Draft

LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact Report
State Clearinghouse No. 2010042063

Santa Clara County
Department of Planning & Development
Planning Office

December 2011

County of Santa Clara

Department of Planning and Development
Planning Office

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December 23, 2011

Ladies and Gentleman:

SUBJECT: THE LEHIGH QUARRY PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT (SCH#2010042063)

The enclosed Draft Environmental Impact Report (DEIR) has been prepared to evaluate the potential environmental impacts of the project described below:

The Permanente Quarry is a limestone and aggregate mining operation. The Applicant proposes to amend the existing, approved 1985 Reclamation Plan for a 20-year period dating from Project approval to satisfy the reclamation requirements of Surface Mining and Reclamation Act (SMARA) and SMARA's implementing regulations, as well as the County's surface mining ordinance (County Code §4.10.370) and Surface Mining and Land Reclamation Standards (County of Santa Clara, 2000). The Project Area includes an approximately 1,238-acre area in an unincorporated area of the County (the Project Area) within the Applicant's overall 3,510-acre ownership.

Your comments regarding the significant environmental effects of this project and the adequacy of the DEIR are welcome. Written comments, submitted to the Santa Clara County Planning Office by **5:00 p.m., February 21st, 2012**, will be included in the Final EIR. Comments on the DEIR should be addressed to:

Rob Eastwood
Santa Clara County Planning Office, County Government Center
70 W. Hedding Street, 7th Floor, East Wing
San Jose, CA 95110
Rob.Eastwood@pln.sccgov.org
Fax – (408) 288-9198

An informational public workshop on the Draft EIR will be held on **January 26, 2012 at 7:00 PM, in the Quinlan Community Center, 10185 N. Stelling Road, Cupertino, CA 95014**.

A public meeting to receive comments on the adequacy of the Draft EIR will be held on **February 2, 2012, at 1:30 p.m. in the County Government Center, Board of Supervisors Chambers, at 70 West Hedding Street, San Jose, CA 95110** before the Santa Clara County Planning Commission.

Sincerely,

Rob Eastwood, Principal Planner, AICP

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EXECUTIVE SUMMARY

ES.1 Introduction

This Environmental Impact Report (EIR) is an informational document intended to disclose to the public and decision-makers the environmental consequences of implementing the Lehigh Permanente Quarry Reclamation Plan Amendment (RPA, or Project) as submitted by Lehigh Southwest Cement Company (Lehigh, or Applicant)[1] to the Santa Clara County Department of Planning and Development (the County). Approval of the Project would amend the existing reclamation plan for the Quarry, which the County approved in March 1985 and would result in the reclamation of an approximately 1,238.7-acre area (the Project Area) within the Applicant's overall 3,510-acre ownership in an unincorporated area of the County. The Project is designed to make the reclaimed lands suitable for future open space uses. It includes site-specific activities to satisfy the reclamation requirements of the Surface Mining and Reclamation Act of 1975, as amended (SMARA) and its implementing regulations[2] and the County's surface mining ordinance and surface mining and land reclamation standards.[3] A lead-agency-approved reclamation plan is required for all mining operations in the state, including the Quarry. The County has primary discretionary authority over the Project and serves as the Lead Agency responsible under the California Environmental Quality Act (CEQA)[4] and SMARA.

This Executive Summary includes the following sections:

- Introduction (ES.1)
- Project Objectives (ES.2)
- Project Setting and Location (ES.3)
- Project Description (ES.4)
- Alternatives (ES.5)
- Environmentally Superior Alternative (ES.6)
- Areas of Controversy and Issues to be Resolved (ES.7)
- Summary of Impacts and Mitigation Measures (ES.8)

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[1] The Permanente Quarry (Mine ID No. 91-43-0004) is owned by Hanson Permanente Cement, Inc. and operated by Lehigh Southwest Cement Company. Lehigh and Hanson both are part of the HeidelbergCement Group, a worldwide producer of construction materials (Lehigh Cement Company, 2011; Hanson, 2011).

[2] SMARA is set forth in Public Resources Code Section 2710 et seq.; its implementing regulations are found in Title 14 of the California Code of Regulations Section 3500 et seq.

[3] Santa Clara County Code §4.10.370; Santa Clara County, 2000. *Surface Mining and Land Reclamation Standards,* http://www.sccgov.org/SCC/docs%2FPlanning,%20Office%20of%20(DEP)%2Fattachments%2FSurface_Mining_Stds.pdf, rev. Aug. 29, 2000.

[4] CEQA is set forth in Public Resources Code Section 21000 et seq.; its implementing regulations (the "CEQA Guidelines) are found in Title 14 of the California Code of Regulations Section 15000 et seq.

A comparative summary of the impacts of the Project and the alternatives to the Project is provided in **Table ES-4**, included at the end of this Executive Summary. The EIR assesses the direct, indirect, and cumulative environmental impacts that could occur as a result of the Project.

ES.2 Project Objectives

The Applicant's objectives for the Project are to:

- Maintain a local, reliable, and economic source of Portland cement-grade limestone and construction aggregate to serve market demands in Santa Clara County, the San Francisco Bay Area and northern California.
- Continue operations at an existing limestone quarry that is uniquely situated to provide for regional needs and that lies in a state-classified MRZ-2[5] resource area meeting the requirements of SMARA and County Code §4.10.370.
- Reclaim existing mining disturbance to conform to the surrounding topography in contour and vegetation, to achieve long-term slope stability, protect water quality, and permit alternative post-mining uses.
- Apply reclamation standards under SMARA to areas disturbed by mining operations within the Quarry.
- Reclaim existing mining disturbance to avoid or eliminate residual hazards to the environment and public health and safety.

ES.3 Project Setting and Location

The Quarry is a limestone and aggregate mining operation located in an unincorporated area of the County west of the City of Cupertino, approximately 2 miles west of the intersection of Interstate 280 and Highway 85. Vehicular access is provided via Stevens Creek Boulevard, Foothill Expressway, and Permanente Road. The address is 24001 Stevens Creek Boulevard, Cupertino, California.

Mining operations commenced in the Project Area at least as early as 1903 and have been continuous since 1939. The Project Area includes all areas of the Applicant's ownership that have been subject to surface mining operations as well as open space areas that have been set aside to physically separate mining operations and offsite land uses.

[5] Department of Conservation, Division of Mines and Geology, DMG Open File Report 96-03 (1996).

ES.4 Project Description

ES.4.1 Overview

The Applicant proposes to amend the 1985 Reclamation Plan for a 20-year period dating from Project approval and to reclaim the Project Area in a manner suitable for future open space uses. "Reclamation" in this context, means:

> the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations… so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.

(Pub. Res. Code §2733; Santa Clara County, 2000). The primary areas to be reclaimed are the Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area (WMSA) and the East Materials Storage Area (EMSA), the crusher/Quarry office support area, Surge Pile, Rock Plant, an area south of Permanente Creek that has been disturbed by prior surface mining-related exploratory activities (Exploration Area), and an area adjacent to and within the Permanente Creek corridor (Permanente Creek Restoration Area or PCRA).

The proposed reclamation would not preclude future extraction activities within the Project Area. The Project also does not foreclose the possibility of future mining in other unincorporated areas of the Applicant's 3,510-acre ownership. However, any such future proposal would require authorization from the County and compliance with SMARA and CEQA. The Applicant has a vested right to conduct surface mining (resource extraction) activities in the Quarry pit, WMSA, EMSA, crusher/ Quarry office support area, Surge Pile, and Rock Plant. No County permit is required to mine these areas. "Surface mining" includes the process of obtaining minerals such as rock or aggregate materials by removing overburden[6] and mining directly from mineral deposits by quarrying and other methods. The separately-permitted Permanente Cement Plant located on the site is outside the Project Area and would not be subject to the RPA.

ES.4.2 Project Components

The Project includes the following components:

- Reclamation of the approximately 264.9-acre Quarry pit, which has been the point of mineral extraction at the Quarry for more than 80 years. Quarry pit walls would be stabilized and the pit would be backfilled primarily with material currently stored in the WMSA, resulting in gentler slopes, a shallower pit, and general consistency with the surrounding topography.

[6] In the Quarry context, "overburden" refers to rock materials that are not suitable for use as limestone or aggregate.

- Reclamation of the approximately 172.6-acre WMSA, which is an existing overburden storage area located west of the Quarry pit. Final WMSA elevation and contours would be returned roughly to pre-mining contours by transporting most of the materials currently stored in the WMSA into the Quarry pit and by processing the remaining materials for commercial use.
- Inclusion of the approximately 75.2-acre EMSA within the reclamation plan boundary and reclamation of the area, including the creation of a permanent overburden storage area. Final contours would be achieved, and the area graded and revegetated to be consistent with the surrounding area and topography.
- Reclamation of the approximately 53.4-acre crusher/Quarry office support area, an existing area located east of the Quarry pit and west of the EMSA. This area would be reduced in size relative to its current acreage and then reclaimed.
- Reclamation of the approximately 8.8-acre Surge Pile, which is an existing stockpile of crushed aggregate located southeast of the Quarry pit.
- Inclusion of the approximately 19.1-acre Rock Plant within the reclamation plan boundary and reclamation of the area. Structures would be dismantled and removed, and the area revegetated.
- Reclamation of an approximately 19.5-acre Exploration Area located south of Permanente Creek that has been subject to mining-related exploratory activities but not mineral extraction. Reclamation that has begun in this area would be completed, including reclamation of roads and pads, revegetation, and monitoring activities.
- Reclamation of approximately 49.2 acres of disturbance within the PCRA, including the removal of limestone boulders from the Permanente Creek area, revegetation, implementation of erosion control measures, slope stabilization work, and restoration of certain portions of the creek channel and riparian corridor. Most of this work would occur using light trucks and foot crews to avoid damaging or destabilizing the creek channel and upslope areas.
- Designation of approximately 599.3 acres of vegetated buffer area where no mining operations would occur.

The Project would be implemented in three phases over an approximately 20-year period, expected to begin with Project approval and conclude with final reclamation (i.e., certified compliance with reclamation standards) by approximately 2030 as shown in **Table ES-1**, *Reclamation Phasing and Related Activities.*

ES.5 Alternatives

ES.5.1 Alternative 1: Complete Backfill Alternative

The Complete Backfill Alternative would be similar to the Project in all respects except that overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities. The EMSA was designed to accept total overburden placement of approximately 6.5 million tons (approximately 4.8 million cubic yards) and to provide overburden storage for the surface mining operation until approximately 2015, when final

TABLE ES-1
RECLAMATION PHASING AND RELATED ACTIVITIES

Phase	Years	Start Date	End Date
Phase 1	9	2011	2020
Reclamation to Commence in Phase 1			
PCRA Subareas 1 through 7			
Exploration Area (ongoing reclamation activities would continue)			
EMSA Phase A			
EMSA Phase B			
EMSA Phase C			
Phase 2	5	2021	2025
Reclamation to Commence in Phase 2			
Quarry Pit Phase A			
Quarry Pit Phase B			
WMSA Phase A			
WMSA Phase B			
PCRA Subareas 1, 2, 6 and 7			
Phase 3	5	2026	2030
Reclamation Sub-Phases Commencing in Phase 3			
WMSA Phase C			
Quarry Pit Phase C			
Final Reclamation			
PCRA Subareas 3,4, 5 and 7			

* NOTE : All reclamation timing is approximate. The dates provided in the table above may change subject to market demand and the quality of resource encountered during the mining process. Additional time could be required for one or more of the proposed phases to allow for maintenance and monitoring of revegetation efforts until reclamation goals standards are met.

contouring and revegetation would occur. Under Alternative 1, the approximately 4.8 million cubic yards of overburden stored in the EMSA would be returned to the Quarry pit during reclamation Phase 2.

As a result, final contours in the EMSA would be comparable to what is shown in Figure 5 of the 1985 Reclamation Plan, the Quarry pit's lowest areas would be raised and thereby provide additional support to quarry walls. Removal of mining overburden from the EMSA would abate the notice of violation related to mining related use of this area, remove an existing source of selenium and thereby preclude its mobilization into downstream waterways, and return views from the valley floor and beyond to a pre-mining condition.

Removing the EMSA also would not meet an objective of the Project, which is the screening of views of and noises associated with the industrial uses occurring at the Cement Plant from the valley floor and recreational areas in the vicinity of the Project Area.

ES.5.2 Alternative 2: Central Materials Storage Area Alternative

The Central Materials Storage Area (CMSA) Alternative would be similar to the Project in all respects except that reclamation of the eastern and central portions of the EMSA (as it exists as of reclamation plan amendment approval) would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored in an area farther removed from the closest viewers and air quality- and noise-sensitive receptors. Reclamation activities in the EMSA would be the same as under the Project (including installation of a “cap” to prevent selenium-containing surface runoff from reaching Permanente Creek) except that such activities would begin immediately upon reclamation plan amendment approval and no new materials would be stockpiled in that area. Mitigation measures recommended to address interim Project impacts (i.e., impacts that could occur while reclamation activities are underway) for the EMSA also would be implemented to avoid or reduce impacts associated with the CMSA before final reclamation of the CMSA begins, which would occur upon the conclusion of mineral extraction in the Quarry pit during reclamation Phase 2.

The description of Alternative 2 is based on an overburden storage area included in the Comprehensive RPA, which the Applicant submitted to the County in 2010 and which has been superseded by the Project. It is informed by details and analysis provided in the Comprehensive RPA, including the supporting reports listed below. Implementation of Alternative 2 would occur in accordance with the engineering and other expectations established in these reports, except as noted below.

- Chang Consultants, 2010. *Drainage Report for the Permanente Quarry* (May 21, 2010)
- Golder Associates, Inc., 2010. *Geotechnical Evaluations and Design Recommendations, Permanente Quarry Reclamation Plan Update, Santa Clara County, California* (May 2010)
- Golder Associates, Inc., 2010. *Geotechnical Evaluations and Design Recommendations, East and Central Materials Storage Areas, Permanente Quarry Reclamation Plan Update, Santa Clara County, California* (May 2010).

The CMSA would be approximately 52.2 acres located east of the Quarry pit and contiguous with the western edge of the EMSA. It would accommodate overburden generated by mining of the Quarry pit during reclamation Phase 1 and then would be reclaimed. Development of the CMSA would allow reclamation activities in the eastern and central parts of the EMSA, which are closer to sensitive receptors than the CMSA, to begin immediately upon Project approval.

During the development of the CMSA, its elevations would range from 775 to 1,270 feet amsl. Final overall slopes would be 2:6(H):1.0(V) or flatter. Benches generally would be established at 40-foot vertical intervals. Interbench slopes would be 2H:1V. The static factor of safety (FOS) for global stability (crest of slope to toe of slope) would be approximately 1.7; the static FOS for interbench slopes would be 1.4. These factors are considered acceptable. Seismically-induced displacements would range from 3 to 13 inches, which also is considered acceptable.

Connection between the CMSA's eastern edge and the flat pad at the western end of the EMSA would be accomplished via an approximately 11-acre area that overlaps the western edge of the EMSA. This linkage would be designed to minimize any interference with reclamation activities in the EMSA. To the extent that minor portions of the EMSA would be affected by connection activities, affected areas would be reclaimed as part of the CMSA.

ES.5.3 No Project Alternative

A traditional No Project Alternative would consist of a scenario in which a Reclamation Plan does not exist. However, such a scenario is not being considered in this analysis because all mining activities are legally required to have a SMARA-compliant Reclamation Plan. As such, the No Project Alternative cannot consider a scenario that does not include some form of SMARA-compliant reclamation, as the Quarry would consequently not be compliant with California law. The No Project Alternative in this document, therefore, identifies a scenario that would be reasonably be expected to occur in lieu of approving the proposed Reclamation Plan.

Under the No Project Alternative, it is expected that mining would continue at the Quarry at the baseline rate.[7] However, SMARA mandates that the Project Area be reclaimed in compliance with all regulatory criteria. The Project is intended to fulfill this legal requirement and abate the issues related to Orders to Comply/Notices of Violation (NOVs) issued by the County in 2006 and 2008 related to deviations from the 1985 Reclamation Plan (i.e., engaging in mining activities outside the approved reclamation boundary). Under the No Project Alternative, the proposed Reclamation Plan would not be approved, these NOVs would not be abated, and the Applicant would remain in violation of SMARA and County requirements because an approved reclamation plan would not encompass all mining-related operations and disturbance. This would result in no additional placement of overburden at the EMSA.

Ultimately, however, in order to address the existing NOVs, a SMARA-compliant reclamation plan would have to be developed, approved following its evaluation under CEQA, and implemented by the Applicant. It is expected that such a reclamation plan would be substantially similar in scope and level of activity to that proposed as the Project, including reclamation of the EMSA to address the existing overburden material at that location. So under the No Project Alternative, the principal difference compared to the Project is not <u>whether</u> reclamation would begin, but rather <u>when</u> reclamation would begin.

The baseline (11-year average) annual limestone production rate for the Quarry is reported by the Applicant to be 2,600,000 metric tons (ALG, 2011). The total limestone production under reclamation Phase 1 is estimated by the Applicant to be 42,300,000 metric tons (ALG, 2011). Thus, under the No Project scenario in which mining would continue at the baseline rate, it would take approximately 16 years to reach the same total production as would be reached in 9 years

7 Quarry operations are characterized by fluctuating production, in response to continually changing market demands. Accordingly, baseline production is based on an average over the 11-year period from January 1, 2000, to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands.

under the Project. It is expected that reclamation Phases 2 and 3 of the Project would occur at the end of the 16-year mining period.

Similar to the Project, the No Project scenario would occur in the three phases shown in **Table ES-2**.

