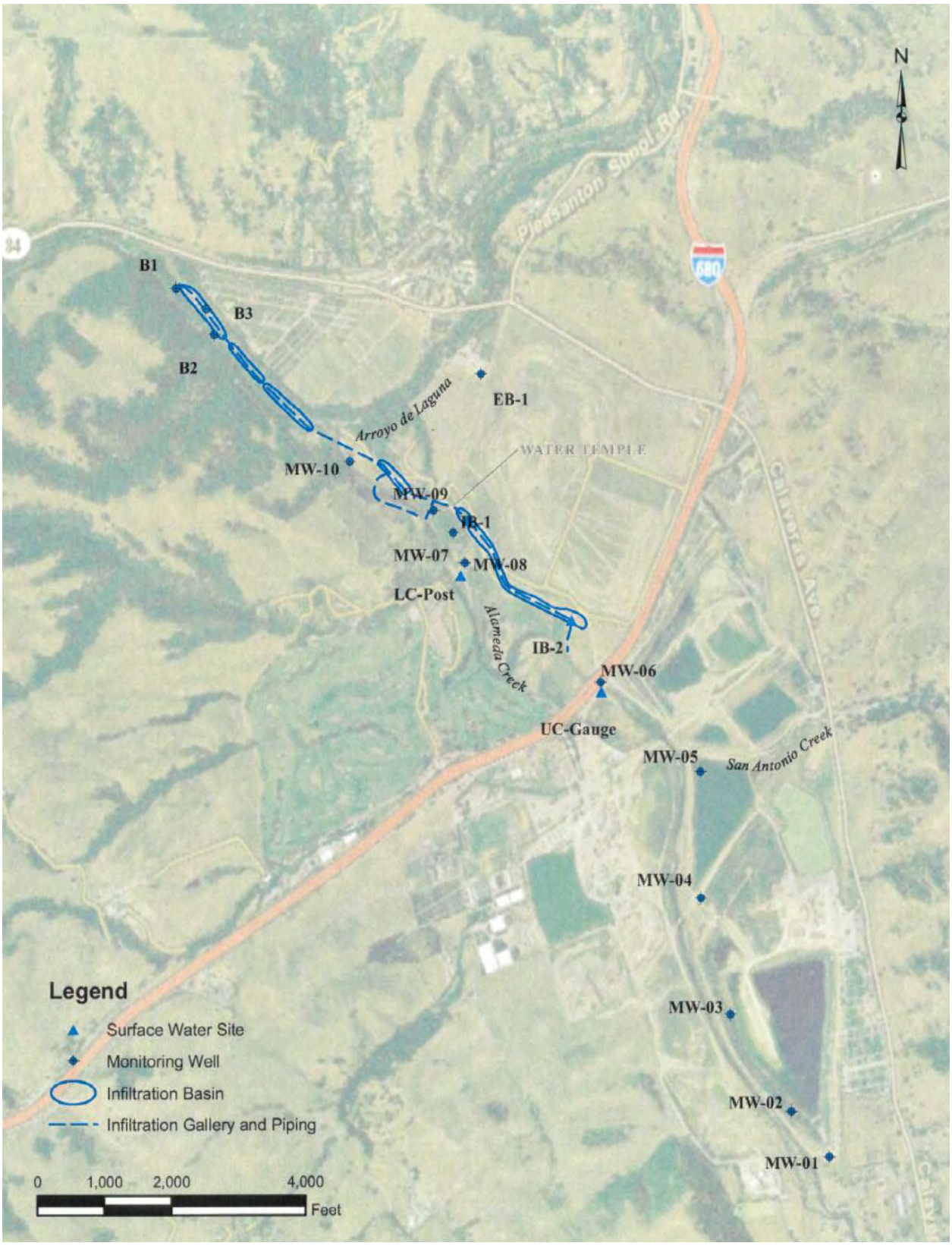
The predominant structural geologic feature in the area is the northwest-southeast trending Calaveras Fault. The Calaveras Fault is part of the larger San Andreas Fault system in northern California. The fault exhibits several miles of right-lateral strike slip displacement and potentially several hundred feet of vertical displacement, down to the west. The Calaveras Fault is located along the eastern edge of the Project site.

Five shallow piezometers have been installed along the west side of the Project site adjacent to Alameda Creek by SFPUC and its consultant (Luhdorff & Scalmanini, 2009). Several additional piezometers are present along Alameda Creek adjacent to the abutting quarries operated by Lehigh-Hanson. The piezometer locations are shown on **Figure 12-4.** Water levels are recorded electronically in several of the piezometers using down-hole pressure transducers and data-loggers. **Figure 12-5** presents the water level data from the piezometers as provided by SFPUC, along with the flow rate in Alameda Creek. The depth to groundwater at the site varies seasonally from less than 10 ft. bgs to more than 30 ft. bgs. The data presented indicate that groundwater elevations are controlled predominantly by flow within Alameda Creek and percolation into the alluvium.

Aquifer tests conducted by Luhdorff & Scalmanini (2009) indicate that the alluvium will produce groundwater at a rate of at least 150 gpm until drawdown reaches the top of the Livermore Formation, at which point groundwater pumping can no longer be sustained. Based on the aquifer test results, Luhdorff & Scalmanini (2009) estimate the transmissivity of the alluvium in the Project area to be approximately 32,500 gallons per day per foot (gpd/ft.), with a storativity of 0.25. The same tests indicate that the transmissivity of the alluvium north of I-680 is substantially less (6,500 gpd/ft.). The difference in transmissivity is attributed to the fact that the alluvial gravels adjacent to the Project have been re-worked and re-graded as part of the relocation of the main channel of Alameda Creek in the 1980s. The higher transmissivity value, therefore, applies to the disturbed gravels within the relocated Alameda Creek, but may not apply to the alluvium in the mining area of the Project. Several of the reports cited above refer to the Livermore Formation as “non-water bearing”, with the exception of localized gravel layers or lenses.

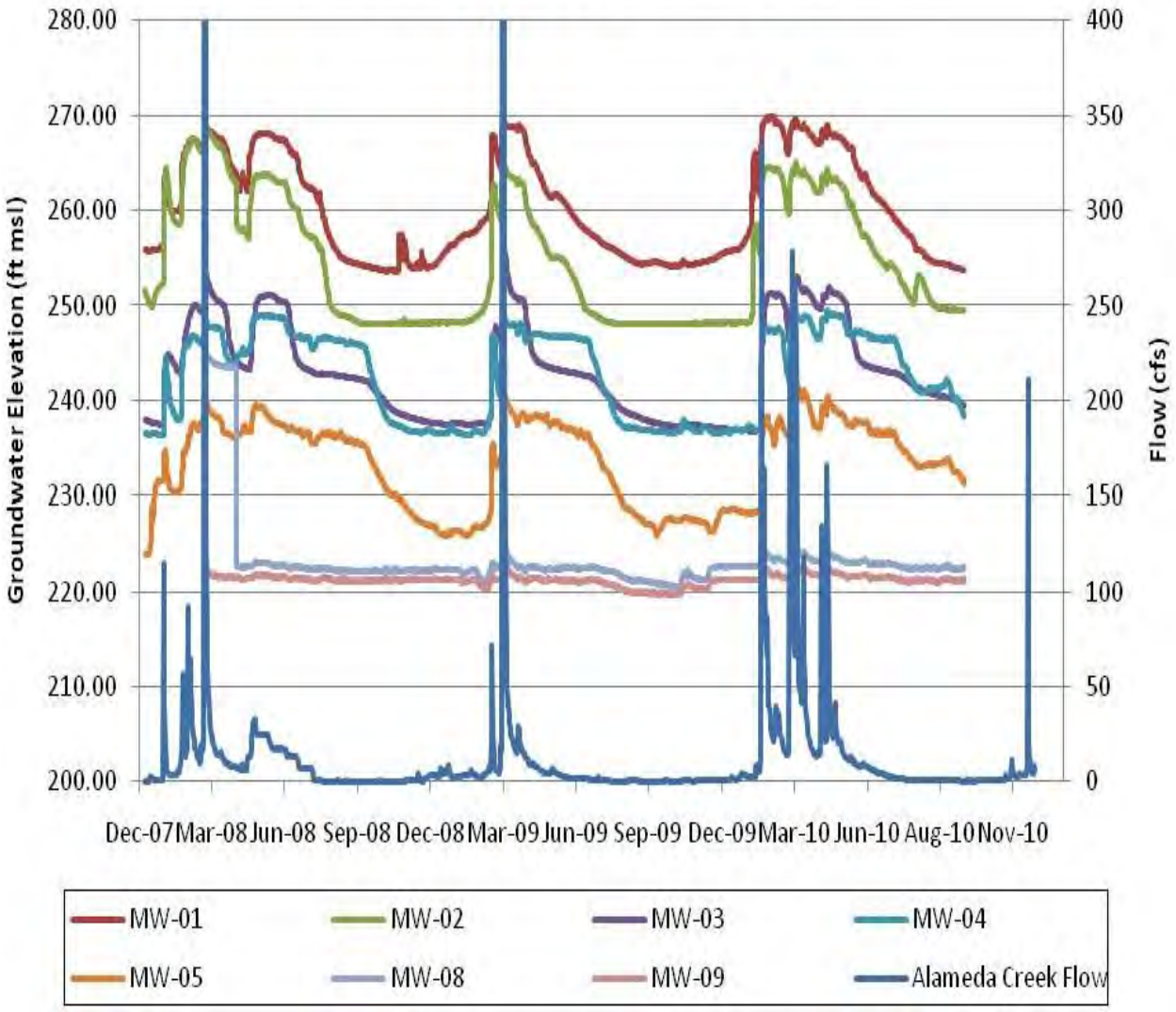
The water-level data, along with the parameters identified during aquifer testing, can be used to estimate the rate of groundwater flow into the Project mining basin in the shallow alluvium. The average total flow into the basin through the alluvium along the west side of the Project site is about 2,366,000 gallons per day, or about 1,650 gpm.

In October 2007, seepage was observed along the south and east walls of the existing quarry, potentially from the Hetch Hetchy pipeline (Berlogar, 2007). Drilling at that time also indicated the occurrence of artesian conditions within the Livermore Formation below approximately 120 ft. msl. It is likely that the artesian conditions encountered in 2007 may be related to isolated layers or lenses of gravel.



Source: Luhdorff & Scalmanini (2009), presented by EMKO Environmental

Figure 12-4
Location of Groundwater Monitoring (piezometer) Points



Source: EMKO Environmental

Figure 12-5
Groundwater Elevations Compared to Flow in Alameda Creek

During field reconnaissance conducted on April 5, 2011, substantial seepage was observed along the west and north sides of the existing quarry, primarily at depths that would be within the alluvium. Significant rainfall had occurred in the preceding weeks. In addition, Alameda Creek was flowing at almost 800 cfs at that time, and had recently been flowing at over 1,000 cfs. The seepage observed on April 5, 2011 is likely representative of the interaction between Alameda Creek and the alluvium, and the range of percolation that occurs when there is appreciable flow in the creek.

Figure 12-5 not only presents data from the five SFPUC piezometers (MW-01 through MW-05), but it also includes data from piezometers MW-08 and MW-09 adjacent to SMP-32, north of I-680. As shown, large changes in flow in Alameda Creek do not result in large changes in the groundwater level at MW-08 and MW-09. Whereas the water levels in MW-01 through MW-05 adjacent to SMP-30 may change by as much as 15 feet to 20 feet seasonally, the water levels in MW-08 and MW-09 vary by less than five feet in response to the same changes in creek flow. A slurry wall has been installed at SMP-32 into the Livermore Formation. The presence of the slurry wall may be reducing seepage from the creek into SMP-32 through the alluvium.

Water-Quality Conditions

Current operations at the Project site discharge water from the North Basin to San Antonio Creek under a NPDES General Permit for Aggregate Mining, No R2-2008-0011 (General Permit). The North Basin contains water from settling or silt removal operations, storm water runoff from the facility, and groundwater pumped from the active quarry basin. Under the General Permit, the current quarry operation is allowed an average discharge rate of 0.8 million gallons per day (mgd), and a maximum discharge rate of 6 mgd. The General Permit also establishes effluent limitations and requires specific monitoring and reporting requirements to verify compliance with the discharge limits.

Table 12-2 presents representative data reported to RWQCB as part of the self-monitoring requirement pursuant to the current General Permit. Table 2 also shows the permit limits. The total suspended solids (TSS), turbidity, total dissolved solids (TDS), chloride, and discharge rate are all well below the permit limits. In a few instances, the pH in the discharge waters has been as high as 8.6, whereas the permit limit is 8.5. However, the pH within Alameda Creek was reported as high as 8.6 in 2009. Therefore, slightly elevated, or alkaline, pH levels appear to be a natural occurrence in the area.

Table 12-2 Water Quality Data

Constituents	Units	2009				2nd Quarter 2010				Permit Limits
		Discharge Point		*Down stream*		*Discharge Point*		*Down stream*		
		Min	Max	Min	Max	Min	Max	Min	Max	
Total Suspended	mg/L	< 2	14	nr	nr	< 0.1	< 0.1	nr	nr	30 Month Avg / 45Weekly Avg
Turbidity	NTU	1.4	3.8	nr	nr	1	4	1.05	2.4	40
pH	std units	8.2	8.5	8.3	8.6	7.8	8.6	7.8	8.5	6.5 – 8.5
Total Dissolved Solids (TDS)	mg/L	180	270	160	270	270	290	250	300	500
Chloride	mg/L	9	15	8.6	15	12	15	12	15	250 Average /Maximum
Flow (mgd)		nr	nr	1	169	0	2.02	0.03	7	0.8/6

nr = not reported

Downstream flow rates based on USGS gauge on Alameda Creek below Welch Creek

Since much of the water in the North Basin is groundwater that is pumped from the active mine basin, the water-quality data for the NPDES discharge is generally representative of groundwater conditions. The downstream samples are representative of surface water quality in Alameda Creek and San Antonio Creek. As Table 12- 2 demonstrates, the groundwater and surface water are almost identical in terms of water quality parameters. This is most likely due to the substantial amount of percolation from Alameda Creek into the mine basin through the shallow alluvium.

Regulatory Setting

Federal, state, and local agencies regulate activities that could affect hydrological and water quality features in the Project area. This section describes the regulatory framework that would apply to the Proposed Project.

Federal

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and gives the US EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA sets water quality standards for all contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

The US Army Corps of Engineers (Corps) has jurisdiction over all waters of the U.S. including, but not limited to, perennial and intermittent streams, lakes, and ponds, as well as wetlands in marshes, wet

meadows, and side hill seeps. Under Section 401 of the CWA, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must also obtain State Water Quality Certification that the proposed activity will comply with state water quality standards.

The National Pollutant Discharge Elimination System (NPDES) is a permit program under the CWA that controls water pollution by regulating point and non-point sources that discharge pollutants into "waters of the U.S." California has an approved state NPDES program through which the USEPA has delegated authority for NPDES permitting to the California State Water Resources Control Board (SWRCB), which has nine regional boards. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates water quality in the Project area.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code, allows the SWRCB to adopt statewide water quality control plans. The purpose of the plans is to establish water quality objectives for specific water bodies.

The act also authorizes the NPDES program under the CWA, which establishes water quality requirements for discharges to waters of the state.

States may request authority from the US EPA to issue general NPDES permits pursuant to Title 40, Code of Federal Regulations (CFR), Part 122.28. The SWRCB did submit an application to the US EPA requesting revisions to its NPDES Program to add general permit authority to its approved NPDES Program. In 1989, the US EPA approved the State Water Board's request, and granted authorization for the State to issue general NPDES permits. Most of the implementation of SWRCB's responsibilities was then delegated to the nine regional boards (see below).

National Toxics Rule (NTR) and California Toxics Rule (CTR).

The US EPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995, and November 9, 1999. About forty criteria in the NTR applied in California.

On May 18, 2000, US EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that applied in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

State Implementation Policy (SIP)

On March 2, 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the US EPA through the NTR and to the priority pollutant objectives established by the Regional Water Boards in their basin plans, with the exception of the provision on alternate test procedures for individual discharges that have been approved by the US EPA Regional Administrator. The alternate test procedures provision was effective on May 22, 2000. The SIP became effective on May 18, 2000. The State Water Board subsequently amended the SIP on February 24, 2005, and the amendments became effective on July 31, 2005. The SIP includes procedures for determining the need for and calculating WQBELs and requires dischargers to submit data sufficient to do so.

Regional

Regional Water Quality Control Board

The San Francisco Bay RWQCB is responsible for the protection of beneficial uses and the water quality of water resources within the San Francisco Bay region.

The San Francisco Bay RWQCB prepared the *San Francisco Bay Basin Water Quality Control Plan* (Basin Plan) for San Francisco Bay. The Basin Plan contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the region and describes beneficial uses of major surface waters and their tributaries. The RWQCB is responsible for regulating construction activities to ensure the protection of these beneficial uses.

Aggregate Mining General Permit

Discharges from aggregate mining, sand washing, and sand off-loading facilities are regulated by the RWQCB and are subject to the permitting requirements of the NPDES General Waste Discharge Requirements for Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters (Aggregate Mining General Permit). The RWQCB established the Aggregate Mining General Permit, in part, to reduce surface water impacts from the discharge from aggregate mining facilities such as the Project. The wastewater at such facilities includes groundwater seepage diverted from active mining pits, storm water runoff from facility yards, runoff of aggregates wash water, and runoff from dust control spray. Typically, this wastewater flows into a series of detention ponds. Pollutants in the discharge from aggregate mining facilities consist mainly of solids that are not settled out in the detention ponds, and dissolved solids which come from groundwater. The discharge may include toxic pollutants from the groundwater (if polluted), or the storm water runoff from the facility (e.g., toxic materials not properly stored at the facility).

Aggregate Mining General Permits are issued pursuant to CWA Section 402 and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and CWC Chapter 5.5, Division 7. They serve as NPDES permits for point source discharges from the facility to surface waters. They also serve as Waste Discharge Requirements (WDRs) pursuant to CWC Article 4, Chapter 4 for discharges that are not subject to regulation under CWA Section 402.

Monitoring and Reporting

40 CFR122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. California Water Code (CWC) sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and State requirements.

Best Management Practices (BMPs) Plan

Dischargers are required to submit a Best Management Practices (BMPs) Plan with their Notice of Intent to obtain coverage under the General Permit, to update the BMPs plan annually, and to implement a BMPs plan for their activity. The purpose of the BMPs plan is to control and abate the discharge of pollutants from the facility to surface waters and to achieve compliance with Best Available Technology Economically Achievable (BAT) or Best Conventional Pollutant Control Technology (BCT) requirement and with applicable water quality standards.

2008 Notice of General Permit Coverage – Sunol Quarry

In February of 2008, the RWQCB issued Final Order #R2-2008-0011, NPDES Permit No. CAG982001, a General Permit for Discharges from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters to RMC Pacific Materials (CEMEX) for the Sunol Aggregate Plant (i.e., the current

Project site). This Order was adopted by the Regional Water Board on February 13, 2008; become effective on May 1, 2008; and does not expire until April 30, 2013. To obtain coverage under this General Permit, the Dischargers (RMC Pacific Materials/CEMEX) were required to submit a Notice of Intent (NOI) Form and a filing fee. Once the NOI was complete, authorization to initiate discharge was issued by the Regional Water Board Executive Officer. RMC Pacific Materials/CEMEX submitted a Notice of Intent application, and in June of 2008 the RWQCB determined that the proposed discharge was eligible for coverage under the requirements of the Aggregate Mining General Permit and issued a Notice of General Permit Coverage for Discharge to RMC Pacific Materials (CEMEX) for the Sunol Aggregate Plant.

Specifics of this currently effective General Aggregate Mining Permit include the following:

- The authorized discharge is limited to settling wastewater that may consist of storm water run-off from all facility structures that has commingled with other wastewater from the facility, and groundwater from active excavation pit.
- Discharge locations are limited to Discharge Point #1 on San Antonio Creek (Latitude 37^{o} 34' 30", Longitude 121^{o} 52' 14"), and Discharge Point #2 on Alameda Creek (Latitude 37^{o} 33' 36", Longitude 121^{o} 57' 57").
- Discharge flow rates are limited to an average of 0.8 mgd (when discharging), and a maximum of 6.0 mgd.
- The effluent from each discharge outfall shall not exceed the following effluent limits:
  - Total suspended solids (TSS) were limited to 45 mg/l weekly average, and 30 mg/l monthly average
  - Turbidity (as measured by NTU) were limited to 40 NTU daily maximum
  - Settable matter was limited to 0.2 ml/hr. daily maximum, and 0.1 ml/hr. on a monthly average
  - Total dissolved solids (TDS) is limited to 500 mg/l as a daily maximum
  - pH is limited to 8.5 standard units instantaneous maximum, and 6.5 standard units instantaneous minimum [4]
  - Chloride is limited to 250 mg/l daily maximum[5]
  - Total Chlorine residual is restricted to 0.0 mg/l as an instantaneous maximum[6]
  - Acute toxicity as measured by the survival rate of bioassay test organism(s) in 96-hour bioassays of undiluted effluent in a single-sample maximum shall be at least 70%.
- Discharge of effluent or treated wastewater at a location or in a manner different from that described in the General Permit is prohibited.

[4] Exceedance of the pH limit will not constitute a violation of this Order if the Discharger can demonstrate that the discharge does not cause a natural background pH to be depressed below 6.5 nor raised above 8.5, or if outside this range, the receiving water has not been altered from normal ambient pH by more than 0.5 Standard Units (through upstream and downstream receiving water monitoring). In no case shall the pH of the effluent be below 6.0 or above 9.0.

[5] The TDS and chloride limits apply to discharges into a fresh water body supporting municipal water supply or groundwater recharge. This includes Alameda Creek above Niles.

[6] The total chlorine residual limit applies only to facilities that use municipal water supply as wash water. The chlorine residual requirement is defined as below the limit of detection by standard methods of analysis, as defined in Standard Methods for the Examination of Water and Wastewater.

- The discharge shall not contain silt, sand, clay or other earthen materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discolorations in surface waters or to unreasonably affect or threaten to affect beneficial uses.
- The discharge shall not contain floating debris, oil, grease, scum, or other floating materials.
- On-site storage of oil, fuel and any other chemicals shall be within secondary containment or under a roof.
- Bypassing retention ponds is prohibited.

The General Permit also requires timely report submittal including a Self-Monitoring Report due 30 days after the end of each quarter regardless of whether there has been a discharge, and Annual Reports which are due by February 1 of each year. An Annual Best Management Practices Plan update is also due by July 1 of each year.

Alameda County Regulations

The Alameda County Flood Control & Water Conservation District (ACFCWCD) is responsible for maintaining drainage facilities in unincorporated Alameda County, and shares this responsibility with incorporated cities. The Project site lies within Special Drainage Area 7-1, and is subject to conditions imposed at the time of issuance of permits.

Alameda Countywide Clean Water Program

The Alameda Countywide Clean Water Program (ACCWP) includes 17 member agencies that work together to protect creeks, wetlands and San Francisco Bay. The ACFCWCD is a participatory agency in the ACCWP. The member agencies have developed performance standards to clarify the requirements of the stormwater pollution prevention program, adopted stormwater management ordinances, conducted extensive education and training programs, and reduced stormwater pollutants from industrial areas and construction sites.[7]

SMP-30 Conditions of Approval

In November of 1992 Alameda County approved Resolution 92-32, combining the then-existing surface mining operation known as SMP-26 with a 45-acre expansion area to create the current SMP-30 Sunol Quarry. Pursuant to that Resolution, the County adopted a number of Conditions of Approval which are still currently effective, or which may have been modified over time. Those currently effective Conditions of Approval for SMP-30 which pertain to issues of hydrology and water quality are listed below.

37. No discharge of turbid water or pollutants shall be permitted off site from the active quarry area. All process waters shall be retained and/or recycled on site. All runoff from active quarry areas and exposed slopes shall be diverted to a settling pond for re-use, with no discharge to the creek. Rising groundwater encountered in active excavation pits shall be returned to a process or settling pond and not be discharged into the creek, except that rising groundwater that does not exceed the turbidity of background levels (as measured in the creek upstream of the quarry) may be discharged to the creek. Dikes, levees, or other barriers shall be maintained to prevent silting of creeks and drainage channels by any surface mining operation.

38. Changes in drainage and/or sedimentation control of facilities shall be submitted in advance to Alameda County Flood Control and Water Conservation District for approval

[7] Alameda County Clean Water Program, 2009

39. The Project site is within Special Drainage Area 7-1 and is subject to conditions imposed at the time of issuance of building permits.

40. Any work within creek areas will require a Streambed Alteration Agreement with the California Department of Fish and Game.

41. Mining shall not occur within 100 feet of the banks of Alameda Creek or within 50 feet of San Antonio Creek.

42. Runoff from the intercepted drainage area east of Calaveras Road shall be picked up and transported around the site or otherwise controlled to the satisfaction of the Flood Control District.

43. Any new structure within the Federal Insurance Administrator's A-2 flood zone will be subject to special building requirements.

Impacts and Mitigation Measures

Significance Criteria

The project would have a significant impact on the environment if it would:

1. Violate any water quality standards, conflict with water quality objectives, fail to meet waste discharge requirements, significantly degrade and surface water body or groundwater, or adversely affect the beneficial uses of such waters, including public uses and aquatic, wetland and riparian habitat;
2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site (i.e., within a watershed);
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff (e.g., due to increased impervious surfaces) in a manner which would result in flooding on- or off-site (i.e., within a watershed);
5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems due to changes in runoff flow rates or volumes;
6. Result in a significant increase in pollutant discharges to receiving waters during or following construction (considering water quality parameters such as temperature, dissolved oxygen, turbidity, and typical stormwater pollutants;
7. Result in an increase in any pollutant for which a receiving water body is listed as impaired under Section 303(d) of the Clean Water Act;
8. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
9. Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

10. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
11. Inundation by seiche, tsunami, or mudflow.

Each of these thresholds of significance is evaluated below.

Discharge to Surface Water

Impact Hydro-1: Although the Project could result in a violation of water quality standards or waste discharge requirements and substantially degrade surface or groundwater water quality, the Project will be required to comply with all applicable regulatory requirements to maintain the quality of water discharged to San Antonio Creek and Alameda Creek, thus reducing impacts to a level of less than significant.. (**Less than Significant**)

The current facility operates under an NPDES permit from RWQCB for discharge of process water, storm water, and groundwater pumped from the existing mine basin into San Antonio Creek and Alameda Creek. The data collected by CEMEX (the prior operator) as part of their self-monitoring requirements of the NPDES permit, demonstrate that the current operations do not violate any water quality standards or waste discharge requirements, including the effluent limits in the permit.

The proposed Project will not result in appreciable changes to the way in which storm water and pumped groundwater are managed and discharged. There will, however, be changes to the processing facilities including the addition of a concrete ready-mix plant and an asphalt batch plant. Discharges from these new facilities, if not properly contained and managed, could result in a violation of water quality standards.

Regulatory Compliance

The Project's new processing facilities will be required to comply with existing regulations for containment of process materials; best management practices (BMPs) to control storm water; and additional practices for the containment of concrete wash-out fluids.

The Applicant will be required to file a Report of Waste Discharge (RoWD) with the RWQCB for Waste Discharge Requirements (WDRs) in the form of an updated NPDES permit. The RoWD must document the change in operator and will describe the engineering and construction methods that will be used in the process area related to the new facilities. RWQCB often requires that a RoWD demonstrate the ability to retain the direct rainfall and run-on from a 100-year, 1-hour storm event. Given the presence of the mine basin for potential storage of excess storm water on a short-term basis, this demonstration likely will not be required.

Additionally, the Project will be required to comply with all regulations related to its proposed increase in the transport, use and/or storage of hazardous materials. Compliance with applicable hazardous materials regulations will minimize the potential for accidental release of hazardous materials such as fuels and asphalt oil into surface waters, and also provide measures by appropriate response to potential accidental spills of such hazardous materials is conducted to prevent degradation of surface water (see Chapter 11: Hazardous Materials).

Compliance with these regulatory requirements will maintain the high quality of the water discharged to San Antonio Creek and Alameda Creek, and prevent any potential violations.

Mitigation Measures

None required.

Use of Fuels and Other Chemicals

Impact Hydro-2: Potential Release of Fuels and Other Chemicals. If flooding occurs on Alameda Creek such that floodwaters enter the basin, the concrete and asphalt batch plants could become inundated and hazardous materials such as Portland cement and asphalt oil could be released to water in the basin. This is a potentially significant impact only after the time the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl. (**Less than Significant with Mitigation**)

Phase I and II

The use of hazardous materials during mining operations could pose a potential health and safety hazard to operational workers and the environment if a significant spill or accident occurred. The use of hazardous materials during mining operations would include maintenance supplies and operational chemicals. Hazardous materials used as part of daily operations or for maintenance of on-site equipment and vehicles would primarily include:

- fuels (diesel, gasoline, and natural gas),
- asphalt oil
- motor oils
- automatic transmission fluids
- paints and thinners
- hydraulic fluids
- lubricating grease
- bottled oxygen and acetylene
- cleaning solvents
- lubricating grease
- brake fluids
- antifreeze

Most of these hazardous materials would be limited to factory-supplied containers of 55-gallon drums or less. These hazardous materials would be stored within designated maintenance areas in accordance with state and local regulations. However, it would be necessary to transport many of these chemicals to on-site locations for repair or maintenance of equipment and/or vehicles. The use of chemicals at localized areas presents the greatest risk of accidental spills, but such use would typically be limited to small quantities of 5 gallons or less, and any spill would be easily cleaned up and disposed of in accordance with governmental regulations.

Operation of the mobile equipment would require on-site use of fuels. On-site storage of fuels would be necessary for refueling of vehicles (e.g., gasoline and diesel). The primary on-site heating chemical would be propane or natural gas for heating the asphalt and/or drying and heating the aggregate for use in the asphalt plant. Fuels would also be transported to service various on-site vehicles, particularly the equipment used for aggregate mining.

Phase II

When the processing area is relocated to the south end of the basin, it will be approximately 50 feet below the current ground surface, at an elevation of 220 ft. msl. If flooding occurs on Alameda Creek such that

floodwaters enter the basin, the concrete and asphalt batch plants could become inundated and hazardous materials such as Portland cement and asphalt oil could be released to water in the basin.

The watershed area of Alameda Creek upstream from SMP-30 is approximately 150 square miles, or 96,000 acres. Although the average annual rainfall at the Project site is about 15 inches, the average annual rainfall in the watershed above the site may be 23 inches to 24 inches per year (URS Consultants, 2008). The total runoff from a 100-yr storm event is estimated to be in the range of 7,000 AF to 12,000 AF. Not all of the runoff from a 100-yr storm will enter the mine basin at SMP-30 if flows exceed the crest of the basin. Although detailed hydrologic and hydraulic calculations have not been conducted for this situation, it is reasonable to assume that the total volume of water that could potentially enter the basin due to a breach during a 100-year storm may be in the range of 3,500 acre-feet to 6,000 acre-feet.

Regulatory Compliance

The Project will comply with applicable regulations regarding fuel use. Best Management Practices (BMPs) will be incorporated into the Project such that potential impacts associated with the use of fuels and other chemicals would be less than significant.

Emergency Response Plan/Contingency Plan

The Project applicant will be responsible for preparing an updated Hazardous Materials Business Plan (HMBP) to address potential hazards to the public and the environment associated with increased transport, use and/or storage of hazardous materials. The HMBP shall be submitted to the Alameda County Department of Environmental Health and must be deemed complete prior to issuance of the revised Surface Mining Permit (Revised SMP-30). In addition to other requirements, the HMBP must include an Emergency Response Plan/Contingency Plan, a Spill Response Plan, and an Emergency Evacuation Plan. The Contingency Plan must identify the duties of a facility Emergency Coordinator and the location of emergency equipment, and include reporting procedures for the facility Emergency Coordinator to follow after a hazardous materials incident, should one occur.

California Accidental Release Program

If the Project handles more than the threshold quantities of extremely hazardous substances, then pursuant to the California Accidental Release Program, the applicant will be responsible for preparing a detailed engineering analysis of the potential accident factors present, and to develop a Risk Management Plan (RMP). If required, the RMP will be implemented by the Project operator to prevent or mitigate releases of regulated substances that could have off-site consequences through hazard identification, planning, source reduction, maintenance, training, and engineering controls.

Above Ground Storage Tank Spill Prevention Control and Countermeasure Plan (SPCC)

The Project applicant shall be required, pursuant to 40 C.F.R. § 112.7(b), to prepare a Spill Prevention Control and Countermeasure (SPCC) plan to provide appropriate containment and/or diversionary structures or equipment to prevent a discharge from all above-ground storage tanks (ASTs). The containment system must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. The containment structure may include dikes, berms, or retaining walls sufficiently impervious to contain oil; curbing; culvers, gutters, or other drainage systems; weirs, booms, or other barriers; spill diversion ponds; retention ponds; or sorbent materials. Additional discharge prevention measures must include procedures for routine handling of products; discharge or drainage controls; countermeasures for discharge discovery, response, and cleanup; and methods of disposal of recovered materials in accordance with applicable legal requirements.

RWQCB Permit Requirements

The Storm Water Pollution Prevention Plan (SWPPP) required for the project (see the Hydrology and Water Quality Section) shall include emergency procedures for incidental hazardous materials releases. The procedures shall include necessary personal protective equipment, spill containment procedures, and training of workers to respond to accidental spills/releases.

Mitigation Measures

MM Hydro-2: Chemical Release Prevention. To prevent the inundation of the processing area and the potential release of hazardous materials to water in the basin (once the processing area is relocated to the south end of the mining basin at an elevation of 220 ft. msl) due to a 100-yr storm event, one or more of the following measures shall be taken:

a) Bulk storage for Portland cement, asphalt oil, fuels, and other chemicals shall be maintained outside of the basin perimeter. Only those materials needed for daily operations shall be stored and maintained in the processing area once it is relocated to the south end of the basin. If reliable weather predictions call for the potential for a 100-year storm event, or a series of events that could potentially yield equivalent flood flows, then all hazardous materials shall be removed from the processing area; or

b) The processing area should not be relocated to the south end of the basin until sufficient excavation has been completed such that the basin volume below the elevation of the processing area (approximately 220 ft. msl) is greater than at least 6,000 acre-feet. At a volume of 6,000 acre-feet, the basin would be capable of holding the total volume of water that could potentially enter the basin due to a breach during a 100-year storm, without overtopping into the processing area.

Resulting Level of Significance after Mitigation

Less than Significant

Depletion of Groundwater Supplies/Interference with Groundwater Recharge

Impact Hydro-3: The Project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume, or a lowering of the local groundwater table level. Dewatering requirements and groundwater levels surrounding the Project will be comparable to current baseline conditions. (**Less than Significant**)

Groundwater has been pumped from the current excavation at rates reportedly ranging from 1,000 gpm to over 2,500 gpm. Current pumping rates may be as high as 10,000 gpm due to the excessive rainfall in late winter and early spring in 2011, but this pumping rate is expected to decrease as soil moisture levels and flow rates in Alameda Creek attenuate with drier weather. This water is sent to the North Basin, where it is used for process water, percolates back to the groundwater table, or is discharged to San Antonio Creek and Alameda Creek.

Most of the dewatering requirement is due to percolation of water from Alameda Creek into the alluvium. The deeper Livermore Formation is generally considered to be a poor groundwater aquifer in the Project vicinity. Groundwater within the Livermore Formation is typically limited to discrete lenses or layers of

gravel. While these zones may produce water in test holes and seep into the basin when exposed in the excavation, the total volume of groundwater present is limited and will diminish as the lens or layer of gravel is excavated. Therefore, the mechanism and volume of groundwater pumped from the excavated basin during mining is not expected to change substantially for the Revised Use Permit. The dewatering requirements and effects on the groundwater levels in the area surrounding the Project will not change appreciably over time.

Measures Included in the Project Design

The Project includes the proposed installation of a slurry wall along the Project perimeter adjacent to Alameda Creek and San Antonio Creek. The slurry wall would extend through the alluvium and be keyed into the upper part of the Livermore Formation, at a depth of approximately 40 ft. bgs, and will be located so as to maintain the required setbacks form Alameda and San Antonio Creeks. The intent of the slurry wall is to reduce the amount of groundwater that seeps from the adjacent creeks into the quarry basin through the alluvium. Until the time a slurry wall is installed, it is anticipated that the dewatering requirements and groundwater levels surrounding the Project will be comparable to current baseline conditions. Once the slurry wall is installed, seeps from the adjacent creeks into the quarry basin will be reduced and dewatering requirements are expected to be lowered. Groundwater levels surrounding the Project area would not be affected.

Mitigation Measures

None needed

Alteration of Existing Drainage Patterns Resulting in Erosion or Siltation

Impact Hydro-4: The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site. (**Less than Significant**)

The Project will not alter the course of any streams or rivers. Pursuant to the currently applicable Condition of Approval for SMP-30, mining shall not occur within 100 feet of the banks of Alameda Creek or within 50 feet of San Antonio Creek. The Project as proposed fully complies with this condition.

Runoff from the mining areas will be eliminated since the Project area will drain internally. In addition, the reclaimed basins will be utilized as water storage basins by SFPUC, minimizing any potential for erosion of the basin walls. Therefore, the Project will reduce any potential for erosion or siltation, either on- or off-site.

Mitigation Measures

None required

Increase in the Rate or Amount of Surface Runoff

Impact Hydro-5: The Project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. (**Less than Significant**)

The Project area is relatively flat and runoff from the site into off-site areas (including the adjacent creeks) does not occur. The Project area drains internally into the on-site basins. Under the Project, the

outside edges of the site will be retained in preserved setbacks and no change in runoff patterns would occur. All precipitation that falls on the Project area will continue to be directed to the mined basins. Therefore, the Project will not result in the potential for increased surface runoff which could result in flooding.

Mitigation Measures

None required

Contribute Runoff Exceeding the Capacity Drainage Systems or Adding Sources of Pollution

Impact Hydro-6: The Project will not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, cause flooding on- and off-site, or provide substantial additional sources of polluted runoff. (**Less than Significant)**

The Project area is relatively flat and runoff from the site into off-site areas (including the adjacent creeks) does not occur. The Project area drains internally into the on-site basins. The Project would not change runoff patterns, and all precipitation that falls on the Project area will continue to be directed to the mined basins.

Existing monitoring data demonstrate that the current quarry operation does not generate polluted runoff, and continued compliance with RWQCB General Permit requirements will ensue that the Project does not generate polluted runoff in the future.

Mitigation Measures

None required

Housing within a Flood Hazard Area

Impact Hydro-7: The Project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. (**No Impact**)

The Project does not involve the construction of any housing.

Mitigation Measures

None required

Structures Which Would Impede or Redirect Flood Flows

Impact Hydro-8: The Project would not place a structure within a 100-year flood hazard area, which would impede or redirect flood flows. (**No Impact**)

The Project does not include the construction of structures that would impede or redirect flood flows. The only new structures proposed at the site include the asphalt batch plant, the cement batch plant, a small office and quality control lab, and a new weigh station. These structures will not be placed within a100-year flood hazard area during Phase I or Phase II, nor would they impede or redirect flood flows. The

existing office building which will remain during Phase I is not located within a100-year flood hazard area and does not impede or redirect flood flows.

Mitigation Measures

None required

Flooding as a Result of the Failure of a Levee or Dam

Impact Hydro-9: The Project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. (**Less than Significant**)

The Project does not include the construction of any levees or dams. There is existing operating mine and processing facilities at the site and that will not change under the Project. The current reduced storage at Calaveras Dam and the construction of a replacement dam will continue to protect the Project site.

Mitigation Measures

None required

Potential Inundation

Impact Hydro-10: The Project will not be inundated by, or result in any inundation by a seiche, tsunami or mudflow. (**Less than Significant**)

The Project is located immediately adjacent to the Calaveras fault and is, therefore, susceptible to strong ground shaking during an earthquake. After reclamation, the pit will be used as a water storage basin by SFPUC. Ground shaking could cause a seiche in the water storage basin, but the basin would already be filled with water and thus not subject to inundation. The water management and conveyance facilities for the water storage basin would be constructed in accordance with applicable building codes and seismic safety requirements such that they would be designed to withstand any effects from a seiche. Any water that may overtop the basin would flow to Alameda Creek and would not inundate any other structures.

The Project is not near the coast, so it is not susceptible to inundation by a tsunami. The slope angles and geologic materials are not conducive to the formation of mudflows.

Mitigation Measures

None Required

Cumulative Hydrology and Water Quality Impacts

Cumulative Impact Hydro -11: Implementation of the Project, combined with other past, present, existing, pending and reasonably foreseeable projects would not result in significant adverse changes to hydrology and/or water quality. (**Less than Significant Cumulative Effect**)

Elevated levels of chloride and TDS have been found within the surface water in Alameda Creek downstream of the confluence with Arroyo de la Laguna and in Arroyo de la Laguna and its tributaries, causing degradation of surface and groundwater quality in the area. Cumulative effects include increased salt loading to the groundwater basins and deterioration of water quality standards for TDS and chloride

due to cumulative discharges into Alameda Creek. These cumulative conditions are primarily due to inflows into Alameda Creek from up-steam flows in Arroyo de la Laguna.

Data from aggregate mining operations in the Sunol area indicate that the levels of chloride and TDS in the discharges from these quarry operations are comparable to the levels in the receiving water, and are substantially below the permit limits established pursuant to NPDES General Permit #R2-2008-0011.[8] Data from the CEMEX Sunol Aggregate Plant (the Project site) shows that its discharges generally meet the Basin Plan's chloride and TDS objectives. Thus, discharge from the current mining operation is not contributing to cumulatively elevated chloride and TDS levels in groundwater. The proposed Project will continue to discharge water into San Antonio Creek and Alameda Creek.

Regulatory Compliance

The General Permit requires those quarry operations that discharge into Alameda Creek above Niles and its tributaries to comply with receiving water limitations for Total Dissolved Solid (TDS) and chloride. Since the proposed Project will continue to discharge water into San Antonio Creek and Alameda Creek, the Project will be required to comply with the standards of that permit.

On-going compliance with the General Permit, as may be amended pursuant to the current Project, will continue to ensure that the Project does not contribute to cumulatively elevated chloride and TDS levels in Alameda Creek downstream of the confluence with Arroyo de la Laguna.

Mitigation Measures

None needed

[8] Staff Summary Report, (Tong Yin), February 13, 2008, General Waste Discharge Requirements for Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters - Reissuance of General NPDES Permit, Fact Sheet Appendix F-1

13

Noise and Vibration

This chapter evaluates the proposed Project's potential impacts related to noise and vibration. This chapter discusses the existing noise levels in the Project vicinity, describes future noise levels resulting from the proposed Project, and evaluates the potential for significant noise impacts with respect to established criteria of significance. Included in the Setting section is a discussion of the fundamentals of acoustics, a description of applicable regulatory criteria, and a summary of existing noise levels at sensitive receptors in the Project vicinity. The impacts and mitigation measures section establishes the criteria of significance, evaluates noise resulting from the proposed Project, and identifies noise impacts and mitigation measures.

Information in this chapter is drawn from:

- *Sunol Quarry Project EIR, Environmental Noise Assessment*, prepared by Rodkin and Illingworth, Inc., December, 2011.

All other sources are referenced at the end of EIR and/or are provided in the Appendices.

Physical Setting

Background Information on Noise

Noise is defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its decibel level. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in **Table 13-1**. Representative outdoor and indoor noise levels in units of dBA are shown in **Table 13-2**.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA.* All sound levels discussed in this report utilize the A-weighting scale. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of

all the time-varying events. This energy-equivalent sound / noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within approximately plus or minus one dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within approximately plus or minus one to two dBA.

Table 13-1: Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Noise Environment	Subjective Impression
	140		
	130		
Civil Defense Siren (100')	120		Pain Threshold
Jet Takeoff (200')	110	Rock Music Concert	
	100		Very Loud
Diesel Pile Driver (100')	90	Boiler Room	
		Printing Press Plant	
	80		
		In Kitchen With Garbage Disposal Running	
Freight Cars (50')	70		Moderately Loud
Pneumatic Drill (50')			
Freeway (100')	60	Data Processing Center	
Vacuum Cleaner (10')			
	50	Department Store	
	40	Private Business Office	Quiet
Light Traffic (100')			
Large Transformer (200')	30	Quiet Bedroom	
	20	Recording Studio	
Soft Whisper (5')	10		
	0		Threshold of Hearing

Source: Illingworth & Rodkin, Inc.

Table 13-2: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels at night (from 10:00 PM to 7:00 AM.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Illingworth & Rodkin, Inc.

Since the sensitivity to noise increases during the evening and at night because excessive noise interferes with the ability to sleep, 24-hour descriptors were developed that incorporate artificial noise penalties added to quiet-time noise events.

- The *Community Noise Equivalent Level, (CNEL)* is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (i.e., 7:00 PM - 10:00 PM) noise levels and a 10 dB addition to nocturnal (10:00 PM - 7:00 AM) noise levels.
- The *Day / Night Average Sound Level, L_{dn},* is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Fundamentals of Ground-borne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the Peak Particle Velocity (PPV) and another is the Root Mean Square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. In this section, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. **Table 13-3** displays the reactions of people and the effects on buildings that continuous vibration levels produce. The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Table 13-3: Reaction of People and Damage to Buildings at Various Continuous Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.02	Barely perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Source: Transportation- and Construction-Induced Vibration Guidance Manual, California Department of Transportation, June 2004.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where ground-borne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile drivers and vibratory compaction equipment typically generates the highest construction related ground-borne vibration levels. Because of the impulsive nature of such activities, the use of the peak particle velocity descriptor (PPV) has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level.

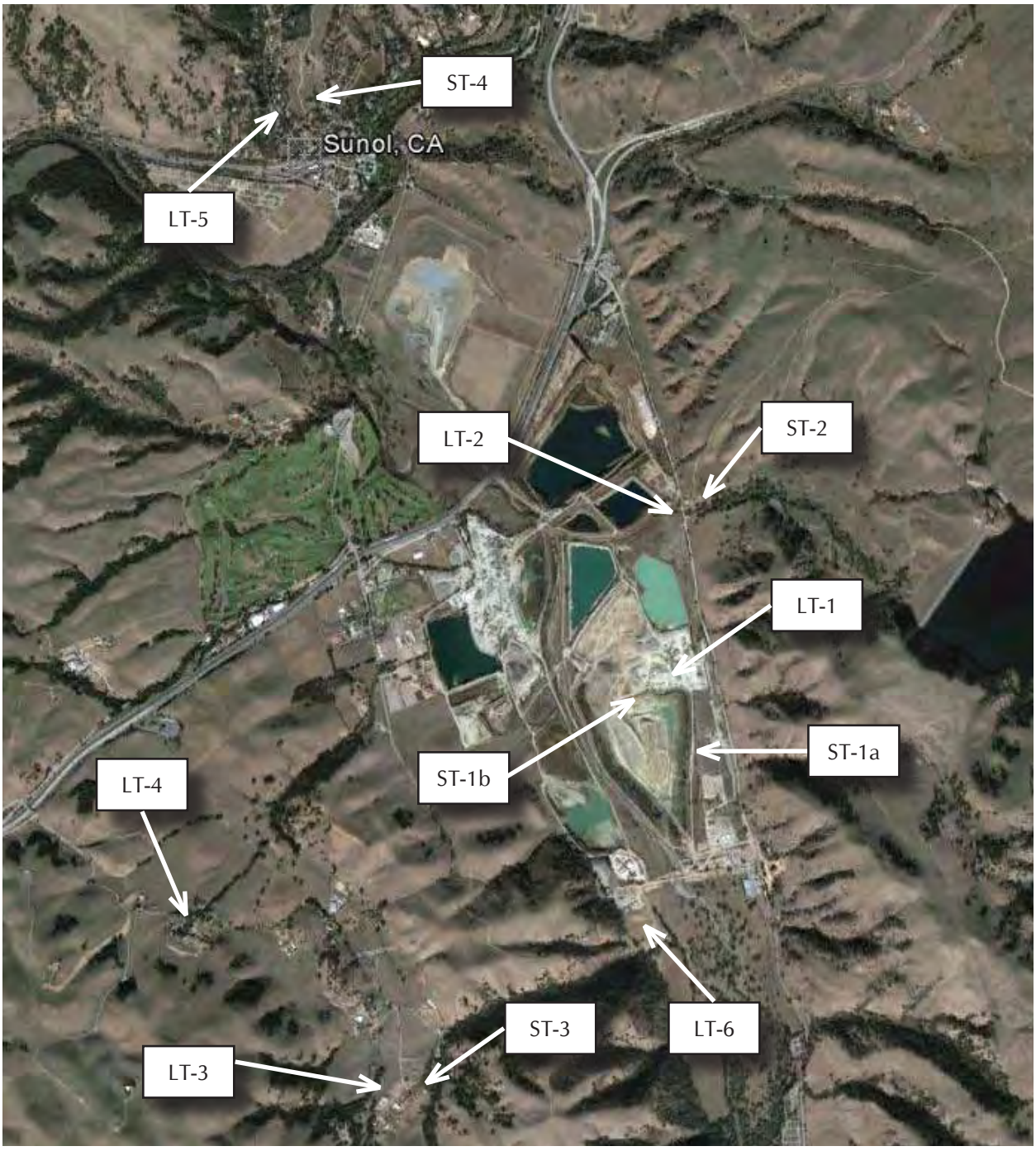
Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

Project Area Noise Characteristics

The Project site is located in unincorporated Alameda County, south and east of Interstate 680 and the community of Sunol. The quarry entrance is located on Calaveras Road approximately 1.4 miles from its intersection with I-680.

Properties adjoining the Project site are predominantly used for aggregate and water resources, rangeland and open space. Rural residences are located to the south and west, and in the community of Sunol. I-680 has the most effect on the noise environment throughout the areas surrounding the Project site. The quarries and other industrial facilities, truck and local traffic, maintenance and ranching activities, and natural sounds including wind in vegetation and crickets in the evening all contribute to the area's soundscape.

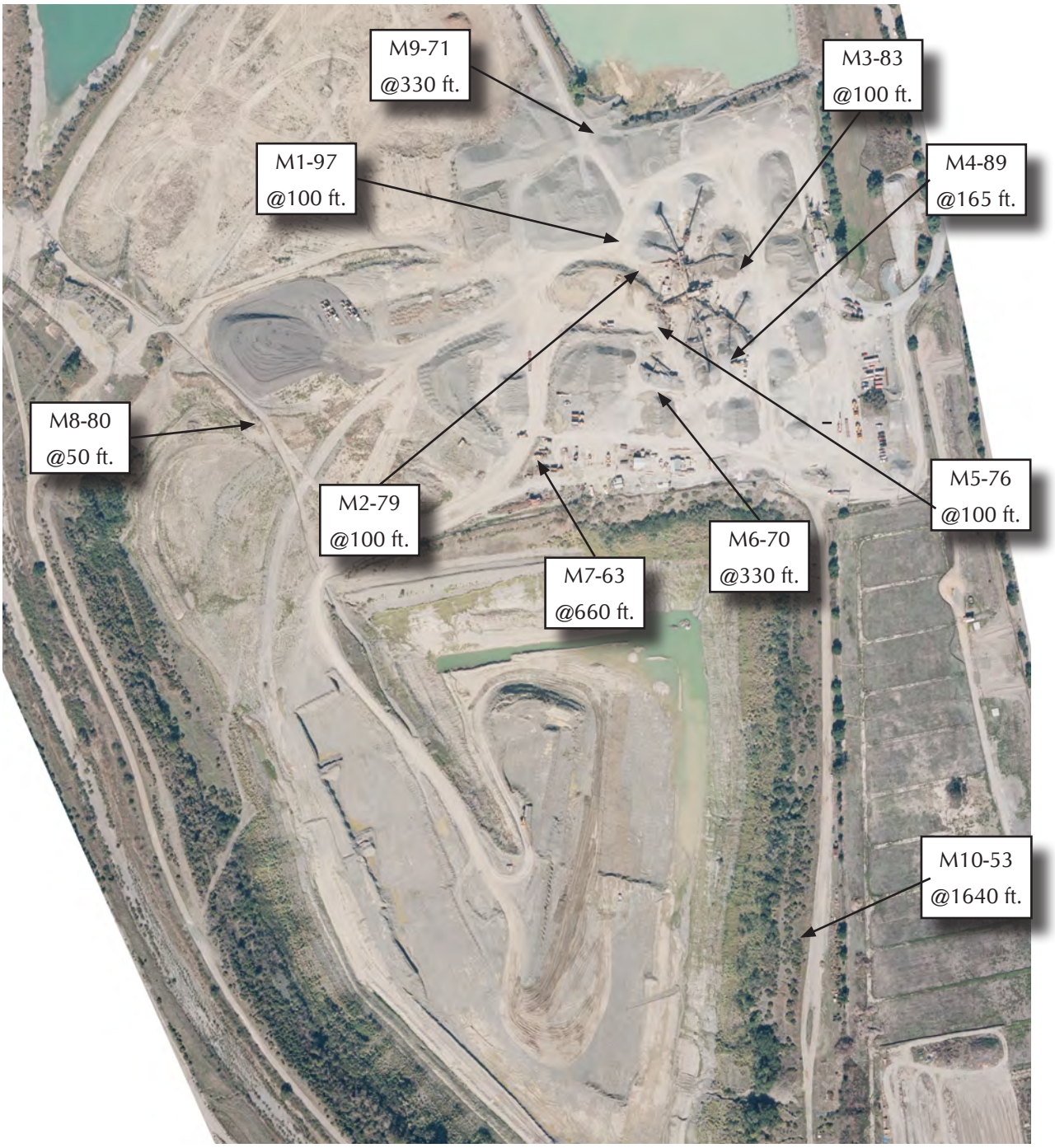
Noise measurements were made at locations surrounding the Project site during September and October 2010. The noise monitoring survey included long-term noise measurements at six locations and additional short-term noise measurements. Noise measurements were also made within the Project site itself to document noise levels near equipment and processing areas. **Figures 13-1 and 13-2** show the approximate locations of noise measurements. Measurement data are included in **Appendix G**.



LT = Long Term. ST = Short Term

Source: Illingworth & Rodkin, Inc.
Aerial base map: 10/2011

Figure 13-1
On-Site Noise Measurement Locations and Corresponding A-Weighted Levels (dBA)



M = Noise Measurement Location
# = A-weighted noise level, dBA

Source: Illingworth & Rodkin, Inc.
Aerial base map: 10/2011

Figure 13-2
Long-Term and Short-Term Noise Measurement Locations

Noise levels were monitored over a period of several days at six locations to quantify noise levels generated at the Project site, along the access roads, and at representative sensitive receivers potentially affected by noise from the Project. The measurements were made during the daytime, evening, and nighttime, on weekdays and on weekends, and included time periods when the quarry and plant facilities were operating and when they were not operating. Short-term noise measurements were made near each of the long-term sites on September 29, 2010. The measurements were made during the daytime and were used to characterize the existing sources of noise at each site. Weather conditions during the survey were favorable for noise monitoring purposes, generally consisting of clear to partly cloudy skies, moderate temperatures, and calm to light winds.

- Measurement site LT-1 was located on the Project site about 650 feet southwest of the plant facilities/processing area. Noise measurements at this location establish overall onsite quarry-generated noise levels occurring on the quarry site including the mining of rock using scrapers, transportation of the rock from the mining area to the processing area, the use of loaders to feed the plant and load trucks, and the crushing, screening, and washing of the quarried rock products. Noise levels from these activities typically ranged from 60-65 dBA from stationary sources and reached typical maximum levels of 75-80 dBA from mobile sources that occasionally moved closer to the monitoring site. On Sunday, when the quarry was not operating, noise levels typically ranged from about 40-55 dBA. The quarry operations caused daily measured noise levels ranging from 68-73 dBA L_{dn}.
- Measurement site LT-2 was located along Calaveras Road between the entrance to the Project site and I-680. The measurement was made 25 feet from the center of the roadway. The dominant noise source during the daytime was vehicular traffic along Calaveras Road. Distant freeway traffic contributed during the nighttime and early morning hours. Crickets at night are evident in the measured data, elevating average and background noise levels between about 7:00 p.m. and 3:00 a.m. The background daytime noise levels were the lowest levels throughout the 24-hour period, ranging from 35-40 dBA. The measured 24-hour average noise level along the roadway ranged from 67-72 dBA L_{dn}. Maximum instantaneous noise levels resulting from quarry truck passbys and trucks serving other industrial sources in construction sites in the area typically ranged from 85-90 dBA.
- Measurement Site LT-3 was located along Sheridan Road about 75 feet from the roadway centerline south of Andrade Road. During the daytime, noise sources included natural sounds of wind in the vegetation, distant traffic, and some local traffic on Sheridan Road. Industrial noise sources from the Project site were inaudible. Occasionally, aircraft were heard at the measurement location. During the nighttime, the noise level was dominated by crickets. The overall measured noise levels ranged from 50-53 dBA L_{dn}. Average noise levels during the daytime were typically in the range of 45-50 dBA L_{eq}. Background noise levels during the daytime were sometimes as low as 30 dBA in the absence of unidentifiable local sources.
- Measurement Site LT-4 was at 5055 Sheridan Road, west of Andrade Road. This measurement location was selected because of the direct line-of-sight to the Project site. Because of the large distance between the site and the measurement location, activities at the site were not audible during the visits to this measurement location. The dominant noise source was distant traffic on Interstate 680. Local traffic along Sheridan Road, although intermittent, also contributed to measured noise levels. Average noise levels ranged from 54-59 dBA L_{dn}. Because this measurement location was closer to I-680 than Location LT-3, minimum daytime noise levels typically did not fall below 35 dBA. Average noise levels during the daytime were typically in the range of 55-60 dBA. The effects of crickets in the evening were, again, evident in the measured data.
- Measurement location LT-5 was in the community of Sunol, near Bond Street and Railroad Avenue, approximately two miles from the Project site. The measurement location was selected to minimize the effects of local traffic and neighborhood activities, in order to be representative of residential

settings in Sunol. The data indicate that loud single events, likely due to railroad train warning horns, local traffic, or other neighborhood activities elevated the hourly L_{eq} sound levels and the L_{dn} levels substantially. In the absence of these events typical median and background levels ranged from 40-50 dBA throughout the day and night, except during the morning commute hours when noise levels from I-680 elevated the range of noise levels to 50-55 dBA, indicating a quiet residential setting, punctuated with these loud single events that occurred during the daytime and the nighttime. The measured 24-hour average levels ranged from 66-72 dBA L_{dn}.

- Noise measurement location LT-6 was selected to represent the nearest sensitive residential receptor to the Project site, the Garcia property located to the south. The Garcia property also adjoins the SFPUC construction site located to the south. Construction noise made a significant contribution to measured noise levels on the Garcia property during the daytime hours. The data indicate that measured day/night average noise levels ranged from 53-58 dBA L_{dn}. During periods when construction was not occurring and activities on the property were minimal, the background hourly average noise level during the daytime was about 45 dBA L_{eq}.

A series of measurements were made in and around the existing plant site/processing area in order to quantify the source levels of stationary and mobile equipment currently operating. These data are used as input data and to calibrate the computer model used to analyze Project-generated noise. Significant sources of stationary noise include rock crushing and screening operations, conveyors, and the sound of rock falling into the rock piles. Measured noise levels and noise measurement locations are shown on Figure 13-1.

- At Location M-1, the dominant noise source was from the 1-1/2 inch gravel conveyor off-loading point.
- At location M-2, the main noise source was the screen deck and trammel washer.
- Measurement location M-3 characterized noise from the primary crusher, the most significant stationary noise source in the rock crushing, screening, and washing area.
- Measurement M-4 was selected to measure noise levels resulting from the yard loader, a Caterpillar Type 988-H wheel loader used to load trucks. The maximum noise level of 89 dBA occurred when the loader was placing material into an empty truck.
- Measurement location M-5 characterized noise levels from the hole loader, a Caterpillar Type 988-F wheel loader used as the main feed into the plant.
- Measurement location M-6, about 330 feet from the plant center to the southwest, characterized overall plant noise in the direction to the south.
- Similarly, measurement location M-7 (also LT-1) was another overall plant noise reference position in the southerly direction.
- Location M-8 was selected because it was near two Caterpillar Type 657 scrapers, and a D8 track dozer.
- At location M-9, overall plant noise levels were measured at a location approximately 330 feet north of the processing area. This reference position was also used to characterize overall facility noise.
- Location M-10 was selected at a distant location from the plant site but where there was direct line-of-sight, and plant noise was still the dominant noise source. At this location, approximately 1,600 feet south of the processing area, overall plant noise resulted in an average noise level of about 53 dBA L_{eq}. This was when there was minimal activity in the quarry pit resulting from scraper operations.

A computer model was used to calculate noise levels for the existing quarry operations. The model, SoundPlan Version 7.0, is a three-dimensional ray-tracing program, which takes into account the sources of noise, the frequency spectra, and the topography of the area. For the Project site, existing noise measurement data from measurements close to the existing equipment were input into the model. The model then calculated levels at the reference positions and those levels were compared to measured levels. The modeled levels equaled the actual measured levels at the reference positions so no adjustments were made to the model. Noise contours in terms of the hourly L_{eq} for existing quarry/plant operations are shown in **Figure 13-3**.

Regulatory Setting

The State of California and Alameda County have established plans and policies that are designed to limit noise exposure at noise sensitive land uses. Applicable regulatory materials include: (1) the State CEQA Guidelines, Appendix G; (2) the Noise Element of the Alameda County General Plan East County Area Plan and Eden Area Plan, and (3) the Alameda County Noise Ordinance.

State

CEQA Guidelines

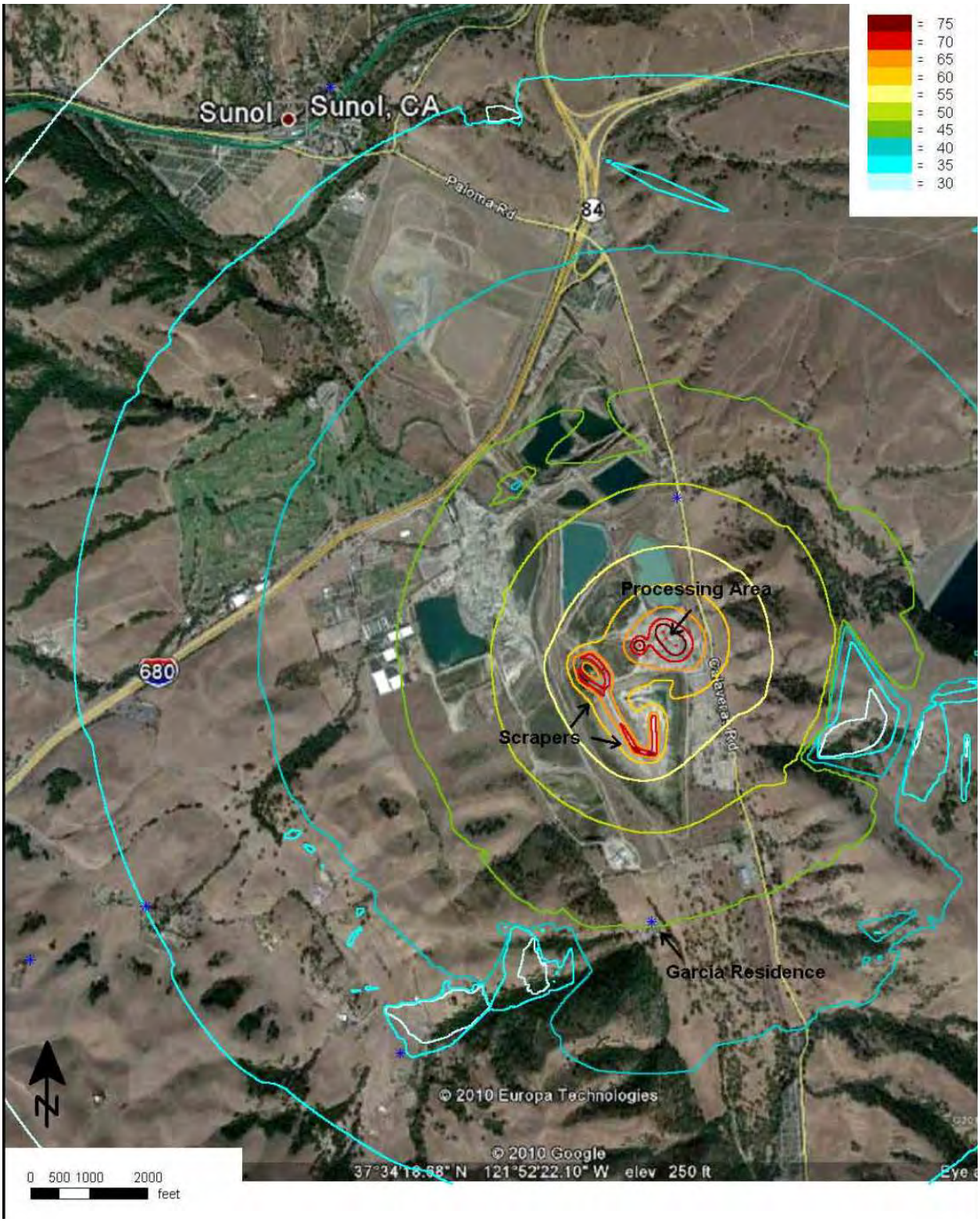
The State CEQA guidelines address how to evaluate the significance of effects of environmental noise attributable to a proposed project. Applicable CEQA questions ask whether a proposed project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies.
- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. [1]

The California Environmental Quality Act does not define the level of ambient noise increase that would be considered substantial. This determination is made by the local lead agency. Typically, in higher noise environments (e.g., where the day-night average noise level would exceed the normally acceptable level), the impact is considered significant if the L_{dn} due to the project would increase existing noise levels by 3 dBA L_{dn} or more at noise-sensitive receptors. Where the noise environment with the project would remain at or below the normally acceptable level (55 dBA L_{dn}), a somewhat higher increase can be tolerated (up to 5 dBA L_{dn}) before a significant impact would occur.

It is generally accepted that in quiet to moderate noise environments away from local area roadways, a 5 decibel increase in the day/night average noise level is required to substantially increase the percentage of people highly annoyed by the noise.

[1] The checklist question regarding temporary or periodic noise increases usually applies to construction activities. For this project, all noise level changes would be considered permanent. Checklist questions addressing aircraft noise are not applicable to the project because the site is not located within an airport land use plan or near a public or private airport. Therefore, temporary construction noise impacts and airport noise impacts are not discussed further in this report.



Noise Level, Leq dBA

Source: Illingworth & Rodkin, Inc.

Figure 13-3
Noise Contours from Existing Sunol Quarry Activities

Local Regulations, County of Alameda

East County Area Plan

The East County Area Plan (ECAP) contains the following goal, policies and implementation programs related to community noise.

Goal: To minimize East County residents and workers exposure to excessive noise.

Policy 288: The County shall endeavor to maintain acceptable noise levels throughout East County.

Policy 289: The County shall limit or appropriately mitigate new noise sensitive development in areas exposed to projected noise levels exceeding 60 dB based on the California Office of Noise Control Land Use Compatibility Guidelines (not applicable to this project).

Policy 290: The County shall require noise studies as part of development review for projects located in areas exposed to high noise levels and in areas adjacent to existing residential or other sensitive land uses. Where noise studies show that noise levels in areas of existing housing will exceed "normally acceptable" standards (as defined by the California Office of Noise Control Land Use Compatibility Guidelines), major development projects shall contribute their pro-rated share to the cost of noise mitigation measures such as those described in Program 104.

Implementation Programs

Program 104: The County shall require the use of noise reduction techniques (such as buffers, building design modifications, lot orientation, sound walls, earth berms, landscaping, building setbacks, and real estate disclosure notices) to mitigate noise impacts generated by transportation-related and stationary sources as specified in the California Office of Noise Control Land Use Compatibility Guidelines.

Alameda County Noise Ordinance

The Alameda County Noise Ordinance, as contained in Chapter 6.60 of the County Code, establishes regulations to control unnecessary, excessive and annoying noise in the County, maintain quiet in areas which exhibit low noise levels currently, and contains programs to reduce noise levels in areas where noise levels are above acceptable levels. Noise level standards for noise-sensitive properties (including residential) are shown in **Table 13-4**.

Table 13-4: Alameda County Noise Ordinance, Noise Level Standards in dB(A) [1]

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

1. Receiving Land Use - Single- or Multiple-Family Residential, School, Hospital, Church, or Public Library Property

Impacts and Mitigation Measures

Thresholds of Significance

Paraphrasing from Appendix G of the CEQA Guidelines, a project would normally result in significant noise impacts if noise levels generated by the project conflict with adopted environmental standards or plans, if the project would generate excessive ground-borne vibration, or if ambient noise levels at sensitive receivers would be substantially increased over a permanent, temporary, or periodic basis. The Project is not located within the environs of an airport, so there is no further discussion of aircraft noise.

The Project would have a significant impact on the environment if it would:

1. Expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan or Municipal Code. The noise standards in Chapter 6.60 of the Municipal Code (see Table 13-4 above) establish the most restrictive limits for noise generation from the Project site and are the significance threshold for Project-generated noise.
2. Expose persons to excessive vibration levels. Ground-borne vibration levels inside a residence exceeding 0.04 inch/sec PPV would be distinctly perceptible. Ground-borne vibration levels exceeding 0.30 in/sec PPV would have the potential to result in damage to older residential buildings.
3. Substantially increase noise levels at sensitive receivers in the vicinity. A substantial increase would occur if existing plus Project noise levels would be 5 dBA DNL or greater above existing conditions.

The proposed Project includes the addition of new equipment at the plant site (i.e., an asphalt plant and a concrete plant), quarry excavation in new and expanded areas, the eventual relocation of the plant site and its associated material processing equipment, and an increase in annual raw material output. The noise and vibration analyses presented below assess how these changes will affect the noise environment at residences in the area, and if people or structures will be exposed to excessive vibration.