TABLE ES-2
"NO PROJECT" PHASING AND RELATED ACTIVITIES

Phase	Years	Start Date	End Date	Activities
Phase 1	16	2012	2027	Quarry operations continue at the baseline rate; EMSA reclamation commences in 2023 and is completed in 2027. Reclamation of the Exploration Area and PCRA occur as under the Project.
Phase 2	5	2028	2032	Quarry infill and WMSA reclamation.
Phase 3	5	2033	2037	Final reclamation, including of the Rock Plant and Surge Pile.

ES.6 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) requires an EIR to identify an environmentally superior alternative. If the environmentally superior alternative is the No Project Alternative, the EIR also must identify an environmentally superior alternative from among the other alternatives. In general, the environmentally superior alternative is defined as that alternative with the least adverse impacts to the project area and its surrounding environment.

The Project would cause significant and unavoidable impacts to Aesthetics, Visual Quality, Light and Glare; Biological Resources; Cultural Resources; and Hydrology and Water Quality. The comparative analysis summarized in **Table ES-4** shows that there are no potential impacts for which the Project is the Least Preferred alternative. For the four resource areas with significant and unavoidable impacts, the Project would be Preferred for two (Aesthetics, Visual Quality, Light, and Glare and Hydrology and Water Quality) and would not be the Least Preferred or Not Preferred for any. Alternative 2 would also be Preferred for two (Cultural Resources and Biological Resources) but would be Not Preferred for Aesthetics, Visual Quality, Light, and Glare. It should be noted that the preference for Alternative 2 over the Project for Biological Resources is for an interim impact prior to final reclamation; post-reclamation, impacts to Biological resources for the two alternatives would be essentially the same. Alternatives 1 and the No Project Alternative would not be Preferred for any of the four resource areas with significant and unavoidable impacts.

Based upon this analysis, none of the three alternatives would provide a material lessening of significant adverse impacts compared with the proposed Project, whereas the Project would be either Preferred over or equivalent to the other alternatives with regard to long-term impacts. Consequently, the proposed Project is the Environmentally Superior Alternative.

ES.7 Areas of Controversy and Issues to be Resolved

Areas of controversy known to the lead agencies, including issues raised by agencies and the public, must be identified in the Executive Summary of an EIR (14 Cal. Code Regs. § 15123). The extensive scoping process to vet the Applicant's various proposals to reclaim the Quarry included four separate Notices of Preparation (NOP), and numerous opportunities for agencies and members of the public to provide input. In total, more than 200 people have provided more than 350 comment letters on the proposals to reclaim the Quarry. A Scoping Report has been prepared for the Project (see Appendix A). It includes copies of each of the NOPs described above, as well as copies of all of the written comments and summaries of all of the oral comments that the County received in response to the respective requests for input. As described in more detail in the Scoping Report, the overarching themes of the comments as they relate to elements carried forward in the proposed Project that fall within the purview of the CEQA process relate to the following main topics:

- The Project Description, including the Project's relationship with the 2007 Proposed RPA, EMSA RPA, Comprehensive RPA; specifics of the WMSA, EMSA, and Quarry pit; the reclamation timeframe; and the volume of material to be used to backfill the Quarry pit. These comments are addressed in this Introduction, as well as in Chapter 2, *Project Description*.

- Alternatives, including CEQA's requirement that a No Project Alterative be evaluated. The No Project Alternative is described in Chapter 3, *Description of Alternatives*, and related impacts are analyzed in Chapter 4, *Environmental Analysis*.

- Aesthetics and Visual Resources, including impacts to ridgeline views, the scenic easement, the visibility of Permanente Quarry terraces and benches, protections provided by the County Zoning Code and Design Review overlay, nighttime lighting effects, and a preference for vegetative buffer areas. These and related comments are addressed in Section 4.1, *Aesthetics, Visual Quality, and Light and Glare*.

- Air Quality, including odor and health-related emissions of diesel, nitrous oxide, sulfur dioxide, dust, arsenic, mercury, and asbestos; a need for an updated health risk assessment; and National Emission Standards for Hazardous Air Pollutants (NESHAP) standards. These and related concerns are addressed in Section 4.3, *Air Quality*.

- Biological Resources, including Permanente Creek and other aquatic and riparian habitat; wetlands; impacts to fish, amphibians, avians, plants, and other species; oak woodland; and the test plots for revegetation efforts. These and related comments are addressed in Section 4.4, *Biological Resources*.

- Cultural Resources, including cultural and historic resources; human remains; and coordination with local tribal governments regarding traditional, cultural, and religious heritage values. These and related comments are addressed in Section 4.5, *Cultural and Paleontological Resources*.

- Geology and Soils, including slope stability, seismicity, and prior grading authorizations. These and related comments are addressed in Section 4.7, *Geology, Soils and Seismicity*.

- Greenhouse Gas Emissions, including the use of low-carbon fuels. See Section 4.8, *Greenhouse Gas Emissions*.
- Hazards and Hazardous Materials, including asbestos, selenium, mercury, petroleum coke, radioactive material, toxic materials, and risks associated with rocks falling from trucks. These and related comments are addressed in Section 4.9, *Hazards and Hazardous Materials*.
- Hydrology and Water Quality, including toxic releases into County watersheds; runoff containing selenium, arsenic, and/or mercury; the potential for surface and groundwater contamination; stormwater and sediment control; streamflows; seeps and springs; beneficial uses of area waters; data concerns; and the status of existing water quality violations. These and related comments are addressed in Section 4.10, *Hydrology and Water Quality*.
- Land Use and Planning, including future use of the site and Project consistency with County land use guidelines and standards. These and related comments are addressed in Section 4.11, *Land Use and Planning*.
- Noise and Vibration, including the effects of blasting, trucks, and earthmoving on recreational users of trails and open space lands in the vicinity of the Project as well as along surface streets. These and related comments are addressed in Section 4.13, *Noise*.
- Recreation, including area trails and Midpeninsula Regional Open Space District lands. See Section 4.16, *Recreation*.
- Transportation and Traffic, including necessary permits; the State Highway System; trip generation, distribution, assignment, Average Daily Traffic, morning and evening peak hour volumes, and cumulative traffic volumes; and damage caused to roads located on adjacent property. These and related comments are addressed in Section 4.17, *Transportation/Traffic*.
- Utilities and Service Systems, including waste disposal, recycling, the storm drainage system, and water demand. See Chapter 2, *Project Description*, and Section 4.18, *Utilities and Service Systems*.
- Cumulative Effects, including with respect to the cement plant and the Permanente Creek Flood Protection Project. Cumulative Effects are analyzed in Section 6, *Cumulative Effects*.

ES.8 Summary of Impacts and Mitigation Measures

This section summarizes the resource areas evaluated in this EIR, as well as impacts of implementation of the Project and alternatives.

ES.8.1 Resource Areas Evaluated

This section summarizes the potential impacts of implementing the Project or alternatives. The affected environment and the potential direct and indirect effects of the Project and alternatives are described and evaluated in Chapter 4 of this EIR for the resource areas listed below. The comparative analysis of alternatives is in Chapter 5 and the cumulative impact analysis is in Chapter 6. Other CEQA considerations are addressed in Chapter 7. Chapter 4 is organized into the following 18 environmental resource or issue areas:

- 4.1 Aesthetics, Visual Quality, and Light and Glare
- 4.2 Agriculture and Forestry Resources
- 4.3 Air Quality
- 4.4 Biological Resources
- 4.5 Cultural and Paleontological Resources
- 4.6 Energy Conservation
- 4.7 Geology, Soils and Seismicity
- 4.8 Greenhouse Gas Emissions
- 4.9 Hazards and Hazardous Materials
- 4.10 Hydrology and Water Quality
- 4.11 Land Use and Planning
- 4.12 Mineral Resources
- 4.13 Noise
- 4.14 Population and Housing
- 4.15 Public Services
- 4.16 Recreation
- 4.17 Transportation/Traffic
- 4.18 Utilities and Service Systems

ES.8.2 Summary of Impacts

Table ES-3, included at the end of this Executive Summary, summarizes the impacts of the Project for each of the resource areas assessed in this EIR. Detailed analyses of impacts are contained in Chapter 4. No impacts were indentified for:

- Agriculture and Forestry Resources
- Population and Housing
- Public Services

Where potentially significant impacts are identified, mitigation measures are proposed that would reduce the extent of the impacts to a less than significant level, to the extent feasible. Impacts were found to be less than significant or less than significant with mitigation for:

- Air Quality
- Energy Conservation
- Geology, Soils, and Seismicity
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Mineral Resources
- Noise
- Recreation
- Transportation/Traffic
- Utilities and Service Systems

Implementing the Project would result in significant and unavoidable impacts for:

- Aesthetics, Visual Quality, and Light and Glare
- Biological Resources
- Cultural Resources
- Hydrology and Water Quality

Table ES-4 compares the conclusions of the impact analyses for the alternatives against the conclusions for the Project. The comparative analysis summarized in Table ES-4 shows no preference among the alternatives for Agriculture and Forestry Resources, Cultural and Paleontological Resources, Hazards and Hazardous Materials, Land Use and Planning, Population and Housing, Public Services, Transportation and Traffic, and Utilities and Service Systems. Of the remaining resource areas:

- The Project was preferred over the alternatives for Aesthetics, Visual Quality, Light, and Glare; and Recreation.

- Alternative 2 was preferred with respect to Biological Resources.

- The Project and Alternative 2 were equally preferred with respect to Hydrology and Water Quality.
- The Project and the No Project Alternative were equally preferred for Energy Conservation.
- The Project was slightly preferred for Air Quality and GHG emissions over Alternative 1 and Alternative 2, but would not be as environmentally advantageous in this respect as the No Project Alternative, which was most preferred for Air Quality and GHG emissions.
- Alternative 1 was most preferred among the alternatives related to Geology and Soils and Mineral Resources.
- Alternative 2 and the No Project Alternative were equally preferred for Noise.

TABLE ES-3
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Aesthetics, Visual Quality, and Light and Glare			
4.1-1: Construction of the Project would have a substantially adverse effect on a scenic vista during an interim period.	Significant	None feasible	Significant and unavoidable
4.1-2: Monitoring and Maintenance of the Project would not have a substantially adverse long term effect on a scenic vista.	Less than significant	None required	Less than significant
4.1-3: Construction of the Project would substantially damage scenic resources within a state- or County-designated scenic highway or route during the period of time when active reclamation activities are occurring.	Significant	None feasible	Significant and unavoidable
4.1-4: Neither active reclamation activities nor monitoring and maintenance of the Project would result in long term substantial damage to scenic resources within a state- or County-designated scenic highway or route.	Less than significant	None required	Less than significant
4.1-5: The Project would alter and substantially degrade the existing visual character or quality of the Project Area during the period of time when active reclamation activities are occurring.	Significant	None feasible	Significant and unavoidable
4.1-6: The implementation of active reclamation activities would alter, but not permanently substantially degrade, the existing visual character or quality of the Project Area.	Less than significant	None required	Less than significant
4.1-7: Lighting required for the Project would not adversely affect daytime or nighttime views in the Project Area.	Significant	**4.1-7:** No night lighting in the EMSA.	Less than significant
4.1-8: The Project would not create new permanent sources of light or glare that would affect daytime or nighttime views in the area.	Less than significant	None required	Less than significant
6-1: Project construction activities could make a cumulatively considerable contribution a substantial adverse effect on a scenic vista and degradation of the existing visual character or quality of the Project Area.	Significant	None feasible	Significant and unavoidable

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Agriculture and Forestry Resources			
(No impact)			
Air Quality			
4.3-1: The Project would generate emissions of criteria air pollutants which could contribute to existing nonattainment conditions and further degrade air quality.	Less than significant	None required	Less than significant
4.3-2: Project traffic associated with operational and reclamation activities would generate localized CO emissions on roadways and at intersections in the Project vicinity.	Less than significant	None required	Less than significant
4.3-3: The Project would expose people to increased levels of toxic air contaminants, which could lead to an increase in the risk of cancer.	Significant	**4.3-3a:** Submit to the County and the BAAQMD a comprehensive inventory of all Project-related off-road construction equipment expected to be used during any portion of the Project; and **4.3-3b:** Provide a plan demonstrating that Project-related off-road equipment would achieve a Project (EMSA-specific) wide fleet-average 35 percent reduction in DPM emissions compared to the proposed fleet in the ALG report; or **4.3-3c:** Submit evidence establishing that there are legally-binding restrictions precluding any occupancy of the caretaker's residence during Phase 1.	Less than significant
4.3-4: The Project would expose people to increased levels of toxic air contaminants, which could increase acute and chronic health risks.	Less than significant	None required	Less than significant
4.3-5: The Project would increase emissions of PM2.5, which could adversely affect human health.	Significant	**4.3-5:** Implement Mitigation Measures 4.3-3a and 4.3-3b (or, alternatively, implement Mitigation Measure 4.3-3c).	Less than Significant
Biological Resources			
4.4-1: Project activities could result in adverse effects on special-status and migratory birds.	Less than significant	None required	Less than significant
4.4-2: Project activities could result in adverse effects on special-status bats.	Significant	**4.4-2a:** Use of Buffers near Active Roosts. **4.4-2b:** Roosting Bats, Maternity Roosting Season. **4.4-2c:** Bat Roost Replacement.	Less than significant
4.4-3: Project activities could result in adverse effects on the San Francisco dusky-footed woodrat.	Less than significant	None required	Less than significant

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Biological Resources (cont.)			
4.4-4: Project activities could result adverse effects on special status aquatic organisms.	Less than significant	None required	Less than significant
4.4-5: Project activities could result in selenium-burdened runoff reaching aquatic habitats and, thereby, in deleterious effects to aquatic organisms and their prey base.	Significant	**4.4-5:** Selenium-related Impacts to Aquatic Habitat.	Significant and unavoidable
4.4-6: Project activities could result in the loss or degradation of riparian habitat associated with Permanente Creek.	Less than significant	None required	Less than significant
4.4-7: Project activities could result in the loss of native oak woodland as defined by Oak Woodlands Conservation Law.	Significant	**4.4-7:** Sudden Oak Death Minimization Measures.	Less than significant
4.4-8: Project activities could result in substantial adverse effects on wetlands and jurisdictional waters associated with Permanente Creek through direct removal, filling, hydrological interruption, or other means.	Significant	**4.4-8a:** Wetland Identification and Avoidance. **4.4-8b:** Wetland Mitigation Plan.	Less than significant
Cultural and Paleontological Resources			
4.5-1: Project activities could cause an adverse change in the significance of an historical resource pursuant to §15064.5 of the CEQA Guidelines and the County's Historic Preservation Ordinance.	Significant	**4.5-1a:** Document the physical characteristics and their historic context of the contributing features of the Kaiser Permanente Quarry Mining District; **4.5-1b:** Salvage and/or relocate a representative portion of the Permanente Quarry Conveyor System and the remains of the early 1940s crusher; and **4.5-1c:** Prepare public information programs to educate the general public on the historic nature of the potential Kaiser Permanente Quarry Mining District.	Significant and unavoidable
4.5-2: Project activities could cause an adverse change in the significance of an archaeological resource as defined in §15064.5 of the CEQA Guidelines.	Significant	**4.5-2:** Notify the County if cultural resources are encountered during Project implementation.	Less than significant
4.5-3: Project activities could directly or indirectly destroy a unique paleontological resource or site.	Significant	**4.5-3:** Notify the County if a paleontological resource is encountered during implementation of the RPA.	Less than significant
4.5-4: Project activities could disturb human remains, including those interred outside of formal cemeteries.	Significant	**4.5-4:** Notify the County Coroner if human skeletal remains are encountered.	Less than significant

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Energy Conservation			
4.6-1: The Project would include means for avoiding or reducing wasteful and/or unnecessary consumption of energy.	Less than significant	None required	Less than significant
Geology, Soils, and Seismicity			
4.7-1: Rock and soil slopes constructed as part of the proposed reclamation of the EMSA, Quarry pit, and WMSA could fail under static or seismic forces if not properly engineered and constructed.	Significant	**4.7-1:** Avoidance and containment of shallow slumps and/or fall-back of overburden material.	Less than significant
4.7-2: In the event of a major earthquake in the region, seismic ground shaking could result in injury to site workers, damage to Quarry equipment and structures, or trigger slope failures. In addition, a large earthquake on the San Andreas Fault could result in minor ground deformation along traces of the Berrocal or Monte Vista Fault Zones.	Less than significant	None required	Less than significant
4.7.3: Earthmoving and other ground disturbance associated with the phased reclamation of the site could temporarily promote accelerated erosion and soil loss.	Less than significant	None required	Less than significant
Greenhouse Gas Emissions			
4.8-1: The Project could result in an increase in greenhouse gas emissions and contribute to climate change.	Significant	**4.8-1a:** Develop Annual GHG Inventory. **4.8-1b:** Greenhouse Gas Emissions Reduction Plan.	Less than significant
4.8-2: The Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.	Less than significant	None required	Less than significant
Hazards and Hazardous Materials			
4.9-1: The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Less than significant	None required	Less than significant