Noise Levels In Excess Of Standards

Impact Noise-1: Project operations are calculated to generate noise levels at the nearest sensitive noise receptor that would exceed 50 dBA during the daytime and would exceed 45 dBA at night time, thereby exceeding the applicable noise standards of the County Municipal Code. (**Less than Significant with Mitigation***)*

There are two operational phases of the Project that would occur:

- In the near term (Phase 1), quarrying activity at the Project site would generally continue in the same manner as occurs today. The quarry area in the South Basin would be expanded, and the existing plant site be expanded to accommodate a new on-site asphalt concrete plant and a ready-mix concrete plant.
- Once quarrying activity in the South Basin is completed, the most southerly portion of the Basin would be partially filled and leveled. The plant site and processing equipment, including the asphalt plant and concrete plant, would be relocated to this area to enable final quarrying of the area underlying the processing plant (Phase II).

The SoundPlan model described in the Setting section was used to calculate noise levels from Phase I and Phase II operations at the project site. Noise generated by the proposed asphalt plant and ready-mix concrete plant are based on data in I&R files from measurements of similar equipment. It was assumed that the asphalt plant would not be an open burner plant and would have fans on the inlet and outlet. Noise contours were developed for daytime and nighttime operating conditions for both Phase I and

Phase II. It was assumed that all equipment would be operating during the daytime and that the asphalt plant and ancillary mobile equipment would be operating during the nighttime.

Phase I

Figure 13-4 shows the output from the SoundPlan noise model for Phase I conditions during daytime operations, with all significant equipment operating at the facility. The most affected receiver location is the Garcia residence located about 2,000 feet south of the Project site. The daytime noise level at this residence is calculated to be 45 to 46 dBA L_{eq}. As previously noted, the L_{eq} average noise level is used in the analysis for comparison to the County noise limit of 50 dBA L_{50} during the daytime and 45 dBA L_{50} during the nighttime. The hourly L_{eq} is always equal to or greater than the hourly L_{50} so it provides a conservative estimate of the noise. The projected daytime noise level at the nearest sensitive receptor for Phase I operations is 4 to 5 dBA below the 50 dBA daytime limit.

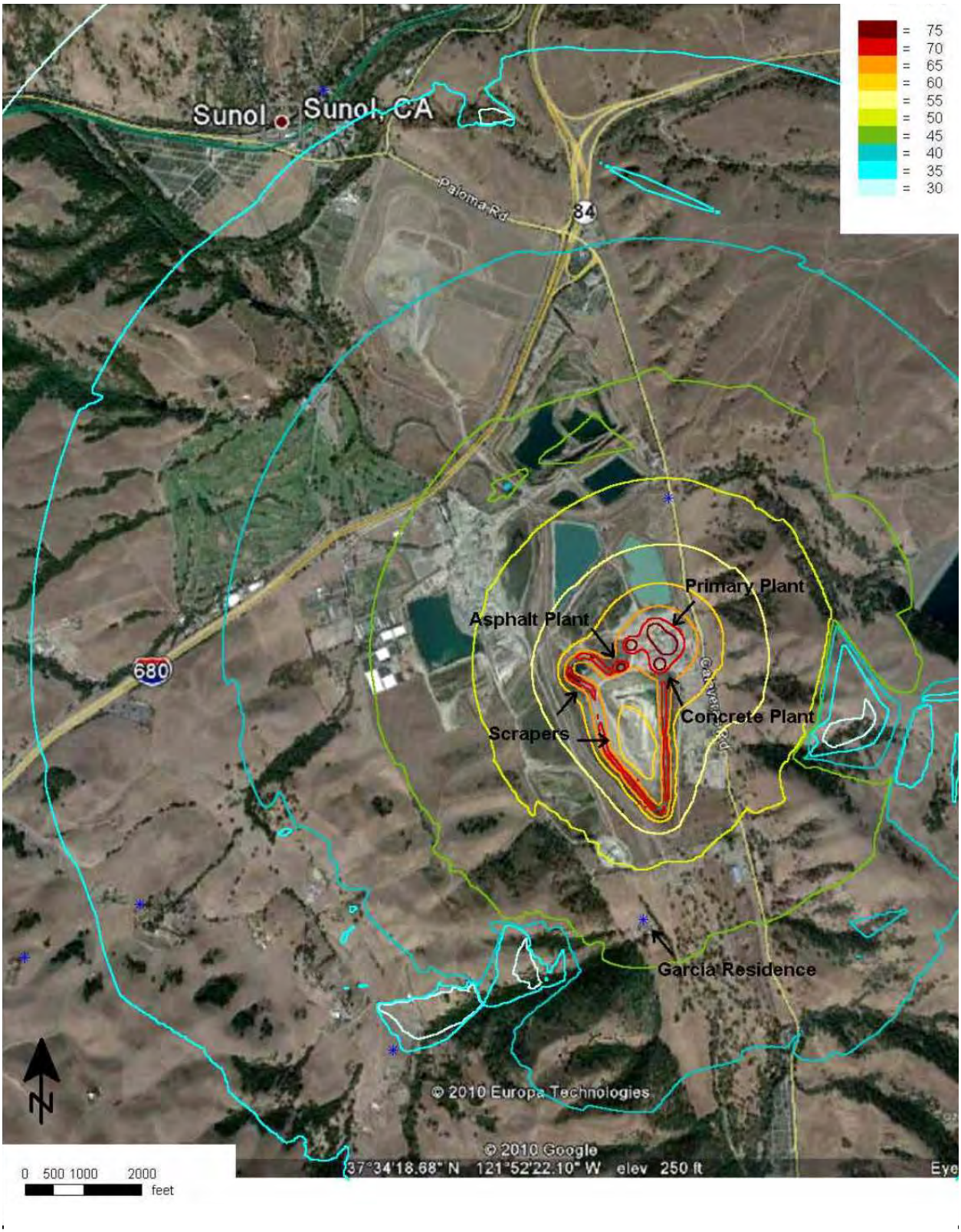
Noise contours from Phase I operations at night are shown in **Figure 13-5**. The projected nighttime noise levels at the most affected receptor location is less than 30 dBA, substantially below the 45 dBA nighttime noise level limit established by the County.

During Phase I operations, no adverse noise impacts are identified, and no mitigation measures are necessary.

Phase II

Noise contours calculated for Phase II operations at the Project site, including the relocated processing plant, are shown on Figure **13-6**. At the most affected receptor (the Garcia residence) the projected noise levels during the daytime would be 51 to 52 dBA L_{eq}. This projected noise level is 1 to 2 dBA above the 50 dBA daytime noise threshold.

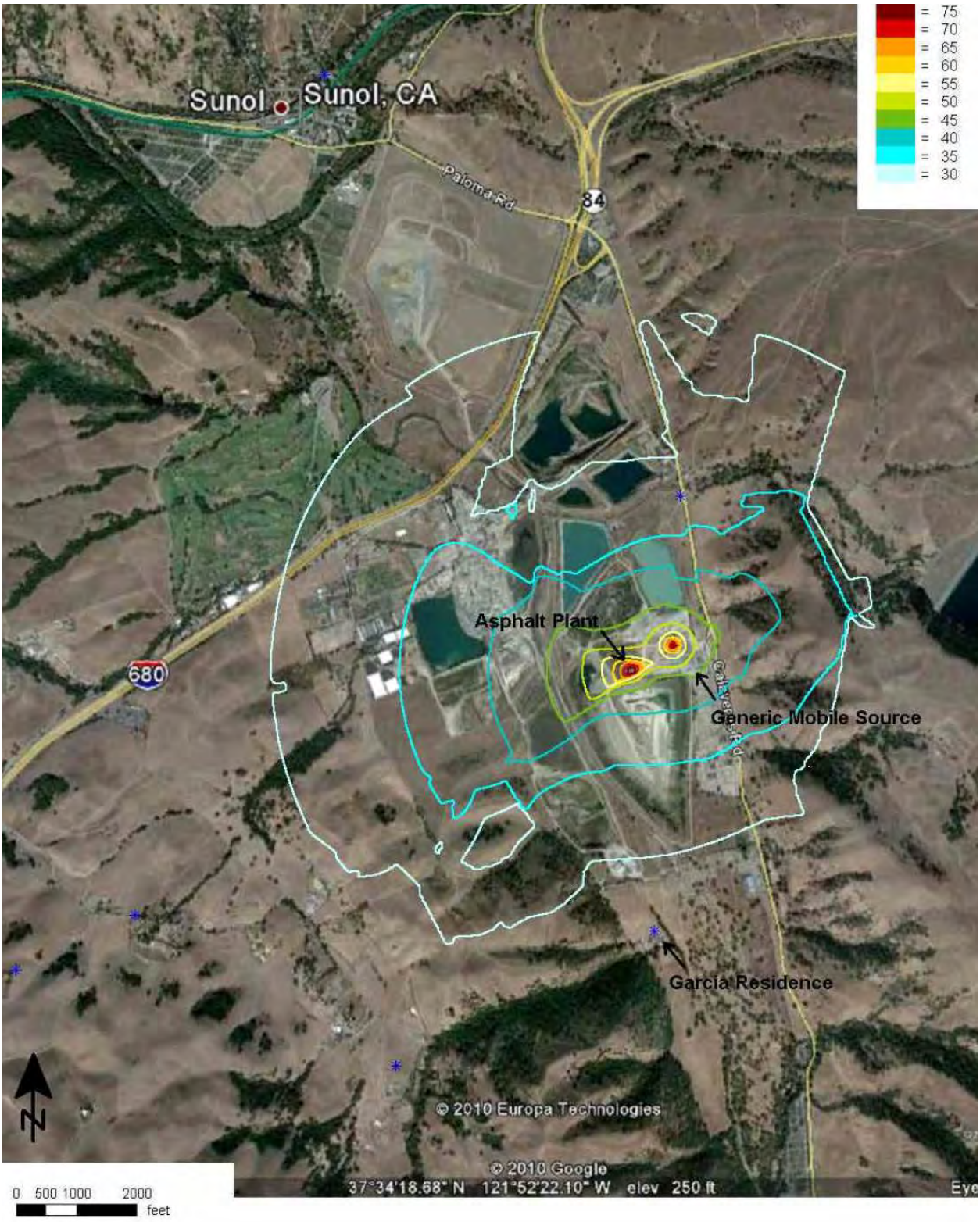
Noise contours for Phase II operations at night are shown on **Figure 13-7**. The noise level at the most affected receptor is calculated to be 40 to 41 dBA, or 4 to 5 dBA below the County's nighttime noise limit. Noise levels would be lower at all other residences that have been identified in the study area to the north, west, and southwest of the Project site. The modeling results confirm that there would be no significant effect on noise levels at other receptor locations further away from the Project site. The projected noise levels at the nearest affected receiver (the Garcia property) from Phase II operations during the daytime are 1 to 2 dBA above the County noise level limits. This would be a significant impact.



Noise Level, Leq dBA

Source: Illingworth & Rodkin, Inc.

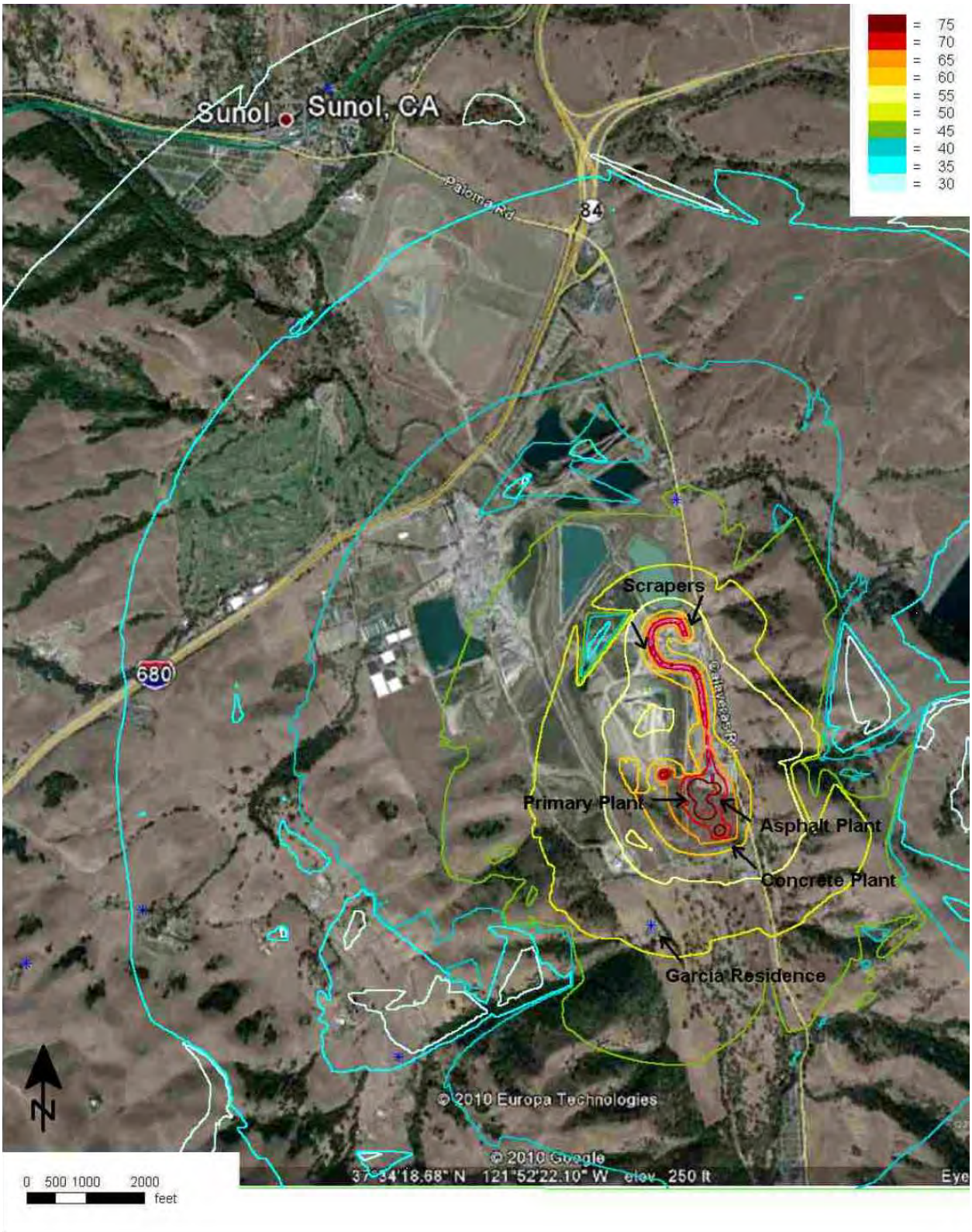
Figure 13-4
Noise Contours from Phase I Project, Daytime Activities



Noise Level, Leq dBA

Source: Illingworth & Rodkin, Inc.

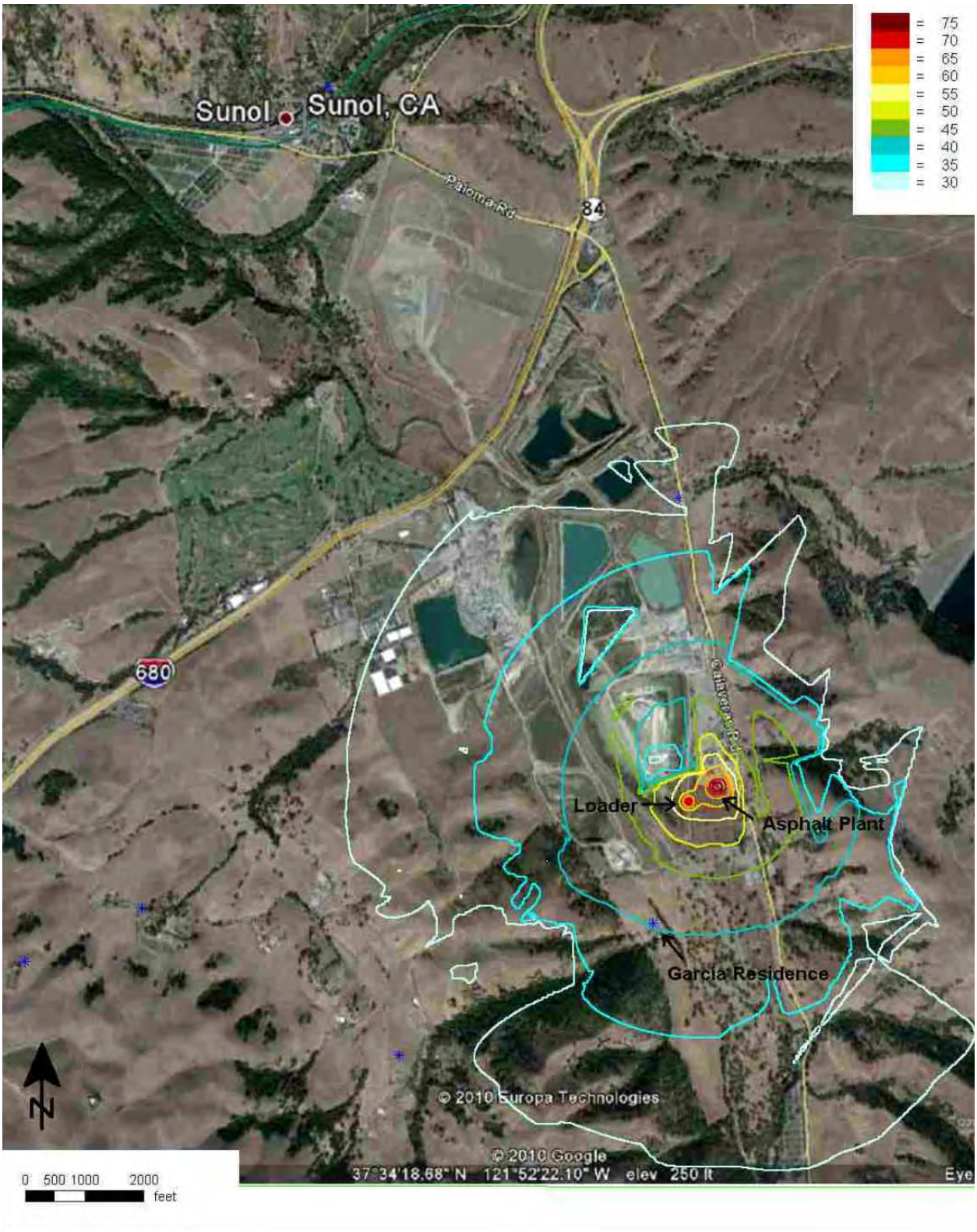
Figure 13-5
Noise Contours from Phase I Project, Nighttime Activities



Noise Level, Leq dBA

Source: Illingworth & Rodkin, Inc.

Figure 13-6
Noise Contours from Phase II Project, Daytime Activities



Noise Level, Leq dBA

Source: Illingworth & Rodkin, Inc.

Figure 13-7
Noise Contours from Phase II Project, Nighttime Activities

Mitigation Measures

The most significant source of noise causing Phase II impacts would be the crushing and screening equipment, the asphalt plant and the concrete plant. Noise levels are projected to exceed allowable levels by about 2 dBA at the only affected receptor (the Garcia residence) located to the south of the Project site. It is likely that in the intervening years prior to plant relocation (Phase II), some equipment at the Project site will change and there will be small changes in noise generation from the equipment. Because this operating scenario will not occur for several years and plant equipment noise levels will likely change, the following mitigation measures are recommended pursuant to implementation of Phase II of the Project:

MM Noise-1a: Noise Survey. A noise survey shall be conducted within 30 days after the plant site and its processing facilities have been moved to the south. At that time, with the final plant layout in place, a determination shall be made as to whether or not additional noise barriers or other noise control measures for the equipment are required to reduce noise levels at the most affected receptor to acceptable levels (i.e., to 50 dBA in the daytime and 45 dBA at nighttime), and the exact locations and types of noise control measures, as may be needed, shall be determined.

MM Noise-1b: Noise Barrier. The method to be used to mitigate Phase II noise impacts shall be noise barriers. Normally, noise barriers are located close to, or on the equipment itself. Typically, the barriers are wood, metal, or quilted noise control blankets. Sometimes, material stockpiles can also be used as a noise barrier when the stockpiles can be maintained at the necessary minimum height to block line of sight from the noise source to the receiver, but in this case the processing area would be below elevation of the surrounding ground, making stockpiles less effective.

Resulting Level of Significance

Because noise levels are conservatively projected to exceed the significance criteria by up to 2 dBA, and noise barriers can reduce noise by 5-15 dBA, noise barriers will be a reasonable and feasible noise abatement measure for this Project, and would reduce the noise impact to a less-than-significant level.

Vibration

Impact Noise-2: Operation of the Project would not expose people to excessive vibration. (**Less than Significant**)

Project activities such as digging, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) generate vibration in the immediate vicinity. Quarry activities are not anticipated to be a source of substantial vibration with the exception of sporadic events such as dropping of heavy objects, or the drilling or breaking of rock in the ground.

Table **13-5** presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet. Jackhammers typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. At the nearest residential land use, located more than 2,000 feet from the vibration sources, activities at the Project site would be expected to result in vibration levels of 0.00005 in/sec PPV or less, below the threshold of human perceptibility (0.03 in/sec PPV). This is a less-than-significant impact.

Table 13-5: Vibration Source Levels for Equipment

Equipment		PPV at 25 ft. (in/sec)	Approximate L_v at 25 ft. (VdB)
Pile Driver (Impact)	upper range	1.158 (N/A)	112
	typical	0.644 (N/A)	104
Pile Driver (Sonic)	upper range	0.734 (N/A)	105
	typical	0.170 (N/A)	93
Clam shovel drop		0.202	94
Hydromill (slurry wall)	in soil	0.008 (N/A)	66
	in rock	0.017 (N/A)	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Mitigation Measures

None required

Cumulative Increase in Ambient Noise Levels

Cumulative Impact Noise-3: Operation of the Project would result in a permanent increase in cumulative ambient noise levels of up to 5 dBA L_{dn} over existing levels in the Project vicinity. (**Less than Significant with Mitigation**)

A cumulative increase in the ambient noise environment of 5 dBA L_{dn} or more is considered significant. The most affected receptor for this evaluation is the Garcia residence because this residence is closest to the Project site.

During the ambient noise survey, construction activities at SFPUC construction sites to the south of the Project area affected existing ambient levels, contributing to the ambient noise conditions. However, there

were periods when construction activities at these sites were not occurring, indicating a more typical ambient average noise level of about 45 dBA during the daytime, and 35 to 40 dBA during the nighttime. These ambient conditions include noise generated at the Project site as well as noise from the adjacent Lehigh-Hanson quarry. No other past, present or reasonably foreseeable future projects are expected to add to the cumulative noise environment in this area. Based on the data and measurements at other receptors not near the Project site and not near other significant sources of existing noise, the existing ambient day-night average noise level in the surrounding area is about 50 to 52 dBA L_{dn}.

Phase I Operations

During Phase I, the new asphalt and concrete plants and other operational noise are calculated to increase noise levels by up to 1 dBA L_{dn} above the existing ambient (and cumulative) level at the Garcia residence. An increase of 1 dBA L_{dn} would not be considered a substantial or significant increase.

Phase II Operations

Once the processing area has been moved to the Phase II position, Project operations are calculated to increase noise levels by 3 to 5 dBA above the existing ambient (and cumulative) level at the Garcia property. A 5 dBA increase would be considered a significant noise impact.

Traffic Noise

Project-generated truck traffic would primarily operate between the Project site and I-680 along Calaveras Road. The increase in noise associated with increased Project-generated traffic is assessed with respect to the "substantial increase" test, based on existing, baseline and projected future traffic volumes derived from the traffic study prepared for this EIR.[2]

There are no residential receptors located along Calaveras Road between the Project site and I-680. Vehicular traffic on this segment of Calaveras Road does not make a significant contribution to the noise environment at any of the identified sensitive receptors.

Increases in cumulative noise resulting from increased truck traffic are calculated by comparing existing and baseline truck volumes with projected future truck volumes under each of the operating scenarios (Phase I and Phase II). Noise levels are calculated to increase by about 6 dBA L_{dn} along Calaveras Road. At the nearest sensitive receiver to Calaveras Road (the Garcia property, which is located more than 2,000 feet from the road), the increase in traffic noise would cause the overall noise level to increase by less than 0.3 dBA L_{dn}. The effect at more distant receivers would be even less. Project-generated truck traffic noise would not significantly affect future noise levels at sensitive receivers in the vicinity of the Project.

Mitigation Measures

Implementation of Mitigation Measures Noise-1a and Noise -1b

Resulting Level of Significance

The Project would only adversely affect ambient noise conditions and cumulative noise conditions in the Project area at the nearest sensitive receptor (the Garcia residence) during Phase II operations. Mitigation measures recommended to address Project-generated noise levels from Phase II operations (see Mitigation Measure Noise-1a and -1b, above) would also effectively reduce noise impacts associated with

[2] Sunol Quarry Expansion Traffic Impact Study, prepared by Fehr & Peers, January 2012

increases in ambient noise and cumulative noise levels to a less than significant (less than cumulatively considerable) level.

14

Traffic, Transportation and Circulation

This section evaluates the proposed Project's potential impacts related to traffic and circulation. This section describes the existing transportation network and traffic conditions in the vicinity of the site and evaluates the extent to which development of the Project as proposed may affect traffic levels and transportation system operations. Information in this section is drawn from:

- *Traffic Impact Study for the Sunol Quarry Expansion*, prepared by Fehr & Peers, January 2012,

All other sources are referenced at the end of this chapter of the EIR and/or are provided in the Appendices.

Physical Setting

This report presents the transportation impact analysis conducted for the proposed Sunol Quarry Expansion (the Project) in the Alameda County. The purpose of the transportation impact analysis is to identify impacts of the Project on the surrounding transportation system and to recommend measures to mitigate significant impacts. This chapter provides an overview of the Project, identifies the study area, describes the analysis scenarios, and discusses the analysis methods and significance standards.

Study Area

The traffic study focuses on the operations of key intersections in the vicinity of the site during the weekday morning and evening peak commute periods, when traffic volumes on the surrounding roadways are highest. Intersections with potential impacts were selected based on the amount of traffic projected to be added by the proposed Project. The locations of these intersections, which are shown on **Figure 14-1**, consist of the following:

- Paloma Road (SR 84) / I-680 Southbound Ramps
- Calaveras Road / I-680 Northbound Ramps
- Calaveras Road / Project Driveway

Study Area Roadways

Regional access to the study area is provided by I-680 while local access to the Project site is provided via Paloma Road (SR 84) and Calaveras Road. The roadways in the study area are described below, and their locations in relation to the Project site are also shown on Figure 14-1.

Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-1
Project Site Vicinity and Study Intersections

Interstate 680 (I-680)

I-680 is a major freeway that provides regional access throughout the San Francisco East Bay and Silicon Valley. It stretches from Highway 101 in San Jose to I-80 in Cordelia. In the vicinity of the Project, I-680 has a north-south orientation and provides three mixed flow travel lanes in each direction. The section of I-680 near to the Project site is a major commute corridor commonly referred to as the Sunol Grade. Access to the Project site from I-680 is provided via the Calaveras Road interchange. I-680 has an average daily traffic (ADT) volume of 141,000 vehicles per day (vpd) between the Calaveras Road and Andrade Road interchanges.[1]

Paloma Road (State Route 84)

Paloma Road (State Route 84) is an east-west rural roadway in the vicinity of the Project. Paloma Road connects Pleasanton Sunol Road to the west, where it becomes Niles Canyon Road, and I-680 to the east, where it becomes Calaveras Road. It is a two-lane undivided roadway with a posted speed limit of 45 mph in the vicinity of the Project.

Calaveras Road

Calaveras Road is north-south rural roadway in the vicinity of the Project. Calaveras Road connects to I-680 to the north, where it becomes Paloma Road. It is a two-lane undivided roadway with a posted speed limit of 50 mph in the vicinity of the Project. Access to the Project site is provided along Calaveras Road, approximately one mile south of the I-680 interchange. Calaveras Road has an ADT volume of 1,300 vpd between I-680 and the Project site.[2]

Existing Pedestrian and Bicycle Facilities

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Pedestrian access and connectivity is generally lacking in the vicinity of the Project; sidewalks are not present on Calaveras Road adjacent to the Project site. The study intersections are unsignalized and all do not provide marked pedestrian crosswalks. No pedestrians were observed along Calaveras Road between I-680 and the Project site during the time traffic counts were conducted for this study.

Bicycle Facilities

Bicycle facilities include the following:

- Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically four to six feet wide.
- Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to share the roadway with bicyclists. Class III facilities may also provide

[1] Caltrans, 2009 (http://traffic-counts.dot.ca.gov/2009all.htm)

[2] Fehr & Peers, October 2010

the shared lane marking (sharrow) to identify the bicycling path for bicyclists and to inform motorists to share the roadway.

Bicycle facilities are not provided on Calaveras Road adjacent to the Project site. However, recreational bicyclists were observed traveling within the vehicular travel way along Calaveras Road, which provides 11-foot travel lanes and paved shoulders of less than one foot.

Transit Service

Nearby transit service providers are Alameda-Contra Costa Transit District (AC Transit) and Livermore Amador Valley Transit Authority (LAVTA). However, neither of these transit agencies provides service to Sunol. The closest bus stop to the Project site is at the Sunol Boulevard/Mission Drive intersection in southern Pleasanton.

Intersection Operations

The traffic study focuses on the operations of key intersections in the vicinity of the site during the weekday morning and evening peak commute periods, when traffic volumes on the surrounding roadways are highest. Intersections with potential impacts were selected on their likelihood to be affected by Project traffic based on the trip distribution characteristics of the Project. The locations of these intersections, which are shown on Figure 14-1, consist of the following:

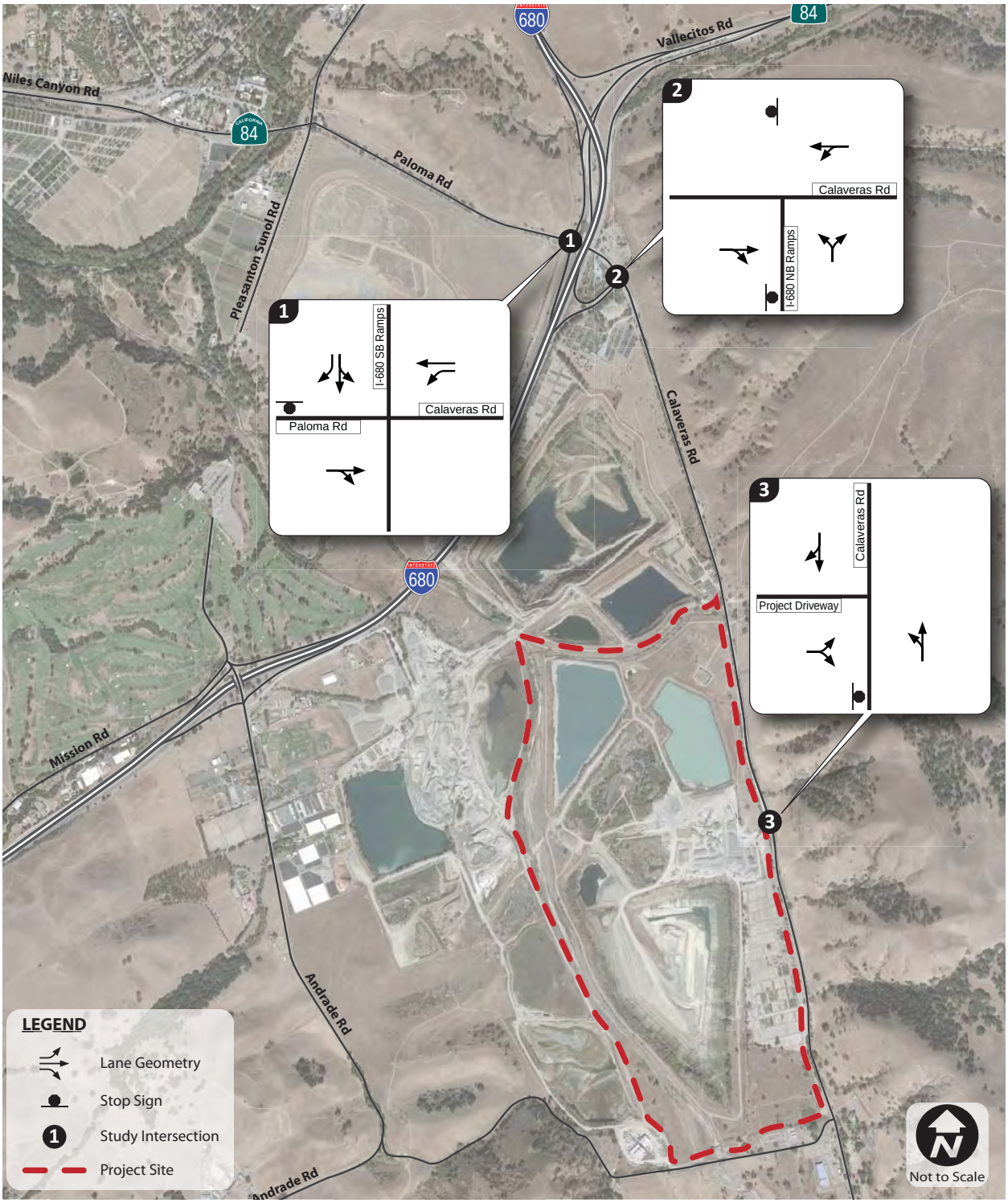
- Paloma Road (SR 84) / I-680 Southbound Ramps
- Calaveras Road / I-680 Northbound Ramps
- Calaveras Road / Project Driveway

Field reconnaissance was performed at the study intersections, in which traffic control, lane configurations, turn pocket lengths, speed limits, and other pertinent roadway characteristics were collected. Intersection operations were also observed, including queuing at all study intersections. Intersection lane configurations and traffic controls are also shown on **Figure 14-2**.

Intersection turning movement counts at the I-680 Ramp intersections with Calaveras Road/Paloma Road were collected from 6:00 to 9:00 AM and from 4:00 to 6:00 PM on Wednesday, October 6, 2010. Turning movement counts at the site driveway were collected from 5:00 to 9:00 AM and from 4:00 to 6:00 PM on Wednesday, October 6, and Thursday, October 21, respectively. The AM and PM peak hour traffic volumes for all three study intersections are presented in **Figure 14-3** and **Figure 14-4**, respectively.