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hazards and Hazardous Materials (cont.)			
4.9-2: The Project could 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.	Less than significant	None required	Less than significant
4.9-3: Sedimentation basins planned for erosion control at the Project site could provide breeding grounds for vectors.	Less than significant	None required	Less than significant
Hydrology and Water Quality			
4.10-1: Post-reclamation conditions in the EMSA, WMSA, and Quarry pit would increase selenium concentrations in Permanente Creek to levels exceeding baseline conditions and RWQCB Basin Plan objectives.	Significant	**4.10-1a:** Professional Geologist Verification of Non-Limestone-Containing Material Use. **4.10-1b:** Verification Water Quality Monitoring.	Less than significant
4.10-2: Interim reclamation activities within the Project Area would contribute concentrations of selenium, Total Dissolved Solids (TDS), and sediment in Permanente Creek.	Significant	**4.10-2a:** Interim Stormwater Control and Sediment Management. **4.10-2b:** EMSA Interim Stormwater Monitoring Plan.	Significant and unavoidable
4.10-3: The Permanente Creek Reclamation Area (PCRA) reclamation activities would contribute concentrations of selenium, Total Dissolved Solids (TDS), and sediment in Permanente Creek.	Less than significant	None required	Less than significant
4.10-4: The Project would alter the existing drainage pattern of the site, which could result increased storm water runoff rates and on- or offsite flooding.	Significant	**4.10-4:** Construction of Onsite Detention Facility.	Significant and unavoidable
4.10-5: Groundwater discharge from the Quarry pit after backfilling and reclamation is complete would adversely alter surface water flows to Permanente Creek.	Less than significant	None required	Less than significant
4.10-6: The Project would alter the existing drainage pattern of the site, which could result in increased stormwater ponding, accumulation of selenium, and flooding.	Significant	**4.10-6:** Stormwater Control to Avoid Ponded Water and Selenium Accumulation.	Less than significant

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Hydrology and Water Quality (cont.)			
Impact 6-2: Incremental Project-specific activities could contribute to downstream flooding.	Significant	**6-2:** Construction of Onsite Detention Facility.	Significant and unavoidable
Land Use and Planning			
4.11-1: The Project would be incompatible with adjacent land uses.	Less than significant	None required	Less than significant
Mineral Resources			
4.12-1: The planned backfill of the Quarry pit would hinder further extraction of cement-grade limestone and aggregate resources from the Quarry pit, thereby resulting in the loss of availability of a mineral resource of state, regional, and local significance.	Less than significant	None required	Less than significant
Noise			
4.13-1: Operations associated with reclamation during Phase 1 would exceed County noise standards and increase ambient noise levels at noise-sensitive uses in the vicinity.	Significant	**4.13-1a:** Prohibition of heavy equipment operations during nighttime hours. **4.13-1b:** Limiting of operations in the EMSA or submittal of evidence establishing that there are legally-binding restrictions precluding any occupancy of the caretaker's residence during the entirety of Phase 1 of the Project.	Less than significant
4.13-2: Operations associated with reclamation during Phase 2 would increase ambient noise levels at noise-sensitive uses in the vicinity.	Less than significant	None required	Less than significant
4.13-3: Operations associated with reclamation Phase 3 may be audible at noise-sensitive uses in the vicinity.	Less than significant	None required	Less than significant
4.13-4: Operations within the Permanente Creek Reclamation Area may be audible at noise-sensitive uses in the vicinity.	Less than significant	None required	Less than significant
Population and Housing			
(No impact)			

TABLE ES-3 (Continued)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Environmental Impact	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Public Services			
(No impact)			
Recreation			
4.16-1: The Project would be near a public park and trail and could affect existing or future recreational opportunities.	Less than significant	None required	Less than significant
Transportation/Traffic			
4.17-1: The Project would cause increases in traffic volumes on area roadways, but would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system.	Less than significant	None required	Less than significant
4.17-2: Traffic generated by Project activities could affect traffic safety of pedestrians and bicyclists.	Less than significant	None required	Less than significant
4.17-3: The Project would provide safe access, and would not obstruct access to nearby uses or fail to provide for future street right-of-way.	Less than significant	None required	Less than significant
4.17-4: Traffic generated by the Project would contribute to pavement wear-and-tear on area roadways.	Less than significant	None required	Less than significant
Utilities and Service Systems			
4.18-1: The Project would require and result in the construction of new storm water drainage facilities, the construction of which could cause environmental effects.	Less than significant	None required	Less than significant
4.18-2: The Project may not be able to be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.	Less than significant	None required	Less than significant

TABLE ES-4
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Aesthetics, Visual Quality, and Light and Glare	Impacts determined to be significant and unavoidable relating to a scenic vista (Anza Knoll), a scenic roadway (I-280) and the alteration or substantial degradation of the existing visual character or quality of the Project Area. All other impacts determined to be less than significant or no impact. **Preferred.**	Implementation of Alternative 1 would cause greater impacts to a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, than the Project, due to the lower height of the EMSA. **Least Preferred.**	Implementation of Alternative 2 would be less environmentally advantageous than the Project relative to a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, due to the lower height of the EMSA. **Not Preferred.**	Implementation of the No Project Alternative would be less environmentally advantageous than the Project relative a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, due to the lower height of the EMSA. **Not Preferred.**
Agriculture and Forest Resources	Implementation of the Project would cause no impact to agriculture and forestry resources. **No Preference.**	Implementation of Alternative 1 would cause the same impact (no impact) to agriculture and forestry resources as the Project. **No Preference.**	Implementation of Alternative 2 would cause a greater impact to forestry resources than the Project because it would result in the conversion of forest land to a non-forest use. **Not Preferred.**	Implementation of the No Project Alternative would cause the same impact (no impact) to agriculture and forestry resources as the Project. **No Preference.**
Air Quality	Impacts to air quality and health risk would be less than significant or less than significant with mitigation. **Slight Preferred.**	Implementation of Alternative 1 would cause a greater impact to air quality and health risk than the Project. **Not Preferred.**	Implementation of Alternative 1 would cause a greater impact to air quality than the Project and the same impact to health risk. **Not Preferred.**	The No Project Alternative would result in a similar or lesser impact for air quality than the Project, and less impact to health risk. **Most Preferred.**
Biological Resources	Impacts to biological resources would be less than significant or less than significant with mitigation for all significance criteria except selenium-related impacts to aquatic habitats, which would be significant and unavoidable until final reclamation is complete. **No Preference.**	Implementation of Alternative 1 would cause similar impacts as the Project except for selenium-related impacts to Permanente Creek, which would be essentially the same until final reclamation is complete and slightly less post-reclamation. **No Preference.**	Implementation of Alternative 2 would cause similar impacts as the Project except for selenium-related impacts to Permanente Creek, which would be slightly less than the Project both pre- and post-reclamation. **Preferred.**	Implementation of the No Project Alternative would cause similar impacts as the Project for all areas except selenium-related impacts to Permanente Creek. Because the interim period before reclamation would be longer than for the proposed Project, the extended timeframe would result in a longer period of selenium-related impacts to aquatic habitat. **Not Preferred.**

TABLE ES-4 (Continued)
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Cultural and Paleontological Resources	Impacts to historical resources determined to be significant and unavoidable. Impacts to archaeological, paleontological, and human remains determined to be less than significant with mitigation. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**
Energy Conservation	Impacts to energy conservation would be less than significant. **No Preference.**	Impacts to energy conservation would be greater than the Project, as more fossil fuel would be required to excavate and move the EMSA materials and thereafter to contour the area. **Not Preferred.**	Impacts to energy conservation would be greater than the Project, as more fossil fuel would be required to implement this alternative based on the increased surface area. **Not Preferred.**	Impacts of the No Project Alternative would be substantially the same as the Project. **No Preference.**
Geology and Soils	Impacts to geology and soils would be less than significant. **Slight Preferred.**	Impacts to geology and soils would be less than the Project due to additional buttressing of the North Quarry and elimination of potential impacts of the EMSA. **Most Preferred.**	Impacts to geology and soils would be similar to or slightly greater than the Project due to the combined height of the EMSA/CMSA and slightly reduced factors of safety. **Not Preferred.**	Impacts to geology and soils would be greater, because baseline conditions of marginal slope stability would continue for a longer period of time. **Not Preferred.**
Greenhouse Gas Emissions	Impacts to greenhouse gas emissions would be less than significant or less than significant with mitigation. **Slight Preferred.**	Implementation of Alternative 1 would cause a greater impact to greenhouse gas emissions than the Project. **Not Preferred.**	Implementation of Alternative 1 would cause a greater impact to greenhouse gas emissions than the Project. **Not Preferred.**	The No Project Alternative would result in lesser impacts for greenhouse gas emissions than the Project. **Most Preferred.**
Hazards and Hazardous Materials	The Project would have no impact or less than significant impacts pertaining to hazards and hazardous materials. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**

TABLE ES-4 (Continued)
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Hydrology and Water Quality	Impacts related to water quality would be less than significant with mitigation except for selenium-related impacts to water quality in Permanente Creek, which would be significant and unavoidable until final reclamation is complete. Drainage and flooding impact would be significant and would be unavoidable if adequate detention facility is not feasible. Groundwater impacts would be less than significant. **Preferred.**	Impacts related to long term selenium leaching to surface water would be less than under the Project; however, the larger area and higher slopes would result in more severe drainage and flooding impacts, and the longer interim period before WMSA and EMSA reclamation could result in more severe interim impacts to water quality. **Not Preferred.**	Impacts to hydrology and water quality would be similar to or slightly less than the Project. **Preferred.**	The interim period before reclamation would be longer than for the proposed Project; the extended timeframe would result a longer period of selenium-related water quality impacts. Downstream flooding impacts resulting from backfilling the Quarry pit would be similar to the proposed Project but would occur several years later. **Not Preferred.**
Land Use and Planning	Impacts to land use and planning determined to be less than significant. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**
Mineral Resources	Impacts to mineral resources determined to be less than significant. **No Preference.**	Impacts to mineral resources would be slightly less than the proposed Project due to the increased ease with which potential aggregate material contained within native geologic materials underlying the EMSA could be accessed. **Preferred.**	Impacts to mineral resources would be the same as the proposed Project. **No Preference.**	Impacts to mineral resources would be the same as the proposed Project. **No Preference.**
Noise	Noise impacts on the caretaker's residence and the Cristo Rey residential area associated with reclamation during Phase 1 would be less than significant with mitigation incorporated. All other impacts would be less than significant. **Not Preferred.**	Impacts from noise would be greater than the Project due to the additional heavy equipment activity required to excavate and remove the EMSA, combined with removal of the feature that would help shield nearby residences from equipment noise. **Not Preferred.**	Impacts from noise would be less than the Project because the reclaimed EMSA would likely shield equipment activity within the CMSA from off-site residential receptors on the valley floor. **Preferred.**	The No Project Alternative would result in lessened overall noise levels compared to the proposed Project, albeit over a longer period of time. **Preferred.**
Population and Housing	The Project would have no impact to population and housing. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**

TABLE ES-4 (Continued)
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Public Services	The Project would have no impact to public services. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**
Recreation	Impacts to recreation determined to be no impact or less than significant. **Preferred.**	Implementation of Alternative 1 would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **Not Preferred.**	Implementation of Alternative 2 would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **No Preference.**	Implementation of the No Project Alternative would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **No Preference.**
Transportation and Traffic	Impacts to transportation and traffic determined to be less than significant. **No preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**
Utilities and Service Systems	Impacts to utilities and service systems determined to be less than significant. **No preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**

CHAPTER 1
Introduction

1.1 Purpose of This Document

This Environmental Impact Report (EIR) is an informational document intended to disclose to the public and decision-makers the potential environmental impacts of the Lehigh Permanente Quarry Reclamation Plan Amendment (RPA, or the Project) proposed by Lehigh Southwest Cement Company (Lehigh, or Applicant) for the Permanente Quarry (Mine ID No. 91-43-0004).[1] This document assesses the direct, indirect, and cumulative environmental impacts that could occur as a result of the slope stability, revegetation, drainage and erosion control, structure dismantling and removal, monitoring, and other reclamation activities proposed in the Reclamation Plan Amendment submitted by Lehigh to Santa Clara County (County) on December 1, 2011 (EnviroMINE, Inc., 2011).

In 1985, the County approved the original reclamation plan (the 1985 Reclamation Plan) for the Permanente Quarry pursuant to the Surface Mining and Reclamation Act of 1975 and its implementing regulations (SMARA). The terms of that plan anticipated that an amendment would be filed in approximately 25 years' time. The first in the series of reclamation plan amendment proposals was submitted for the County's consideration in 2007, the second in 2009, the third in 2010, and the fourth in July 2011. The July 2011 proposal was updated in December 2011. The December 2011 reclamation plan amendment proposal for the Permanente Quarry is the Project that is the subject of this EIR. The December 2011 application supersedes all prior applications for amendment of the 1985 Reclamation Plan. The analysis in this EIR is based on information submitted to the County as part of the Applicant's request for reclamation plan amendment approval, as well as information contained in materials submitted with the Applicant's prior reclamation-related applications for the Permanente Quarry and from independent studies and research conducted by the County and EIR preparers.

This EIR examines the potential impacts of the Project and alternatives to the Project. All of the resource areas in the California Environmental Quality Act (CEQA)[2] Guidelines Appendix G checklist as well as the County of Santa Clara's checklist are analyzed.

1 The Permanente Quarry is owned by Hanson Permanente Cement, Inc. and operated by Lehigh Southwest Cement Company. Lehigh and Hanson both are part of the Heidelberg Cement Group, a worldwide producer of construction materials (Lehigh Cement Company, 2011; Hanson, 2011).

2 CEQA is set forth in Public Resources Code Section 21000 and following; its implementing regulations (the "CEQA Guidelines") are found in Title 14 of the California Code of Regulations Section 15000 and following.

1.2 Project Overview

The Permanente Quarry is a limestone and aggregate mining operation located in the Santa Clara County (County) foothills west of the City of Cupertino. The Applicant proposes to amend the existing, approved 1985 Reclamation Plan for a 20-year period dating from Project approval. The Project Area includes an approximately 1,238.7-acre area in an unincorporated area of the County (the Project Area) within the Applicant's overall 3,510-acre ownership. The 1,238.7-acre area consists of the existing Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area (WMSA) and the East Materials Storage Area (EMSA), the crusher/Quarry office support area, surge pile, Rock Plant, approximately 284-acres located south of Permanente Creek that have been disturbed by prior exploratory activities (Exploration Area), approximately 25.9-acres adjacent to Permanente Creek (Permanente Creek Restoration Area or PCRA), and open space areas that serve to physically separate operations at the site from other uses in the surrounding environs.

The Project is designed to make the reclaimed lands suitable for future open space uses. Toward this end, the RPA includes site-specific activities to satisfy the reclamation requirements of SMARA and SMARA's implementing regulations,[3] as well as the County's surface mining ordinance (County Code §4.10.370) and Surface Mining and Land Reclamation Standards (County of Santa Clara, 2000).

The Project also is intended to ensure that Permanente Quarry is in compliance with state and local law. The Applicant has a vested right to conduct surface mining (resource extraction) activities and no permit to mine is required from the County. Although the right to mine is vested, Lehigh is subject to SMARA's and the County's requirement that it have a lead agency-approved reclamation plan for its surface mining operations (Pub. Res. Code §2770; County Code §4.10.370(C)). As demonstrated by Notices of Violation issued by the County in 2006 and 2008 for mining outside of the approved 1985 Reclamation Plan boundary, the Applicant currently is out of compliance with SMARA and the County's requirements (see County of Santa Clara, 2006, 2008, and 2009). The Project, if approved, would abate these violations.

1.3 Use of this Document by Agencies

CEQA Guidelines Section 15124(d) requires that an EIR contain a statement briefly describing the intended uses of the EIR. The CEQA Guidelines indicate that the EIR should identify the ways in which the Lead Agency and any responsible agencies would use this document in their approval or permitting processes. The following discussion summarizes the roles of the agencies and the intended uses of the EIR.

The County has primary discretionary authority over the Project as the Lead Agency responsible under SMARA for reviewing the RPA and the Lead Agency responsible under CEQA for

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3 SMARA is set forth in Public Resources Code Section 2710 et seq.; its implementing regulations are found in Title 14 of the California Code of Regulations Section 3500 et seq.

reviewing the Project's potential environmental effects. The County will use this EIR in conjunction with other information developed in the administrative record when considering whether to approve the Project.

The California Department of Conservation's State Mining and Geology Board and Office of Mine Reclamation (collectively, DOC) administer SMARA at the state level by promulgating regulations, providing technical assistance for lead agencies, maintaining a statewide database of mine-related information, and being responsible for compliance-related matters (DOC, 2011c). DOC has held numerous hearings where the Permanente Quarry and its compliance status were discussed (see, e.g., DOC, 2006, 2007b, 2011a, 2011b).

Other agencies may rely on information in this EIR to inform their decisions regarding the issuance of specific permits or authorizations related to Project implementation. **Table 1-1** identifies the permits, approvals, and agency consultations expected to be required for approval of the Project.

TABLE 1-1
EXPECTED PERMITS, APPROVALS AND CONSULTATIONS

Agency	Permit/Approval Required
Federal	
U.S. Army Corps of Engineers (USACE)	Clean Water Act, Section 404 Nationwide Permit if jurisdictional waters of the U.S. could be affected by reclamation activities proposed by the Project. Endangered Species Act compliance (ESA Section 7 consultation) would be conducted as part of the Clean Water Act Section 404 process. National Historic Preservation Act compliance (NHPA Section 106 consultation) also would be conducted as part of the Clean Water Act Section 404 process.
State	
State Water Resources Control Board (SWRCB)	Construction Stormwater General Permit; Notice of Intent to Comply with Section 402 of the Clean Water Act, SWPPP and SPCC Plan; Industrial Stormwater General Permit; Approval of O&M SWPPP and SPCC Plan. Section 401 Certification if USACE determines jurisdictional waters of the U.S. would require a Clean Water Act Section 404 permit.
San Francisco Bay Regional Water Quality Control Board (RWQCB)	The RWQCB would implement the Section 401 Certification on the SWRCB's behalf.
California Department of Fish and Game (CDFG)	Streambed Alteration Agreement.
Local	
Santa Clara County, Department of Conservation & Development	Reclamation Plan Amendment, Demolition Permit
Santa Clara County Department of Environmental Health, Hazardous Materials Division, CUPA	Hazardous Materials Business Plan and Permit for handling hazardous materials above threshold quantities (includes hazardous waste management).