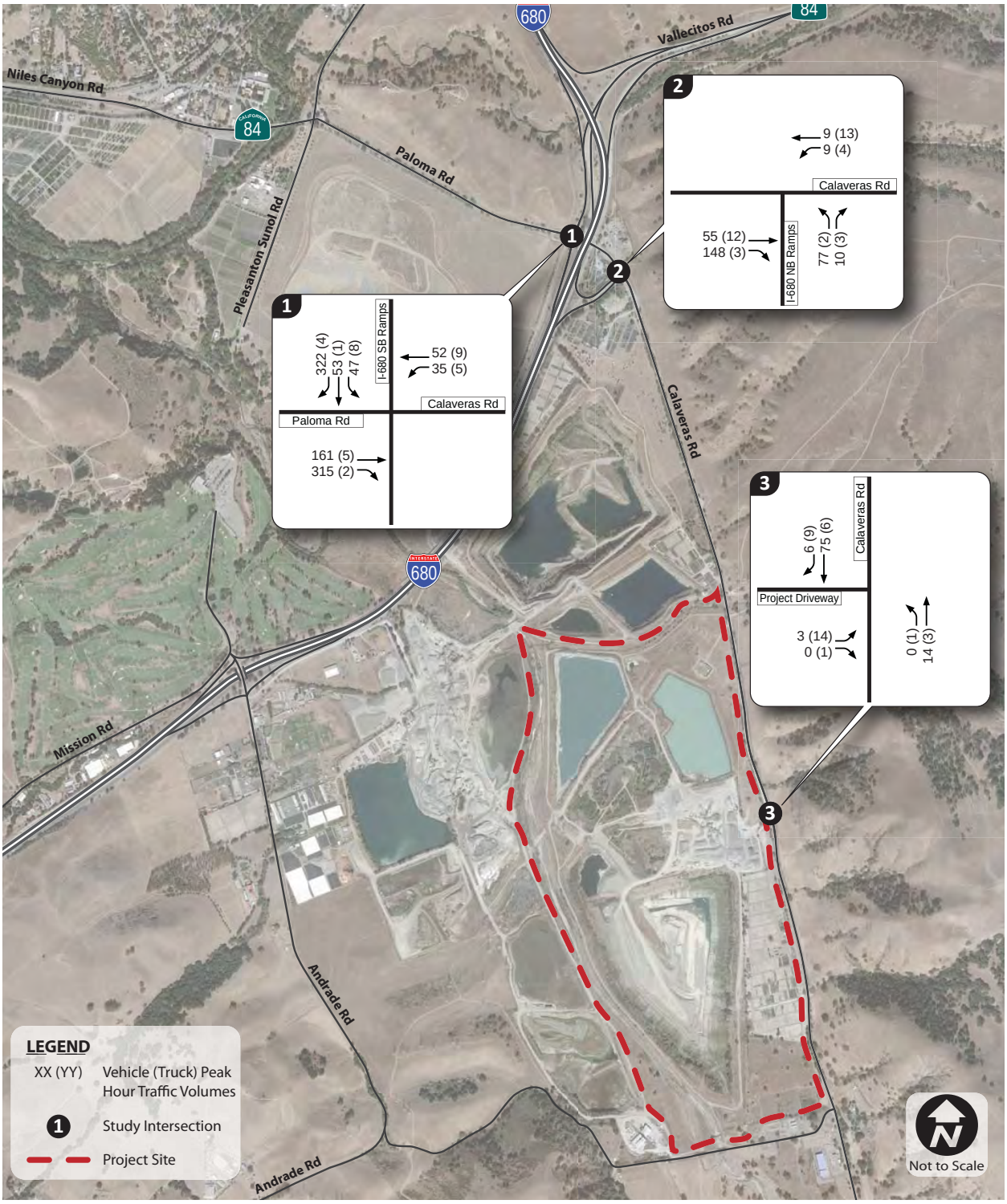
Additionally, twenty-four hour vehicle classification counts were collected on Calaveras Road segments north and south of the Project driveway on October 6, 2010. These counts were used to determine ADT volumes along Calaveras Road, which were 1,330 vehicles per day (vpd) north of the Project driveway and 1,230 vpd to the south. All traffic count data is provided in **Appendix H**.

Existing operations were evaluated for the weekday AM and PM peak hours at the study intersections. **Table 14-1** summarizes the intersection analysis results.



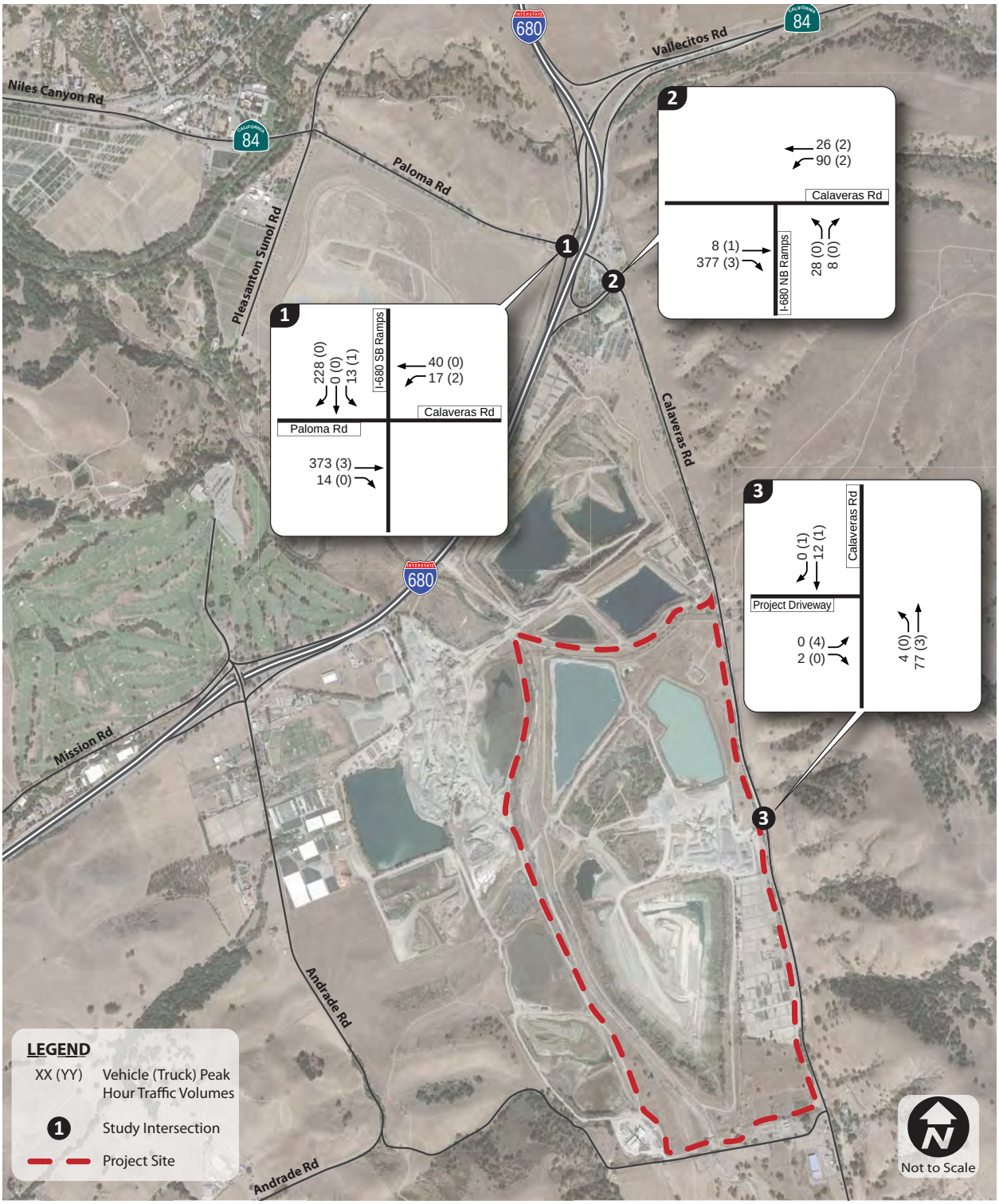
Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-2
Traffic Control and Lane Configurations



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-3
Existing AM Peak Hour Traffic Volumes



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-4
Existing PM Peak Hour Traffic Volumes

Table 14-1: Existing (2010) Peak Hour Intersection Levels Of Service

Intersection	Control[1]	Peak Hour	Delay (in seconds)[2]	LOS
1 Paloma Road (SR 84) / I-680 Southbound Ramps	SSSC	AM	5.7 (12.5)	A (B)
		PM	3.7 (10.0)	A (A)
2 Calaveras Road / I-680 Northbound Ramps	SSSC	AM	10.4 (13.8)	B (B)
		PM	11.0 (13.4)	B (B)
3 Calaveras Road / Project Driveway	SSSC	AM	2.0 (10.7)	A (B)
		PM	1.0 (9.9)	A (A)

Notes:
1. SSSC = side street stop controlled intersection
2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).

Source: Fehr & Peers, December 2010.

As shown, all of the study intersections currently operate at acceptable service levels (LOS E or better for I-680 Ramp intersections and LOS D or better for Calaveras Road/Project Driveway intersection) under this analysis scenario. Detailed intersection LOS calculation worksheets are presented in **Appendix H**.

Existing Peak Hour Traffic Signal Warrants

To assess consideration for signalization of stop-controlled intersections, the California Manual of Uniform Traffic Control Devices (CMUTCD), presents eight signal warrants. Generally, meeting one of the signal warrants could justify signalization of an intersection. However, an evaluation of all applicable warrants should be conducted and additional factors (e.g., congestion, approach conditions, accident record) should be considered before the decision to install a signal is made. The peak hour volume warrant (Warrant 3) for urban conditions was evaluated using the existing traffic count data. The results of the traffic signal warrant analysis are shown in **Table 14-2**. As shown in the table, the urban peak hour volume traffic signal warrant is not satisfied at any of the study intersections.

Detailed signal warrant assessments are provided in **Appendix H**.

Table 14-2: Existing Peak Hour Signal Warrant Analysis

Intersection	Control[1]	Peak Hour Warrant Met?
1 Paloma Road (SR 84) / I-680 Southbound Ramps	SSSC	No
2 Calaveras Road / I-680 Northbound Ramps	SSSC	No
3 Calaveras Road / Project Driveway	SSSC	No

Notes:
1. SSSC = side street stop controlled intersection

Source: Fehr & Peers, December 2010

Regulatory Setting

This section describes the regulatory framework that would apply to the Proposed Project.

Alameda County Regulations

SMP-30 Conditions of Approval

In November of 1992 Alameda County approved Resolution 92-32, combining the then-existing surface mining operation known as SMP-26 with a 45-acre expansion area to create the current SMP-30 Sunol Quarry. Pursuant to that Resolution, the County adopted a number of Conditions of Approval which are still currently effective, or which may have been modified over time. Those currently effective Conditions of Approval for SMP-30 which pertain to issues of traffic and circulation are listed below.

26. Access must meet Calaveras Road at grade.

27. The permittee shall maintain stop signs at all exits to County roads The Public Works Agency and Planning Department will continue to monitor whether trucks are stopping before exiting the site onto Calaveras road. If the condition is determined by the Public Works Agency to be hazardous, then a program to find additional ways to stops trucks (other than the existing stop signs) will be developed and implemented by the permittee and approved by the Director of the Public Works Agency to remedy the situation.

28. Permittee shall post a $5,000 cash bond with Alameda County to clean up any spillage that may occur on, or repair any extraordinary deterioration to, the County haul routes lying between the site and 1-680. Said bond is to be replenished to its full amount when it diminishes to $2,000. A certificate of deposit may be utilized in lieu of a cash bond subject to approval of the Director of Public Works

a. As part of the regular inspection of the quarry required under the Surface Mining Permit the Public Works Agency will annually inspect the pavement condition of Calaveras Road between the quarry access and the 1-680 ramps. Required repairs will be identified by the County.

b. The permittee shall contribute to the cost of maintaining, repairing, strengthening, or reconstructing the subject segment of Calaveras Road, if the County inspection shows a need for such pavement improvements

c. Participation by permittee in the cost of such pavement improvements shall be in proportion to the percentage of heavy truck traffic on Calaveras Road contributed by the quarry operations and 100 percent towards any road damage directly attributed to the operations

29. Permittee shall contribute to the costs of reconstructing and widening Calaveras Road when determined necessary by the Director of Public Works. Costs will be shared proportionately by other quarries that gain access from Calaveras Road based on use.

30. A program to reduce speed and accidental spillage from trucks leaving the quarry site shall be designed by the permittee's engineer. Program shall include, but not be limited to, a redesign of the access road to rectify the problem of trucks failing to stop before turning onto Calaveras Road

Project Trip Characteristics

The Project proposes the extension of mining operation at Sunol Quarry for at least another thirty years by extending the mining depth and adding a 58-acre expansion parcel. Additionally, the Project will include addition of an asphalt-concrete plant and a ready-mix concrete plant on the site. The locations of

the processing plant will change over the life of the Project. As such, two Project phases have been evaluated. Details of both phases are assessed in the subsequent sections.

Phase 1

Project Phase 1 proposes to construct the new asphalt-concrete and ready-mix plants within the current operations area central to the site. To facilitate smoother on-site truck traffic circulation, the existing driveway along Calaveras Road will be converted to only allow inbound traffic. Outbound vehicles will exit the site via a new one-way driveway at the southern end of the Project site, approximately 1,750 feet south of the existing driveway.

Phase 2

Under Phase 2, the processing plant will be moved to the southern end of the site. The southern site driveway would be converted to a two-way, inbound/outbound driveway and the existing driveway would be closed.

Daily Trip Generation Scenarios

The estimated trip generation for the Project was derived using traffic count data collected at the existing site and existing truck loading information provided by the plant operator. Peak hour counts collected at the site driveway were used to calculate trip generation rates for the site under current operating conditions. Use of these site-specific rates is more applicable for use in this analysis, as opposed to using the limited data sample contained in Institute of Transportation Engineers' (ITE) Trip Generation for general heavy industrial uses.

Mining extraction rates for three operating conditions were evaluated, including current, "regularly recurring peak", and "Project peak" conditions with the new asphalt-concrete and ready-mix plants.

Current / Existing Trip Rate

The current daily truck trip rate generated by the existing plant is a function of the volume of extracted material that is transported from the site. During a two week period from August 23, 2010 to September 5, 2010 the average daily truck trip rate was measured to be approximately 240 truck trips per day, 120 empty trucks inbound and 120 full outbound truck trips transporting material from the site (see **Appendix H**).

Using an average truck capacity of approximately 24 tons of extracted aggregate per outbound truck, the average daily transport rate calculated during that period was approximately 2,900 tons per day.[3] By projecting that daily transport rate out across a total of 250 operating days per year, it results in an average annual production rate of approximately 725,000 tons per year.[4]

Regularly Recurring Peak Trip Rate

Due to the recession, current (2010/2011) mining levels at the existing site are considerably lower than in previous years. During the years of 1999-2001, when residential and commercial construction activity was at higher levels, the quarry's annual aggregate extraction rate averaged approximately 1.1 million tons of aggregate per year. This production level represents a regularly recurring peak of mining activity fully permitted and allowed under the current SMP-30 Surface Mining Permit. At 1.1 million tons per

[3] 120 outbound truck trips/day x 24 tons per trip = 2,900 tons/day x 250 days per year = 725,000 tons per year

[4] Actual production during 2010 was less than the projected rate of 725,000 tons due to slower production during the months of September through December.

year of aggregate transported over the 250 operating days per year, this recurring peak had an average daily transport rate calculated to be approximately 4,400 tons per day. Assuming an average of approximately 24 tons of aggregate per outbound truck, this recurring peak period averaged approximately 183 outbound truck trips, or 360 total daily truck trip ends (combined inbound and outbound).

Project Peak Trip Rate

The Project peak trip rate reflects anticipated peak mining and transport levels from the expanded quarry, together with the addition of an asphalt-concrete and a ready-mix batch plant. As described in Chapter 3: Project Description, the Project is expected to have a maximum production/transport rate of approximately 3.0 million tons of extracted aggregate (either as raw aggregate, mixed asphalt or mixed concrete) per year. Based on the same factors presented above (250 operating days per year, and approximately 24 tons of material per outbound truck), the Project's maximum trip rate is calculated to be approximately 990 total trip ends (or 500 round trips) per day [5], or a maximum increase of approximately 630 truck trip ends per day. Actual extraction/transport rates will be driven by market demands, and approval of the Project will not necessarily produce an increase in truck trips during any given time period.

Table 14-3 presents the approximate extraction/transport rates for the various operating condition scenarios. As shown, the extraction/transport rates range from 725,000 tons per year to 3 million tons per year.

Table 14-3: Site Extraction/Transport Rates with Comparable Daily Truck Trips

Project Operating Condition	Extraction Rate (tons per year)	Average Daily Truck Trips
Current (August – September 2010)	725,000[1]	240 trip ends (120 round trips) per day
Regularly Recurring Peak (1999 – 2001)	1,100,000	360 trip ends (180 round trips) per day
Project Peak with New Plants	3,000,000	990 trip ends (500 round trips) per day

1. Projected rate based on available data through September 2010. Actual 2010 extraction rates were not as high due to low production rates from September through December.

Peak Hour Trip Rates

Existing Peak Hour Trips

Table 14-4 presents the peak hour trip generation rates as observed at the site. Existing operating conditions reflect the AM and PM peak hour inbound and outbound traffic as observed at the site driveway. The AM peak hour driveway trips were obtained from traffic counts conducted on October 6, 2010. The PM peak turning movement counts (which were conducted on October 21, 2010) yielded no driveway trips between 4:00 to 6:00 PM. Therefore, "existing" driveway trips were estimated based on the twenty-four hour vehicle classification counts observed north and south of the site driveway. The daily truck trip estimate is based on truck loading data provided by the plant operator.

[5] 3 million tons per year / 250 operating days per year = approximately 12,000 tons per day. 12,000 tons / 24 tons per truck = 500 outbound trucks, or a combined total of 990 inbound and outbound truck trips per day

Table 14-4: Existing/Observed Peak Hour Trip Generation at the Site

Trip Type	Daily[1]	AM Peak Hour[2]			PM Peak Hour[3]		
		In	Out	Total	In	Out	Total
Truck	154	10	15	25	1	4	5
Car	N/A	6	3	9	4	2	6
Total Site Trips		16	18	34	5	6	11

Notes:

1. Daily trucks represent total truck trip ends on October 6, 2010 (Source: Cemex)

2. Based on turning movement counts conducted on October 6, 2010. AM Peak hour of driveway activity: 6:45–7:45 AM.

3. PM volumes derived from tube counts along Calaveras Road conducted on October 6, 2010.

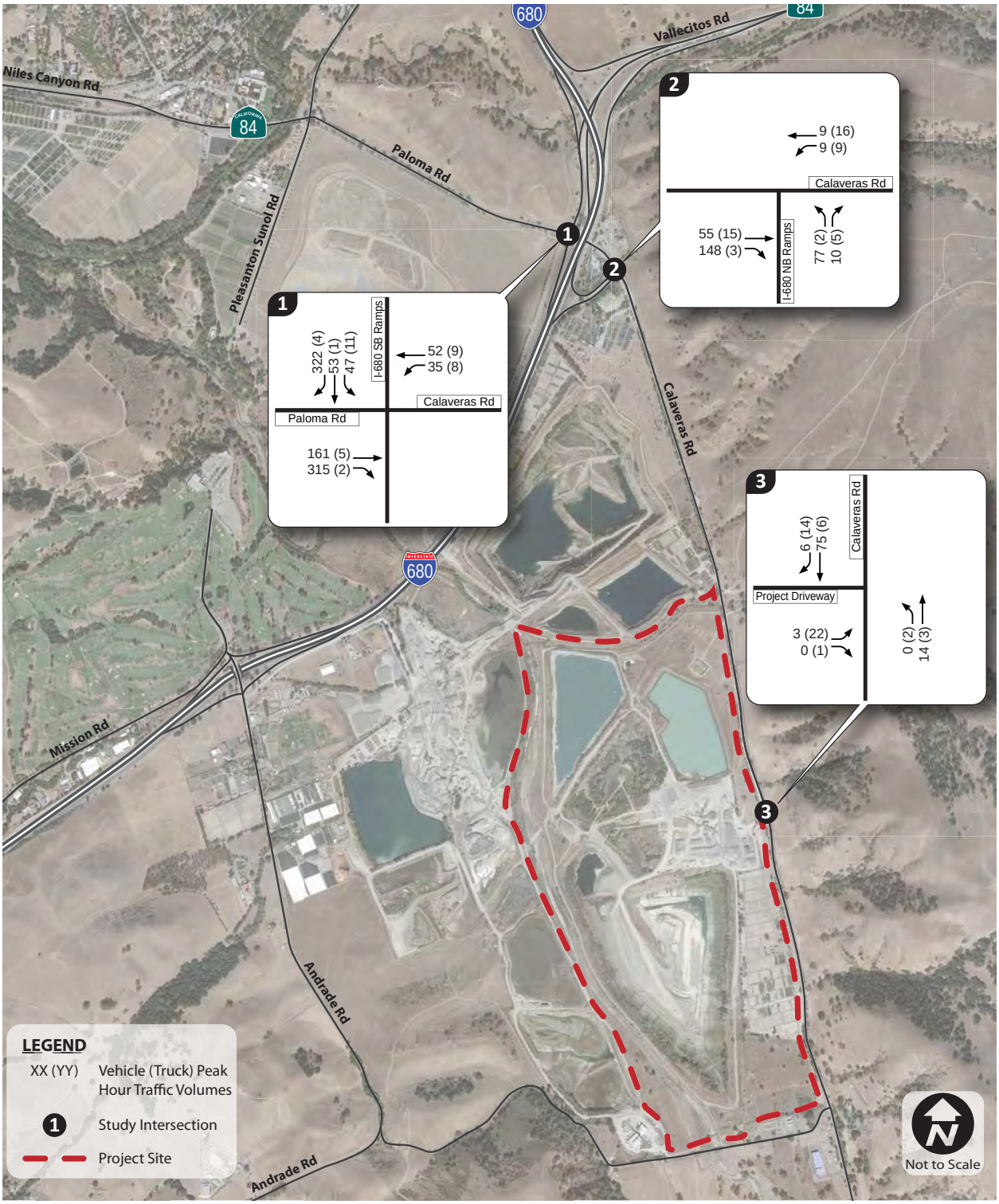
Source: Fehr & Peers, December 2010.

Based on discussions with the Project applicant, the traffic counts were conducted on a day in which the site generated a relatively low amount of trips, even for the modest business years during 2010/2011. Therefore, the observed peak hour truck trips to/from the site were increased by a factor of 56 percent (56%) to reflect true average operating conditions. This adjustment factor was calculated by comparing the average truck loading that occurred during the two week period bracketed by the sample dates, and comparing that average to the truck loading/transport that occurred on the actual day when the counts were collected. **Table 14-5** presents the adjusted trip generation, representative of existing operating conditions at the site. **Figures 14-5** and **14-6** present the adjusted AM and PM peak hour traffic volumes, respectively.

Table 14-5: Adjusted "True" Peak Hour Trip Generation, Existing Conditions

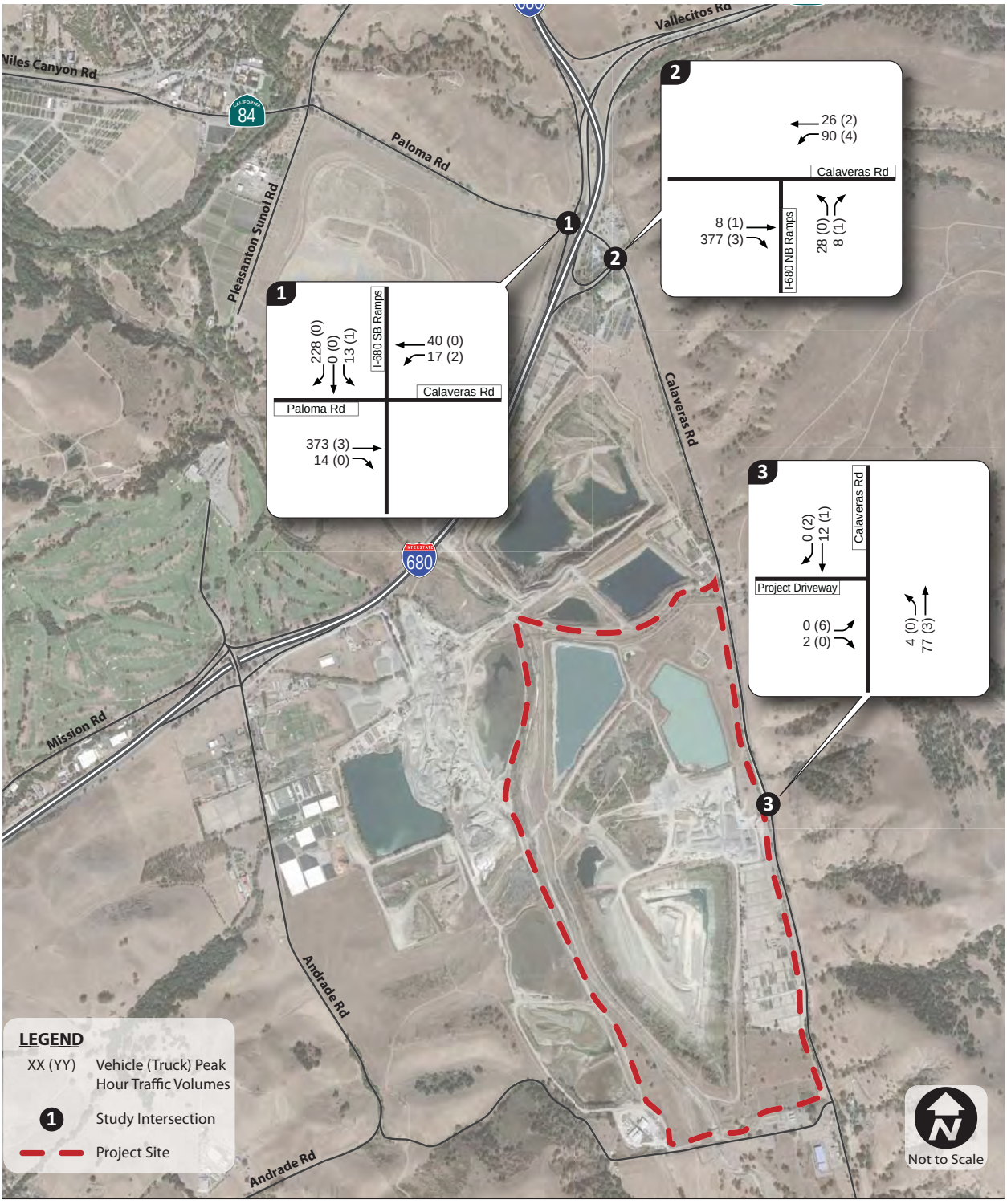
Trip Type	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Truck	240	16	23	39	2	6	8
Car	N/A	6	3	9	4	2	6
Total Site Trips		22	26	48	6	8	14

Source: Fehr & Peers, December 2010.



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-5
Adjusted AM Peak Hour Traffic Volumes



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-6
Adjusted PM Peak Hour Traffic Volumes

Peak Hour Trip Rates, Regularly Recurring Peak and Project Peak

As presented in Table 14-5, during the year 2010 the site generated an adjusted average of approximately 48 total AM peak hour trips, of which 39 were truck trips and 9 were car trips. Compared to a projected/ calculated production rate of approximately 725,000 tons per year for that period, the following per-ton trip rates can be further calculated:

- Daily – approximately 330 truck trips per million tons/year
- AM Peak Hour
  - Approximately 53.4 truck trips per million-tons/year
  - Approximately 12.3 car trips per million-tons/year
- PM Peak Hour –
  - Approximately 11 truck trips per million-tons/year
  - Approximately 8.2 car trips per million-tons/year

These calculated peak hour trip generation rates for trucks and cars were used to derive the anticipated peak hour trip generation of the site under both the recurring peak and Project maximum operating conditions. **Table 14-6** presents a comparison of peak hour site trip generation under current, regularly recurring peak, and Project maximum production rate conditions.

Table 14-6: Comparative Peak Hour Trip Generation (Existing, Regularly Recurring Peak and Project Peak)

Trip Type	Units	Daily[1]	AM Peak Hour[2]			PM Peak Hour[3]		
	(MT/yr.)		In	Out	Total	In	Out	Total
Existing / Current								
Trucks	0.73	240	16	23	39	2	6	8
Car		N/A	6	3	9	4	2	6
Total			22	26	48	6	8	14
Regularly Recurring Peak								
Trucks	1.10	361	24	35	59	3	9	12
Car		N/A	6	3	9	4	2	6
Total			30	38	68	7	11	18
Project Peak								
Trucks	3.00	986	64	96	160	8	25	33
Car		N/A	9	5	14	6	3	9
Total			73	101	174	14	28	42
Net New Project Trips, Relative to Regularly Recurring Peak Conditions			43	63	106	7	17	24
Net New Project Trips, Relative to Existing/Current Conditions			51	75	126	8	20	28

Notes:

1. Unit = Million-tons per year

2. Calculated truck trip generation rates: AM rate = 53.39; Enter = 40%, Exit = 60%; PM rate = 10.95; Enter = 25%, Exit = 75%; Daily rate = 328.54; Enter = 50%, Exit = 50%

3. Calculated car trip generation rates: AM rate = 10.95; Enter = 67%, Exit = 33%; PM rate = 8.21; Enter = 67%, Exit = 33%; 4. A 50 percent growth in car trips was assumed under ultimate conditions.

Source: Fehr & Peers, December 2010.

As shown in Table 14-6, the Project is estimated to generate 126 total net new AM peak hour trips and 28 total net new PM peak hour trips, relative to current conditions. However, relative to the regularly recurring peak, the increases would be smaller, at 106 total net new AM peak hour trips and 24 total net new PM peak hour trips.

Heavy Vehicle Adjustment

The larger size of trucks is accounted for in the traffic analysis. A heavy vehicle adjustment factor has been used in the intersection modeling software in Synchro, which affects the Highway Capacity Manual intersection capacity calculations. The No Project scenarios use the existing percentage of heavy vehicles obtained directly from the counts, and the Plus Project scenarios utilize a higher percentage of heavy vehicles to account for the increase in truck traffic due to the Project.

"Conservative" Assumptions

Although Table 14-6 indicates that the Project could generate a peak hour trip rate of as many as 160 total AM peak hour trips (64 trips inbound and 96 trips outbound), the Project applicant has indicated that it is not possible for the proposed Project to operate at such high volumes of truck transport. Instead, if the Project were operating under its maximum potential (i.e., if the asphalt and concrete batch plant were operating at full capacity and raw aggregate was being loaded at maximum rates) it is unlikely that the Project could actually accommodate any more than a total of 60 truck transports during any given hour period.[6] This would equate to a maximum peak hour trip rate of 120 truck trips (60 inbound and 60 outbound). Therefore, it is likely that a peak operating condition would result in extending the peak hour period over a longer duration, and it is possible that inbound trucks may arrive at the site and wait in queue until the loaders are able to process all transport operations For purposes of analysis, the 160 AM peak hour trips have been utilized as a "worst-case" scenario for assessing potential off-site roadway and intersection impacts.

Trip Distribution and Trip Assignment

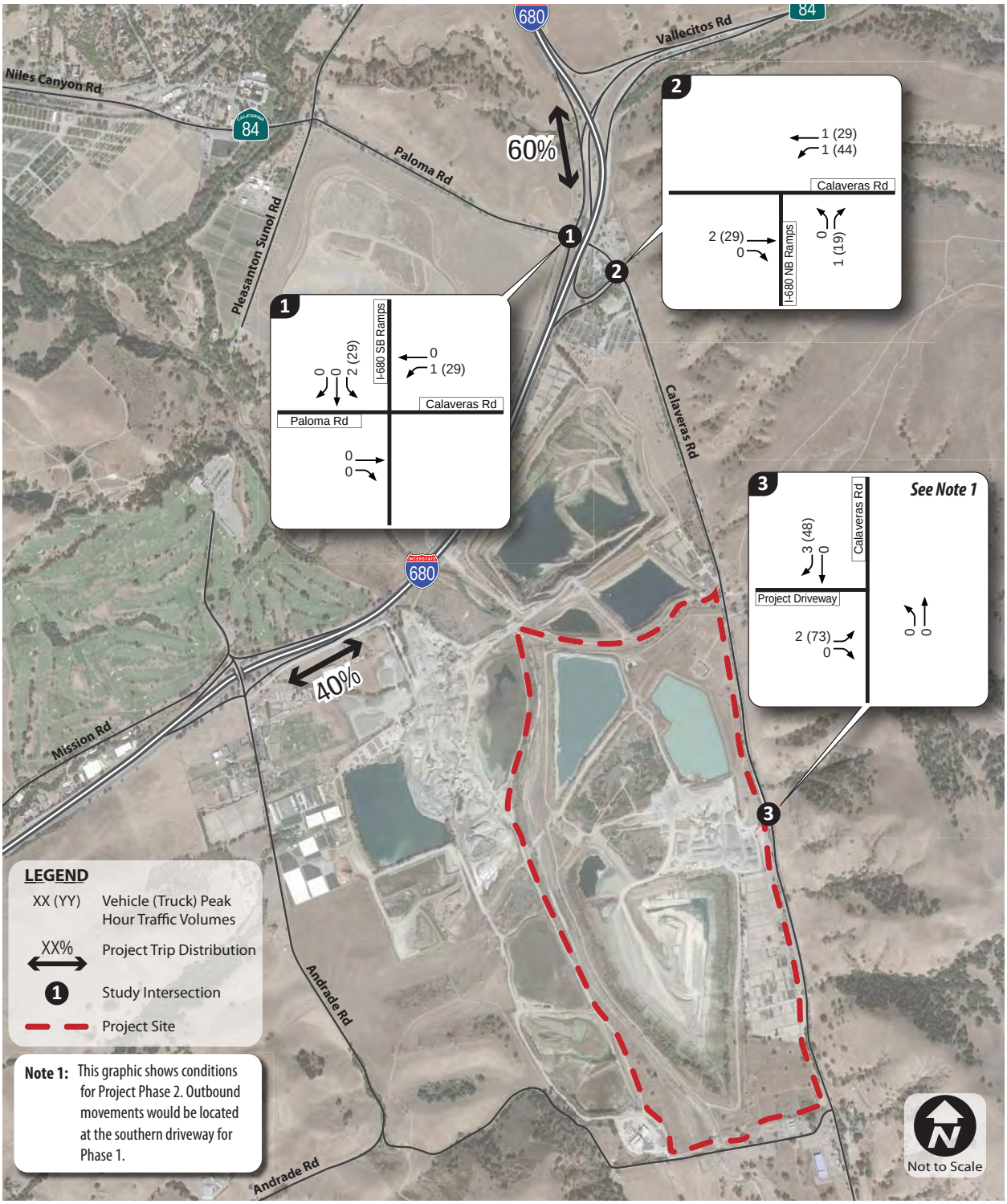
Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. Project trip distribution was based on data obtained from the traffic counts collected at the existing site and the plant's market area provided by the Project applicant. Trip distribution estimates were developed assuming that the new Project trips would access the site from the same general areas as current site trips. AM and PM trip distribution and assignment are shown on **Figures 14-7 and -8**, respectively, for passenger vehicles and trucks. Project-generated trips were assigned to the surrounding transportation network based on the following general directions of approach and departure:

- 60% of trips begin/end along I-680 north of Calaveras Road
- 40% of trips begin/end along I-680 south of Calaveras Road

Assigned Project trip turning movement volumes were added to the existing counts to develop Existing plus Project traffic volumes. AM and PM peak hour traffic volumes for Existing plus Project conditions are provided on **Figure 14-9 and -10**, respectively.