1.4 Public Review and Comment

1.4.1 Scoping

Four Notices of Preparation (NOPs) have been published and distributed to advise interested local, regional, and state agencies, as well as members of the public, that an EIR would be prepared to analyze impacts that could be caused by Lehigh's proposed reclamation of the Quarry. In total, more than 200 people have provided more than 350 comment letters on the four separate proposals to reclaim the Quarry.

On June 29, 2007, the County issued an NOP related to the first proposed amendment to the 1985 Reclamation Plan (the "2007 Proposed RPA") (County of Santa Clara, 2007). Issuance of this NOP initiated a 30-day period during which the public and agencies could provide input on the scope of issues and alternatives to be analyzed in the EIR. The County hosted a community scoping meeting to discuss the proposal on July 26, 2007. If it had been approved, the 2007 Proposed RPA would have modified the 330-acre area covered by the 1985 Reclamation Plan to include 917 acres and would have extended the termination date of the plan by 25 years. The 2007 Proposed RPA would have addressed five main areas: the Quarry pit, WMSA, EMSA, an approximately 30-acre new mining area in the southeast portion of the site, and buffer areas. However, the 2007 Proposed RPA was not formally considered for approval. Instead, the County determined that the application was not complete, and additional geotechnical studies were required before the application could be considered complete.

On April 28, 2010, the County issued an NOP related to the second proposed amendment to the 1985 Reclamation Plan (the "EMSA RPA"). The EMSA RPA, if approved, would have abated the Notice of Violation (NOV) issued to the Permanente Quarry operator by the County on June 20, 2008, for illegally stockpiling materials in the EMSA outside the approved 1985 Reclamation Plan boundary. Components of the proposed EMSA RPA have been carried forward into the current Project.

On March 10, 2011, the County issued an NOP related to the third proposed amendment to the 1985 Reclamation Plan (the "Comprehensive RPA") (County of Santa Clara, 2010, 2011a). The Comprehensive RPA, if approved, would have abated the October 2006 combined NOV / Order to Comply as well as included in the reclamation plan boundary a new, approximately 207-acre surface mining area south of Permanente Creek and an approximately 52-acre overburden disposal area located east of the Quarry pit and just west of and overlapping the EMSA. Neither of these components has been carried forward into the current Project.

On August 18, 2011, the County issued an NOP for the July 2011 application, which was updated in December 2011 to include subsequent developments and refinements and which is the Project now under consideration (County of Santa Clara, 2011b). The NOP made clear that the application for the Project supersedes prior applications. The comment period for the Project NOP ended on September 26, 2011.

A Scoping Report has been prepared for the Project (see Appendix A). It includes copies of each of the NOPs described above, as well as copies of all of the written comments and summaries of all of the oral comments that the County received in response to the respective requests for input. As described in more detail in the Scoping Report, the overarching themes of the comments as they relate to elements carried forward in the proposed Project that fall within the purview of the CEQA process relate to the following main topics:

- The Project Description, including the Project's relationship with the 2007 Proposed RPA, EMSA RPA, Comprehensive RPA; specifics of the WMSA, EMSA, and Quarry pit; the reclamation timeframe; and the volume of material to be used to backfill the Quarry pit. These comments are addressed in this Introduction, as well as in Chapter 2, *Project Description*.

- Alternatives, including CEQA's requirement that a No Project Alterative be evaluated. The No Project Alternative is described in Chapter 3, *Description of Alternatives*, and related impacts are analyzed in Chapter 4, *Environmental Analysis*.

- Aesthetics and Visual Resources, including impacts to ridgeline views, the scenic easement, the visibility of Permanente Quarry terraces and benches, protections provided by the County Zoning Code and Design Review overlay, nighttime lighting effects, and a preference for vegetative buffer areas. These and related comments are addressed in Section 4.1, *Aesthetics, Visual Quality, and Light and Glare*.

- Air Quality, including odor and health-related emissions of diesel, nitrous oxide, sulfur dioxide, dust, arsenic, mercury, and asbestos; a need for an updated health risk assessment; and National Emission Standards for Hazardous Air Pollutants (NESHAP). These and related concerns are addressed in Section 4.3, *Air Quality*.

- Biological Resources, including Permanente Creek and other aquatic and riparian habitat; wetlands; impacts to fish, amphibians, avians, plants, and other species; oak woodland; and the test plots for revegetation efforts. These and related comments are addressed in Section 4.4, *Biological Resources*.

- Cultural Resources, including cultural and historic resources; human remains; and coordination with local tribal governments regarding traditional, cultural, and religious heritage values. These and related comments are addressed in Section 4.5, *Cultural and Paleontological Resources*.

- Geology and Soils, including slope stability, seismicity, and prior grading authorizations. These and related comments are addressed in Section 4.7, *Geology, Soils and Seismicity*.

- Greenhouse Gas Emissions, including the use of low-carbon fuels. See Section 4.8, *Greenhouse Gas Emissions*.

- Hazards and Hazardous Materials, including asbestos, selenium, mercury, petroleum coke, radioactive material, toxic materials, and risks associated with rocks falling from trucks. These and related comments are addressed in Section 4.9, *Hazards and Hazardous Materials*.

- Hydrology and Water Quality, including toxic releases into County watersheds; runoff containing selenium, arsenic, and/or mercury; the potential for surface and groundwater contamination; stormwater and sediment control; streamflows; seeps and springs; beneficial uses of area waters; data concerns; and the status of existing water quality violations. These and related comments are addressed in Section 4.10, *Hydrology and Water Quality*.

- Land Use and Planning, including future use of the site and Project consistency with County land use guidelines and standards. These and related comments are addressed in Section 4.11, *Land Use and Planning.*
- Noise and Vibration, including the effects of blasting, trucks, and earthmoving on recreational users of trails and open space lands in the vicinity of the Project as well as along surface streets. These and related comments are addressed in Section 4.13, *Noise.*
- Recreation, including area trails and Midpeninsula Regional Open Space District lands. See Section 4.16, *Recreation.*
- Transportation and Traffic, including necessary permits; the State Highway System; trip generation, distribution, assignment, Average Daily Traffic, morning and evening peak hour volumes, and cumulative traffic volumes; and damage caused to roads located on adjacent property. These and related comments are addressed in Section 4.17, *Transportation/Traffic*.
- Utilities and Service Systems, including waste disposal, recycling, the storm drainage system, and water demand. See Chapter 2, *Project Description,* and Section 4.18, *Utilities and Service Systems.*
- Cumulative Effects, including with respect to the cement plant and the Permanente Creek Flood Protection Project. Cumulative Effects are analyzed in Section 6, *Cumulative Effects*.

1.4.2 Public Comment on the Draft EIR

This Draft EIR is being circulated to local and state agencies and to interested individuals who may wish to review and comment on the report. Written comments may be submitted to the County during the 60-day public review period. Written comments on this Draft EIR will be accepted via regular mail, fax, and e-mail, as well as at a public meeting that will be noticed under separate cover. All comments received will be addressed in a Response to Comments document, which, together with this Draft EIR, will constitute the Final EIR for the Project.

This Draft EIR identifies the environmental impacts of the Project, indicates how those impacts would be mitigated or avoided, and identifies and evaluates alternatives to the Project. This document is intended to provide the County with the information required to exercise its discretionary authority with respect to the Project, which would be considered at a separately-noticed public meeting of the County Planning Commission.

CEQA states that the lead agency (here, the County) shall not approve a project as proposed unless the significant environmental effects of that project have been reduced to a less-than-significant level, essentially “eliminating, avoiding, or substantially lessening” its expected impacts. If the lead agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels despite the implementation of all feasible mitigation measures and alternatives, the agency must state in writing the reasons for its action.

Findings and a Statement of Overriding Considerations must be included in the record of project approval and mentioned in the Notice of Determination (NOD).

1.5 Organization of this EIR

This EIR is organized as follows:

Executive Summary. Provides a summary description of the Project, the alternatives, and the Environmentally Superior Alternative. Also provides a tabulation of the impacts and mitigation measures for the proposed Project and alternatives.

Chapter 1, *Introduction*. Provides a brief description the Project, outlines the public agency use of the EIR, describes the scoping process, and describes how a Final EIR will be prepared.

Chapter 2, *Project Description*. Describes the Purpose and Need for the Project, identifies the Project Objectives, and provides a detailed description of the Project.

Chapter 3, *Description of Alternatives*. Provides a description of the alternatives screening and evaluation process, a description of alternatives considered but eliminated from further analysis and the rationale for doing so, and a description of the alternatives analyzed in Chapters 4 and 5.

Chapter 4, *Environmental Analysis*. Analyzes each environmental resource area, including: a) the setting, which describes environmental conditions and regulatory information; b) the baseline against which potential environmental effects are evaluated; c) standards for determining the level of potential environmental impacts for each issue; d) potential impacts, which indicate the environmental effects that are anticipated from the Project; and e) mitigation measures for impacts that are identified as potentially significant.

Chapter 5, *Comparison of Alternatives*. Provides a discussion of the relative advantages and disadvantages of the Project and the alternatives that were evaluated, and identifies the CEQA Environmentally Superior Alternative.

Chapter 6, *Cumulative Impacts*. Identifies the projects considered in the cumulative analysis, and describes the cumulative impacts of the Project when considered together with other past, present, and reasonably foreseeable future projects.

Chapter 7, *Other CEQA Considerations*. Provides a discussion of growth-inducing impacts, significant environmental effects that could not be avoided, and irreversible environmental changes.

Chapter 8, *Report Preparers*. Identifies the authors and reviewers of this Draft EIR.

Chapter 9, *Glossary and Acronyms.* Presents definitions of terms and a list of acronyms used throughout the EIR.

Appendices. Provide technical or procedural materials that are pertinent to the analysis contained in the EIR. See the Table of Contents for the full list of appendices.

References – Introduction

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CHAPTER 2
Project Description

2.1 Project Overview

Lehigh Southwest Cement Company (Lehigh, or Applicant)[1] proposes to amend the existing Reclamation Plan for the Permanente Quarry (Quarry), a limestone and aggregate mining operation located in the Santa Clara County (County) foothills west of the City of Cupertino, for a 20-year period dating from project approval. The proposed Reclamation Plan Amendment (RPA or Project) includes approximately 1,238.7 acres, consisting of approximately 636.8 acres of existing or planned surface mining operation-related disturbance and approximately 599.3 acres of open space areas where no mining operations have occurred or would occur under the Project. This approximately 1,238.7-acre area comprises the "Project Area" for this EIR.[2] The primary areas to be reclaimed are the Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area (WMSA) and the East Materials Storage Area (EMSA), the crusher/Quarry office area, surge pile, Rock Plant, approximately 284-acres located south of Permanente Creek that have been disturbed by prior exploratory activities (Exploration Area), and approximately 25.9-acres adjacent to Permanente Creek (Permanente Creek Restoration Area or PCRA).

The Project is designed to make the reclaimed lands suitable for future open space uses. It includes site-specific activities to satisfy the reclamation requirements of the Surface Mining and Reclamation Act of 1975, as amended, and its implementing regulations (collectively, SMARA)[3] as well as the County's surface mining ordinance (Santa Clara County Code §4.10.370) and Surface Mining and Land Reclamation Standards (Santa Clara County, 2000). A lead-agency-approved reclamation plan is required for all surface mining operations in the state, including the Quarry. The County has primary discretionary authority over the Project and serves as the Lead Agency responsible under the California Environmental Quality Act (CEQA)[4] and SMARA. If approved, the Project would ensure the Quarry is in compliance with State and local mining laws. The Project would not preclude future extraction activities within or beyond the Project Area. Any such future proposal would require authorization from the County and compliance with CEQA.

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1 The Permanente Quarry (Mine ID No. 91-43-0004) is owned by Hanson Permanente Cement, Inc. and operated by Lehigh Southwest Cement Company. Lehigh and Hanson both are part of the HeidelbergCement Group, a worldwide producer of construction materials (Lehigh Cement Company, 2011; Hanson, 2011).

2 The Assessor's Parcel Numbers included in the Project Area are: 351-09-011, -012, -020, -020, -21, and -022; 351-10-005, -033, 037, and -038; and 351-11-001, -005, -006, -007, and -012.

3 SMARA is set forth in Public Resources Code Section 2710 et seq.; its implementing regulations are found in Title 14 of the California Code of Regulations Section 3500 et seq.

4 CEQA is set forth in Public Resources Code Section 21000 and following; its implementing regulations (the "CEQA Guidelines) are found in Title 14 of the California Code of Regulations Section 15000 and following.

2.2 Project Location

2.2.1 Regional Setting

The Quarry is located in the eastern foothills of the Santa Cruz Mountains, which are part of California's Coast Range and separate the San Francisco Bay Area from the Pacific Ocean along the San Francisco Peninsula. More specifically, the Quarry is located in an unincorporated area of the County west of the City of Cupertino, approximately 2 miles west of the intersection of Interstate 280 and Highway 85. Vehicular access is provided by Foothill Expressway, Stevens Creek Boulevard, and Permanente Road. The address is 24001 Stevens Creek Boulevard, Cupertino, California, 95014. See **Figure 2-1**, *Regional Location*.

2.2.2 Project Site

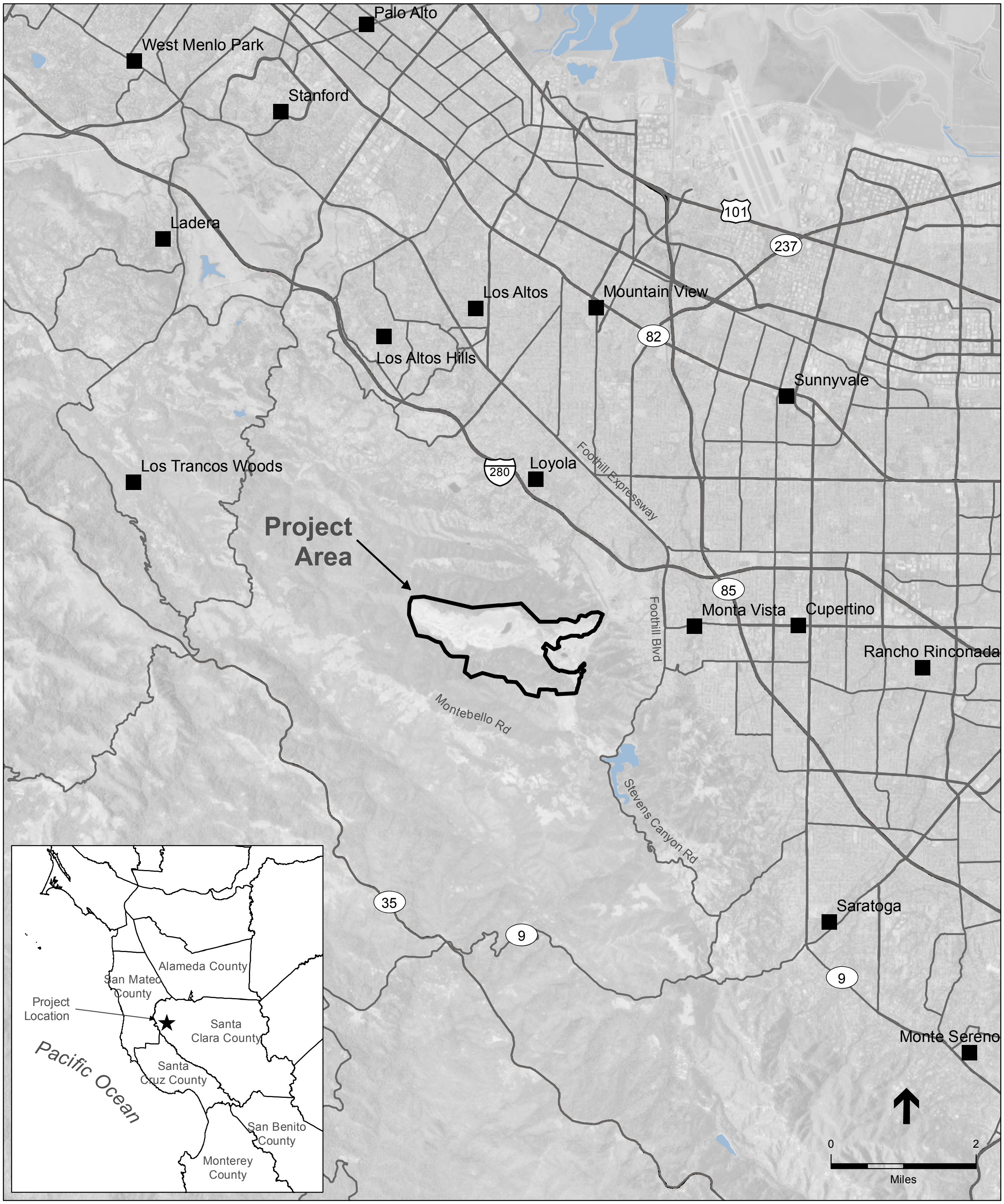
The Project Area is situated within the Applicant's 3,510-acre ownership. See **Figure 2-2**, *Project Area*. Of the total site acreage, 2,656 acres are subject to the County's land use jurisdiction (Santa Clara County, 2011a). The remaining 854 acres are located within the cities of Palo Alto and Cupertino. Outside of the Project Area, the primary use of the site relates to the Applicant's operation and maintenance of the Permanente Cement Plant. The majority of the remaining acreage is relatively undisturbed, steep, heavily vegetated, and has limited access. The Cement Plant and other areas of the site that are not within the Project Area are not part of the Project.

Figure 2-3, *Existing Topography*, shows the existing topography of the site, which consists of gentle to steep terrain marked by a series of generally east-west trending ridges and valleys. Steep slopes predominate, with flatter terrain occurring within some previously-disturbed areas in the Project Area. Elevations within the site generally increase from east to west, ranging from about 500 feet above mean sea level (amsl) near the site entrance to about 2,640 feet amsl at the western and southwestern site boundaries. Elevations within the Project Area range from approximately 500 feet amsl at the eastern edge to approximately 2,000 feet amsl at the western edge.

The site is bordered by large open space areas to the north, south, and west, and is in close proximity to urban areas to the east. To the north and northeast are Rancho San Antonio County Park and Mid Peninsula Regional Open Space District land. The closest residential areas are in the cities of Cupertino, Los Altos, Palo Alto, and Saratoga: at the closest points of these residential areas to the Project Area, the City of Cupertino is approximately .45 mile to the east, the City of Los Altos is approximately 1 mile to the northeast, and the City of Saratoga is approximately 3 miles to the southeast. Two census-designated residential areas (Loyola and Los Altos Hills) are approximately 1 mile north. A separate mining operation, the Stevens Creek Quarry, is adjacent to the Project Area to the south.

2.2.3 Project Area

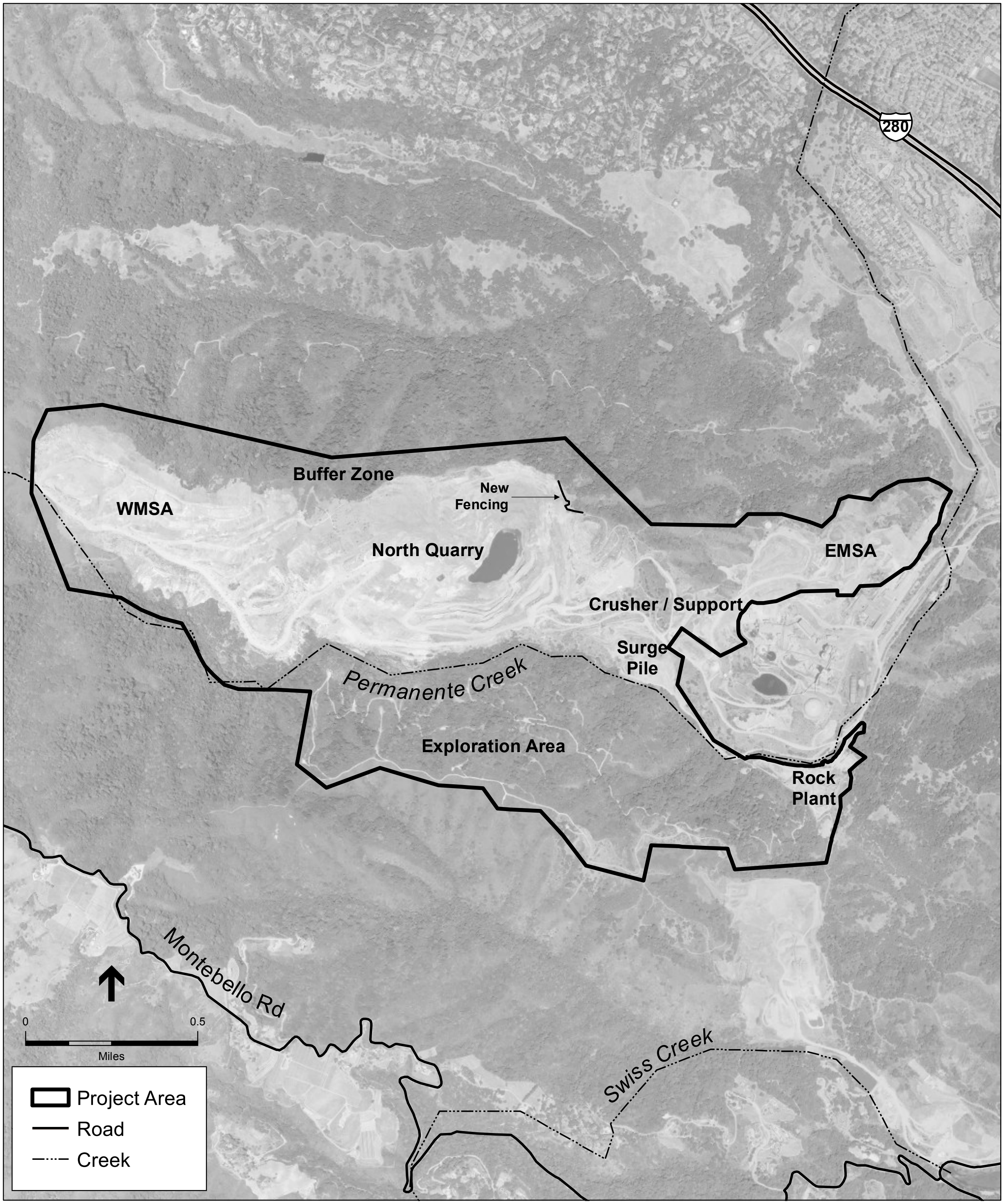
As noted above, the Project Area consists of the approximately 1,238.7-acre within which active reclamation activities would occur and existing, vegetated open spaces that would be designated as "buffer areas" to physically separate onsite operations and surrounding land uses.



SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment . 211742

Figure 2-1
Regional Location



SOURCE: SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 2-2
Project Area

2.3 Existing Land Use

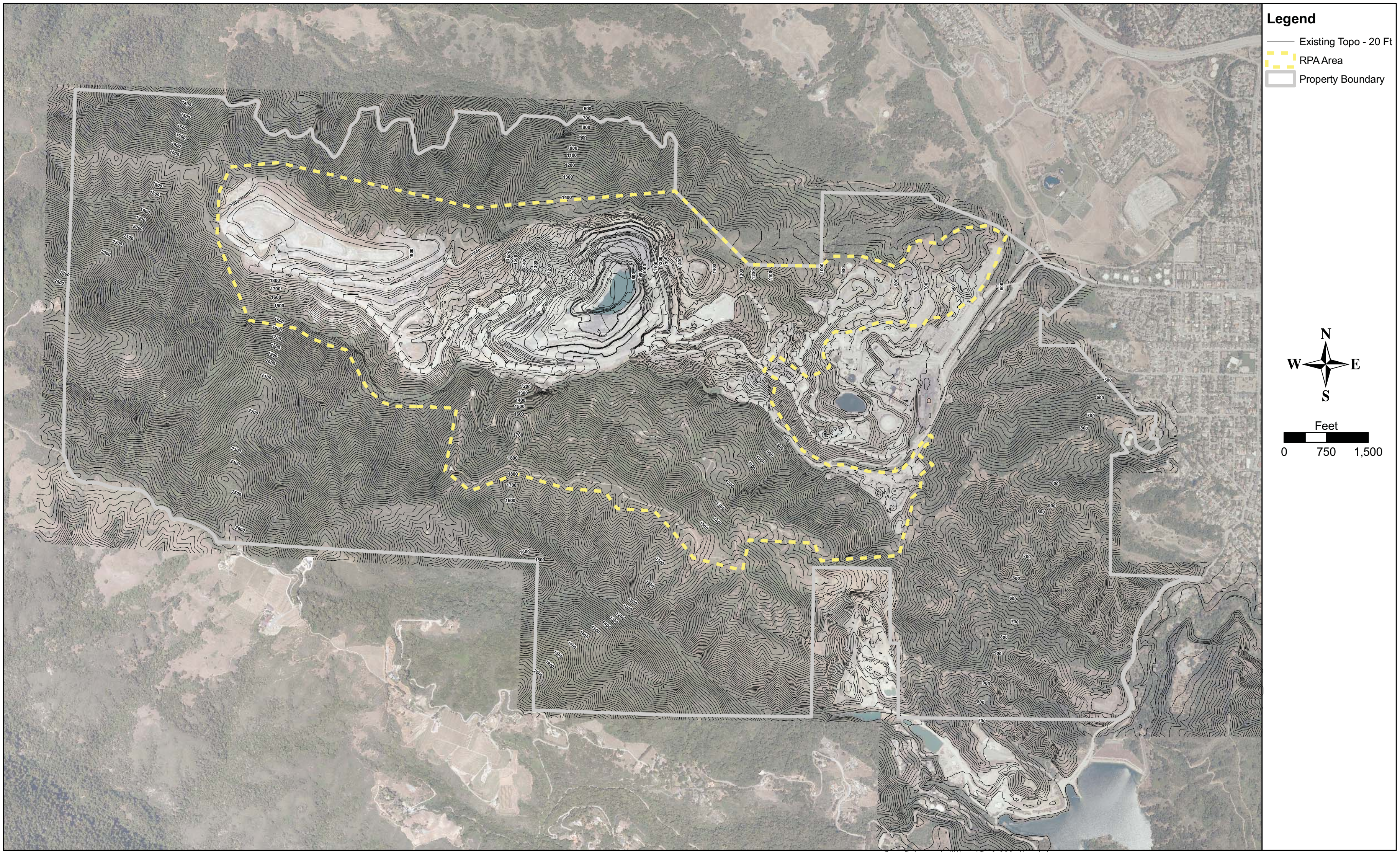
2.3.1 Existing Land Use in the Project Area

The Project Area contains approximately 636.8 acres of existing or planned surface mining disturbance related to mineral extraction, overburden storage, roads, exploration areas, and ancillary facilities. The Quarry primarily produces cement-grade limestone and lower grade limestone and greenstone suitable for use in construction aggregate products. Mining operations began at the Quarry as early as 1903 and have been continuous since 1939. Mineral extraction is expected to continue in the Quarry pit until about 2025 (EnviroMINE, 2011b). The Quarry has a vested right to conduct surface mining activities in the Quarry pit, WMSA, EMSA, crusher/ Quarry office area, surge pile, and Rock Plant. No County permit is required to mine these areas.

"Surface mining" includes the process of obtaining minerals such as rock or aggregate materials by removing topsoils and overburden (i.e., rock materials that are not suitable for use as limestone or aggregate) and excavating mineral commodities using excavators, drilling and blasting; hauling of materials using trucks and conveyors; and then processing of the materials using a primary crusher and the Rock Plant. Final slopes then are graded to engineered slopes and benches. However, because the County has determined that mining operations are a legal nonconforming use (i.e., a vested right) in the Project Area, the potential environmental impacts related to surface mining in the Project Area generally are not analyzed as part of the Project evaluated in this EIR; instead, mining-related impacts are considered as part of the cumulative scenario (see Chapter 6, *Cumulative Impacts*). The remainder of this section provides an overview of existing land use in the Project Area as it relates to the RPA.

The Quarry produces limestone for cement production and low calcium carbonate limestone for construction aggregate uses. Materials are extracted from the Quarry pit for processing, and overburden is disposed of in various locations in the Project Area. Settling ponds for quarry run-off and operational water ponds also are operated and maintained within and adjacent to the Project Area. The Applicant estimates that existing mining activities would continue in the Quarry pit until approximately 2025, depending on market demands for the mineral commodities produced. Existing operational areas overlap with the some of the areas that would be reclaimed by the Project: the Quarry pit, WMSA, EMSA, crusher/Quarry office area, surge pile, and Rock Plant. All of the areas to be reclaimed as part of the Project are described below.

In accordance with the regulations implementing SMARA (14 Cal Code Regs. §3705(b)), the Applicant conducts a revegetation "test plot program" in different locations of the Project Area to determine appropriate materials and techniques to improve the success of reclamation-related revegetation efforts. Sixteen test plots were constructed in 2007 on top of bare graded overburden rock at two locations. Of these, 13 plots (1-12 and 16) were constructed at the relatively flat "Yeager Yard" site. These plots will be monitored annually for five years to assess species success on the various soil types, invasive plant issues, the success of the mychorrhizal inoculant, herbivory levels, and the need for irrigation. The remaining three test plots (13-15) are in the EMSA and provide information about seed germination and productivity on the north facing



SOURCE: EnviroMine Inc., 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 2-3
Existing Topography

slopes in that area. These plots will be dismantled before the EMSA is reclaimed. Additional information about the existing test plot program is provided in Section 5.0 of the Revegetation Plan prepared for the Project by WRA (2011b).

The Project Area also includes existing, undisturbed open space areas where no mining-related work occurs, as well as reclaimed areas. Maintenance of the areas that already have been revegetated includes the monitoring of native grass species, shrubs and trees, irrigation as necessary to encourage the establishment of planted trees and shrubs, and installation, maintenance and monitoring of the protective cages that have been installed around most container plantings to reduce damage caused by browsing deer.

Non-quarrying uses and activities occurring in the Project Area include plowing for fire breaks and construction, maintenance of dirt roads, and monitoring of the Ridgeline Protection Easement that was agreed to by Hanson's predecessor in interest in 1972.[5]

2.3.2 Existing Land Uses in the Vicinity of the Project

Existing land uses in the area immediately outside the Project Area but within the Project site are operated by the Applicant, including the Cement Plant and open space uses. The nearest non-Applicant operated land use to the west of the Project Area is an open space area approximately 0.5 mile away. To the south, the nearest non-Applicant operated land use is the Stevens Creek Quarry, another mining operation, which is adjacent to the Project Area; other existing uses farther south and more than 0.5 mile from the Project Area include some rural residential uses and small agricultural operations (including the Ridge Winery and Vineyards, which are 0.8 mile south of the site). To the east, the nearest non-Applicant-operated uses include open space and recreational uses associated with Rancho San Antonio County Park, Gates of Heaven Cemetery, and residential subdivisions. To the north, the nearest non-Applicant-operated uses are open space and recreational (i.e., Mid Peninsula Regional Open Space District and Rancho San Antonio County Park lands). The nearest residence to the Project Area is the caretaker's residence located south of Permanente Road outside the site's front entrance, within 1,000 feet of the fence line.

2.4 Project Purpose and Need

Under SMARA and the County's ordinance, all operators of surface mines must prepare a reclamation plan and submit it for lead agency approval (Pub. Res. Code §2770; Santa Clara County Code §4.10.370(C)). Substantial deviations from an approved reclamation plan may not be undertaken without the lead agency's approval of an amendment to that plan (Pub. Res. Code §2777). Reclamation is defined in the statute (Pub. Res. Code §2733) as:

5 As explained in the 1985 Reclamation Plan (p. 1), "Kaiser Cement Corporation granted a permanent easement to the County of Santa Clara to ensure the protection of the view of Permanente Ridge from the Los Altos Area. This easement… states that the ridge would not be lowered below the elevation of 1500 feet for the majority of its length, and not below 1650 feet for a specified area." Subsequently, the elevation and characteristics of the conservation easement changed. This EIR does not analyze issues related to conformity of existing conditions with the easement.

> [T]he combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.

The County approved a reclamation plan for the Quarry in 1985 (the "1985 Reclamation Plan") that was prepared by Ruth and Going, Inc. for the County's Department of Planning and Development in October 1984 (Ruth and Going, Inc., 1984). The 1985 Reclamation Plan addressed approximately 330 acres. It describes the site, the limestone deposit, and then-existing and planned operations. It shows the anticipated final lateral extent and elevations of what now is referred to as the Quarry pit, WMSA (Area A), and an "East Rock Storage" area (Area C) on the eastern rim of the Quarry pit. It also identifies an area as potential source of topsoil (Area B), which is part of the Quarry pit (Ruth and Going, Inc., 1984, Sheet L1).

In October 2006, the County issued an Order to Comply/Notice of Violation (NOV) to the Quarry operator for deviating from the 1985 Reclamation Plan by engaging in mining activities outside its approved reclamation boundary. The operator noted in response that the 1985 Reclamation Plan did not cover all mining-related disturbance when it was approved (such as the Rock Plant, roads, and certain material storage areas) because this was consistent with how SMARA was understood at that time. Nonetheless, in order to update the 1985 reclamation according to the current application of SMARA's requirements, and to abate the NOV, it was agreed that the operator would submit a reclamation plan amendment that encompassed all disturbed areas and mining-related access roads, structures, stockpiles and storage areas (specifically including the Rock Plant), and that addresses the slope instability along the north wall of the Quarry pit. In January 2007, the mine operator submitted an application to amend the 1985 Reclamation Plan to abate the NOV. Necessary additional geological analysis was conducted to address slope stability issues in the Quarry pit, resulting in major modifications to the 2007 application. In June 2008, the County issued a second NOV to the Quarry operator for stockpiling overburden material in a different area outside the 1985 Reclamation Plan boundary – the EMSA. The proposed Project, if approved, would address these NOVs; however, until is approved, the Applicant remains in violation of SMARA and County requirements. Consequently, the purposes of the RPA are to: Provide an approved Reclamation Plan that satisfies State and local requirements for final reclamation, allows for continued mining production concurrently with reclamation work, leaves in place those features and infrastructure as necessary to allow future mining of the remaining onsite mineral deposits, and abates the two NOVs (Lehigh, 2011c).

The proposed reclamation plan amendment and environmental review process for updating the 1985 Reclamation Plan began in 2007. The proposal since has been further developed and refined by subsequent proposals, including the East Materials Storage Area Reclamation Plan Amendment (the "EMSA RPA") and what has been referred to as the "Comprehensive RPA," and has culminated in the Project being analyzed in this EIR. The EMSA RPA and Comprehensive RPA, including their respective preliminary draft environmental reviews, are superseded by this Project and this EIR.