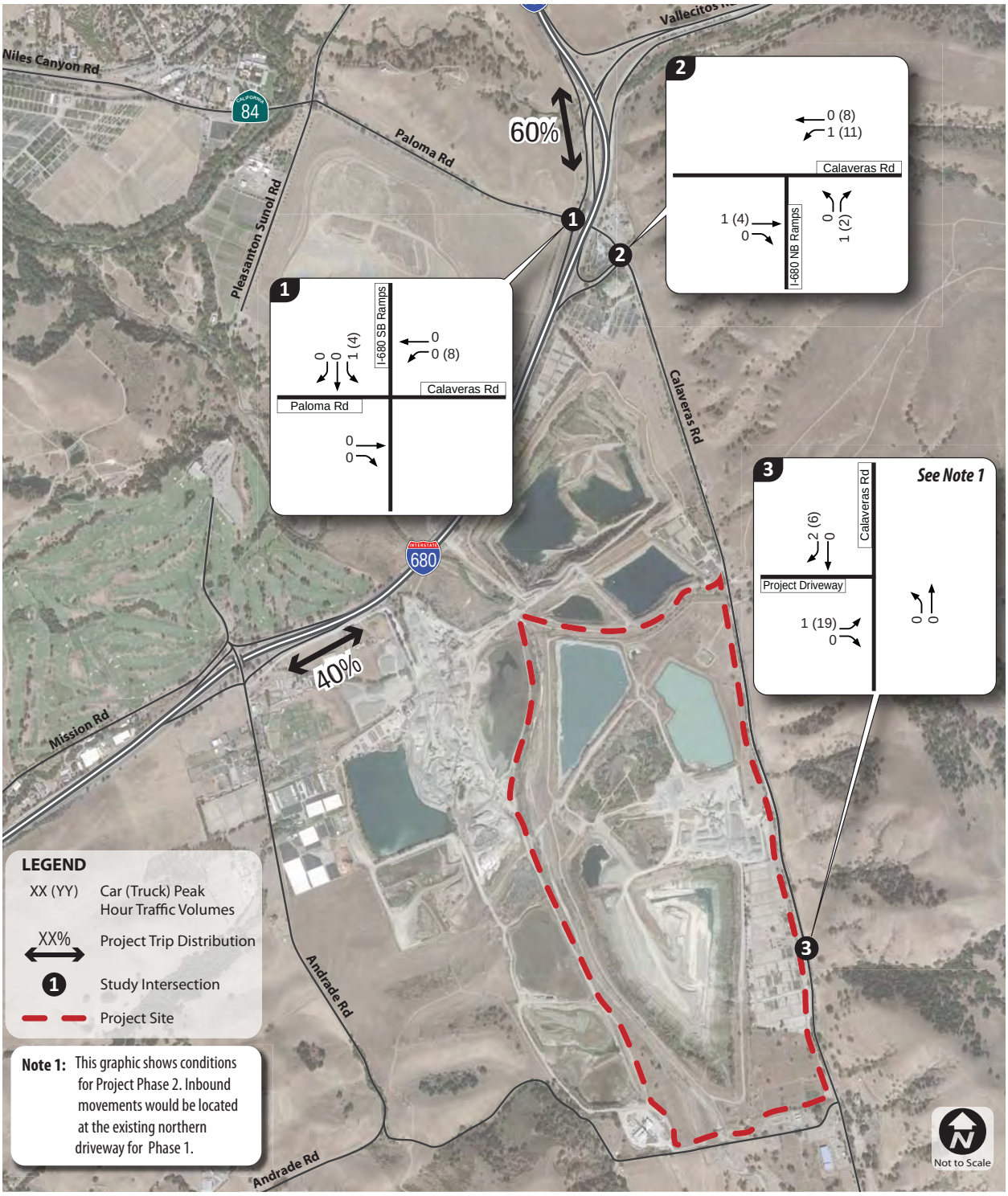
Table 14-7 and **14-8** show the number of Project trips added to the study intersections and freeway segments, respectively, as well as the Project's percentage of the total future traffic volume.

[6] Personal communication, Jim Summers of Oliver de Silva, Inc, Project Applicant, December 2011



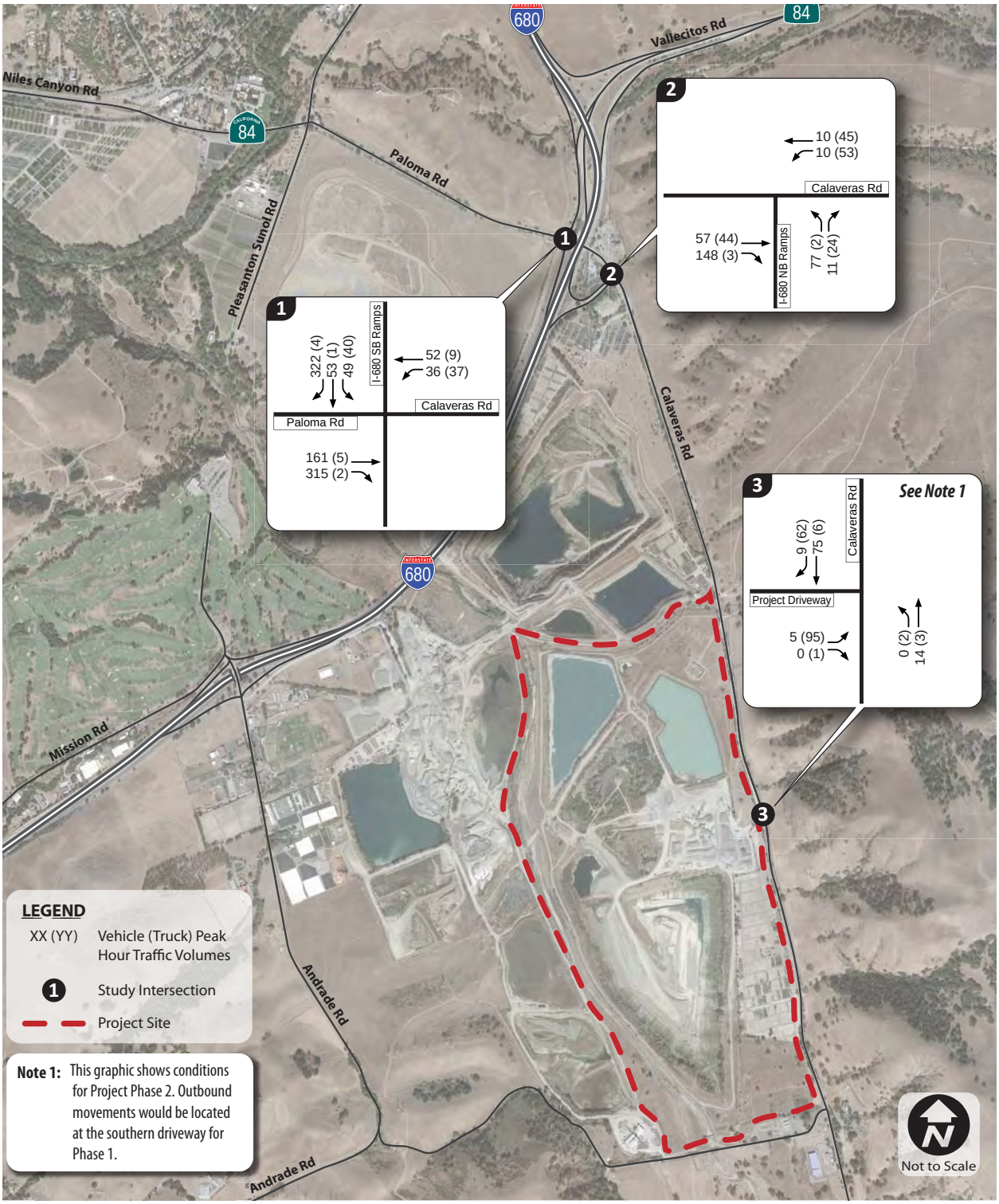
Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-7
AM Trip Distribution and Assignment



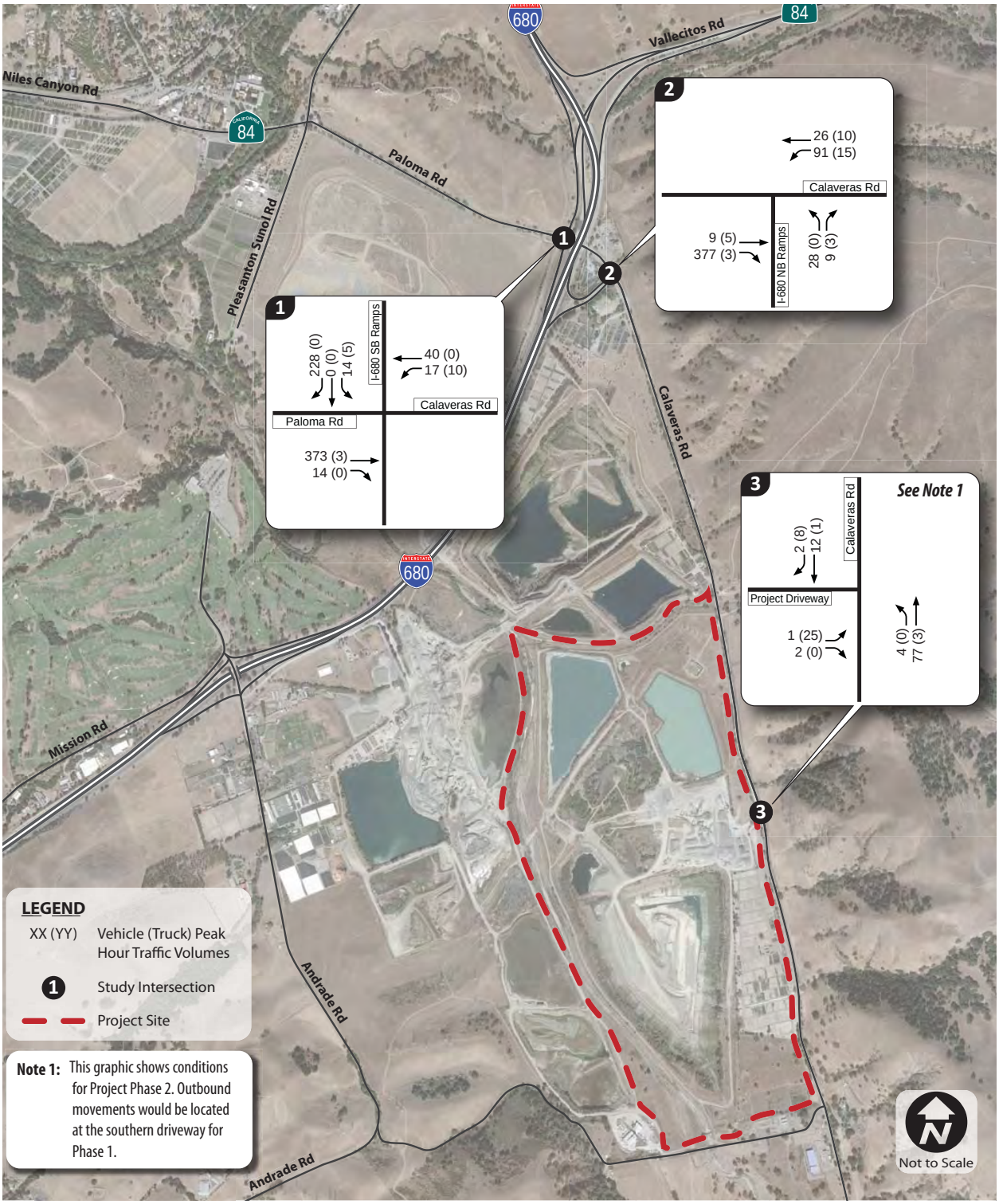
Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-8
PM Trip Distribution and Assignment



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-9
AM Peak Hour Traffic Volumes, Existing plus Project



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-10
PM Peak Hour Traffic Volumes, Existing plus Project

Table 14-7: Intersection Traffic Volumes – Project Trips As Percentage Of Total Volume

Intersection	Peak Hour	Existing Traffic Volume	Project Trips	Percent Project
1. Paloma Road (SR 84) / I-680 Southbound Ramps	AM	1,025	61	5.6%
	PM	689	13	1.9%
2. Calaveras Road / I-680 Northbound Ramps	AM	358	126	26.0%
	PM	543	28	4.9%
3. Calaveras Road / Project Driveway	AM	146	126	46.3%
	PM	93	28	23.1%

Source: Fehr & Peers, December 2010.

Table 14-8: Freeway Traffic Volumes – Project Trips As Percentage Of Total Volume

Freeway Facility	Peak Hour	Existing Traffic Volume	Project Trips	Percent Project
I-680 Northbound between SR 84 and Calaveras Road	AM	4,105	45	1.1%
	PM	6,220	12	0.2%
I-680 Southbound between Sunol and Calaveras Road	AM	7,040	31	0.4%
	PM	4,480	5	0.1%
I-680 Northbound between Calaveras Road and Andrade Road	AM	4,075	20	0.5%
	PM	6,170	3	0.1%
I-680 Southbound between Calaveras Road and Andrade Road	AM	6,990	30	0.4%
	PM	4,450	8	0.2%

Source: Fehr & Peers, January, 2012

Impacts and Mitigation Measures

Significance Criteria

The Project would have a significant impact on the environment if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit
2. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks
4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

5. Result in inadequate emergency access
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

Each of these thresholds of significance is evaluated below.

Intersection Level of Service

Impact Transp-1: The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including intersection level of service standards. (**Less than Significant**)

The Existing plus Project intersection analysis results are presented in **Table 14-9**

Table 14-9: Existing + Project Peak Hour Intersection Levels Of Service

Intersection	Control	Peak Hour	Existing		Plus Project	
			Delay[2]	LOS	Delay	LOS
Phase I, using both existing (inbound) and new South Gate (outbound) driveways						
#1 Paloma Road (SR 84) / I-680 Southbound Ramps	SSSC	AM	5.7 (12.5)	A (B)	6.8 (14.5)	A (B)
		PM	3.7 (10.0)	A (A)	3.9 (10.1)	A (B)
#2 Calaveras Road / I-680 Northbound Ramps	SSSC	AM	10.4 (13.8)	B (B)	12.6 (19.1)	B (C)
		PM	11.0 (13.4)	B (B)	11.3 (14.3)	B (B)
#3 Calaveras Road / Project Driveway	SSSC	AM	2.0 (10.7)	A (B)	0.1 (0.2)	A (A)
		PM	1.0 (9.9)	A (A)	0.2 (0.3)	A (A)
#4 Calaveras Road / South Project Driveway (outbound only)	SSSC	AM	N/A		5.9 (11.7)	A (B)
		PM			2.4 (10.3)	A (B)
Phase II, using new South Gate driveway only (inbound and outbound)						
#3 Calaveras Road / Project Driveway- inbound only	SSSC	AM	2.0 (10.7)	A (B)	N/A	
		PM	1.0 (9.9)	A (A)		
#4 Calaveras Road / South Project Driveway (outbound only)	SSSC	AM	N/A		4.6 (12.3)	A (B)
		PM			2.1 (10.6)	A (B)

Notes:

1. SSSC = side street stop controlled intersection

2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).

The significance criterion for intersection level of service is based on applicable policies of the public agencies whose facilities are likely to be affected by the proposed Project.

- Alameda County has a level of service standard of LOS E for roadways included in the Congestion Management Program (CMP) system. Both Paloma Road (SR 84) and I-680 are designated as

CMP/MTS facilities. Thus, the LOS E standard is applicable for the two I-680 ramp study intersections.

- For non CMP/MTS facilities within Alameda County, the current operating standard is LOS D or better during peak periods. This standard is applicable for the Calaveras Road intersections at the Project driveways.

As shown in Table 14-9, all study intersections are projected to operate at acceptable service levels (LOS A, B or C) at the I-680 ramp intersections, and at acceptable service levels (LOS A or B) for Calaveras Road/Project Driveway intersections. The Project would increase delay at each of these intersections minimally, by less than 5 seconds. This impact would be considered less than significant.

This analysis is based on the unlikely "worst-case" scenario whereby the Project could generate as many as 160 AM peak hour trips. As indicated above, the actual operating capacity of the Project is unlikely able to accommodate this much throughput during any given hour. Therefore, the actual peak hour conditions are likely overstated, and the implications would be that the peak hour conditions of maximum plant operations (at closer to 120 total inbound and outbound trips) would occur for longer than the 1-hour peak duration. This would not result in any greater effects at the intersection than is presented in Table 14-9 above.

Mitigation Measures

None required

Peak Hour Signal Warrant

Impact Transp-2: The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to traffic signal warrant criteria. (**Less than Significant**)

The CMUTCD peak hour volume traffic signal warrant (Warrant 3) for urban conditions was evaluated for the unsignalized intersections in the study area. The urban peak hour volume traffic signal warrant is not satisfied at any of the study intersections under existing or plus Project conditions. Detailed signal warrant calculations are provided in Appendix H. This impact would be considered less than significant.

Mitigation Measures

None required

Freeway Operations

Impact Transp-3: The Project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including but not limited to freeway operating conditions. (**Less than Significant**)

The existing LOS, traffic volumes, Project trips added to the study freeway facilities, and the Project's percentage of the total future traffic volume are presented in **Table 14-10**.

Table 14-10: Freeway Traffic Volumes – Project Trips As Percentage Of Total Volume

Freeway Facility	Peak Hour	Existing Traffic Volume (LOS)	Project Trips	Percent Project
I-680 Northbound between SR 84 and Calaveras Road	AM	4,105 (A)	45	1.1%
	PM	6,220 (B)	12	0.2%
I-680 Southbound between Sunol and Calaveras Road	AM	7,040 (D)	31	0.4%
	PM	4,480 (A)	5	0.1%
I-680 Northbound between Calaveras Road and Andrade Road	AM	4,075 (A)	20	0.5%
	PM	6,170 (E)	3	0.1%
I-680 Southbound between Calaveras Road and Andrade Road	AM	6,990 (D)	30	0.4%
	PM	4,450 (A)	8	0.2%

Source: Fehr & Peers, January, 2012

As shown, although the Project is expected to add 126 AM peak hour trips and 28 PM peak hour trips to the freeway system, it would only amount to up to 1.1 percent of the total peak hour traffic. Along the I-680 northbound segment between Calaveras Road and Andrade Road during the PM peak hour, when the freeway operates at LOS E, the Project would only contribute 0.1 percent of the total traffic volume. Therefore, the Project's impact on freeway operations is expected to be nominal.

Mitigation Measures

None needed

Site Access and Circulation

Impact Transp-4: The proposed Project could substantially increase traffic hazards due to a design feature; existing conditions at the Project site's current driveway create the potential for near-misses and collisions (especially given the mix of heavy trucks, passenger vehicles and recreational cyclists), and the increase in vehicles relying on this driveway under the Project would potentially exacerbate this current condition. Sight distances all along Calaveras Road, including at the proposed new south access drive, are limited by differing grade conditions and vegetation. Additionally, with only one driveway access to the site, if that driveway was blocked or obstructed, an emergency vehicle may not be able to easily access the site in case of emergency. (**Less than Significant with Mitigation**)

Site Access

The level of service results for the existing and proposed driveways, as presented above, indicate that the site driveways are projected to operate at acceptable service levels with the addition of Project traffic and regional traffic growth. Under Phase 1 of the Project, the existing driveway will be converted to allow inbound traffic only; outbound vehicles will exit the site via a new one-way driveway at the southern end of the site.

The existing driveway is located on the west side of Calaveras Road, approximately a half-mile from the north boundary of the Project site, providing direct access to the site from Calaveras Road. In its existing condition, the driveway meets the road at an acute angle. The grade difference between the driveway and Calaveras Road is significant. South of the driveway, Calaveras Road climbs uphill and the Project

driveway rises to meet Calaveras Road. Although trees and other taller vegetation are setback approximately 50 to 60 feet from the intersection, views are still obscured for truck drivers exiting the site and for northbound drivers and cyclists on Calaveras Road. While the traffic operations analysis indicates low traffic volumes and there are no recent reported collisions, these conditions are less than optimum for safe traffic conditions, especially given the mix of heavy trucks, passenger vehicles, and recreational cyclists.

The proposed new southern driveway would allow outbound traffic only under Phase I, and would be converted to a two-way full access driveway under Phase II. This proposed new driveway would meet Calaveras Road at a "T" intersection flanked by landscaped berms. The existing vegetation on the berms as well as the existing "Road Work Ahead" construction sign facing southbound traffic in this area obstruct line of sight to the north. Given the elevation change between Calaveras Road and the access road, the new driveway will be steep. Sight distance was measured at the southern driveway location in both directions. There is 305 feet of sight distance to the north and 580 feet to the south, whereas 550 feet is the minimum corner sight distance required per the California Highway Design Manual.

Emergency Access

Factors such as number of access points, roadway width, and proximity to fire stations determine whether a project provides sufficient emergency access. Under Phase I, the existing driveway provides centralized inbound access to the site, located approximately one half-mile south of the Project's northern boundary. Under Phase II, the southern driveway (which is approximately 3/4-mile from the Project's northern boundary) provides inbound and outbound access to the site. If the driveway was blocked or obstructed, an emergency vehicle may not be able to easily access the site in case of emergency.

The nearest fire station to the site is on Pleasanton-Sunol Road in Sunol, approximately 2 miles north of the Project site.

On-Site Circulation

Phase I Circulation

During Phase I, access into the Project site would continue to function as it currently functions today. Trucks and vehicles accessing the site would continue to enter the site from Calaveras Road at the driveway entrance to the existing plant. With the expanded plant operations, on-site circulation from the driveway entrance will then be improved. As shown in **Figure 14-11**, those trucks entering the site to be loaded at either the asphalt batch plant or the concrete batch plant will turn right upon entering the plant, then travel around the central crusher equipment and materials stockpiles in a counter-clockwise direction to either the asphalt or concrete plant, and then exit the site via a new path of travel to the south, exiting the site at a new south gate exit onto Calaveras Road.[7] Those trucks entering the site to be loaded with raw aggregate will also turn right upon entering the site, make a wide U-turn at the north of the plant, be loaded with material, and then exit to the south at the new south gate.

This on-site circulation plan removes the left-turn exit at the existing driveway, effectively separates various trucking operations from each other, minimizes the potential for internal on-site circulation conflicts, and allows the plant to operate in an efficient manner.

[7] Phasing of the new south gate may not occur at initial Project implementation, in which case trucks may continue to use the existing driveway exit onto Calaveras Road.

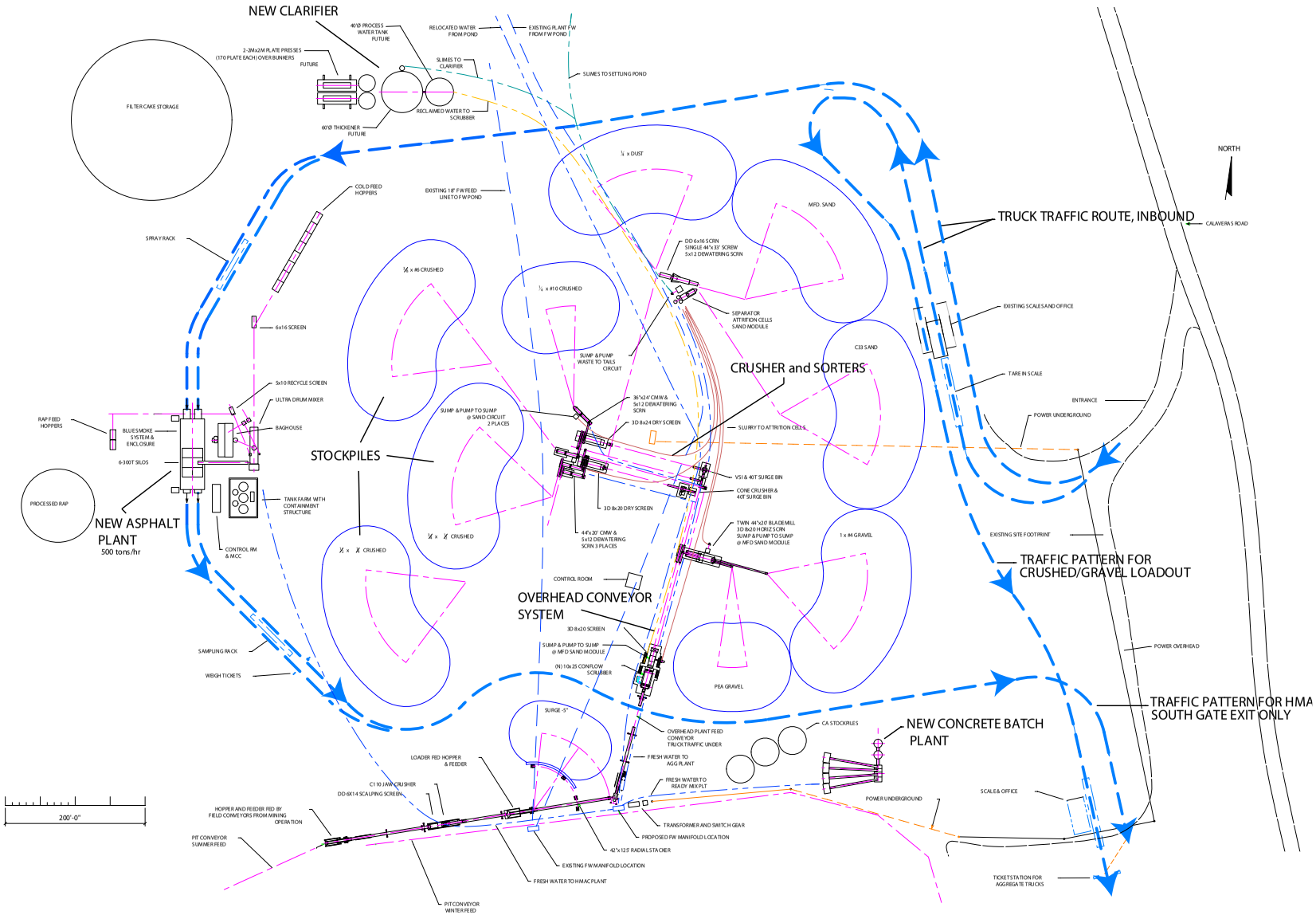


Figure 14-11
On-Site Circulation, Phase I

Source: Calkins Engineers

Phase II Circulation

In Phase II, the plant operations will move to the south end of the site and be placed on a back-filled bench constructed within the quarry pit. The bench will be at an elevation of approximately 50 feet below the surrounding ground surface. All trucks entering the southern plant site will enter from the south gate, follow a sloped driveway to the base of the plant site, make similar on-site circulations patterns as described above for the Phase I plant, and then exit back up the driveway and out of the south gate.

Mitigation Included as Part of the Project

The Project's proposal to restrict access at the existing driveway to inbound vehicles only, with outbound vehicles exiting at the new south gate, would substantially improve sight distance concerns for exiting north bound vehicles. Ultimately closing the existing driveway under Phase II would eliminate sight distance concerns at the existing driveway altogether.

Additionally, during periods of heavy production when large volumes of aggregates, asphalt and/or concrete are loaded and hauled, it may be necessary for the haul fleet to queue while waiting to be loaded with material. The proposed plant site would incorporate an internal ring road capable of accommodating such queues without blocking access to the loading areas or blocking the ingress and egress of other trucks and vehicles.

Prior Conditions of Approval

When approving the original SMP-30 permit in 1992, Alameda County adopted the following Conditions of Approval for that permit pertaining to access onto Calaveras Road:

26. Access must meet Calaveras Road at grade.

27. The permittee shall maintain stop signs at all exits to County roads. The Public Works Agency and Planning Department will continue to monitor whether trucks are stopping before exiting the site onto Calaveras Road. If the condition is determined by the Public Works Agency to be hazardous, then a program to find additional ways to stop trucks (other than the existing stop signs) will be developed and implemented by the permittee as approved by the Director of the Public Works Agency to remedy the situation.

These Conditions of Approval are still applicable to the currently effective permit, and are recommended to be extended so as to apply to the current Project as well.

Mitigation Measures

MM Transp-4a: Intersection Sight Distance: Keep the area around the southern driveway intersection free of visual obstructions such as tall landscaping and signage, which would obstruct line of sight for drivers exiting the site.

a) Vegetation fronting the site along Calaveras Road should be trimmed as necessary to allow at least 550 feet of sight distance, which is the minimum corner sight distance required per the California Highway Design Manual.

b) Allow the location of the southern driveway to shift north or south along Calaveras Road to best accommodate the required sight distance.

c) Raising the elevation of the southern driveway approach to Calaveras Road to reduce the grade difference would improve the sight lines at the intersection.

MM Transp-4b: Two Points of Access, Phase II. During Phase II, which assumes only one access point to/from the site, consider keeping the existing driveway as a secondary access for emergency vehicles only.

Resulting Level of Significance

Implementation of these Conditions of Approval and recommended mitigation measures would ensure site access and emergency access safety, and the impact would be reduced to a level **of less than significant**.

Pedestrian Circulation

Impact Transp-5: The Project would not conflict with adopted policies, plans or programs regarding pedestrian facilities. The Project proposes to accommodate a new trail alignment. However, possible pedestrian/vehicle conflict points associated with one of the potential trail alignments could decrease the performance or safety of such facilities. (**Less than Significant**)

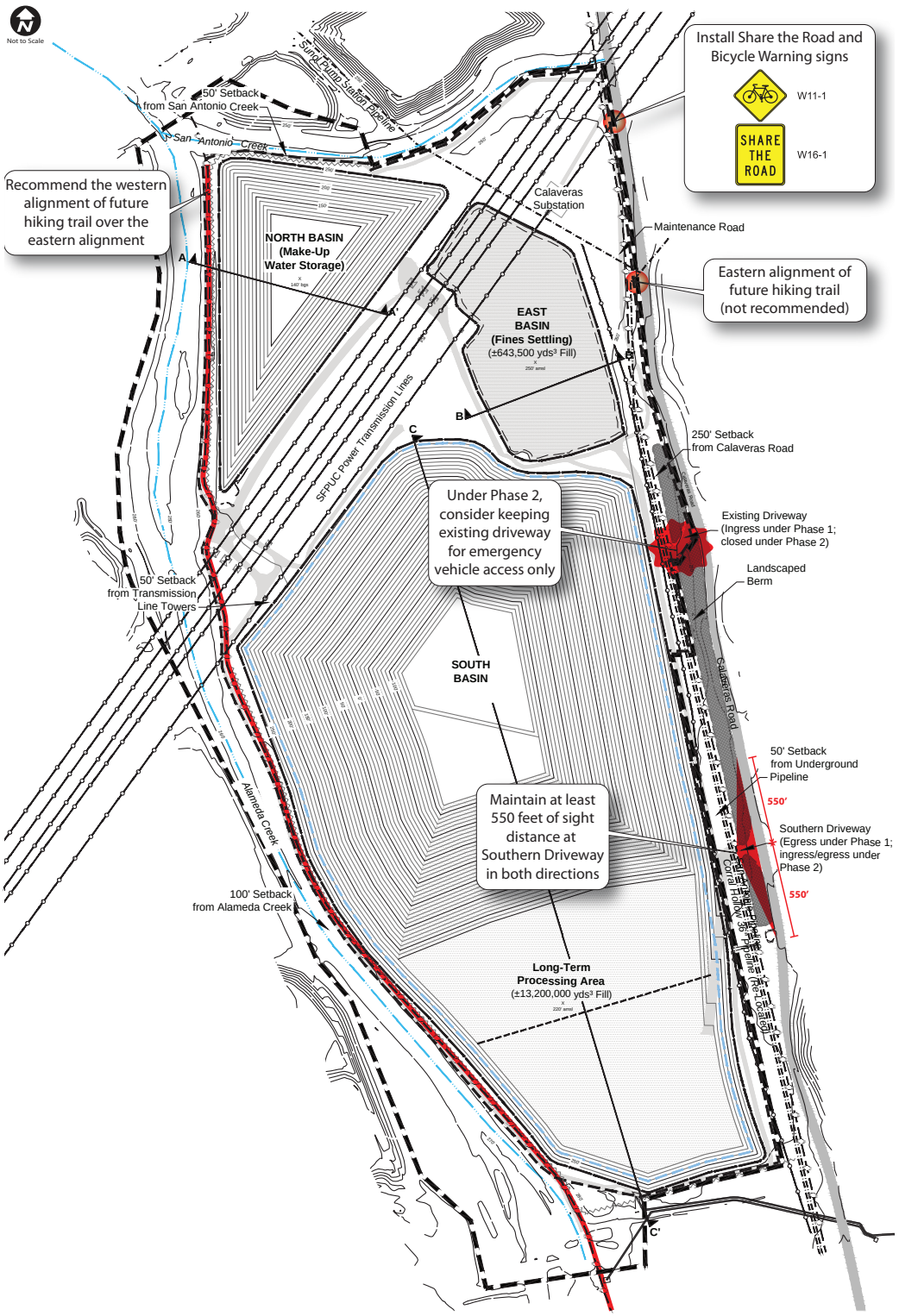
Given the rural location of the Project site and the industrial nature of the uses of a quarry, pedestrian demand is not expected to increase as a result of the proposed Project. Pedestrian facilities do not currently exist in the vicinity of the Project site. The site is adjacent to the Sunol Regional Wilderness, part of the East Bay Regional Park system, with various trails accessed from Calaveras Road and nearby Welch Creek Road. The Sunol Valley Resource Management Element of the San Francisco Public Utilities Commission (SFPUC) Watershed Management Plan indicates the potential for a future hiking trail west of Calaveras Road. A potential hiking trail is also listed in the East Bay Regional Parks District Master Plan (2007), which lists a potential regional trail running from Pleasanton Ridge Regional Park and the Calaveras Ridge Trail south to the Sunol Regional Wilderness and the Ohlone Wilderness Trail via a hiking trail west of Calaveras Road.

Mitigation Measures Included in the Project

The Project applicant has agreed to accommodate possible future public access trails through the Project area as may be desired by the East Bay Regional Park District. The Site Plan calls out two potential alignments for the future hiking trail (see **Figure 14-12**). The first alignment is along the western edge of the site paralleling Alameda Creek and traveling along the North and South Basins before continuing south outside of the Project area. The second alignment runs along the eastern edge of the site, running from the northeastern corner of the Project site and traveling south along the East and South Basins, paralleling Calaveras Road. The proposed hiking trail alignment on the eastern side of the Project would cross both the Project driveways. Although both the driveway and the hiking trail would have relatively low volumes, the eastern trail alignment would increase the possible pedestrian/vehicle conflict points.

Mitigation Measures

None required



Source: Fehr & Peers

Figure 14-12
Potential Alignments for the Future Hiking Trail

Although not required to avoid or reduce a conflict with adopted policies, plans, or programs regarding pedestrian facilities, the following recommendation is made to increase the safety for pedestrians who may use the recreational trail:

Recommendation Transp-5: It is recommended that if the future hiking trail moves forward, the western trail alignment along Alameda Creek should be considered preferable as it provides less pedestrian/vehicle conflict points as compared to the eastern alignment along Calaveras Road.

The proposed Project would provide the potential for a future hiking trail west of Calaveras Road, consistent with the Sunol Valley Resource Management element of the SFPUC Watershed Management Plan and the East Bay Regional Parks District's Master Plan. Implementation of the above recommendation would provide a margin of increased safety for pedestrians choosing to walk ride on this trail.

Bicycle Circulation

Impact Transp-6: The Project would not conflict with adopted policies, plans, or programs regarding bicycle facilities, or otherwise decrease the performance or safety of such facilities. (**Less than Significant**)

Currently, off-site bicycle facilities do not exist in the Project vicinity, and Calaveras Road is not a designated Alameda County bicycle route. However, according to the Alameda County Bicycle Master Plan for Unincorporated Areas (2007)[8], Calaveras Road is shown as a proposed Class IIID Bicycle Route from the Sunol Regional Park to the Santa Clara County line. Class IIID - Rural Bike Routes are described as un-signed roads where vehicles share the roadway with bicycles, with two-foot shoulders where possible (although Calaveras Road is indicated as having no shoulders).