2.5 Project Objectives

As stated in the *Permanente Quarry Supplemental Project Description* (Lehigh, 2011c), the Applicant's objectives for the Project are to:

- Maintain a local, reliable, and economic source of Portland cement-grade limestone and construction aggregate to serve market demands in Santa Clara County, the San Francisco Bay Area and northern California.
- Continue operations at an existing limestone quarry that is uniquely situated to provide for regional needs and that lies in a state-classified MRZ-2[6] resource area meeting the requirements of SMARA and County Code Section 4.10.370.
- Reclaim existing mining disturbance to conform to the surrounding topography in contour and vegetation, to achieve long-term slope stability, protect water quality, and permit alternative post-mining uses.
- Apply reclamation standards under SMARA to areas disturbed by mining operations within the Quarry.
- Reclaim existing mining disturbance to avoid or eliminate residual hazards to the environment and public health and safety.

2.6 Reclamation Plan Amendment Components

Areas included in the Project are identified in **Table 2-1**. Each is described below.

TABLE 2-1
RECLAMATION PLAN AMENDMENT COMPONENTS

Project Component	Acreage
East Materials Storage Area	75.2
Quarry Pit	264.9
West Materials Storage Area	172.6
Crusher / Quarry Office Support Area	53.4
Surge Pile	8.8
Rock Plant	19.1
Permanente Creek Restoration Area	49.2[1]
Exploration Area	19.5
Buffer Zones	599.3
Total Plan Area	**1,238.7**

[1] This includes 23.3 acres in the quarry pit area.

SOURCE: EnviroMINE, 2011b (Table 1)

[6] Department of Conservation, Division of Mines and Geology, DMG Open File Report 96-03 (1996).

2.6.1 East Materials Storage Area

The EMSA is an existing, approximately 75-acre overburden and rock storage area located in the easterly portion of the Quarry. It is designed to accept total overburden placement of approximately 6.5 million tons (approximately 4.8 million cubic yards), and to provide overburden storage for the Quarry until approximately 2015, depending on the rate of mining as dictated by market factors. The EMSA is not included in the 1985 Reclamation Plan. Existing EMSA slopes are at a 2H:1V[7] angle interrupted by 25-foot benches every 40 feet (2.5H:1V to 2.6H:1V overall).

With implementation of the Project, final contours would be achieved, and native vegetation and oak woodland habitats would be established that would be consistent with the surrounding area and topography. Reclamation in this area also has been designed to visually screen onsite operations from offsite public viewers. The processes and activities that would be undertaken to accomplish reclamation of the EMSA are described in Section 2.7.2.

2.6.2 Quarry Pit

The Quarry pit has been the point of mineral extraction at the Quarry for more than 100 years, and is expected to encompass approximately 265 acres at buildout. Current elevations range from approximately 750 feet amsl to 1,750 feet amsl. Existing slope angles are 1.0H:1.0V overall. There are four areas of the Quarry pit that have been subject to landslides, or appear to be unstable: the Main Slide on the northwest wall; the Scenic Easement Slide in the upper portion of the northeast wall; the Mid-Peninsula Slide in the upper benches of the eastern wall; and an area of potential instability recognized within the Quarry pit's west wall.

With implementation of the Project, the Quarry pit would be backfilled with approximately 60 million short tons of overburden rock generated by reclamation of the WMSA and ongoing mining activities. The materials would backfill the lower 500 feet of the Quarry pit, and then be used to create a large buttress, hundreds of feet thick, against the west and north walls of the Quarry pit to increase the factor of safety (FOS) for the west and north walls, including the area of the Main Slide. The Scenic Easement Slide and the Mid-Peninsula Slide would be stabilized by re-grading of the upper slopes of the Quarry pit to "lay-back" the slopes to a less steep, more stable configuration (Golder Associates, Inc., 2011). These activities would result in gentler slopes, a shallower pit, and general consistency with the surrounding topography. The processes and activities that would be undertaken to accomplish the reclamation of the Quarry pit are described in Section 2.7.3.

2.6.3 West Materials Storage Area

The WMSA is an existing, approximately 140-acre overburden storage area located west of the Quarry pit with elevations ranging from approximately 1,500 to 1,975 feet amsl. The WMSA is expected ultimately to cover about 173 acres and have a maximum elevation of approximately 1,900 feet amsl. Overall slope angles in the WMSA are a maximum gradient of 2.5H:1.0V.

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7 Ratios are defined as horizontal distance (H) to vertical height (V).

With implementation of the Project, final WMSA elevation and contours would be returned by grading generally to pre-mining contours by transporting most of the materials currently stored in the WMSA into the Quarry pit and by processing the remaining materials, which are expected to be comprised of valuable limestone and aggregate, for commercial use. Some fill would be left in place to provide stability to the natural slopes and to assist with drainage control. The eastern flank of the WMSA would be graded to merge with the proposed backfill of the Quarry pit. The reclaimed slopes of WMSA would be a maximum of 2.5H:1V with most areas much flatter than this (Golder Associates, Inc., 2011). The processes and activities that would be undertaken to accomplish the proposed reclamation of the WMSA are described in Section 2.7.4.

2.6.4 Crusher/Quarry Office Support Area

The Crusher and Quarry Office Support Area is an existing, approximately 60-acre area located east of the Quarry pit and west of the EMSA. It contains primary and secondary crushing stations, two portable trailers used for office purposes, and maintenance areas, and serves as a general support area for ongoing Quarry operations. The Applicant would move the structures within this area east of their current location. The new location would be approximately 53-acres; the remaining approximately 7 acres would be incorporated into (and reclaimed as part of) the Quarry pit. The 53-acre area, in turn, would be reclaimed separately. The processes and activities that would be undertaken to accomplish reclamation of the Crusher and Quarry Office Support Area are described in Section 2.7.5.

2.6.5 Surge Pile

The Surge Pile is an existing, approximately 9-acre stockpile of crushed aggregate located southeast of the Quarry pit. It holds mined materials pending transport via conveyor belt to the Rock Plant for further processing. Reclamation of the Surge Pile would occur as described in Section 2.7.6.

2.6.6 Rock Plant

The Rock Plant is an existing, fully-integrated rock processing facility capable of an annual throughput of approximately 2,000,000 tons of aggregate (EnviroMINE, Inc., 2011a). It is located on approximately 19 acres southeast of the Surge Pile. Its elevation ranges from approximately 580 to 770 feet amsl. Rocks are crushed, conveyed, washed, and screened into an assortment of types and grades of aggregate products, which then are stored in silos or stockpiles until picked up by customers' haul trucks. Process fines, which are not suitable for sale as aggregate products, also are generated as a result of the rock processing activities. These fines either would be transported to the Quarry pit for permanent storage or would be blended with topsoil and overburden to support the proposed revegetation effort. Process fines have a clay loam texture and contain a substantially greater amount of silt and clay compared to the overburden rock.

Structures and facilities located at the Rock Plant include:

- Approximately 3,400 feet of conveyors and related structural supports;

- Approximately 7,000 feet of 36-inch conveyor belting;
- Maintenance, control, and office buildings (approximately 18,000 square feet);
- 5 separate conveyor tunnels, consisting of a total of 1,700 linear feet;
- 6 bag houses;
- 850,000-gallon water tank;
- 10,000-gallon water tank;
- 4,000-gallon water tank;
- 2,000-gallon above ground diesel tank;
- Miscellaneous electrical panels;
- 2 crushers;
- 7 vibrating screens;
- 35,000 square feet of concrete foundations, each approximately 12-inches thick;
- 4,500 linear feet of 2-inch water mains;
- 2 truck scales;
- 2 belt presses;
- 4 compressors;
- 6 office and storage trailers; and
- Sand Screw

(EnviroMINE, 2011a). Additional Rock Plant facilities include a clarifier tank (approximately 9 feet, 6 inches high, 65 feet in diameter, with a capacity of approximately 290,000 gallons) and four loadout silos (each approximately 20 feet high, 16 feet in diameter, with a capacity of approximately 200 tons). Other structures in the Rock Plant include an approximately 200-foot by 150-foot mobile equipment maintenance facility known as the "lower garage," which services light vehicles other than large quarry equipment (large quarry equipment is serviced at the upper garage near the Quarry Offices). The lower garage has three vehicle bays and an office. Grease and engine lubricants are stored in an approximately 100-foot by 15-foot building in the Rock Plant, southeast of the lower garage. Mobile trailers with offices and a break room comprise an approximately 65-foot by 40-foot area. Reclamation of the Rock Plant would occur as described in Section 2.7.7.

2.6.7 Permanente Creek Reclamation Area

The PCRA includes approximately 23.1 acres along Permanente Creek and the adjacent hillsides that have been affected by mining activities, erosion events, and activities to control erosion in that area. Activities to reclaim Permanente Creek and the affected upslope areas would occur as described in Section 2.7.8.

2.6.8 Exploration Area

The Comprehensive RPA proposal, which has been superseded by the Project, included a proposal to expand quarrying activities to a new area south of Permanente Creek. The current Project does not contain such a component. The exploratory activities that informed prior proposals consisted of an exploratory drilling program in several locations within an approximately 284-acre area to study the feasibility and geologic context for the proposed South Quarry. Because this exploratory work constitutes “surface mining operations” under SMARA (Pub. Res. Code §2735), the current Project provides for reclamation of the area affected by those activities. Proposed reclamation of this area is described in Section 2.7.8.

2.6.9 Buffer Areas

Implementation of the Project would add approximately 212 acres to the existing approximately 5.2 acres of buffer area, for a total of approximately 217.2 acres of land within the Project Area to maintain a physical separation between the sights, sounds, and other characteristics of the Quarry’s activities and other land uses. These areas are primarily undeveloped, steep hillsides with thick vegetation.

2.6.10 Project Area Access Roads

The Applicant uses the existing network of onsite roads to access to various parts of the Project Area and to haul material around the site. Most of the existing roads are surfaced with gravel or are unimproved; however a small percentage is paved. Existing roadway widths range from 100-feet wide to 12-feet wide to accommodate the variety of vehicles that use them. Of the existing total of approximately 86,000 linear feet of roadways, approximately 55,000 feet would be reclaimed. The remaining approximately 31,000 feet would remain in place to provide access within the Project Area after reclamation is complete. Proposed reclamation of onsite roads is described in Section 2.7.11.1.

2.7 Amended Reclamation Plan Implementation

In part, the purpose of the County’s surface mining and land reclamation standards is to “assure that mined lands are reclaimed to ensure the future usefulness and amenity of the land after extraction ceases” and that this goal is “achieved with full consideration for neighboring uses” (Santa Clara County, 2000). “Reclamation,” in this context, means:

> the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations… so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.

(Pub. Res. Code §2733; Santa Clara County, 2000). The RPA is the Applicant’s plan to reclaim lands that have been affected by mining operations in the Project Area and, thereby, assure that they are useable and safe for future open space uses. The processes and activities that would be engaged in to accomplish reclamation of each of the Project components described in Section 2.6 are described in this Section.

2.7.1 Reclamation Phasing

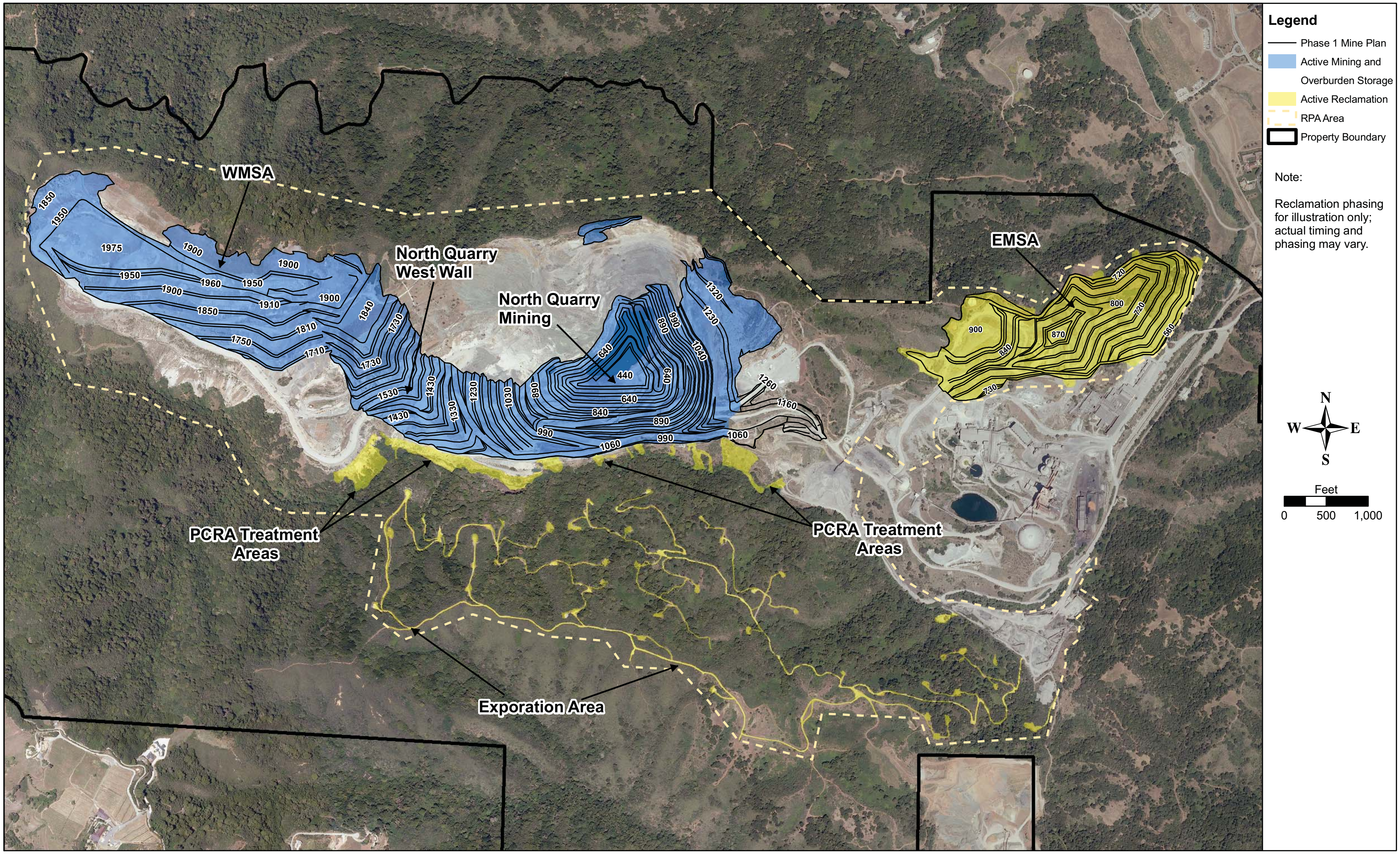
The Project would be implemented in the three phases shown in **Table 2-2**. The actual timing of each phase of reclamation would depend on the rate of extraction and the availability of overburden for use in backfilling the Quarry pit, which could vary based on market conditions and the quality of mineral resources encountered during the mining process. Additional time could be required for one or more of the proposed phases to allow for maintenance and monitoring of revegetation efforts until reclamation goals standards are met.

TABLE 2-2
RECLAMATION PHASING AND RELATED ACTIVITIES

Phase	Years	Start Date	End Date
Phase 1	9	2012	2020
Reclamation to Commence in Phase 1			
PCRA Subareas 1 through 7			
Exploration Area (ongoing reclamation activities would continue)			
EMSA Phase A			
EMSA Phase B			
EMSA Phase C			
Phase 2	5	2021	2025
Reclamation to Commence in Phase 2			
Quarry Pit Phase A			
Quarry Pit Phase B			
WMSA Phase A			
WMSA Phase B			
PCRA Subareas 1, 2, 6 and 7			
Phase 3	5	2026	2030
Reclamation Sub-Phases Commencing in Phase 3			
WMSA Phase C			
Quarry Pit Phase C			
Final Reclamation			
PCRA Subareas 3,4, 5 and 7			

* Note : All reclamation timing is approximate. The dates provided in the table above may change subject to market demand and the quality of resource encountered during the mining process.

Reclamation Phase 1 (shown in **Figure 2-4**) would begin with Project approval and end when excavation activities conclude in the Quarry pit. Phase 1 would include stabilization, removal and restoration activities along Permanente Creek to address water quality concerns, beginning immediately upon Project approval; by the closure and commencement of final reclamation in the EMSA beginning in or before 2015; and by continued active excavation in the Main Quarry and WMSA (Lehigh, 2011c). Reclamation of the Exploration Area also would occur in Phase 1.



SOURCE: EnviroMine Inc., 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 2-4

Reclamation Plan Amendment Phase 1

Reclamation Phase 2 (as shown in **Figure 2-5**) would begin in approximately 2021, after Quarry pit extraction ends. Phase 2 would be characterized by excavation in the WMSA, backfilling of the Quarry pit. Portions of the WMSA containing quality limestone and aggregates would be separated for subsequent processing. Revegetation would begin in this phase as conditions allow, where final contours are reached, and excavation and backfilling are completed (Lehigh, 2011c).

Reclamation Phase 3 (as shown in **Figure 2-6**) would begin in approximately 2026, once the Quarry pit has been backfilled to the height and configuration shown in the RPA. Phase 3 would be characterized by the removal of equipment and structures throughout the Project Area, as well as finish grading and revegetation activities associated with WMSA Reclamation Phase C, Quarry pit Reclamation Phase C, the Crusher and Quarry Office Area, Surge Pile, Rock Plant, and other areas of mining-related disturbance. Phase 3 includes final reclamation. "Final reclamation" refers to the process of bringing areas in active reclamation to conclusion, according to the established reclamation performance standards set forth in Section 2.8, and the initiation and continuation of long-term monitoring and maintenance until reclamation is certified as complete (Lehigh, 2011c).

2.7.2 East Materials Storage Area

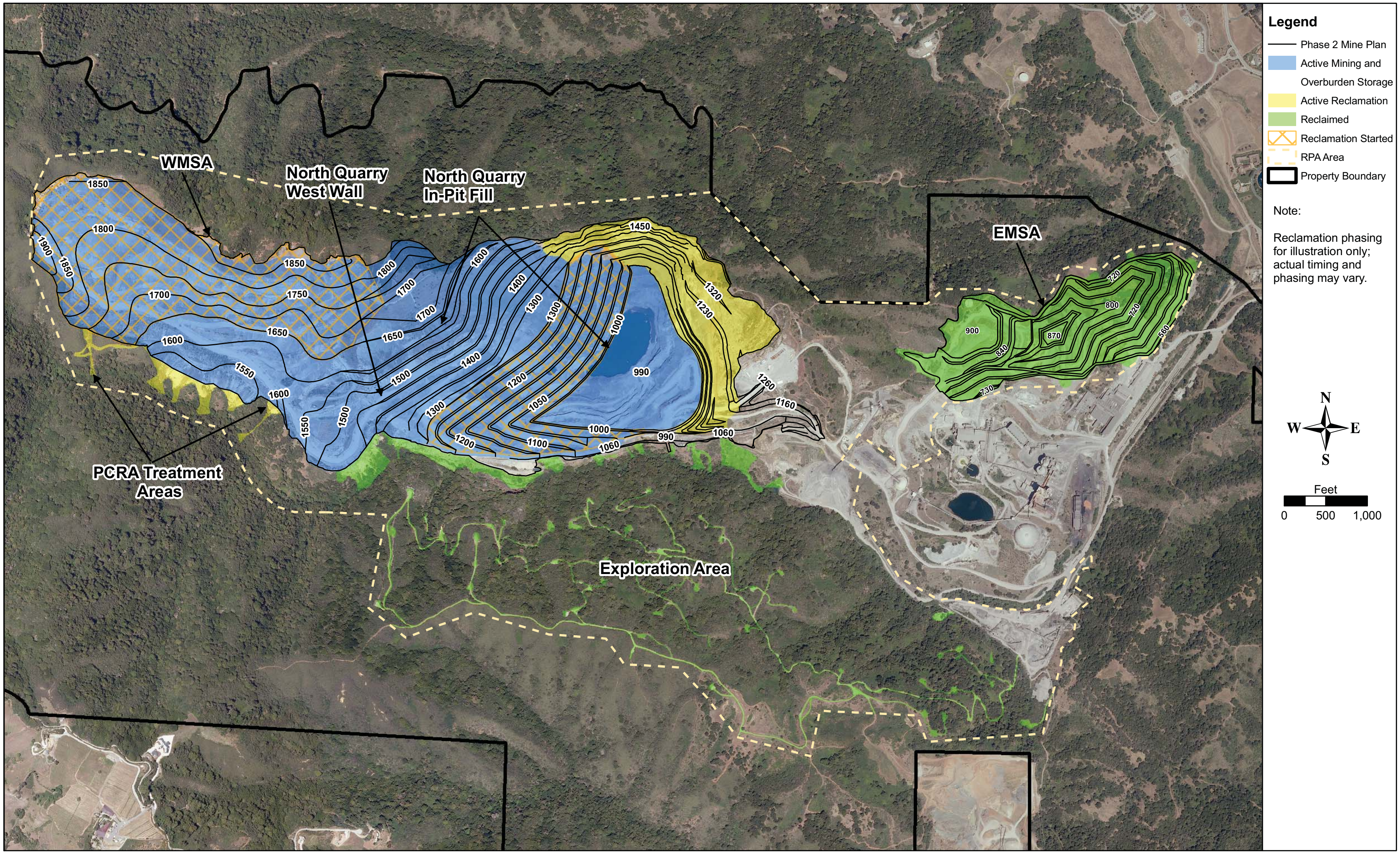
The proposed reclamation of the EMSA would achieve final contours and establish native vegetation and oak woodland habitats consistent with the surrounding area and topography. Reclamation of the EMSA would occur during Reclamation Phase 1.

To achieve final contours, overburden would be moved using heavy, earth-moving equipment, and graded. Final elevations in the EMSA would be a maximum of 900 feet amsl, and overall slope angles would not exceed 2.6H:1V. These slopes would be comprised of 2H:1V inter-bench slopes, interrupted by 25-foot wide benches spaced at 40-foot vertical intervals in accordance with engineering design requirements for stability and suitability for future open space use. Fill slopes would conform to the surrounding hillside topography and natural contours.

To establish native vegetation and oak woodland habitats consistent the surrounding area and topography, no topsoil would be imported (EnviroMine, Inc., 2011a). Instead, available topsoil from the site would be blended with overburden and other available materials. Different topsoil blends currently are being monitored in multiple test plots to identify the optimal topsoil blend. The results of these tests would continue to provide data until Project-related revegetation activities begin.

2.7.3 Quarry Pit

Reclamation of the Quarry pit would include re-grading to "lay-back" the upper slopes to create a less steep, more stable configuration, and transformation of the existing contours of the benches and slopes of the excavation to a downward-sloping hillside generally consistent with the surrounding natural topography, and achieve long-term slope stability (Golder Associates, Inc., 2011).



SOURCE: EnviroMine Inc., 2011

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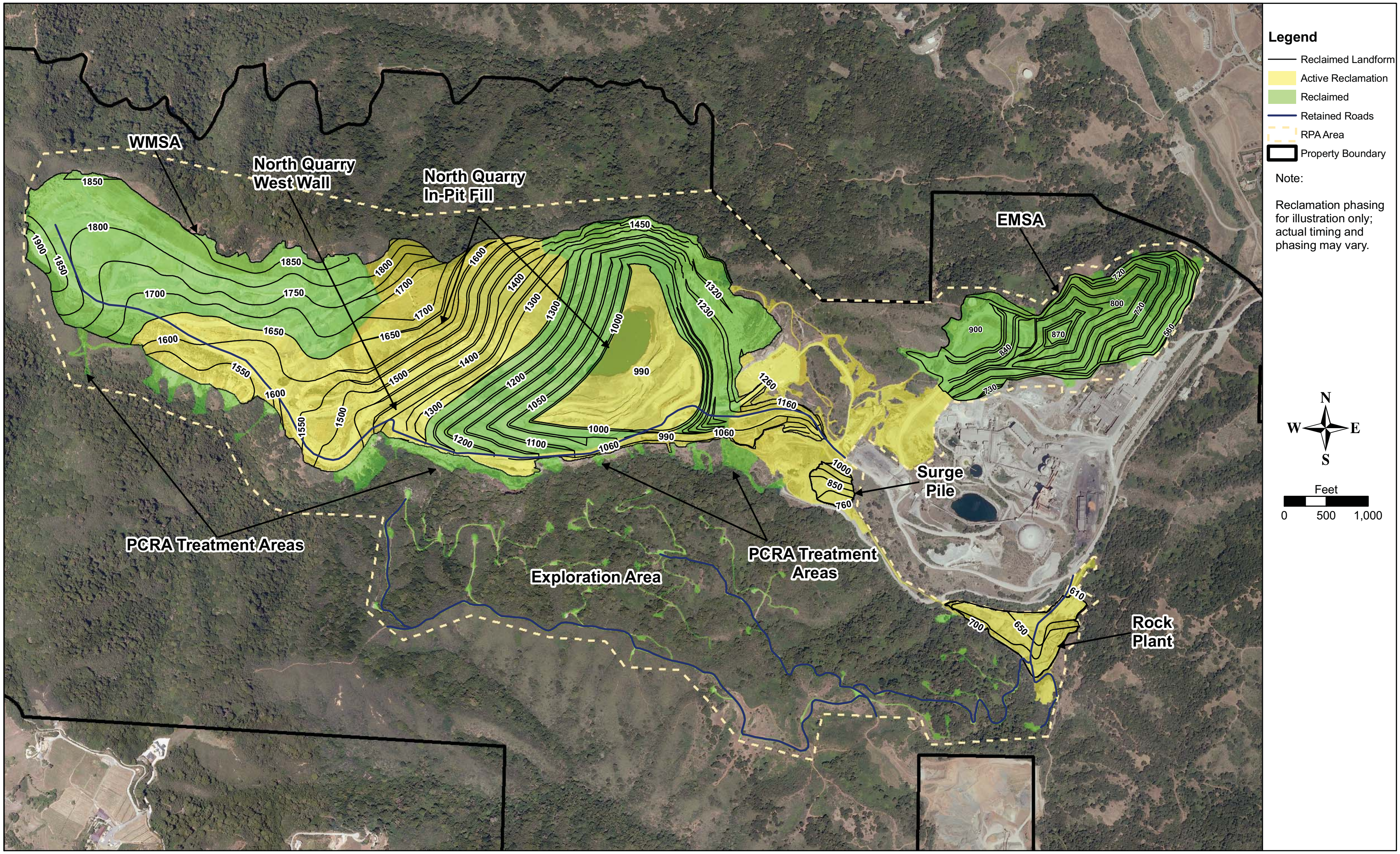
Figure 2-5
Reclamation Plan Amendment Phase 2



SOURCE: EnviroMine Inc., 2011

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Figure 2-6
Reclamation Plan Amendment Phase 3
Final Reclamation

As described in detail below, this would be accomplished primarily by placing a large volume of overburden in the pit to raise the elevation of its lowest areas. Although no adopted height or depth restrictions apply to the EMSA, WMSA, or Quarry pit, the final, maximum depth of the excavation would reach 440 amsl, which is approximately 50 feet below the maximum depth listed in the existing 1985 Reclamation Plan. With implementation of the Project, backfill not only would be placed in the pit to establish a new base elevation of 990 amsl, but also would be placed at higher elevations against the existing walls to flatten slope angles for increased slope stability. Reclaimed slopes in the Quarry pit would not exceed 2.5H:1.0V overall.

Approximately 60 million tons of backfill material would be used, comprised of approximately 12 million tons generated by ongoing Quarry pit mining and 48 million tons harvested from the WMSA (EnvironMINE, Inc., 2011b). With this material in place, the Quarry pit would feature continuously down-sloping sides that provide positive drainage into Permanente Creek. Currently, the Applicant pumps out the water that collects in the bottom of the Quarry pit (a process called "dewatering") to achieve a fully drained condition during the dry season (Hungerford, 2011). Project-related backfilling would begin when the Quarry pit has been completely dewatered.

Reclamation of the Quarry pit would proceed according to three subphases. Quarry pit Phase A would focus on the upper elevations of the Quarry pit's northern and eastern faces, which generally range between 990 and 1,460 feet amsl. In turn, Quarry pit Phase B would focus on slopes below 1,300 feet amsl, and Quarry pit Phase C would focus on the west face above 1,300 feet amsl, the Quarry pit floor, the main haul road, and any other areas within the Quarry pit that have not been reclaimed. Final elevations would range between 990 and 1,800 feet amsl, and final slope angles would be a maximum of 2.5H:1.0V.

The following activities would be involved: fill slopes would be graded to the final contours described above, a minimum of 6 to 12 inches of topsoil medium would be placed over backfilled areas, erosion control measures would be installed, and reseeding and planting activities would occur. Although revegetation is anticipated to be adequate to control erosion, interim hydroseeding using a native seed mix would be used in some areas until such time as permanent revegetation activities commence. Revegetation activities would be followed by maintenance and monitoring period until the reclamation performance standards are achieved (see, e.g., Section 2.7.9.2, *Revegetation*).

Reclamation activities in the Quarry pit would occur during each of the three phases of proposed reclamation. Reclamation of the west wall of the Quarry pit would occur during Phase 1, with remaining reclamation of the Quarry pit to occur in Phase 2 and Phase 3.

2.7.3.1 Reclamation Phase 1 Activities in the Quarry Pit

Excavation of the Quarry pit is expected to continue while the EMSA is reclaimed during reclamation Phase 1. Consequently, because the EMSA currently stores overburden generated by excavation of the Quarry pit, the storage location for overburden generated by mining activities would transition during Phase 1 from the EMSA to the Quarry pit west wall. Overburden generated by the mining activities would cease being moved to the EMSA by truck during this time and instead would be trucked from the point of excavation to the west wall area of the Quarry pit. The materials then would be used to backfill the west wall to approximately 1,840 feet amsl and, thereby, establish a link between the western edge of the Quarry pit with the eastern portions of the existing WMSA.

2.7.3.2 Reclamation Phase 2 Activities in the Quarry Pit

Phase 2 would begin when Quarry pit extraction is complete. At that time, approximately 48 million short tons of overburden from the WMSA would be used to would backfill the lower 500 feet of the Quarry pit, and then be used to create a large buttress to increase the FOS for the west and north walls (Golder Associates, Inc., 2011). This material would be added to the 12 million short tons of overburden placed against the west wall of the Quarry pit from continued mining operations during Phase 1, for a total backfill quantity of 60 million short tons. All of the material stored in the WMSA would be sorted. Approximately 75 percent of it then would be transported to the Quarry pit backfill areas by conveyor, with the remaining approximately 25 percent to be transported by truck (Lehigh, 2011d). Backfilling would raise the depth of the Quarry pit from approximately 440 feet amsl to 990 feet amsl.

Material excavated in the WMSA would be fed by bulldozer to the grizzly unit, which would screen out 12-inch plus material to create an adjacent stockpile that would be loaded onto trucks by a loader. Smaller diameter material would fall into a hopper at the end of a portable conveyor and, from there, be routed through a series of one or more portable conveyors until reaching the fixed conveyor, which would lie adjacent to the WMSA access road. Material would be transported by a fixed and temporary conveyor to the Quarry pit, or by haul truck for oversized material. The conveyor system would be constructed during Phase 2 and relocated around the WMSA as backfilling of the Quarry pit is completed (EnviroMINE, Inc., 2011b). Material arriving by conveyor would be routed to backfill by other portable conveyors and a radial telestacker that distributes material for placement by heavy earthmoving equipment. A maximum of 31 portable 4-foot by 125-foot conveyors would be used: 27 in the WMSA area, and 4 in the Quarry pit area (Ashworth Leininger Group, 2011). The general location, length, and alignment of the conveyors are shown in **Figures 2-7**, **2-8**, and **2-9**. The actual location may vary slightly depending on site conditions when installation occurs. Material arriving by truck would be hauled directly to the point of placement.

Backfill materials would be placed against existing Quarry pit slopes, compacted using heavy hauling and spreading equipment, and then rough-graded according to geotechnical recommendations. Portable conveyors would shift locations within the WMSA or Quarry pit as needed. An electrical line would be extended to power the conveyors, grizzly unit and telestacker (a significant portion of the electrical power needed for this equipment would be generated by the fixed conveyor as it delivers overburden and rock downhill). All conveyors would be removed when no longer necessary. The fixed conveyor would be dismantled when no longer needed. Portable conveyors would be towed off site.

SOURCE: EnviroMine Inc., 2011

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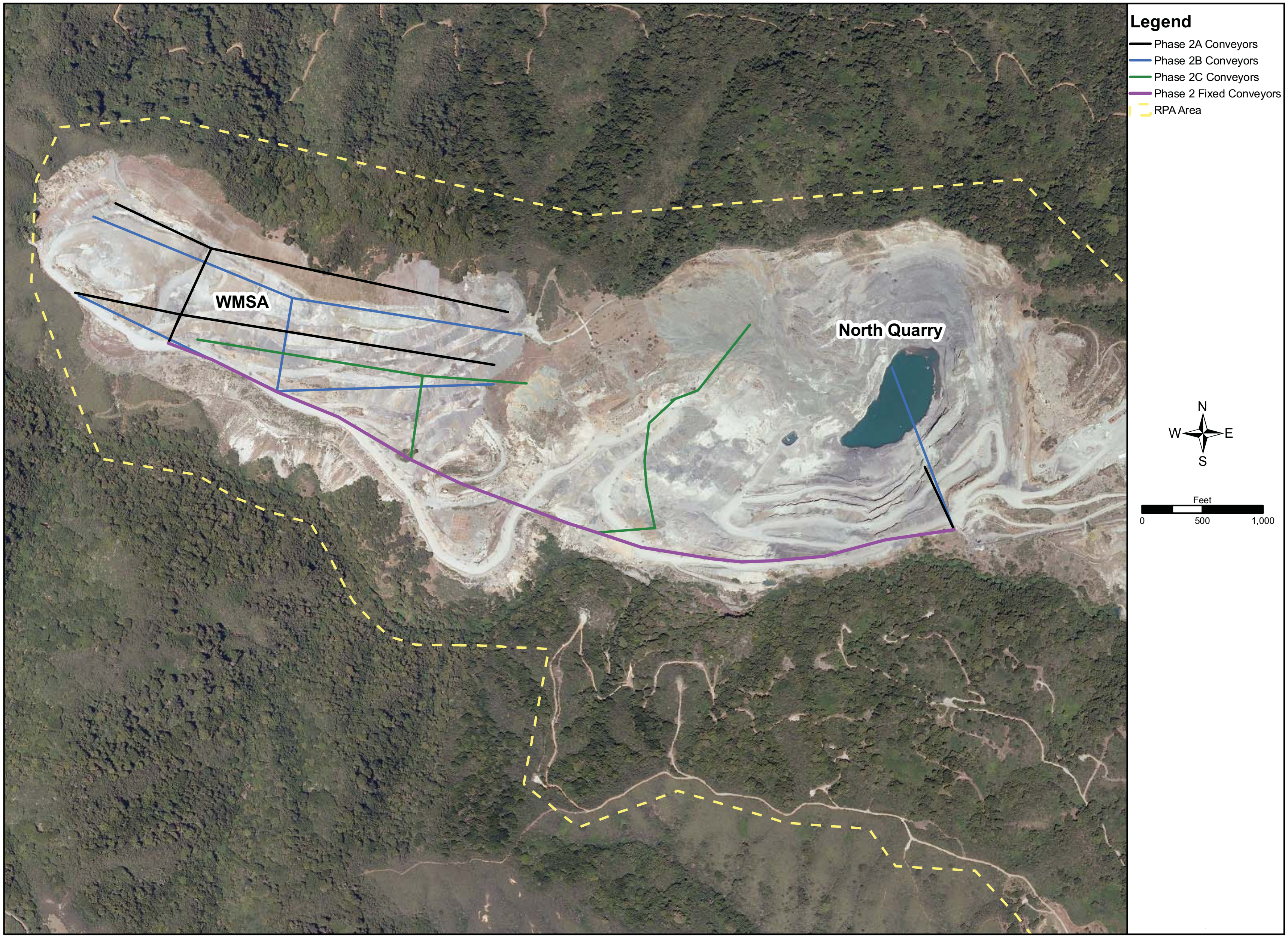
Figure 2-7
Conveyor System Layout - Quarry



SOURCE: EnviroMine Inc., 2011

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Figure 2-8
Conveyor System Layout - WMSA Extraction and North Quarry Backfilling

SOURCE: EnviroMine Inc., 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 2-9

Conveyor System Layout - Rockplant Facilities

2.7.3.3 Reclamation Phase 3 Activities in the Quarry Pit

Phase 3 would begin when the Quarry pit has been backfilled to its ultimate height and configuration. Equipment and structures would be removed, finish grading and revegetation activities would occur. Long-term monitoring and maintenance would begin and continue until reclamation is certified as complete.