The Bicycle Master Plan also indicates that for Class IIID bike routes; "Where traffic volumes are below 2,000 vehicles per day (vpd), roads with narrow shoulders (i.e., only an edge line) are generally acceptable from a bicyclist's point of view since the amount of oncoming traffic is minimal. According to research by others, a road with 24 feet of pavement including shoulders could accommodate traffic volumes of up to 1,760 vpd and still be compatible with bicycle travel. Still, others suggest that 12-foot shared lanes on rural roads are acceptable to experienced bicyclists if traffic volumes are under 2,000 vpd and sight distance is adequate. Roads of this type are in the more rural areas of the County and generally often have topographical constraints, have no curb and gutters, and have little demand for on-street parking."

Calaveras Road has 11-foot travel lanes and paved shoulders of less than one foot, meaning that bicyclists that use Calaveras Road share the travel lane with motorists and trucks. Calaveras Road has an average daily traffic volume of approximately 1,300 vpd between I-680 and the Project site, and the Project is projected to increase traffic volumes by approximately 630 truck trips per day, nearing the total daily traffic volume on this road to 2,000 vpd.

Although this volume of traffic is considered by certain research standards to be acceptable for bicycle traffic on narrow rural roads, the Project's increased truck traffic would increase bicycle safety hazards. Recreational cyclists were observed traveling on Calaveras Road. Based on the projected increase in truck traffic along Calaveras Road due to the Project, potential conflicts between recreational bicyclists

[8] Alameda County Bicycle Master Plan for Unincorporated Areas, prepared by Alameda County Public Works Agency & Michelle DeRobertis, March 2007. Accessed via http://www.acgov.org/pwa/BMP%20Final%20Report%20March%202007%20(8-07).pdf

and truck traffic may increase. Ensuring adequate sight distance for truck drivers at both Project driveways is critical for cyclist safety as well as the safety of all roadway users.

Mitigation Measures

None required

Although not required to avoid or reduce a conflict with adopted policies, plans, or programs regarding bicycle facilities, the following recommendation is made to increase the safety for bicycle riders using Calaveras Road:

Recommendation Transp-6: Signage. Due to the presence of recreational cyclists along Calaveras Road, it is recommended that the installation of "Share the Road" signs in conjunction with Bicycle Warning signs be considered along Calaveras Road and on the Project site driveways to warn drivers to watch for bicyclist, who generally travel at slower speeds. Placement of these signs shall be determined in consultation with the Alameda County Public Works Department.

Implementation of this recommendation would provide a margin of increased safety for bicycle riders choosing to ride on Calaveras Road, even though this roadway is not a designated bicycle facility.

Roadway Safety Hazards

Impact Transp-7: The Project would not substantially increase roadway hazards due to a design feature or an incompatible use. (**Less than Significant**)

The Project does not include any new roadway design features (other than a new access point as discussed above), nor does it introduce a new incompatible use. The existing operating quarry already generates large-capacity truck traffic onto Calaveras Road, and the only change would be that the Project would increase the volume of such truck traffic. However, the Project could result in exacerbating existing roadway safety hazards due to additional spillage from the trucks onto roadways and further deterioration of County haul routes between the site and I-680.

Prior Conditions of Approval

When approving the original SMP-30 permit in 1992, Alameda County adopted the following Conditions of Approval for that permit pertaining to roadway safety hazards on Calaveras Road:

28. Permittee shall post a $5,000 cash bond with Alameda County to clean up any spillage that may occur on, or repair any extraordinary deterioration to, the County haul routes lying between the site and 1-680. Said bond is to be replenished to its full amount when it diminishes to $2,000. A certificate of deposit may be utilized in lieu of a cash bond subject to approval of the Director of Public Works

a. As part of the regular inspection of the quarry required under the Surface Mining Permit the Public Works Agency will annually inspect the pavement condition of Calaveras Road between the quarry access and the 1-680 ramps. Required repairs will be identified by the County.

b. The permittee shall contribute to the cost of maintaining, repairing, strengthening, or reconstructing the subject segment of Calaveras Road, if the County inspection shows a need for such pavement improvements

c. Participation by permittee in the cost of such pavement improvements shall be in proportion to the percentage of heavy truck traffic on Calaveras Road contributed by the quarry operations and 100 percent towards any road damage directly attributed to the operations

30. A program to reduce speed and accidental spillage from trucks leaving the quarry site shall be designed by the permittee's engineer. The Program shall include, but not be limited to, a redesign of the access road to rectify the problem of trucks failing to stop before turning onto Calaveras Road

These Conditions of Approval are still applicable to the currently effective permit, and are recommended to be extended so as to apply to the current Project.

Mitigation Measures

None required

Although the Project would not substantially increase roadway hazards due to a design feature or an incompatible use, implementation of these Conditions of Approval would reduce roadway safety hazards and these impacts would be less than significant.

Cumulative Intersection Level of Service

Cumulative Impact Transp-8: The Project will not make a significant contribution of traffic to cumulative traffic levels at study area intersections, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system (including intersection level of service standards) would occur. (**Less than Significant**)

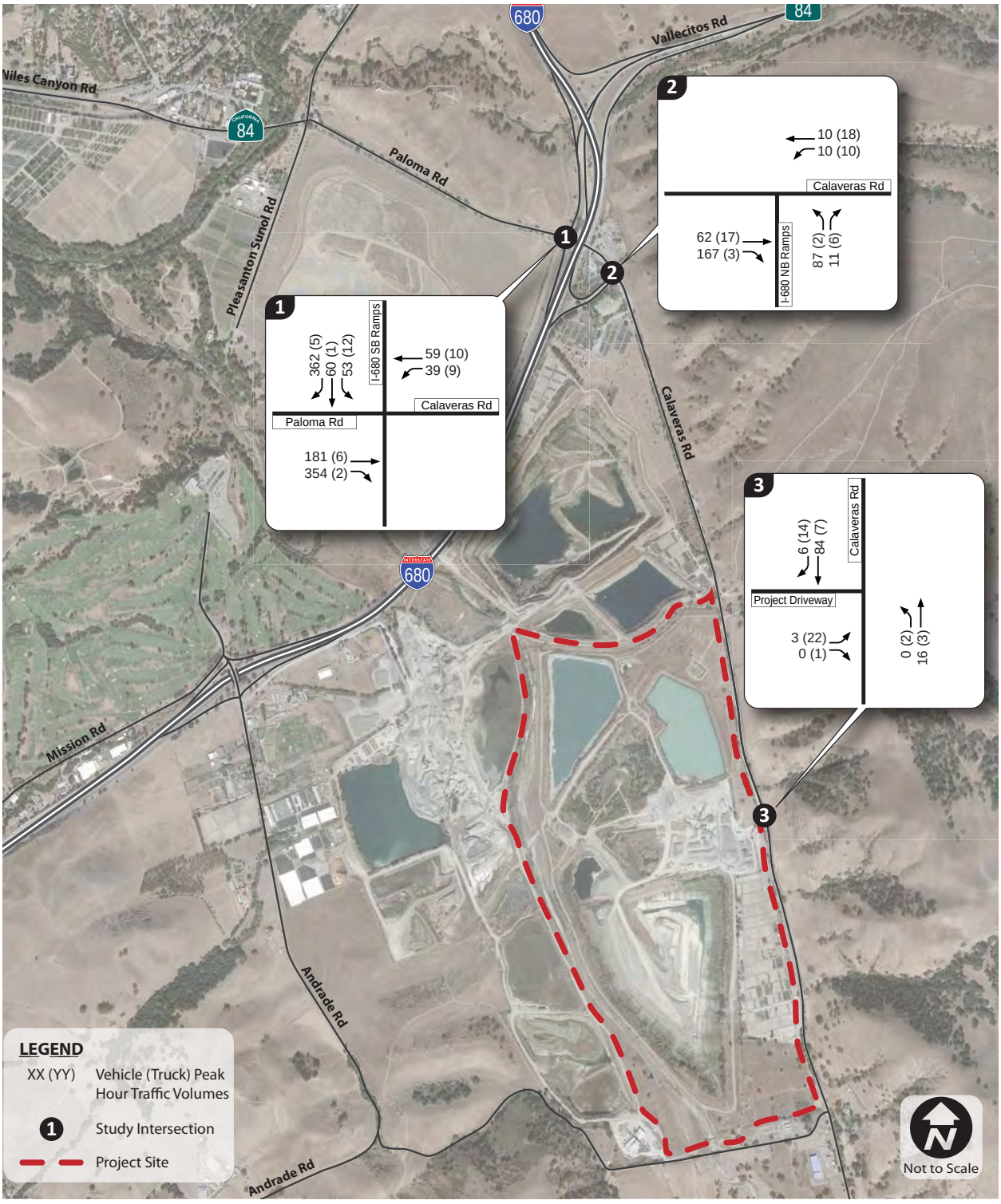
Cumulative Scenario

Traffic volumes for the Cumulative No Project conditions (year 2035) were developed using the latest version of the Alameda Countywide Travel Demand Model. Land use, employment and population projections in the model are based on Association of Bay Area Governments (ABAG) Projections 2005. The model forecasts are not used directly to forecast intersection turning movements. Instead, the model outputs were used to develop annual growth rates in traffic at study area intersections. Based upon these model outputs, annual growth rates of 0.5 percent and 1.0 percent were used for the AM and PM peak hours, respectively. Forecasts of weekday AM and PM peak hour traffic volumes under Cumulative No Project conditions were developed by applying these model-based growth rates to the existing AM and PM peak hour intersection turning movement counts.

The estimated traffic volumes for the AM and PM peak hour under Cumulative No Project conditions are presented in **Figure 14-13** and **Figure 14-14**. This analysis assumes that no roadway improvements are planned in the study area in the future and that the intersection configurations and controls under existing conditions would continue under Cumulative No Project conditions.

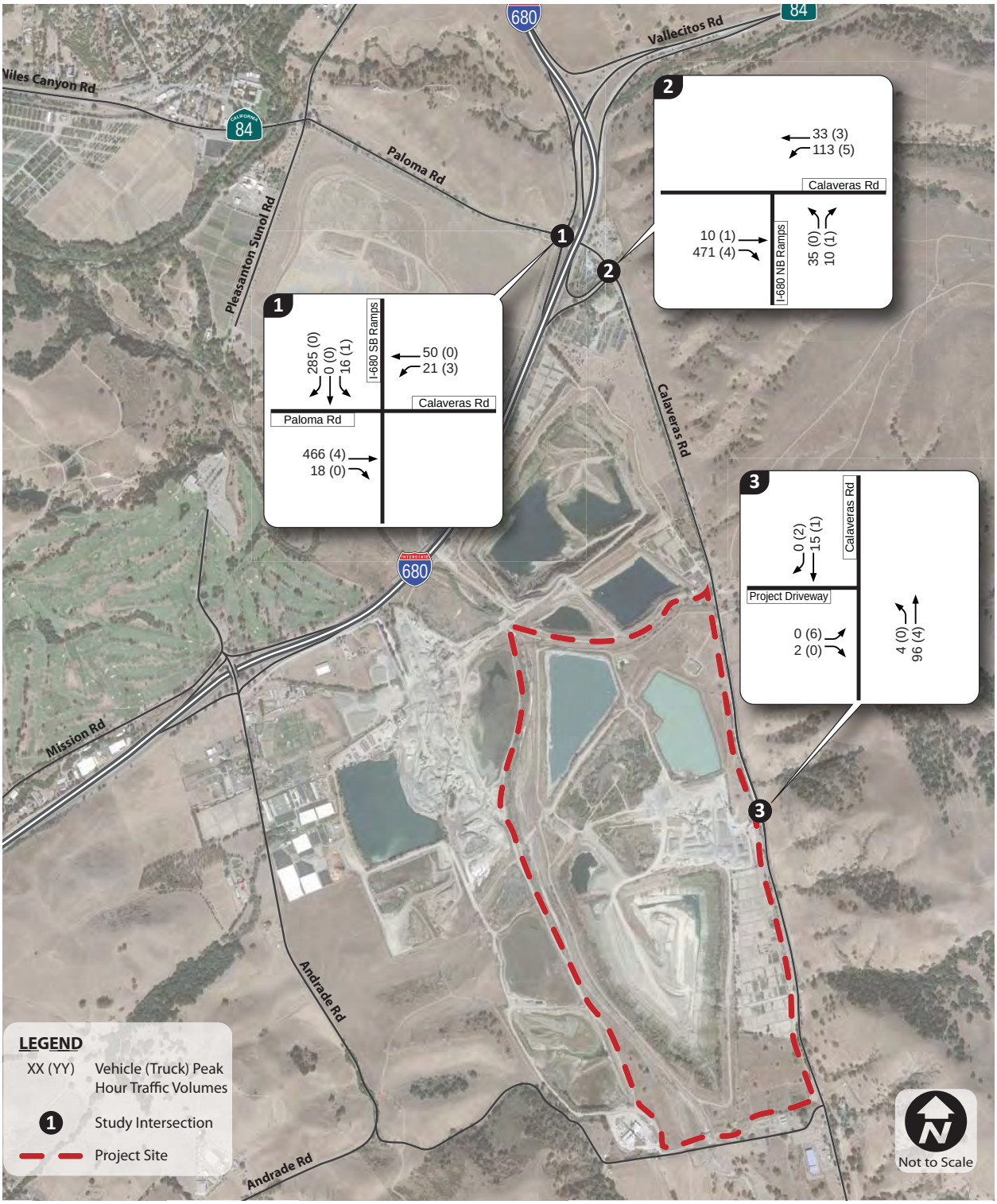
Cumulative plus Project Traffic

Based on the trip generation and distribution assumptions previously described for the Project, peak hour traffic forecasts for Cumulative plus Project conditions were developed. Peak hour traffic volumes for both cars and trucks under Cumulative plus Project conditions are shown on **Figure 14-15** and **Figure 14-16**, respectively. **Table 14-11** shows the percentage of total future cumulative traffic generated by the Project at each intersection. **Table 14-12** shows Project traffic as a percentage of cumulative traffic growth.



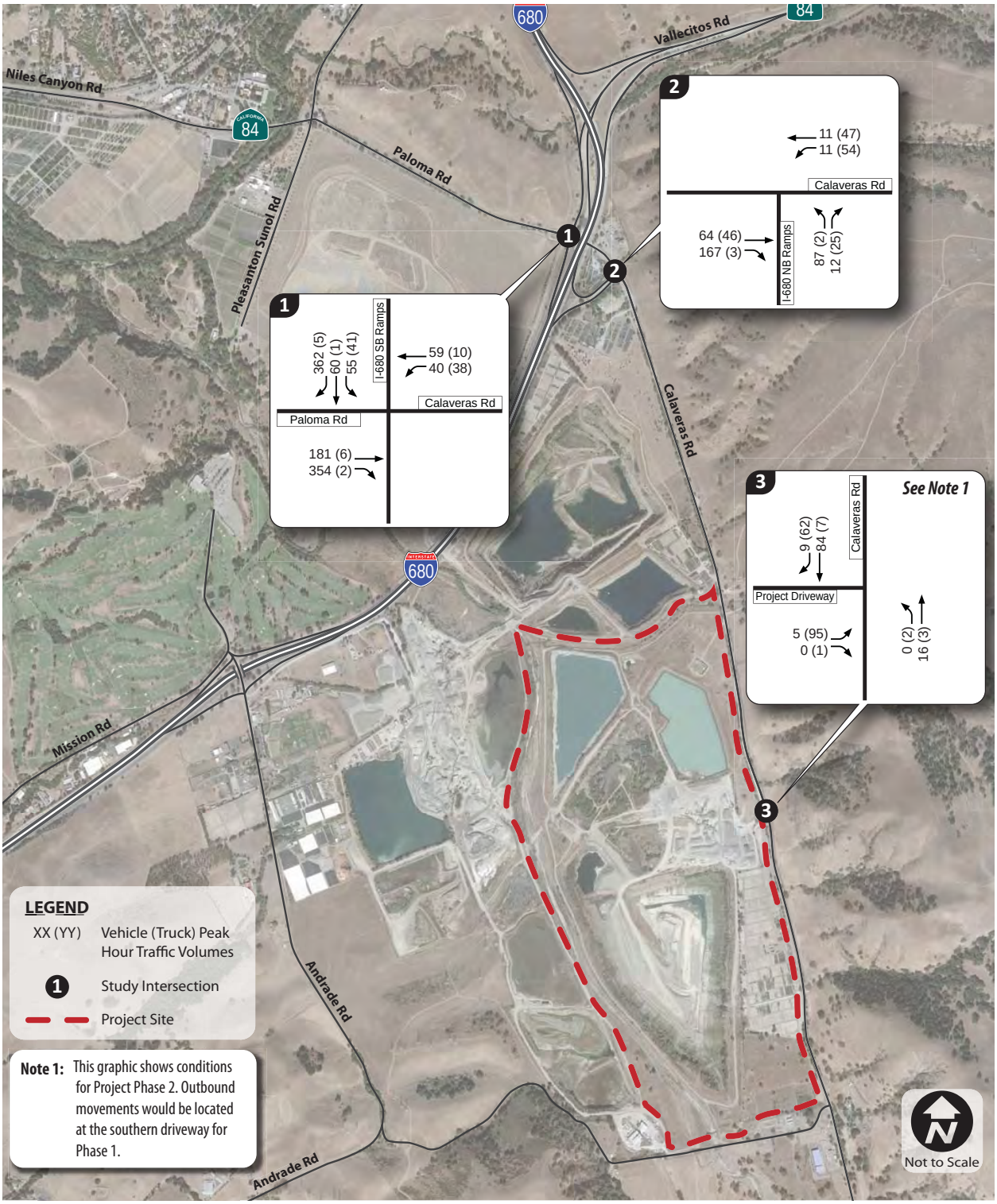
Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-13
Cumulative AM Peak Hour Traffic Volumes, No Project



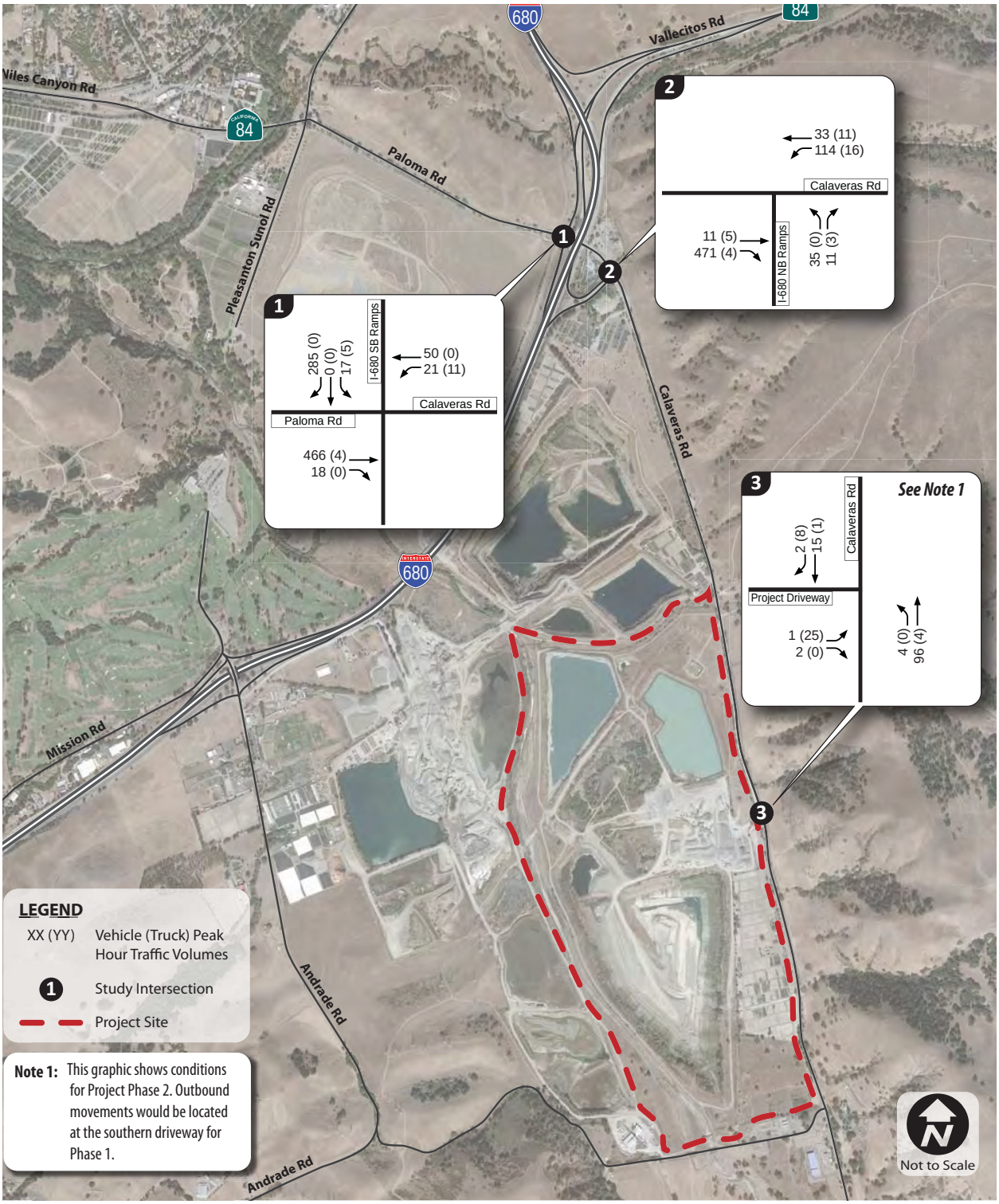
Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-14
Cumulative PM Peak Hour Traffic Volumes, No Project



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-15
AM Peak Hour Traffic Volumes, Cumulative plus Project



Source: Fehr & Peers
Aerial base: 10/2010

Figure 14-16
PM Peak Hour Traffic Volumes, Cumulative plus Project

Table 14-11: Cumulative plus Project Conditions – Project Trips As Percentage Of Total Cumulative Traffic Volume

Intersection	Peak Hour	Cumulative Traffic Volume	Project Trips	Percent Project
1. Paloma Road (SR 84) / I-680 Southbound Ramps	AM	1,153	61	5.0%
	PM	864	13	1.5%
2. Calaveras Road / I-680 Northbound Ramps	AM	403	126	23.8%
	PM	686	28	3.9%
3. Calaveras Road / Project Driveway	AM	158	126	44.3%
	PM	130	28	17.7%

Source: Fehr & Peers, December 2010.

Table 14-12: Cumulative plus Project Conditions – Project Trips As Percentage Of Cumulative Traffic Growth

Intersection	Peak Hour	Traffic Volume, Other Growth	Project Trips	Percent Project
1. Paloma Road (SR 84) / I-680 Southbound Ramps	AM	128	61	32.3%
	PM	173	13	7.0%
2. Calaveras Road / I-680 Northbound Ramps	AM	45	126	73.7%
	PM	138	28	16.9%
3. Calaveras Road / Project Driveway	AM	12	126	91.3%
	PM	23	28	54.9%

Source: Fehr & Peers, December 2010.

Aside from Project driveways, the intersection where the Project makes the greatest contribution of traffic is at the I-680/Calaveras Road northbound ramp. At this intersection, the Project contributes up to 24 percent of the total future traffic volume in the AM peak hour, and 4 percent in the PM peak hour. As a function of overall traffic growth at this location, the Project contributes up to 74 percent of the traffic growth in the AM peak hour, and 17 percent in the PM peak hour at this ramp intersection.

Intersection Level of Service

The analysis of intersection operations under Cumulative plus Project conditions was performed using the same methodologies applied for Existing and Existing plus Project conditions. The intersection analysis results for Cumulative No Project and Cumulative plus Project s conditions are presented in Table **14-13**.

Table 14-13: Cumulative + Project Peak Hour Intersection Levels Of Service

Intersection	Control	Peak Hour	Cumulative, No Project		Plus Project	
			Delay[2]	LOS	Delay	LOS
Phase I						
#1 Paloma Road (SR 84) / I-680 Southbound Ramps	SSSC	AM	6.2 (13.6)	A (B)	8.2 (17.7)	A (C)
		PM	4.0 (10.6)	A (B)	4.1 (10.8)	A (B)
#2 Calaveras Road / I-680 Northbound Ramps	SSSC	AM	11.0 (14.8)	A (B)	14.8 (24.8)	B (C)
		PM	12.7 (17.2)	A (B)	13.3 (18.9)	B (C)
#3 Calaveras Road / Project Driveway	SSSC	AM	1.9 (10.8)	A (B)	5.7 (11.9)	A (B)
		PM	0.9 (10.0)	A (B)	2.0 (10.5)	A (B)
Phase II						
#3 Calaveras Road / Project Driveway- inbound only	SSSC	AM	1.9 (10.8)	A (B)	0.1 (0.2)	A (A)
		PM	0.9 (10.0)	A (B)	0.2 (0.3)	A (A)
#4 Calaveras Road / South Project Driveway (outbound only)			N/A		5.7 (11.9)	A (B)
					2.0 (10.5)	A (B)

Notes:
1. SSSC = side street stop controlled intersection
2. For side-street stop-controlled intersections, delay is reported as: Intersection average (worst case approach).

As shown in Table 14-13, all intersections are projected to operate at acceptable levels of service during both the AM and PM peak hours, both with and without the Project. Delays increase by 11 seconds (at the Calaveras Road / I-680 Northbound Ramps) or less at all study intersections under the Cumulative plus Project scenario relative to Cumulative No Project conditions. This would be a less than significant cumulative effect.

Mitigation Measures

None required

Cumulative Peak Hour Traffic Signal Warrant Analysis

Cumulative Impact Transp-9: The Project will not make a significant contribution of traffic to cumulative traffic levels at study area intersections, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system, including but not limited to traffic signal warrant criteria, would occur. (**Less than Significant**)

The CMUTCD peak hour volume traffic signal warrant (Warrant 3) for urban conditions was evaluated for the unsignalized intersections in the study area under Cumulative plus Project conditions. The urban peak hour volume traffic signal warrant is not satisfied at any of the study intersections. Detailed signal warrant calculations are provided in Appendix H. This impact would be considered less than significant.

Mitigation Measures

None required

Cumulative Freeway Operations

Cumulative Impact Transp-10: The Project will not make a significant contribution of traffic to cumulative traffic levels on study area freeways, and no conflicts with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system, including but not limited to freeway operating conditions, would occur. (**Less than Significant**)

The cumulative traffic volumes on study area freeways, the Project trips added to the study freeway facilities and the Project's percentage of the total future traffic volume are presented in Table 14-14.

Table 14-14: Freeway Traffic Volumes – Project Trips As Percentage Of Total Cumulative Volume

Freeway Facility	Peak Hour	Existing Traffic Volume (LOS)	Project Trips	Percent Project
I-680 Northbound between SR 84 and Calaveras Road	AM	5,158	45	0.9%
	PM	9,380	12	0.1%
I-680 Southbound between Sunol and Calaveras Road	AM	7,668	31	0.4%
	PM	4,020	5	0.1%
I-680 Northbound between Calaveras Road and Andrade Road	AM	5,085	20	0.4%
	PM	9,995	3	0.1%
I-680 Southbound between Calaveras Road and Andrade Road	AM	10,767	30	0.3%
	PM	5,635	8	0.1%

Source: Fehr & Peers, January, 2012

As shown, the increase in traffic volumes along the study freeway facilities would only amount to up to 0.9% percent of the peak hour traffic under Cumulative conditions. Therefore, the Project's impact on freeway operations is expected to be nominal.

Mitigation Measures

None needed

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Alternatives

CEQA Guidelines Regarding Alternatives

CEQA Guidelines require an analysis of a reasonable range of alternatives for any project subject to an EIR. The purpose of the alternatives section is to provide decision-makers and the public with a discussion of alternatives to the Project or its location that are capable of avoiding or substantially lessening any significant effects of the Project, even if these alternatives would impede to some degree the attainment of the Project objectives, or would be more costly. Evaluation of alternatives should present the proposed action and all the alternatives in comparative form to define the issues and provide a clear basis for choice among the options.

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Where a lead agency has determined that, even after adoption of all feasible mitigation measures, a project as proposed would still result in significant environmental effects that cannot be substantially lessened or avoided, the agency must first determine whether there are any alternatives that are both environmentally superior and feasible.

CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation (§15126.6(a)).
- An EIR is not required to consider alternatives which are infeasible (§15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project (§15126.6(b)).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§15126.6(d)).

Accomplishing Basic Project Objectives

CEQA requires analysis of those alternatives that would feasibly attain "most of the basic objectives of the project . . ."[1]

The objectives of the proposed Project include the following:

[1] *CEQA Guidelines,* Section 15126.6 (a)

Operations Objectives

- To expand the overall production potential of the quarry by increasing the area under permit by approximately 58 acres and deepening the depth of excavation to at least 225 feet below ground surface (bgs), and to a maximum 400 feet bgs;
- Extend the expiration date of the mining permit to 30 years after approval of the modification; and to
- To add additional ancillary uses at the site, including an asphalt batch plant and a concrete plant.

Reclamation Objective

The primary objective of the Landowner (SFPUC) is to maximize water storage goals, as set forth in the Sunol Valley Resource Management Element of the Alameda Watershed Plan adopted by the SFPUC in 2000.

Conservation Objective

The primary conservation objectives include significantly reducing potential biological impacts associated with the Project, fully mitigating biological resource impacts of the Project, and providing additional conservation benefits that will help to restore Alameda Creek and to improve habitat for native species in the vicinity of the Project through implementation of the Conservation Plan for the Sunol Quarry SMP-30 Site.

Business Objectives

To ensure the on-going business enterprise as a commercial mining and aggregate products business, the Project applicant has identified the following objectives that the Project will need to meet, which include:

- A supply of sufficient resources for long-term (30 years) availability;
- A property of sufficient size and existing surrounding land uses that minimize land use compatibility issues;
- A location with competitive distance to aggregate consumption markets;
- A site located within a state-designated Mineral Resource Zone (the MRZ-2a zone);
- Property under one ownership;
- Ability to efficiently transport product via the local road network and state highway system;
- A site with no prohibitive easement, agreement, or contract restrictions;
- A site consistent with Alameda General Plan policies, including Measure D for expansion of an existing quarry site on the same or adjoining parcel;
- A site consistent with the SFPUC Watershed Management Plan; and
- A site that minimizes additional contributions to GHG emissions by enhancing production of aggregate-based products proximate to the source of these materials, and proximate to future construction site destinations.

Other than the CEQA-mandated No Project Alternative, the alternatives identified in this EIR are those considered capable of feasibly attaining most, but perhaps not all of these basic objectives of the Project, and which may also be capable of avoiding or substantially lessening any significant effects of the Project. Each of the identified alternatives would impede, to some degree, attainment of these Project objectives.

Reducing Significant and Unavoidable Project Impacts

CEQA requires the identification and analysis of alternatives that would ". . . avoid or substantially lessen any of the significant effects of the project." As indicated in the preceding chapters of this EIR, the Project could result in several potentially significant environmental effects. However, elements of the Project's proposed design, compliance with existing regulations and in some cases additional mitigation measures, if implemented, would be capable of reducing all such effects to a level of less than significant. With adoption and implementation of all recommended feasible mitigation measures, the Project as proposed would not result in significant environmental effects that cannot be substantially lessened or avoided to less than significant levels.

Mitigation measures recommended in this EIR do, however, lead to the description of possible alternatives to the Project. These alternatives are further discussed below.

Alternatives Considered But Rejected

Alternative Site

In considering the range of alternatives to be analyzed in an EIR, CEQA Guidelines state that; "an alternative site/location should be considered when feasible alternative locations are available and when the significant effects of the project would be avoided or substantially lessened by putting the project in another location." In this case, the range of reasonable and feasible alternative locations for the Project is severely limited by several primary considerations.

The Project is first and foremost a quarry where construction aggregate (sand and gravel) is harvested from naturally occurring deposits. Construction aggregate is used to make, among other important construction products, Portland cement concrete, asphalt, railroad ballast, stucco, road base and fill. The Project is entirely dependent upon the availability of these aggregate deposits. The Project site and much of the surrounding areas (which are also currently in active quarrying operations) have been designated by the State Mining and Geology Board as being a "Regionally Significant Construction Aggregate Resource Area", indicating that there is a high likelihood that significant aggregate deposits are present. There is a limited number of other sites in Alameda County which have been similarly designated as Regionally Significant Construction Aggregate Resource Areas, generally limited to the Livermore/Pleasanton Chain-of Lakes area, Apperson Ridge, an area in the hills west of Fremont near the Alameda/Santa Clara County boundary, and several scattered sites in the Bay shore near Newark, Fremont and Union City. [2] Nearly all of these other sites are either currently in active production of raw aggregate, have closed production and completed reclamations, are currently permitted but not yet in operation, or are unlikely to be considered for aggregate production because of their more environmentally sensitive surroundings.

A fundamental objective of the Project is to expand upon and further enhance the operations of an already existing quarry operation. By definition, expansion and enhancement of that operation cannot occur at an alternate location.

As stipulated within the East County Area Plan (ECAP Policy 155); "Except to the extent required by state law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry." Therefore,

[2] California Department of Conservation, "Designation of Regionally Significant Construction Aggregate Resource Areas in the South San Francisco Bay, North San Francisco Bay, Monterey Production-Consumption Regions (SMARA Designation Report #7), January 1987

other than the expansion of an existing quarry operation, no new quarries at other locations in unincorporated Alameda County are permitted unless approved by the voters. Other existing quarries in unincorporated Alameda County that are harvesting regionally significant aggregate resources are limited to the Project site (SMP-30) and the adjacent Lehigh-Hanson quarry (SMP-24, 32 and 33) in Sunol; the Radum (SMP-31, 36), Elliot (SMP-23) and Vulcan (SMP-16) quarries operating in the Pleasanton/Livermore area; and the approved but not in operation quarry site at Apperson Ridge (SMP-17). The other two operating quarries in unincorporated Alameda County, Niles Canyon (SMP-34) and Sheridan (SMP-28) are not identified by the state as being within Regionally Significant Construction Aggregate Resource Areas.

Furthermore, relocation of this Project to another location may be capable of reducing Project-related impacts in the immediate proximity to the Project site, but would likely result in similar impacts at different locations proximate to any alternate site.

For these reasons, an alternative site location is not considered.

No Project / No Action

CEQA Guidelines Section 15126.6 (e3B) states that "if a project is a development project on an identified property, the No Project Alternative is the circumstances under which the Project does not proceed." In this case, if the Project (i.e., the proposed revisions to SMP-30) is not approved, the currently effective SMP-30 permit would still allow continued quarrying operations at the Project site. Quarrying would be limited to the existing 323-acre site, the asphalt and concrete batch plant would not be constructed, and the permit would expire in 2021. However, on-going quarrying operations would continue until the quarry pit was excavated to a depth of 140 feet below ground surface. Crushing, sorting and hauling of aggregate materials would continue.

Not approving the Project would not result in cessation of these activities at the Project site, and there is not a No Project alternative that would stop or close the current quarry operation.

Overview of Alternatives

Three CEQA-based alternatives are analyzed in this EIR, as listed below. These alternatives are included to meet the CEQA requirement for describing a range of reasonable alternatives to the Project that would feasibly attain most of the basic objectives of the Project, but would avoid or substantially lessen significant environmental effects. These CEQA alternatives include:

Alternative #1: No Project (Continuation of Existing Conditions)

CEQA Guidelines require identification and comparative assessment of a no-project alternative, which is defined as the circumstances under which the Project does not proceed. This EIR considers the No Project alternative as conditions which currently exist, with all SMP-30 permit approvals and all conditions pursuant to that approval continuing on until 2021, but with no expansion of the site, no deepening of the quarry pit, and no new asphalt plan or concrete batch plant added to the operations facilities.

Alternative #2: Quarry Expansion Only (No Asphalt or Concrete Batch Plant)

Generally, the proposed Project can be described as two key elements:

- expansion of quarrying activities within the South Basin (i.e., increasing the size and depth of the quarry pit) and increasing the rate of annual aggregates extraction, and

- adding additional manufacturing operations at the processing plant (i.e., the asphalt and concrete batch plant).

Many of the potentially significant environmental effects of the proposed Project are related to the addition of the new processing plant operations. This alternative provides a comparative assessment of a Quarry Expansion Only Alternative, whereby the expansion of quarrying activities within the South Basin would occur as proposed, but the additional processing operations at the asphalt and concrete batch plants would not occur. This alternative is intended to isolate for comparative purposes the pros and cons associated with the proposed new processing plant operations and equipment.

Alternative #3: Reduced Production Rate

Concurrent with the proposed expansion of quarrying activities within the South Basin and the additional manufacturing operations at the processing plant, the Project also proposes to increase the overall operating capacity (i.e., increase the total maximum production) at the quarry from its previous regularly recurring peak of approximately 1.1 million tons of aggregate produced per year, to approximately 3 million tons per year.[3]

As identified in various chapters of this EIR, there are certain points along the continuum between the baseline of 1.1 million tons and the proposed maximum annual production of 3.0 million tons per year where certain environmental effects are "triggered" (primarily air quality effects). Physical mitigation measures such as improved emission standards are recommended for the Project, and these measures are capable of reducing impacts to a level of less than significant. However, another approach for avoiding such potential impacts is to limit quarrying activity and/or the production of asphalt and concrete products to levels below where these "trigger points" occur. These reduced production levels are used to describe a Reduced Production Rate Alternative.

Alternative #1: No Project (Continuation of Existing Conditions)

The "no project" alternative identified and evaluated in this EIR considers the practical results of not approving the Project as proposed, but continuing to operate the existing quarry pursuant to the currently effective SMP-30 permit. This "No Project" alternative represents the practical result of non-approval of the Project.

Description of No Project (Continuation of Existing Conditions) Alternative

The No Project Alternative is specifically defined as the following:

- Raw aggregate materials (sand and gravels) would continue to be extracted from the active mining pit (South Basin) in the southern portion of the Project site. The mining pit would be excavated to a maximum depth of 140 feet below ground surface. Setbacks from the banks of the quarry pit would be maintained at 100 feet from the banks of Alameda Creek and 50 feet from the banks of San Antonio Creek. The side slopes of the mining pit would remain at 2:1 (horizontal: vertical) throughout the site, and 1½:1 adjacent to the plant site. It is estimated that the area to be extracted under the current SMP-30 permit could yield approximately 12 million tons of aggregate resources.

[3] The actual annual yield of construction aggregate produced at the quarry would continue to be highly dependent upon market demand for these products by the construction industry.

- Further excavation of those portions of the 323-acre SMP-30 site not already fully excavated would occur, but excavation of the proposed 58-acre expansion area would not occur and excavation of the area under the processing plant site would also not occur.
- Extracted raw materials would continue to be hauled from the pit to the processing plant, where washing, crushing and sorting of raw aggregates would continue.
- Although the current SMP-30 permit does not contain an annual maximum production rate, this alternative assumes that production could reach historical regularly-recurring peak production rates of approximately 1.1 million tons of aggregate produced per year, although annual production would continue to be regulated by market demand for the product.
- All raw aggregate material (i.e., sand and gravel) harvested at the site would be hauled via truck to off-site locations for further processing into concrete and asphalt, or for use as construction material.

Upon completion of mining activities, the SMP-30 Reclamation Plan would be implemented, including fill of the East Basin with silt and mining fines with ultimate reclamation for agricultural purposes; establishment of a landscape plan for the area along Calaveras Road to provide a visual screen from the road; revegetation of all exposed slopes, reclaimed banks and bare soil areas with native grasslands; and establishment of a tree and shrub planting plan for the entire bank of San Antonio Creek between Calaveras Road and its confluence with Alameda Creek. The SMP-30 permit identifies the end use of the South Basin quarry pit as a water storage reservoir for SFPUC (as indicated in Section A-A on Figure 3-5), but would not maximize water storage potential of the pit as proposed under the Project.

The Project's proposed SMP-30 Conservation Plan is subject to approval of the Project by Alameda County, after which the Project applicant has committed to implement a number of conservation measures to enhance habitat for special status species in the vicinity of the Project site. Under the No Project alternative, the SMP-30 Conservation Plan is not assumed, and its conservation measures would not be implemented.

Comparison of Environmental Effects

Continuation of Baseline Environmental Conditions

Land Use Plans and Policies

The No Project Alternative represents a continuation of existing conditions at the Project site pursuant to the currently applicable SMP-30 permit. As such, existing conditions and continuation of those existing conditions are consistent with the Alameda County ECAP, the County Zoning ordinance, the County Surface Mining and Reclamation Ordinance and the SFPUC Alameda Watershed Management Plan.

Aesthetics

The No Project Alternative would not result in any substantial changes to existing views of the site from surrounding vantage points. The South Basin quarry pit would not be expanded into the 58-acre expansion site or deepened below 140 feet. The processing plant would continue to crush, sort and provide for the conveyance of material from the site. No new asphalt plant, concrete batch plant or associated large equipment would be added at the site. No Phase II relocation of the plant site as proposed under the Project would occur. The plant site would remain at its current location and stockpile heights would continue to be limited to 25 feet. The SFPUC's plans for using portions of the Project site as spoils sites for the disposal of excavation material would occur under the No Project alternative, providing a partial visual buffer along Calaveras Road.

Air Quality

Under the No Project Alternative, existing (baseline) stationary sources and mobile sources of air emissions would continue to occur. Existing stationary sources include the aggregate plant and the gas dispensing facility. The continued operation of the processing plant, including the crushing and transferring of aggregate, will continue to result in emissions of particulate matter (PM_{10} and $PM_{2.5}$). Baseline levels of off-road equipment emissions will continue to occur as a result of typical daily operation of equipment such as graders, loaders, tractors, scrapers, and off-road trucks. Baseline levels of mobile source emissions will also continue to occur as a result of typical daily operation of motor vehicles (including heavy duty haul trucks) by vendors, employees, and Project delivery trucks.

Climate Change

There are no existing stationary sources of GHG emissions at the Project site, and the No Project alternative would not add any new stationary sources.

Under the No Project alternative, existing levels of GHG emissions from non-stationary sources (i.e., the aggregate plant, off-road equipment and mobile sources) would continue. As indicted in Chapter 8: Climate Change, Table 8-2, at regularly recurring peak production rates of approximately 1.1 million tons of aggregate production per year, these baseline GHG emissions are estimated to be approximately 8,280 MT CO2e per year.

Biological Resources

Under the No Project Alternative, the site has been and would continue to be subject to extensive disturbance from a long history of sand and gravel mining operations and recent work for the SFPUC's Alameda Siphons and New Irvington Tunnel projects. As a result, most of the land surfaces would continue to be graded and the groundwater levels would be managed for quarry operations. The majority of the area is developed or supports only ruderal vegetation. These developed areas would continue to provide poor quality habitat for wildlife due to their general lack of vegetation, poor soil quality and continual disturbance from quarry work.

Geology and Soils

All environmental issues pertaining to geology and soils for the No Project Alternative have been fully and adequately addressed pursuant to the 1992 approval of the SMP-30 permit.

Hazards and Hazardous Materials

Under the No Project Alternative, several hazardous materials that are currently used at the site would continue to be stored and used, including petroleum-based oils, lubricants, and solvents and two above-ground storage tanks. Petroleum-based fuels and oils would continue to be used to operate on-site trucks, vehicles and certain plant equipment, and limited quantities of lubricants and solvents would continue to be used for maintenance and repair of equipment and stored in service vehicles and storage areas.

Hydrology and Water Quality

Under the No Project Alternative, there would be no appreciable changes to the way in which storm water and pumped groundwater are managed and discharged on site. The No Project Alternative would continue to operate under its effective NPDES permit from the RWQCB for discharge of process water, storm water, and groundwater pumped from the existing mine basin into San Antonio Creek and Alameda Creek. Data collected by the prior quarry operator demonstrate that the current operations do not violate any water quality standards or waste discharge requirements, including the effluent limits in the permit.

Noise

Under the No Project Alternative, noise levels generated by the existing quarry operations would continue to occur in substantially the same manner as they do today. Existing noise measurement data for the existing quarry and plant operations (as shown in Figure 13-3 of this EIR) indicate that under existing conditions, the most affected sensitive receiver (located about 2,000 feet south of the site) is not subjected to noise levels that exceed the County noise limit of 50 dBA during the daytime or 45 dBA during the nighttime.

Traffic

During the years of 1999-2001 when residential and commercial construction activity was at higher levels than in 2011/2012, the annual aggregate extraction rate from the site averaged approximately 1.1 million tons of aggregate per year. This production level represents a regularly recurring peak of mining activity fully permitted and allowed under the current SMP-30 Surface Mining Permit, and is thus representative of baseline traffic conditions under the No Project Alternative. At 1.1 million tons per year of aggregate transported over the 250 operating days per year, this baseline traffic condition has an average daily transport rate of approximately 183 daily outbound truck trips, or 360 total daily truck trip ends (combined inbound and outbound trips).

Based on this baseline condition, the No Project Alternative would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for intersection level of service standards. As shown in Table 14-9 of this EIR, this existing transport rate results in a level of service at all studied intersections of LOS A or B. Under existing baseline condition, the urban peak hour volume traffic signal warrant is not satisfied at any of the study intersections, and the baseline condition contributes less than 1% of the total existing volume of traffic on I-680.

Project Impacts Avoided or Reduced

Air Quality

Mitigation measures recommended in this EIR are capable of reducing or offsetting the incremental increase in air emissions associated with the Project to a less than significant level. Under the No Project Alternative, no increase in emissions would occur. Thus, the additional emissions from the Project's stationary sources, including incremental additions of stationary source emission of criteria pollutants and toxic air contaminants from the concrete and asphalt plant, and increased exhaust emissions from off-road equipment and greater numbers of haul truck trips would not occur, and no mitigation measures would be required.

Climate Change

Mitigation measures recommended in this EIR are capable of reducing or offsetting the incremental increase in Project-generated non-stationary source GHG emissions to a less than significant level. Under the No Project Alternative, the non-stationary source GHG emissions that would result from the electrical demands of the equipment associated with the aggregate plant, the concrete plant and the asphalt plant; as well as increased emissions from off-road equipment and from mobile sources associated with haul trucks, vendor delivery trucks, and employee commute vehicles would not occur, and no mitigation measures would be required.

Biological Resources

The primary difference between the No Project Alternative and the Project with respect to biological resources is that the No Project Alternative would not expand the quarry onto the adjacent 58-acre expansion site. Compliance with regulatory requirements and implementation of the Project's proposed

Conservation Plan and Reclamation Plan would fully compensate for the biological effects of the Project. However, the No Project Alternative:

- would not affect the approximately 3.8 acres of marginal to low quality upland dispersal habitat for California tiger salamander and California red-legged frog present in this area;
- would not remove nesting habitat for special status birds and other birds protected by the Migratory Bird Treaty Act and the California Fish and Game Code or foraging and roosting habitat for bats that is present in the 58-acre expansion area;
- would not remove willow scrub habitat from along the walls of the South Basin or mulefat scrub from along the walls of the North Basin. Although neither of these habitat patches are supported by a creek or stream and are not pristine riparian habitats, they do have a low potential to support nesting birds and other wildlife that are tolerant of human activity; and
- would not remove approximately 480 linear feet of ephemeral stream, which may be considered a jurisdictional water of the U.S.

The No Project Alternative would therefore not require compensation or other mitigation measures for these effects.

Hazards and Hazardous Materials

Compliance with regulatory requirements and additional mitigation measures recommended in this EIR are capable of reducing impacts associated with the Project's increase in the amount of hazardous materials that would be present on site to a less than significant level. However, the No Project alternative would not increase the amount of hazardous materials used on site; it would not add the various hazardous materials associated with the Project's proposed asphalt plant, including asphaltic oil, diesel fuel, liquid propane, oil emulsions, motor and hydraulic oil, waste motor oil, acetylene and oxygen (compressed gases) and hydrated lime, and no increase in regulatory compliance or additional mitigation measures would be required.

Hydrology and Water Quality

Compliance with regulatory requirements and additional mitigation measures recommended in this EIR are capable of reducing potential impacts of the Project related to the discharge of wastewater from the ready-mix concrete plant and asphalt batch plant to a less than significant level. However, since the No Project Alternative would not include the addition of a concrete ready-mix plant or an asphalt batch plant, there would be no discharges from these facilities that would need to be contained and managed to prevent a violation of water quality standards, and no increase in regulatory compliance or additional mitigation measures would be required.

Noise

Mitigation measures recommended in this EIR are capable of reducing noise generated by the Project to levels that would not exceed the County Municipal Code requirements. However, the No Project Alternative would not add additional noise sources (including the asphalt and concrete batch plant facilities) and would not eventually relocate these noise sources to the southerly portion of the South Basin, as proposed in Phase II of the Project. Thus, the No Project Alternative would not generate noise levels at the nearest sensitive noise receptor (the private residence approximately 2,000 feet to the south of the Project site) that would exceed the applicable noise standards of the County Municipal Code, and mitigation measures would not be required.

Project Environmental Benefits Not Achieved

Land Use Plans and Policies

Unlike the Project, the No Project Alternative would not enable the SFPUC to maximize its water storage potential consistent with the policies of the SFPUC Alameda Watershed Management Plan. The current SMP-30 Reclamation Plan does not specifically identify the end use of the quarry pit as a water storage reservoir for the SFPUC, and the size and depth of the currently approved quarry pit would not maximize the water storage potential at this site.

Air Quality

As currently occurs, aggregate and sand produced at the quarry which is to be used for the production of asphalt or concrete would continue to be hauled via truck to offsite facilities for further processing into asphalt or concrete, and then the asphalt or concrete will be hauled via truck to individual construction sites. The No Project Alternative would not enable the co-locating of a concrete or asphalt plant near the source of the raw aggregate materials, as proposed under the Project. Thus, the intermediate truck trips to off-site processing facilities would continue to occur and the air quality benefits of reducing the overall transportation distance of these intermediate truck trips would not be achieved.

Climate Change

As indicated above pertaining to air quality, aggregate and sand produced at the quarry which is to be used for the production of asphalt or concrete would continue to be hauled via truck to offsite facilities for further processing into asphalt or concrete, and then the asphalt or concrete will be hauled via truck to individual construction sites. The No Project Alternative would not enable the co-locating of a concrete or asphalt plant near the source of the raw aggregate materials, as proposed under the Project. Thus, the GHG emissions associated with these intermediate truck trips to off-site processing facilities would continue to occur and the benefits of reducing the overall transportation distance of these intermediate truck trips would not be achieved.

Biological Resources

The Project's proposed SMP-30 Conservation Plan is subject to approval of the Project by Alameda County, after which the Project applicant has committed to implement a number of conservation measures to enhance habitat for special status species in the vicinity of the Project site. Under the No Project Alternative, the SMP-30 Conservation Plan is not assumed, and its conservation measures and habitat enhancements would not be implemented.

The benefits of the No Project Alternative's Reclamation Plan would be similar to the benefits identified for the Project's Reclamation Plan. Either Reclamation Plan would have a similar positive impact on California tiger salamander, California red-legged frog and special status bird and bat species by increasing the habitat quality on-site. However, the No Project Alternative would not result in reuse of the quarry pit for water storage and would not create over 200 acres of open water aquatic habitat.

Traffic

Under the No Project Alternative (or existing conditions) the existing driveway access to Calaveras Road would continue to experience relatively low traffic volumes, and there are no recent reported collisions. However, the current site distance parameters at this driveway are less than optimum for safe traffic conditions, especially given the mix of heavy trucks, passenger vehicles, and recreational cyclists in this area. The No Project Alternative would not include the Project's proposal to restrict access at the existing driveway to inbound vehicles only and to have outbound vehicles exit at a new south gate. Thus,

the No Project Alternative would not enable the substantially improved sight distance concerns for exiting north bound vehicles, as proposed under the Project.

Ability to Meet Project Objectives

The No Project Alternative would not enable the Project applicant to meet any of its operations objectives for the Project. The No Project Alternative would not expand the overall production potential of the quarry by increasing the area under permit or by deepening the depth of excavation, it would not extend the expiration date of the mining permit, and it would not allow the additional ancillary uses proposed at the site, including the asphalt batch plant or concrete plant.

The No Project Alternative would not achieve the primary reclamation objective of the landowner (SFPUC), which is to maximize the water storage potential of the quarry pit. It would also not result in achievement of the primary conservation objectives as established pursuant to the Conservation Plan for the Sunol Quarry SMP-30 Site, which are dependent upon approval of the Project as proposed.

Finally, the No Project Alternative would not achieve any of the applicant's identified business objectives needed to ensure the on-going business enterprise as a commercial mining and aggregate products business.

Alternative #2: Quarry Expansion Only

Alternative #2, the Quarry Expansion Only Alternative considers the potential environmental consequences of a modified project under which quarrying activities at the site would occur as proposed pursuant to the Project, but the processing plant would not be expanded to include the Project's proposed new asphalt plant and concrete batch plant.

Description of the Quarry Expansion Only Alternative

The Quarry Expansion Only Alternative is specifically defined as the following:

Phase I

Certain existing water transmission lines and overhead power lines traversing the site would be relocated to an alignment parallel to Calaveras Road in order to fully and safely access an expanded quarry pit. A soil/bentonite slurry cutoff wall would be installed along the northerly portion of Alameda Creek, and another slurry cutoff wall installed along a portion of San Antonio Creek to prevent creek in-flow into the quarry pit and basins. The current quarry pit plus the 58-acre expansion site would be excavated to a minimum depth of 225 feet, with a potential maximum depth of 400 feet. Side slopes would be maintained at a 2:1 horizontal to vertical ratio.

Plant operations such as washing, crushing and sorting of sand and aggregates would continue at the existing plant site. This alternative would not result in an expansion of the existing plant site to accommodate asphalt or concrete batch plants or other ancillary structures such as a Q/C lab or truck scales.

Ingress into the site would be maintained at the existing driveway off of Calaveras Road. Egress may continue from the existing driveway, but a new "south gate" exit may be installed further south along Calaveras Road, as an exit-only. With the new south gate, the existing driveway would become an entrance-only.

Phase II

Once the existing quarry pit and the 58-acre expansion area have been excavated to their full depth, material wastes (or fines) that are generated during the washing, crushing and sorting of sand and aggregates will be placed back into the south end of the quarry pit as engineered fill, creating a bench within the quarry with a surface elevation of approximately 50 feet below ground surface. All of the Phase I plant equipment (the washers, crushers and sorters – but not an asphalt or concrete batch plant) would be relocated onto this new bench within the old quarry pit. Once the equipment has been moved, the north end of the quarry pit will be expanded so that the former plant site can be excavated.

Ingress and egress to the Phase II (long-term) plant site would be from the new "south gate" installed during Phase I.

Sand and Gravel Production

Under the current SMP-30 permit conditions, the quarry yield is estimated to have approximately 12 million tons of aggregate resources remaining. This alternative would maximize sand and gravel production from the quarry up to approximately 60 million tons of saleable aggregate. While the actual annual yield of construction aggregate produced at the quarry will continue to be highly dependent upon market demand, this alternative assumes that the quarry would increase its annual volume of extracted materials over the 1.1 million tons per year baseline, but not as much as the maximum 3 million tons per year as proposed under the Project.

However, under this alternative all quarry products would be hauled via truck to off-site locations for further processing into concrete and asphalt, or for use as construction material.

Phase III - Reclamation

In addition to the Reclamation Plan requirements pursuant to the current SMP-30 permit, the Quarry Expansion Only Alternative would enable ultimate reclamation efforts to allow use of the completed quarry pit for SFPUC water storage. At completion, the expanded quarry pit is expected to result in approximately 23,000 acre feet of water storage, and additional storage could be provided by mining deeper than 225 feet, as may be feasible.

The Project's proposed SMP-30 Conservation Plan is subject to approval of the Project by Alameda County, after which the Project applicant has committed to implement a number of conservation measures to enhance habitat for special status species in the vicinity of the Project site. Under the Quarry Expansion Only Alternative, the SMP-30 Conservation Plan is not assumed, and its conservation measures would not be implemented.

Comparison of Environmental Effects

Environmental Consequences Similar to Those of the Project

Land Use Plans and Policies

The Quarry Expansion Only Alternative represents a continuation and expansion of existing aggregate resource mining at the Project site. Continuation and expansion of this land use is consistent with the Alameda County ECAP, the County zoning ordinance, the County Surface Mining and Reclamation Ordinance and the SFPUC Alameda Watershed Management Plan.

Like the Project, the Quarry Expansion Only Alternative would not physically divide an established community; would not fundamentally conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect; and would not fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan. Similar

to the Project, this alternative would enable the SFPUC to maximize its water storage potential, consistent with the policies of the SFPUC Alameda Watershed Management Plan.

Aesthetics

Like the Project, implementation of the Quarry Expansion Only Alternative would not substantially change existing views of the site from surrounding vantage points and would not substantially adversely affect scenic vistas. The scenic corridor along I-680 in both northbound and southbound directions would not be adversely affected by this alternative, and impacts on the I-680 scenic corridor would be less than significant.

Similar to the Project, views of the higher (50-foot) stockpiles and taller conveyor equipment under the Quarry Expansion Only Alternative would be substantially more predominant in the foreground view from Calaveras Road than are the current operations, but no concrete or asphalt batch plant silos would be seen above the stockpiles. The visual character of the site would still be characteristic of a quarry operation. Similar to the Project, this alternative's processing plant (the crushing, sorting and conveyor equipment only) would not eclipse or obstruct views of the hillsides and ridgelines across the valley.

Air Quality

Without implementation of the mitigation measures recommended in this EIR the Project is projected to generate an operational increase of approximately 58 tons per year of NOx on an annual basis at maximum production rates, exceeding the 10 tons per year threshold. Of this net increase in operational NOx emissions, only about 5 tons per year are attributable to the concrete or asphalt plant, and the remaining nearly 53 tons per year of additional NOx emissions are attributable to mobile source emissions (off-road mobile equipment and haul trucks). These mobile source emissions of nearly 53 tons per year would still occur under the Quarry Expansion Only Alternative, and mitigation measures such as those recommended for the Project would be required.

Without implementation of the mitigation measures recommended in this EIR, the Project (during Phase II operations) is estimated to result in an estimated excess incremental cancer risk for the nearest sensitive receptor that would exceed the currently applicable threshold of 10 in a million. The primary source of the incremental cancer risk is diesel exhaust from scrapers used to excavate aggregate from the South Basin quarry pit. Under this alternative, expanded quarry pit excavations would generate similar emissions of toxic air contaminants, the impact on the nearest sensitive receptor would be similar, and mitigation measures such as those recommended for the Project would be required to reduce this impact to a less than significant level.

Climate Change

Like the Project, this alternative would generate incremental increases in non-stationary source GHG emissions from increased usage of off-road equipment and from increased mobile sources associated with haul trucks. Of the Project's net increase of approximately 16,442 MT CO_2e per year at peak operating capacity, the bulk of these GHG emissions (roughly 9,640 MT CO_2e per year) are associated with haul trucks which travel to the site to pick up material and then transport it to its point of use. Mitigation measures recommended in this EIR are capable of reducing or offsetting the Project's increase in mobile source GHG emissions. The mobile source GHG emissions associated with these haul trips would still occur under this alternative, and mitigation measures such as those recommended for the Project would be required to reduce this impact to a less than significant level.

Biological Resources

Like the Project, the Quarry Expansion Only Alternative would expand the quarry pit onto the adjacent 58-acre expansion site. Thus, this alternative would affect the approximately 3.8 acres of marginal to low

quality upland dispersal habitat for California tiger salamander and California red-legged frog present; it would remove nesting habitat for special status birds and other birds protected by the Migratory Bird Treaty Act and the California Fish and Game Code and foraging and roosting habitat for bats; it would remove willow scrub habitat from along the walls of the South Basin; and it would remove approximately 480 linear feet of ephemeral stream which may be considered a jurisdictional water of the U.S. Compliance with regulatory requirements and implementation of the Project's proposed Conservation Plan and Reclamation Plan would fully compensate for the biological effects of the Project. However, the Project's proposed Conservation Plan cannot be assumed under this alternative, and additional mitigation measures would be required to provide for such compensation.

Geology and Soils

Like the Project, the Quarry Expansion Only Alternative could be subject to strong ground shaking caused by a large earthquake, which could create potential hazards to workers and equipment and could result in earthquake-induced slope failure, transmission tower foundation damage and seismically induced flooding. Additionally, slope failure could affect cut slopes created by quarry excavations and could affect fill slopes constructed for roads, levees, the backfilled bench at the long-term processing facility, and stockpiles. Slope failure could damage internal and external roads, buried utilities and pipelines, transmission tower foundations or on-site structures. Design considerations similar to those of proposed under the Project would be required to adequately address potential slope failure issues. Soil erosion could occur under this alternative, and proper drainage and erosion control measures as recommended for the Project would be required to reduce this impact to a less than significant level.

Hydrology and Water Quality

Like the Project, this alternative would include a Phase II relocation of the processing plant to the south end of the South Basin, where it will be approximately 50 feet below the current ground surface. If flooding occurred on Alameda Creek such that floodwaters entered the basin, the processing plant could become inundated and hazardous materials such as maintenance supplies, operational chemicals and fuels (although not Portland cement or asphalt oil) could be released into the water in the basin. Compliance with regulatory requirements and implementation mitigation measures similar to those recommended for the Project would be required to reduce this impact tot a less than significant level.

Project Impacts Avoided or Reduced

Aesthetics

The Quarry Expansion Only Alternative would not introduce any new sources of light which could substantially or adversely affect nighttime views in the area.

Air Quality

Compliance with regulatory requirements and additional mitigation measures recommended in this EIR are capable of reducing potential impacts of the Project related to fugitive dust during construction. The Quarry Expansion Only Alternative would not include construction of new operating plant equipment (asphalt plant and the concrete batch plant) or new structures (the small QA/QC lab and the small offices). The incremental increase in fugitive dust associated with these construction activities would not occur and additional regulatory compliance would not be required. On an average daily basis and an annual basis and without the mitigation measures as recommended in this EIR, incremental emissions of NOx associated with the Project would exceed applicable thresholds. While the bulk of the Project's NOx emissions would result from mobile sources (mostly haul trucks taking construction materials from the site), a portion of these emissions (26 pounds per day or 5 tons per year) would be generated from on-site stationary sources attributable to the asphalt plant and concrete plant. Under this alternative, all of

the mobile source emissions would continue to occur, but the stationary source emissions (which amount to approximately one-half of the allowable threshold for incremental increases in emissions), would not occur and the overall impact pertaining to emissions of NOx would be reduced, but not to less than significant levels. Mitigation measures similar to those recommended for the Project would be required.

Climate Change

There are no existing stationary sources of GHG emissions at the Project site. Under the Quarry Expansion Only Alternative, the Project's increase in stationary source GHG emissions resulting from natural gas fuel combustion and process emissions from the drum mixer and the hot asphalt oil storage tanks would not occur. Without these stationary source emissions, this alternative would not result in a significant quantity of stationary source emissions of GHG and the mitigation measures recommended for the Project (which would reduce or offset the Project's stationary source GHG emissions to a less than significant level), would not be required.

Geology and Soils

Under the Quarry Expansion Only Alternative, there would be no new buildings at the site that would be considered habitable under the terms and definitions of the Alquist-Priolo Act, and this alternative would not expose people or structures to substantial risk of loss, injury, or death involving rupture of the Calaveras Fault. The detailed geologic investigations of proposed structure sites as recommended for the Project would not be required.

Hazards and Hazardous Materials

The Quarry Expansion Only Alternative would not increase the amount of hazardous materials used on site. It would not add the various hazardous materials associated with the Project's proposed asphalt plant, including asphaltic oil, diesel fuel, liquid propane, oil emulsions, motor and hydraulic oil, waste motor oil, acetylene and oxygen (compressed gases), and hydrated lime. The additional regulatory compliance and mitigation measures recommended to reduce Project effects related to increased hazardous material usage to less than significant levels would not be required.

Hydrology and Water Quality

The Quarry Expansion Only Alternative would not include the addition of a concrete ready-mix plant or an asphalt batch plant, and there would be no additional discharges from these facilities that would need to be contained and managed, as is recommended for the Project, to prevent a violation of water quality standards.

Noise

The most significant sources of noise causing Project impacts to nearby sensitive receptors (during Phase II) would be the crushing and screening equipment, the asphalt plant and the concrete plant. Without the mitigation measures recommended in this EIR, noise from this equipment is projected to exceed allowable daytime noise levels by about 2 dBA. Without the asphalt plant and concrete plant, noise levels under this alternative would be unlikely to exceed the daytime threshold and the mitigation measures recommended for the Project would not be required to substantial reduce or avoid such effects.

Applicable Mitigation Measures

As indicated in each of the separate analytical chapters of this EIR, mitigation measures have been identified that are capable of reducing potentially significant impacts of the Project specific to the expanded and deepened quarry operations as well as the increased hauling of additional excavated material, to less than significant levels. These same mitigation measures would be applicable to the

Quarry Expansion Only alternative, similarly reducing impacts of this alternative to less than significant levels.

Although the Quarry Expansion Only Alternative is capable of reducing and/or avoiding certain of the Project's environmental impacts specific to the new equipment as proposed under the Project (i.e., the asphalt and concrete batch plants), mitigation measures recommended in this EIR are also capable of reducing the Project's impacts to less than significant levels.

Project Environmental Benefits Not Achieved

Air Quality

As currently occurs, aggregate and sand produced at the quarry which is to be used for the production of asphalt or concrete would continue to be hauled via truck to offsite facilities for further processing into asphalt or concrete, and then the asphalt or concrete will be hauled via truck to individual construction sites. The Quarry Expansion Only Alternative would not enable the co-locating of a concrete or asphalt plant near the source of the raw aggregate materials, as proposed under the Project. Thus, the intermediate truck trips to off-site processing facilities would continue to occur and the air quality benefits of reducing the overall transportation distance of these intermediate truck trips would not be achieved.

Climate Change

As indicated above pertaining to air quality, aggregate and sand produced at the quarry which is to be used for the production of asphalt or concrete would continue to be hauled via truck to offsite facilities for further processing into asphalt or concrete, and then the asphalt or concrete will be hauled via truck to individual construction sites. The Quarry Expansion Only Alternative would not enable the co-locating of a concrete or asphalt plant near the source of the raw aggregate materials, as proposed under the Project. Thus, the GHG emissions associated with these intermediate truck trips to off-site processing facilities would continue to occur and the benefits of reducing the overall transportation distance of these intermediate truck trips would not be achieved.

Biological Resources

The Project's proposed SMP-30 Conservation Plan is subject to approval of the Project by Alameda County, after which the Project applicant has committed to implement a number of conservation measures to enhance habitat for special status species in the vicinity of the Project site. Under the Quarry Expansion Only Alternative, the SMP-30 Conservation Plan is not assumed, and its conservation measures and habitat enhancements would not be implemented. Other mitigation measures would be necessary to compensate for the loss of biological resources under this alternative.

Ability to Meet Project Objectives

The Quarry Expansion Only Alternative would not enable the Project applicant to meet all of its basic operations objectives for the Project. Although this alternative would be able to expand the overall production potential of the quarry by increasing the area under permit and by deepening the depth of excavation, and it would also extend the expiration date of the mining permit, this alternative would not allow the additional ancillary uses proposed at the site, including the asphalt batch plant or concrete plant.

The Quarry Expansion Only Alternative would be able to achieve the primary reclamation objective of the landowner (SFPUC), which is to maximize the water storage potential of the quarry pit. However, it would not result in achievement of the primary conservation objectives as established pursuant to the

Conservation Plan for the Sunol Quarry SMP-30 Site, which are dependent upon approval of the Project as proposed.

Finally, the Quarry Expansion Only Alternative would only be able to achieve a partial list of the applicant's identified business objectives needed to ensure the on-going business enterprise as a commercial mining and aggregate products business. This alternative would achieve the mineral resource needs and objectives of the Project in that it would be on a site located within a state-designated Mineral Resource Zone, it would enable mining of a supply of sufficient resources for long-term (30 years) availability, and it would be at a location with competitive distance to aggregate consumption markets with the ability to efficiently transport product via the local road network and state highway system. This alternative would meet the specific property requirements and objectives of the Project in that it would be conducted on a property of sufficient size and existing surrounding land uses that minimize land use compatibility issues, it would occur on a property under a single ownership and on a site with no prohibitive easement, agreement, or contract restrictions. This alternative would also be generally consistent with Alameda General Plan policies, including Measure D for expansion of an existing quarry site on the same or adjoining parcel, and consistent with the SFPUC Watershed Management Plan.

The Quarry Expansion Only Alternative would not achieve the business objective for a site that minimizes additional contributions to GHG emissions by enhancing production of aggregate-based products proximate to the source of these materials and proximate to future construction site destinations.

Alternative #3: Reduced Production Rate

Alternative #3, the Reduced Production Rate Alternative considers the potential environmental consequences of a modified project under which quarrying and processing activities at the site would occur as proposed pursuant to the Project, but the volume of annual production of aggregates, as well as the manufacturing of asphalt and concrete, would be limited by certain environmental 'trigger points' at which environmental effects, without otherwise being mitigated, have been identified to occur.

Factors Defining the Reduced Production Rate Alternative

Operational Criteria Pollutant Reductions

Assuming that the Project would begin operating at full production capacity of 3 million tons per year of aggregate production at year 2013, mobile sources emissions of NOx (which are mostly emissions from haul trucks taking aggregate material, asphalt and concrete from the site) would exceed both the average daily incremental emission threshold and the annual incremental emissions threshold. However, US EPA and California ARB emission standards for such vehicles will result in a reduction in emissions over the duration of the Project. These emissions standards will phase in over time, incrementally reducing NOx emissions. Based on anticipated phasing-in of emission standards and without otherwise mitigating such emissions, production of all quarry and processing plant operations at the site could commence in 2013 at up to 1.5 million tons of aggregate per year, increase production rates to 2.25 million tons aggregate per year by 2016, and achieve the maximum annual production rate of 3 million tons of aggregate per year by 2020, without exceeding any applicable criteria air pollution thresholds.

Operational Toxic Air Contaminant Reductions

During Phase II operation of the Project, the estimated excess incremental cancer risk for the nearest sensitive receptor (assuming a consistent annual production rate at the Project of 3 million tons aggregate per year) exceeds the applicable threshold of 10 in a million. The primary source of the excess cancer

risk at the most affected sensitive receptor location is diesel exhaust from the scrapers used to excavate aggregate. Without otherwise mitigating the emission rate of the scraper (as recommended in MM AQ-5), the estimated incremental lifetime cancer risks at this (and all other) sensitive receptor locations could be reduced by limiting the annual aggregate throughput to a maximum of 2.25 million tons per year. At this total throughput level and without other mitigation measures, operations at the site would not exceed applicable toxic air contaminant thresholds.

Stationary Source GHG Emission Reductions

The asphalt batch plant (at a maximum production rate of 1 million tons/year of asphalt) would emit stationary sources of GHG emissions that would exceed currently applicable stationary source thresholds. Based on a straight-line interpolation of the asphalt plant emissions, the current stationary source threshold would not be exceeded until the asphalt plant reaches a production rate of approximately 770,000 tons/year. On an annual basis, asphalt production could be limited to a maximum production of approximately 770,000 tons per year without exceeding the currently effective stationary source threshold.

Mobile Source GHG Emission Reductions

The Project's projected net increase in non-stationary source emissions of GHGs (e.g., mobile sources and electricity use) is estimated at more than 14,284 MT CO_2e per year, which exceeds the currently effective threshold of 1,100 MT CO_2e/year. The bulk of these non-stationary source emissions (more than half) are associated with haul trucks which travel to the site to pick up material and then transport it to its point of use, and the other half of these emissions are associated with electricity use at the plant and off-road equipment (i.e., scrapers, graders, rubber tired loaders, crawler tractors, cranes, water trucks). Based on a straight-line interpolation of mobile source GHG emissions, the total aggregate throughput at the site (including raw aggregate, asphalt and concrete) could be limited to approximately 1.1 million tons per year without exceeding the currently applicable threshold. The production level could be achieved based on a decrease in emissions due to the improved efficiency of equipment as compared to current conditions, and a corresponding increase in emissions from electrical use at the asphalt and concrete plants.

Description of the Reduced Production Rate Alternative

Based on these trigger point factors, it is possible to develop a Reduced Production Rate Alternative capable of reducing each of these environmental effects, other than mobile source emissions of GHG, to less than significant levels. Under this Reduced Production Rate Alternative, the total harvesting of raw aggregate from the quarry pit would be limited to 1.5 million tons for the first three years (years 2013 through 2016) and then increased to a maximum of 2.25 million tons per year thereafter. At 2.25 million tons per year after 2016, this rate of annual production would be approximately 75% of the maximum production rate proposed under the Project, and would not exceed criteria pollutant or toxic air contaminant thresholds. Additionally, the production of asphalt would be limited to approximately 770,000 tons per year. This rate of annual asphalt production (at approximately 77% of the maximum asphalt production rate proposed under the Project) would not exceed stationary source GHG emission thresholds.

All other aspects of the proposed Project would remain the same as proposed, including expansion and deepening of the South Basin quarry pit, operation and phased relocation of the plant site, and ultimate reclamation of the quarry pit for SFPUC water storage. Given the limitations of this alternative, the proposed SMP-30 Conservation Plan (which is subject to approval of the Project at a 3 million ton per year maximum production rate) cannot be assured and the conservation measures under that Conservation Plan are not assumed.

At a maximum production rate of 2.25 million tons per year, the estimated volume of 60 million tons of available raw aggregate at the quarry could be extracted within the 30-year lifetime of the proposed Revised SMP-30 permit. However, this production limitation would not enable the quarry to meet the higher fluctuations in market demand for aggregate materials predicted to occur over time.

Comparison of Environmental Effects

For nearly all environmental factors analyzed in this EIR, the Reduced Production Alternative would have identical or similar environmental effect as those of the proposed Project.

- The Reduced Production Rate Alternative would be consistent with all applicable land use plans, policies and regulations pertaining to the site.
- The impacts to biological resources, hydrology and water quality, geology and soils related to the expansion and deepening of the South Basin quarry pit would be the same as those of the Project.
- The impacts related to increased noise, increased presence of hazardous materials at the site and changes in aesthetics related to the expanded plant operations would be the same as those of the proposed Project.

Traffic

The proposed Project, at a peak production rate of 3 million tons per year of aggregate harvested and hauled from the site, would have no significant adverse impacts related to the operation of study area intersections, would not trigger signal warrants at any study intersections, and would have a less than significant effect on highway operations. Although a Reduced Production Rate alternative would generate proportionally less overall traffic related to the hauling of material from the site, the reduction in traffic volume is not necessary to reduce any otherwise significant traffic or transportation-related impacts.

Air Quality

The Reduced Production Rate Alternative is specifically described as being the rate of quarrying activity that can be achieved at the site without exceeding the threshold for estimated incremental cancer risk for the nearest sensitive receptor, assuming no other mitigation measures as recommended for the Project. The primary source of excess cancer risk at the most affected sensitive receptor location is diesel exhaust from the scrapers used to excavate aggregate. Mitigation measures recommended for the Project (i.e., retrofitting the scraper engines to achieve a higher emissions standard) would be capable of reducing this risk to below threshold levels. However, without otherwise mitigating the emission rate of the scraper, the estimated incremental lifetime cancer risks at this sensitive receptor could also be reduced by limiting the Reduced Production Rate Alternative to an annual aggregate throughput of a maximum of 2.25 million tons per year. At this total throughput level, the Reduced Production Rate Alternative would not exceed applicable toxic air contaminant thresholds.

The Reduced Production Rate Alternative would also correspond to the rate of aggregate production and hauling that can be achieved at the site without exceeding mobile sources emission thresholds of NOx (which are mostly emissions from haul trucks taking aggregate material, asphalt and concrete from the site) on an average daily and annual basis. Based on anticipated phasing-in of emission standards that are part of the regulatory context, the Reduced Production Rate Alternative could commence operation in 2013 at up to 1.5 million tons of aggregate per year, and increase production rates to 2.25 million tons aggregate per year by 2016, without exceeding any applicable criteria air pollution thresholds. Although a maximum annual production rate of 3 million tons of aggregate per year could be achieved by 2020 without exceeding any applicable criteria air pollution thresholds, the Reduced Production Rate Alternative would limit production to 2.25 million tons based on the toxic air contaminant threshold.

Climate Change

The Reduced Production Rate Alternative is also specifically described as being the rate of asphalt production that can be achieved at the site without exceeding the threshold for stationary sources of GHG emissions. This alternative, at an asphalt production rate of 770,000 tons/year, would not exceed the currently effective stationary source threshold.

The Reduced Production Rate Alternative does not limit aggregate production and hauling at a rate that can be achieved without exceeding the currently applicable threshold for non-stationary source emissions of GHGs. The bulk of non-stationary source emissions are associated with haul trucks which travel to the site to pick up material and then transport it to its point of use, and the other half of these emissions are associated with electricity use at the plant and off-road equipment (i.e., scrapers, graders, rubber tired loaders, crawler tractors, cranes, water trucks). Without otherwise applying mitigation measures capable of reducing and/or offsetting these emissions as recommended for the Project, the production rate at the quarry would have to be limited to a total aggregate throughput at the site (including raw aggregate, asphalt and concrete) of approximately 1.1 million tons per year in order to limit emissions to below currently applicable non-stationary source GHG emission thresholds. This would be a greater reduction in aggregate production at the site than defined under this Alternative.

Ability to Meet Project Objectives

The Reduced Production Rate Alternative would be able to expand the overall production potential of the quarry by increasing the area under permit and by deepening the depth of excavation; it would extend the expiration date of the mining permit, and would allow the additional ancillary uses proposed at the site, including the asphalt batch plant and the concrete plant.

The Reduced Production Rate Alternative would be able to achieve the primary reclamation objective of the landowner (SFPUC), which is to maximize the water storage potential of the quarry pit.

However, with limits imposed on production rates at the site under the Reduced Production Rate Alternative, it cannot be assumed that the voluntary SMP-30 Conservation Plan and its conservation measures and habitat enhancements would be implemented.

The Reduced Production Rate Alternative would be located on a site within a state-designated Mineral Resource Zone, and it would be at a location with competitive distance to aggregate consumption markets with the ability to efficiently transport product via the local road network and state highway system. This alternative would meet the specific property requirements and objectives of the Project in that it would be conducted on a property of sufficient size and existing surrounding land uses that minimize land use compatibility issues, it would occur on a property under a single ownership and on a site with no prohibitive easement, agreement, or contract restrictions. This alternative would also be generally consistent with Alameda General Plan policies, including Measure D for expansion of an existing quarry site on the same or adjoining parcel, and consistent with the SFPUC Watershed Management Plan.

The Reduced Production Rate Alternative would not fully achieve the Project's business objective to enhance production of aggregate-based products proximate to the source of these materials and proximate to future construction site destinations, or to enable mining of a supply of sufficient resources for long-term availability. The reductions in production rates under this alternative would limit the applicant's ability to meet the overall demand cycles of the construction industry for aggregate mineral resources and their by-products (asphalt and concrete).

Environmentally Superior Alternative

CEQA requires the identification of the environmentally superior alternative in an EIR.

No Project Alternative

Under the No Project (Continuation of Baseline Conditions) Alternative, there would be no change in conditions at the Project site and none of the potential environmental impacts associated with the Project would occur. The No Project Alternative is considered the environmental superior alternative, since continuation of the quarry and plant operations in its current status would avoid each of the potential environmental impacts that could result from further developing the quarry as proposed without the need for mitigation measures as recommended for the Project. However, this alternative would meet none of the Project objectives and would not achieve any of the environmental benefits proposed under the Project.

Where a No Project alternative is identified as the environmentally superior alternative, CEQA requires the EIR to identify another alternative that would be considered environmentally superior in the absence of the No Project alternative.

Mitigated Project

As indicated in each of the technical analysis chapters of this EIR, there are no potentially significant environmental impacts associated with the Project as proposed that cannot be reduced to a level of less than significant through implementation of all recommended mitigation measures. Given that these measures are capable of reducing Project impacts to less than significant levels, the fully mitigated Project is environmentally superior unless any of the other identified alternatives are better able to mitigate Project impacts. Therefore, the CEQA issue at hand is whether prohibiting the production of asphalt and concrete at the site, or reducing the overall production capacity actually achieves an environmentally superior condition.

Analysis of this question benefits from additional information related to the supply and demand for aggregate resource product.

Project Need / Comparison to Demand

According to the California Department of Conservation, the demand for aggregate resources throughout the South San Francisco Bay region is projected to be approximately 1.24 billion tons over the next 50 years. This demand can be compared to a currently permitted production capacity from within the South San Francisco Bay region of approximately 458 million tons of aggregate during that same 50-year period. In other words, currently permitted quarries in the South San Francisco Bay region are projected to be capable of meeting only approximately thirty-seven percent (37%) of the projected aggregate resource demand over the next 50 years.[4] Given the relative difference in long-term permitted supply compared to long-term projected demand, it can be assumed that supply for the region's demand for aggregate resources will need to be met from sources outside the region.

Displacement of Environmental Effects

Under the Reduced Production Rate Alternative where the production of raw aggregate from the Project site is reduced, it is reasonable to assume that the difference between the Project's reduced production capacity and local demand for aggregate resources would likely be met by other aggregate quarries. Reduced quarrying capacity at the Project site would likely be off-set in the near term by increased quarrying at other quarries within the region, and in the longer term by more distant out-of-region

[4] California State Mining and Geology Board, *"A Report of Mineral Land Use Classifications and Designations Under the Surface Mining and Reclamation Act of 1975"*, SMGB Information Report 2008-05, Geologic Survey and California Department of Conservation map of Aggregate Availability in California, July 2008

quarries. When raw materials are brought into the region from out-of-the-region supply sources, or met by quarries within the region but more distant from intended construction sites than is the Project site, the overall transportation distance to supply these materials is increased, along with commensurate increases in associated environmental effects (e.g., increased traffic, increased air quality emissions and increased emissions of GHG).

Similarly, eliminating the co-located production of raw aggregate, asphalt and concrete (such as would occur under the Quarry Only Alternative) would likely result in a comparative increase in overall truck travel lengths to meet the market demand for these products. Raw aggregate and sand produced at the quarry and then hauled via truck to other off-site facilities for further processing into asphalt or concrete increases the overall transportation distance of these materials, as compared to co-locating the concrete and asphalt plants at the source of the raw aggregate materials as is proposed by the Project.

Restricting or reducing the production levels of aggregate resources and their byproducts at the Project site would reduce Project-related impacts in immediate proximity to the Project site. However, mitigation measures recommended in this EIR are capable of reducing such impacts to less than significant levels. Similar site-specific impacts would likely occur wherever these materials are instead produced. The potential environmental effects associated with production of these products is not eliminated, but transferred to another, potentially even more sensitive, location where similar mitigation measures would most likely also be required.

Given relative certainty of long-term demand for aggregate resource products in the South San Francisco Bay region (even if this demand is curtailed during periods of economic decline), it is unlikely that simply failing to meet this demand on a local or regional level will result in eliminating the need for these resources and materials. More likely, if the regional demand for these resources cannot be met from within the region, then the demand will be met from supplies from out of the region. The generation of air quality and GHG emissions associated with quarrying and hauling activities will still occur, but would occur elsewhere besides at the Project site. Additionally, the increased travel associated with hauling these materials in from outside the region will even further exacerbate air quality emission (from trucks, rail or barge) and will also exacerbate commensurate emissions of greenhouse gasses.

Thus:

- to the extent that mitigation measures recommended in this EIR are fully implemented, the environmental consequences of the Project can be reduced to less than significant levels.
- The environmental benefits associated with co-locating the concrete and asphalt plant near the source of the raw aggregate materials are environmentally superior to the consequences of increased air emissions and GHG emissions otherwise associated with additional intermediate truck trips to and from other off-site processing facilities.
- The environmental benefits of meeting market demand for aggregate resources from regionally available supplies is environmentally superior to meeting the same level of demand from further distant locations with increased transportation needs.
- The Project's proposed SMP-30 Conservation Plan, which is subject to approval of the Project as proposed by Alameda County, commits the Project to implementation of a number of conservation measures and habitat enhancements for special status species that would otherwise not occur without the Project.

Based on these reasons, the Project as mitigated through measures recommended in this EIR is identified as the environmentally superior alternative.

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Other CEQA Considerations

As required by the California Environmental Quality Act (CEQA), this chapter discusses the following additional environmental considerations relative to the proposed Project:

- Summary of Project Effects
  - Significant unavoidable impacts
  - Cumulative environmental impacts
  - Effects found not to be significant
- Other CEQA Considerations
  - Growth-inducing impacts, and
  - Significant irreversible changes

Summary of Project Effects

Significant and Unavoidable Impacts

As indicated in the preceding chapters of this Draft EIR, the Project would not result in any significant and unavoidable impacts that cannot be avoided or reduced to a less than significant level through implementation of mitigation measures recommended in this EIR.

Cumulative Impacts

As defined in CEQA Guidelines Section 15355, a cumulative impact consists of a change in the environment which results from the incremental impact of the Project when added to other closely-related past, present, existing, approved, pending and reasonably foreseeable future development in the area surrounding the Project site. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

In Chapters 5 through 14 of this EIR, cumulative impacts are discussed and analyzed for each environmental topic. Other cumulative projects within the Sunol Valley which are considered in the cumulative context include the SFPUC's Alameda Siphons Seismic Reliability Upgrade Project (Alameda Siphon No. 4), the Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project (SVWTP Project), the San Antonio Backup Pipeline (SABPL project), and the New Irvington Tunnel project, as well as the on-going Lehigh-Hanson aggregate quarry (SMP-24 and -32) immediately adjacent to the Project site. As indicated in the preceding chapters of this EIR, the Project would not result in any cumulatively significant impacts that cannot be reduced to less than significant (less than cumulatively considerable) levels with implementation of mitigation measures recommended in this EIR, as summarized below.

Aesthetics

The aesthetic and visual quality of the Sunol Valley has been substantially affected by other past and ongoing projects including the other mining operations, roadway development and other SFPUC water conveyance and treatment facilities. The Project would result in tree removal, and the loss of on-site trees would contribute to cumulative vegetation removal in the area. However, a mitigation measure is recommended in this EIR to require the Project applicant and the County to re-assess the landscape buffers along Calaveras Road to determine if additional plantings are necessary to visually filter and soften views of the site from Calaveras Road. If additional tree plantings are determined by the County to be necessary, the Project applicant will be required to prepare a detailed landscape and planting plan for the Calaveras Road landscape buffer. Implementation of this mitigation measure would reduce the Project's contribution to cumulatively adverse aesthetic impacts to less than significant.

Air Quality

Construction and operation of the Project, in combination with other past, present and reasonably foreseeable future projects, could result in significant adverse cumulative impacts on air quality. However, a mitigation measure (MM AQ-4: CAP Monitoring and Reduction Plan) is recommended that would require Project emissions of NOx be either reduced or off-set by an amount necessary to comply with applicable significance thresholds. With implementation of this mitigation, the Project's contribution to cumulative criteria pollutant impacts would be reduced to a level of less than significant.

Construction and operation of the Project would also contribute to a cumulatively considerable health risk impact. There are multiple types of toxic air contaminant (TAC) sources within a 1,000-foot boundary around the Project area, including the I-680 freeway. When added to these other sources, the Project would contribute localized emissions to the surrounding area, contributing to cumulative air quality impacts to off-site receptors. However, a mitigation measure (MM AQ-5: TAC Monitoring and Reduction Plan) is recommended that would require that Project emissions of TAC be reduced such that the estimated incremental lifetime cancer risks at all sensitive receptor locations is maintained below applicable thresholds. With implementation of the mitigation, the Project's contribution to cumulative TAC-related health risk impacts would be reduced to a level of less than significant.

Climate Change

The emission of GHG is inherently a cumulative issue, no one project could emit so much GHG as to individually result in measurable climate change. Therefore, the applicable thresholds used in this EIR determine whether the Project's emissions of GHG would be considered cumulatively considerable. The Project's stationary sources (new equipment) and mobile sources (primarily haul trucks) would generate greenhouse gas emissions at levels in excess of applicable significance thresholds. As such, the Project would generate greenhouse gas emissions that may have a significant cumulative effect. However, mitigation measures (MM CC-1 and CC-2: GHG Monitoring and Reduction Plans) are recommended that would require Project-generated GHG emissions be reduced to a level at or below the applicable thresholds by either limiting production and operations, or by requiring that any excess emissions not otherwise fully mitigated on-site be instead mitigated through off-site compensation. Such compensation could include the purchase of carbon credits. The purchase of carbon offset credits would enable the Project to provide off-site compensation equivalent to 100% of the Project's GHG emissions in excess of the applicable threshold, and would reduce the Project's contribution to cumulative climate change to a level of less than significant.

Biological Resources

Quarry expansion and reclamation, in combination with other past, present and reasonably foreseeable future projects in the site vicinity, could potentially have a cumulatively considerable impact on biological resources. However, when considered relative to the existing state of biological resources in the

area, the Project would add only a minor, incremental contribution to cumulative impacts on biological resources. Once the Project's proposed Conservation and Reclamation Plans are fully implemented, local habitat will be considerably improved for special status species. Proposed funding of planning efforts and restoration of habitat that contributes to regional enhancement of values for special status as well as common wildlife provides compensation for the Project's specific impacts as well as for the Project's contribution to cumulative impacts.

Geology and Soils

The Project would not result in any incremental geologic impacts that, when added to other closely-related past, present, existing, approved, pending and reasonably foreseeable future development in the area surrounding the site, would result in cumulative impacts. The Project's potential geologic impacts are specific to the Project site; can be fully mitigated through regulatory compliance, Project design and mitigation measures recommended in this EIR; and would not combine with other projects in the area in manner that could be individually minor but collectively significant.

Hazardous Materials

The Project would not result in any incremental hazardous or hazardous materials impacts that, when added to other closely-related past, present, existing, approved, pending and reasonably foreseeable future development in the area surrounding the site, would result in cumulative impacts. The Project's potential hazardous materials impacts are specific to the Project site; can be fully mitigated through regulatory compliance, Project design and mitigation measures recommended in this EIR; and would not combine with other projects in the area in manner that could be individually minor but collectively significant.

Hydrology and Water Quality

Potential cumulative water quality effects include increased salt loading to the groundwater basins and deterioration of water quality standards for TDS and chloride. These cumulative conditions are primarily due to inflows into Alameda Creek from up-steam flows in Arroyo de la Laguna. Data from aggregate mining operations in the Sunol area (including data from the existing SMP-30 quarry) indicate that the levels of chloride and TDS in discharges from quarry operations generally meet the Basin Plan's chloride and TDS objectives and do not contribute to cumulatively elevated chloride and TDS levels in groundwater. The Project's required on-going compliance with applicable regulations (including its required RWQCB General Aggregate Mining Permit) will continue to ensure that the Project does not contribute to cumulatively elevated chloride and TDS levels in Alameda Creek downstream of the confluence with Arroyo de la Laguna.

Noise

Cumulative noise conditions in the area include noise generated at the Project site as well as noise from the adjacent Lehigh-Hanson quarry. Once the current SFPUC construction projects in the area are complete, no other past, present or reasonably foreseeable future projects are expected to add to the cumulative noise environment in this area.

The Project would adversely contribute to cumulative noise conditions at the nearest sensitive receptor during Phase II operations. However, mitigation measures recommended to address Project-generated noise levels (MM Noise-1a and -1b) would effectively reduce noise impacts associated with increases in cumulative noise levels to a less than significant (less than cumulatively considerable). Cumulative vehicular traffic on Calaveras Road would not make a significant contribution to the noise environment at any of the identified sensitive receptors.

Traffic

Traffic volumes for cumulative conditions in year 2035 were developed using the latest version of the Alameda Countywide Travel Demand Model. Land use, employment and population projections in the model are based on growth rate projections from the Association of Bay Area Governments (ABAG) Projections 2005. Cumulative traffic conditions were developed by applying these model-based growth rates to the existing AM and PM peak hour intersection turning movement counts. Under these cumulative conditions, all intersections are projected to operate at acceptable levels of service during both the AM and PM peak hours, both with and without the Project. This would be a less than significant cumulative effect.

Traffic signal warrants were evaluated for the unsignalized intersections in the study area under cumulative conditions. The traffic signal warrants are not satisfied at any of the study intersections and this cumulative impact would be less than significant.

The Project's incremental contribution to cumulative increases in traffic volumes along the I-680 freeway would only amount to 0.9% percent of the peak hour traffic under cumulative conditions. Therefore, the Project's impact on cumulative freeway operations would be less than significant.

Effects Found Not to be Significant

Issues Fully Addressed in the Initial Study

The Initial Study prepared for this EIR (see Appendix A) indicated that there were a number of environmental issues that were not significantly affected by the Project, were adequately examined under the previous 1992 Mitigated Negative Declaration, or would be fully mitigated through implementation of mitigation measures that would be adopted as condition of Project approval. Since no further concerns regarding these environmental issues were raised during public review of the NOP/Initial Study, no further analysis of these issues has been conducted. The Initial Study concluded that the Project would have a less than significant effect on the following environmental topic areas:

- Agricultural and Forest Resources,
- Cultural Resources,
- Mineral Resources
- Population and Housing,
- Public Services and Recreation, and
- Utilities and Service Systems.

No further analysis for these environmental topic areas is contained within this Draft EIR.

Regulatory Compliance

Each of the analytical chapters of this EIR (Chapters 5 through 14) includes a Regulatory Setting section which describes the existing regulatory context within which the Project would operate. If approved, the proposed Project would be required to comply with all of the applicable laws and regulations identified. In many instances, compliance with regulatory requirements that specifically provide for the protection of public health and safety, or that require avoidance and/or mitigation of potential environmental effects, would ensure that impacts would not occur or would be adequately mitigated to a level of less than significant.

Some examples of potential environmental effects that this EIR indicates would be avoided or fully mitigated through regulatory compliance include:

- The proposed Project would be required to comply with the requirements of the Corps Section 404 permit, RWQCB Section 401 permit, and CDFG Streambed Alteration Agreement. Terms and conditions of these permits would minimize Project impacts on jurisdictional waters and compensate for temporary and permanent losses.
- Pursuant to Chapter 6.95 of the Health and Safety Code, the Project will be required to prepare a Hazardous Materials Business Plan containing information on the location, type, quantity, and health risks of hazardous materials and/or waste used or generated by the Project. These regulations also require a Hazardous Materials Inventory and chemical description for each hazardous material handled at the facility, a site plan, a summary of record keeping procedures, and a written Employee Training Plan. The requirements of the Hazardous Materials Business Plan will ensure the safe routine use of hazardous materials through proper handling, recycling, treating, storing and disposing of hazardous materials and waste. The Project will be required to submit a Best Management Practices (BMP) Plan with its Notice of Intent to obtain coverage under the Regional Water Quality Control Board's General Aggregate Mining Permit, to update the BMP Plan annually, and to implement the BMP Plan. The purpose of the BMP Plan is to control and abate the discharge of pollutants from the facility to surface waters, and to achieve compliance with the best available technology economically achievable (BAT) or best conventional pollutant control technology (BCT) requirements, and with applicable water quality standards. Compliance with these applicable regulations would minimize significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials to less than significant levels.
- The Project's new processing facilities will be required to comply with existing regulations for containment of process materials; best management practices (BMPs) to control storm water, and additional practices for the containment of concrete wash-out fluids. The applicant will be required to file a Report of Waste Discharge with the RWQCB in the form of an updated NPDES permit. The updated NPDES will describe the engineering and construction methods that will be used in the process area related to the new facilities. Compliance with these regulatory requirements will maintain the high quality of the water discharged to San Antonio Creek and Alameda Creek, and prevent any potential violations.

Project Design / Proposal

In many instances, this EIR has concluded that the Project's proposed design or other elements of the Project would avoid otherwise potentially significant environmental effects. If approved, the Project would be required to comply with these proposed design measures and implement those elements of the Project that avoid or fully compensate for environmental effects. Some examples of potential environmental effects that this EIR indicates would be avoided or fully mitigated through design measures or other elements of the Project include:

- The proposed Project includes implementation of the proposed Revised SMP-30 Conservation Plan and a Reclamation Plan. These plans include restoration of riparian habitat on both banks of Alameda and San Antonio Creeks adjacent to the proposed Project as well as financial support of restoration of Alameda Creek in the Sunol Valley and a Sunol Valley Restoration Plan. Execution of the Conservation Plan and Reclamation Plan would compensate in full for permanent impacts to willow and mulefat scrub within the proposed Project site. Willow and mulefat scrub that would be removed within the quarry pits is characterized as low quality habitat, whereas the riparian habitats on Alameda and San Antonio Creeks that would be restored as part of the Conservation Plan already provide higher values for wildlife than habitats surrounding active quarry pits and, upon restoration, would be more diverse and have enhanced values for terrestrial and aquatic wildlife. With implementation of the Project's proposed Conservation Plan and Reclamation Plan, impacts to riparian habitats from the proposed Project would be less than significant.

- The Project's excavation plans indicate that all mined slopes will be excavated at a design angle of 2:1, consistent with the Alameda County Surface Mining Ordinance requirements, the recommendations of the 1990 Geomatrix report, and current recommendations (Benchmark Resources and Berlogar, 2010). Based on a "worst-case" slope stability analysis performed for the Project at the designed 2:1 slope, the quarry pit slope would exceed a safe slope stability factor of 1 and would eliminate or reduce hazards related to slope failure to a less than significant level.

Additional Mitigation Measures

In those instances where regulatory compliance and/or the Project's proposed design and other components of the Project proposal would not ensure or fully mitigate potential environmental effects, this EIR recommends additional mitigation measures that, upon implementation, would be capable of reducing any remaining effects to less than significant levels. CEQA Guidelines, Section 15370 defines 'mitigation measures' to include all of the following actions: a) avoiding the impact altogether by not taking a certain action or parts of an action; b) minimizing the impact by limiting the degree or magnitude of the action and its implementation; c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and e) compensating for the impact by replacing or providing substitute resources or environments.

Some examples of potential environmental effects that this EIR indicates would be avoided or fully mitigated through implementation one or more of these types of mitigation measures as recommended in this EIR include:

- It is common practice for truck operators hauling asphalt to coat their truck beds with diesel fuel prior to loading asphalt at an asphalt plant. This practice frequently results in the ground surface becoming contaminated with excess diesel fuel, which could result in the contamination of storm water or present a potential threat to groundwater. Mitigation Measure Haz-3a is recommended in this EIR which would prohibit truck spraying with diesel fuel or any other petroleum hydrocarbon-containing liquid. Implementation of this mitigation measure would avoid the potential impact altogether by not taking a certain action that may otherwise be common practice. Suitable bio-degradable surfactants could be used (if desired) to prevent asphalt from sticking to the truck beds.
- During Phase II of the proposed Project, noise levels from the crushing and screening equipment and the asphalt plant and the concrete plant are projected (based on current assumptions about the equipment) to exceed allowable noise levels. It is likely that in the intervening years prior to plant relocation, some equipment at the Project site will change and there will be changes in noise generation from the equipment. Because this operating scenario will not occur for several years and plant equipment noise levels will likely change, mitigation measures are recommended that require a new noise survey to be conducted once the plant site has been moved to the south, with a determination made at that time as to whether additional noise barriers or other noise control measures for the equipment are required to reduce noise levels. Implementation of this mitigation measure would reduce the noise impact over time by preserving the acceptable noise environment.
- Analysis included in this EIR indicates that operation of the proposed Project could expose sensitive receptors to substantial concentrations of toxic air pollutants and fine particulate matter. Mitigation Measure AQ-5 is recommended that would require the applicant to prepare and implement a TAC Monitoring and Reduction Plan demonstrating how the facility will be operated in a manner that can reduce impacts to below threshold levels. Emission reductions may take the form of replacement or retrofit of engines to meet US EPA Tier 4 interim emissions standard, or by reducing overall production rates at the Project site so as to not exceed the threshold. Analysis conducted for this EIR demonstrates that either of these emission reduction measures would be capable of reducing impacts associated with toxic air contaminant emissions to below currently applicable thresholds.

Implementation of this mitigation measure would either minimize the impact by limiting the degree or magnitude of the action (i.e., reducing production levels at the quarry), or would reduce the impact by repairing (i.e., retrofitting) the impacted environment with better emission controls.

- The proposed Project would generate greenhouse gas emissions from both stationary source equipment and from mobile sources (i.e., haul trucks) that would exceed established significance thresholds. Mitigation Measures CC-1 and CC-2 are recommended in this EIR which would either reduce the Project's GHG emissions to a level at or below threshold levels, or would require that any emissions not fully mitigated on-site be instead mitigated through off-site compensation. Such compensation could include the purchase of carbon credits. Implementation of these mitigation measures would either minimize the impact by limiting the degree or magnitude of the action (i.e., reducing production levels), or would compensate for the impact by replacing or providing substitute resources or environments (i.e., through purchase of offset carbon credits).

As indicated throughout this EIR, there are no potentially significant environmental effects associated with the proposed Project that cannot be reduced to levels of less than significant through required compliance with existing regulations, with follow through of Project design measures as proposed, and/or with implementation of additional mitigation measures as recommended in this EIR.

Other CEQA Considerations

This section addresses the mandatory findings of significance that must be addressed in an EIR prepared under the California Environmental Quality Act pertaining to growth inducement and significant irreversible environmental changes.

Growth-Inducing Impacts

This section analyzes the growth-inducement potential and associated secondary effects of growth impacts of the proposed Project, as required by CEQA Guidelines Section 15126.2. The Project constitutes an expansion of an existing aggregate quarry and this analysis focuses on the incremental increase in growth-inducement potential resulting from that expansion.

Section 15126.2(d) of the CEQA Guidelines states that an EIR should discuss "…the ways in which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." Growth can be induced in a number of ways including through elimination of obstacles to growth, through the stimulation of economic activity within the region, or through precedent-setting action.

The Project would not result in any direct, substantial contributions to economic or population growth. The Project would not increase population through the construction of new buildings for habitation or commerce. The Project would not induce growth by removing infrastructure barriers or by providing new infrastructure, nor would it create new transportation access to a previously inaccessible area. Though construction activities associated with the Project would provide employment opportunities, they would not be substantially beyond what would normally be available to construction workers in the area, and workers are expected to be drawn from the local labor pool. Therefore, the Project would not result in a substantial direct contribution relative to growth inducement.

The Project would produce a mineral resource which would be utilized in future construction projects in the Bay Area region. The Project site is presently, and would continue to be a quarry where construction aggregate (sand and gravel) is harvested from naturally occurring deposits. Construction aggregate is used to make Portland cement concrete, asphalt, railroad ballast, stucco, road base and fill. According to the California Department of Conservation, the demand for aggregate resources throughout the South San Francisco Bay region is projected to far exceed the production capacity from currently permitted quarries from within the region. Although the projected long-term shortfall in locally and regionally available

aggregate resources could be seen as a potential obstacle to growth, it is more likely that demand for these resources will be met by other sources from outside the region. Therefore, the Project would not indirectly induce growth by eliminating an obstacle to growth. Any such obstacles could be overcome by obtaining the resource from outside the region, even if doing so would result in greater environmental effects.

Although the Project would increase the number of jobs available at the site, it would not substantially stimulate economic activity within the region. Rather, the Project is proposed to be able to respond to increased economic and development activity as may occur over time. Furthermore, the Project is not a precedent-setting action. Rather, it is a continuation and expansion of an existing quarry in compliance with the policy direction contained in the applicable General Plan. These policies prohibit new quarry or other open-pit mines outside of the County's Urban Growth Boundary unless approved by the voters of the County, except for excavation adjacent to an existing quarry site or on the same or an adjoining parcel such as proposed by the Project.

Significant Irreversible Changes

Section 21100(b)(2)(B) of CEQA requires that an EIR identify any significant effect on the environment that would be irreversible if the Project were implemented. Section 15126.2(c) of the CEQA Guidelines identifies irreversible environmental changes as:

- uses of nonrenewable resources during the initial and continued phases of the project, since a large commitment of such resources makes removal or non-use thereafter unlikely;
- primary impacts and, particularly, secondary impacts (such as highway improvement which provide access to a previously inaccessible area) which generally commit future generations to similar uses; and
- irreversible damages resulting from environmental accidents associated with the Project.

Section 15126.2(c) further clarifies that, "irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Construction activities and operations associated with the Project would result in an irretrievable and irreversible commitment of natural resources through the use of power supply and construction materials. Construction of new water storage facilities as proposed pursuant to the Project's Reclamation Plan would also result in an irretrievable or irreversible commitment of land to water storage uses. However, these uses are consistent with the County of Alameda and SFPUC land use policies, would take up limited land area, and are compatible with the adjacent land uses.

The continued and expanded extraction and harvesting of aggregate resources from the Project site would be an irreversible commitment of these resources. However, the Project is located within a state-designated Regionally Significant Construction Aggregate Resource Sector which is specifically intended to provide for continued and expanded extraction of that resource. Precluding continued access to these aggregate resources would not be consistent with local and state-wide policies which recognize the regional value of the County's construction aggregate resources.

As indicated Chapter 10: Geology and Soils and Chapter 11: Hazards and Hazardous Materials, the Project would not, to the extent foreseeable, result in irreversible damage due to environmental accidents.

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