2.7.4 West Materials Storage Area

The WMSA stockpile would be excavated progressively in a general north-northwest to south-southeast direction and in three subphases. WMSA Phase A would focus on slopes above 1,750 feet amsl, WMSA Phase B would focus on south-facing slopes between 1,650 and 1,750 feet amsl, and WMSA Phase C would focus on south-facing slopes below 1,650 feet amsl. Reclamation of the WMSA Phases A and B would be initiated during Phase 2. In Phase 3 reclamation of the WMSA would include the removal of equipment and structures, finish grading, and revegetation. Long-term monitoring and maintenance would begin and continue until reclamation is certified as complete.

The majority of the materials currently stored in the WMSA would be used to backfill the Quarry pit as described above. Some of the remaining materials currently stored in the WMSA are expected to be marketable aggregate material that could be separated, screened, and transported via haul trucks for additional processing for commercial uses (Lehigh, 2011d). Marketable aggregates would be identified visually, then loaded using loaders into trucks for delivery to the primary crusher for crushing and conveying to the Rock Plant. The process would use existing processing equipment and the existing vehicle fleet. No additional truck trips would be required relative to existing conditions. Trucks would use existing Quarry roads connecting these locations: no new roads or upgrades of existing roads would be required related to this use. These excavation and relocation activities would deplete most of the WMSA's overburden stockpiles and return the area to a lower elevation.

The ultimate WMSA design blends the eastern end of the WMSA with the Quarry pit; final contours would resemble existing, naturally-occurring south-facing slopes in the vicinity of the Quarry. Final overall slope angles in the WMSA would not exceed 2.5H:1.0V.

Reclamation activities would consist of grading slopes to final contours, applying growth medium, installing erosion control measures, reseeding and planting the area, and then beginning maintenance and monitoring activities. Where mining activities, including activities related to the relocation of stored materials, have resulted in the compaction of soil in the WMSA, ripping or disking would be used to establish a suitable rooting zone in preparation for planting. The WMSA revegetation plan is similar to the proposal for the Quarry pit. Revegetation would consist of a minimum of 6 to 12 inches of topsoil medium over remaining areas of overburden, and in other WMSA areas according to the slopes, exposures and type of vegetation. Following installation of erosion controls, the WMSA would be reseeded with native plants. Maintenance and monitoring would begin and continue until the reclamation standards achieved (see Section 2.7.9.2, *Revegetation*).

2.7.5 Crusher/Quarry Office Support Area

Reclamation of the Crusher and Quarry Office Support Area would occur during reclamation Phase 3. It would involve the dismantling and demolition of the primary crusher, the secondary crusher, and an equipment maintenance facility. The scrap would be sold for salvage value or disposed of offsite. The two existing Quarry offices are portable and would be removed from the site. Information about non-hazardous waste disposal is provided in Section 2.7.11.5, *Utilities*. Hazardous materials and fuel stored in the area would be removed and managed as described in Section 2.7.11.6, *Hazardous Materials and Hazardous Waste*.

Once structures are dismantled, demolished, and removed, reclamation of the Crusher/Quarry Office Area would involve finish grading, application of a growth medium, installation of erosion control measures, and reseeding and planting activities. See Section 2.7.11.2, *Revegetation*, and the subsection of Section 2.7.9.5 discussing stormwater and erosion control for more information about these activities. Where mining operations have resulted in the compaction of soil, ripping or disking would be used to establish a suitable rooting zone in preparation for planting. Long-term monitoring and maintenance would begin and continue until reclamation is certified as complete.

2.7.6 Surge Pile

Reclamation of the Surge Pile would occur during Phase 3. It would involve removal of stockpiled materials and restoration of the area to approximate the natural topography. Materials stored in the Surge Pile would be transported to the Rock Plant via existing conveyor belts or haul trucks using the same mechanisms and systems that presently move such materials between these points. Materials also could be transported directly offsite from the Surge Pile. Following the removal of the Surge Pile materials, all existing structures (such as vibrating screens and conveyor belts) would be dismantled. Scrap from dismantled structures would be sold for salvage value or transported offsite (see Section 2.7.11.5, *Utilities*, regarding non-hazardous solid waste).

Once structures are removed, reclamation of the Surge Pile would consist of finish grading, application of growth medium, installation of erosion control measures, and reseeding and planting activities. Where mining operations have resulted in the compaction of soil, ripping or disking would be used to establish a suitable rooting zone in preparation for planting. Long-term monitoring and maintenance would begin and continue until reclamation is certified as complete.

2.7.7 Rock Plant

Reclamation of the Rock Plant would occur during Phase 3. It would involve the dismantling, demolition, and transport offsite of all structures (including conveyors, crushers, screens, wash plants, scales, and miscellaneous structures) with the exception of the lower garage and scale house. These structures would remain, continuing to serve non-mining purposes after final reclamation. The overland conveyor system currently extending from the Quarry pit to the Cement Plant would be dismantled and removed as part of the proposed reclamation of the Rock Plant (EnviroMINE, Inc., 2011a).

Steel structures would be cut into manageable pieces with an excavator mounted with a steel shear, with pieces placed on an over-the-road truck for removal to a scrap yard. Screens, crushers, scales and the like would be dismantled in the most efficient manner possible, which may include shearing and cutting using a cutting torch, or simply unbolting the equipment from the support structures prior to demolition. Conveyor tunnels would be excavated to remove the corrugated culvert pipe supports (EnviroMine, Inc., 2011a). Scrap would be sold for salvage value or transported offsite (see Section 2.7.9.5, *Utilities*, regarding non-hazardous solid waste). Concrete foundations would be demolished using a rock breaker attachment on an excavator and a front end loader. Demolished concrete materials would be removed from the site (EnviroMINE, Inc., 2011a).

Once structures are removed, reclamation of the Rock Plant would consist of finish grading, application of growth medium, installation of erosion control measures, and reseeding and planting activities. Where mining operations have resulted in the compaction of soil, ripping or disking would be used to establish a suitable rooting zone in preparation for planting. Long-term monitoring and maintenance would begin and continue until reclamation is certified as complete.

2.7.8 Permanente Creek Reclamation Area

The PCRA includes approximately 49.2 acres of mining-related disturbance that, for mapping and illustrative purposes, is divided into seven subareas. The Applicant has proposed a customized reclamation treatment for each PCRA subarea. The proposed reclamation treatments in the PCRA would be conducted mostly by light vehicles and foot crews to avoid the damage and destabilization to the channel and slopes that could be caused by the use of heavy earth-moving equipment on the slopes adjacent to the creek, and have been designed to be consistent with a long-term creek restoration plan that is currently is being developed with the RWQCB for the Permanente Creek watershed (referred to hereafter as the “Restoration Plan”).

The RPA also adopts certain restoration concepts proposed in the Restoration Plan. For Subareas 3, 4 and 5, the RPA includes restoration measures identified for the areas known as Reach 17 and 18 of the Restoration Plan, which propose the removal of overburden fills from the creek channel, channel widening and the restoration of a more natural creek alignment. For Subarea 7, the RPA includes the preferred restoration measures for portions of Reaches 12 and 13 in the Restoration Plan, which propose the replacement of the Pond 13 outflow and downstream half-culvert with a wider and more natural creek channel. The measures would be implemented during Phase 3 of RPA.

The design of the restoration measures for Subareas 3, 4, 5 and 7 are described below, and in additional detail in the RPA Revegetation Plan and the engineering drawings and details. These designs retain some flexibility within the bounds analyzed so that these reclamation activities would take place concurrent with and in a manner consistent with the Restoration Plan under the jurisdiction of the RWQCB. This reclamation plan treatment would also be refined during any necessary permitting processes of all jurisdictional agencies including the RWQCB, the U.S Army Corps of Engineers (USACE) and the California Department of Fish and Game (CDFG). In no event shall the treatments be less stringent than those required under SMARA.

The proposed acreages and timing for reclamation of the PCRA subareas are as follows:

- ***Subarea 1:*** 8.68 acres, Phase 1 and 2
- ***Subarea 2:*** 21.81 acres, Phase 1 and 2
- ***Subarea 3:*** 4.26 acres, Phase 1 and 3
- ***Subarea 4:*** 4.44 acres, Phase 1 and 3
- ***Subarea 5:*** 3.85 acres, Phase 1 and 3
- ***Subarea 6:*** 1.05 acres, Phase 1 and 2
- ***Subarea 7:*** 5.09 acres, Phase 1, 2 and 3

The restoration plan has been submitted to the RWQCB, but has not yet been finalized.

2.7.8.1 PCRA Subarea 1

Subarea 1 includes approximately 8.68 acres of disturbance in the westernmost portion of the PCRA. The upper (northern) portion of this subarea is composed primarily of fill slopes constructed prior to 1976 in connection with the development of the WMSA. In Phase 1, this subarea would be subject to revegetation and erosion controls listed in **Table 2-3** below. Hydroseeding and installation of fiber rolls would take place for all areas within Subarea 1 located south of the main WMSA access road and extending to the creek. In Phase 2, reclamation of the upper portion of this subarea would occur as part of the excavation of the WMSA. The excavation of the WMSA would include the removal of the upper pre-SMARA fill slope, and leave the lower slope intact. The removal of the upper fill slope would remove any potential sources of erosion that may affect the lower slopes, and redirect overland flows to Basin 40C. The upper slopes would be recontoured, resoiled and revegetated. Reclamation treatments of Subarea 1 are provided in Table 2-3.

2.7.8.2 PCRA Subarea 2

Subarea 2 includes approximately 21.81-acres of disturbance in an area located immediately east of Subarea 1. Erosion in this subarea may be attributed to the sparsely vegetated hillsides and also to the construction of an access road that cuts across fill areas. The lower portion includes the toe of the fill slopes and is mostly undisturbed. In Phase 2, this subarea would be subject to revegetation and erosion controls listed in **Table 2-4** below (with the exception of the installation of RPA Basins 40B and 40C).Hydroseeding and installation of fiber rolls would take place for all areas within Subarea 2 located south of the main WMSA access road and extending to the creek. In Phase 2, reclamation of the upper portion of this subarea would occur, which would excavate the upper fill slope, and leave the lower slope intact. The removal of the upper fill slope would remove potential sources of erosion that may affect the lower slopes, and redirect overland flows to RPA Basins 40B and 40C. The upper slopes would be recontoured, resoiled and revegetated.

TABLE 2-3
PRCA SUBAREA 1 RECLAMATION TREATMENTS

Activity	Description
Basin Improvements	The existing catch basins located along the access road (previously installed for erosion control) would be replaced with redesigned basins as shown on the engineering plans. Basins are sized to meet SMARA's 20-year standard, and are sited to release flows into existing drainages feeding the creek. Any existing limestone material in the catch basins would be removed. Silt fencing would be installed down-gradient of the basins during construction.
Geotechnical Assessment	Evaluation of the slopes that remain above the road (after WMSA excavation/recontouring) for slope stability.
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix for additional erosion control. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Road Treatment	The existing road would be regraded (in-sloped) to collect drainage on the interior of the road as shown on the engineering plans, then ripped or disked prior to hydroseeding.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V, as shown on the engineering plans. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.

SOURCE: EnviroMINE, Inc., 2011b (Table 12)

TABLE 2-4
PRCA SUBAREA 2 RECLAMATION TREATMENTS

Activity	Description
Basin Outlets and Flow Controls	At the end of Phase 2, two new sedimentation basins (numbered 40B, 40C) would be installed at the southern edge of the WMSA at the conclusion of Phase 2 when the WMSA has been excavated to its final contours. The basins would release flows to existing drainages located in the PCRA. The outlets would extend to the bottom of the slope and the outfall pipes would release to engineered flow dissipators (grouted rip-rap pads) to be installed within the existing drainages. The grouted riprap would dissipate the outflow energy, provide an armored blanket that protects the ravines from erosion, and be used to direct the outflow to the existing rock drainage to minimize the potential for erosion.
Soil Treatment	To prepare the steep slopes for revegetation, a winched sheepsfoot (tethered to a bulldozer) would be lowered from above and tracked across disturbed portions of the slope. This would create a textured surface that resists erosion and better holds hydroseeded material. Disturbed areas located downslope of where the sheepsfoot would traverse would be protected by silt fencing.
Revegetation	Disturbed areas (21.81 acres) would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.

SOURCE: EnviroMINE, Inc., 2011b (Table 13)

2.7.8.3 PCRA Subarea 3

Subarea 3 includes approximately 4.26-acres of disturbance in an area located directly east of Subarea 2. The uppermost portion of Subarea 3 is composed of fill slopes that were constructed before 1976 in connection with the development of the WMSA access road. Parts of the middle slope are covered with fill material, and the lower slope areas are largely undisturbed with evidence of infrequent erosion flows. Reclamation of the uppermost portion of this subarea (i.e., the haul road and immediately adjacent slope) would remove the uppermost fills and any sources of erosion for the reclaimed lower slopes. On the extreme eastern portion of Subarea 3, creek restoration would occur utilizing the same recommendations as Subareas 4 and 5. Creek restoration measures identified in further detail in the RPA Revegetation Plan (Attachment B) would occur in Phase 3. Reclamation of the middle and lower slope would be reclaimed with the treatments listed in **Table 2-5**.

TABLE 2-5
PRCA SUBAREA 3 RECLAMATION TREATMENTS

Activity	Description
Soil Treatment	To prepare the steep slopes for revegetation, a winched sheepsfoot (tethered to a bulldozer) would be lowered from above and tracked across disturbed portions of the slope to create a textured slope that resists erosion and better holds hydroseeded material. Disturbed areas located downslope of where the sheepsfoot would traverse would be prepared with silt fencing to be in stalled at the toe of the slope.
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix for additional erosion control. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology likely exists.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.

SOURCE: EnviroMINE, Inc., 2011b (Table 14)

2.7.8.4 PCRA Subarea 4

Subarea 4 includes approximately 4.44-acres of disturbance in an area located directly east of Subarea 3. It is composed primarily of fill slopes that were constructed before 1976, with some areas where it appears that subsequent erosion has occurred. Subarea 4 would be reclaimed with the treatments listed in **Table 2-6**.

2.7.8.5 PCRA Subarea 5

Subarea 5 includes approximately 3.85-acres of disturbance in an area located directly east of Subarea 4. It would be reclaimed during Phase 1, with the exception that the creek restoration measures identified below and in additional detail in the RPA Revegetation Plan (Attachment B to the Applicant’s December 7, 2011, RPA application) would occur in Phase 3. Subarea 5 is composed partially of fill slopes that were constructed before 1976. This Subarea would be reclaimed with the treatments listed in **Table 2-7**.

TABLE 2-6
PRCA SUBAREA 4 RECLAMATION TREATMENTS

Activity	Description
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
South-Creek Revegetation	Areas of mining disturbance on the south side of the creek would be seeded using a broadcast seeder or by hand-seeding in areas above the ordinary high water mark.
Slope BMPs	Erosion blankets would be placed across the slope for erosion control. Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas on the northern and southern sides of the creek would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.
Creek Restoration	In Phase 3, creek restoration would occur to remove overburden and silts. The removal of overburden and silts would involve the following restoration measures: • Remove overburden material and sediment deposits. • Create a stable channel, subject to geotechnical and groundwater investigations as needed location • of bedrock and other constraints on channel design. • Establish a new bankfull bench and floodplain. • Install step pools, drop structures and other stream control devices as needed for a stable c • Revegetate riparian areas.

SOURCE: EnviroMINE, Inc., 2011b (Table 15)

2.7.8.6 PCRA Subarea 6

Subarea 6 includes approximately 1.05-acre of disturbance in an area located directly east of Subarea 5. It would be reclaimed during Phase 1, with the exception that at the end of Phase 2 one ravine would be armored during Phase 2 to accept flows from RPA Basin 40A. Subarea 6 is composed of areas of fill interspersed with other areas that are undisturbed or that have naturally reclaimed. Subarea 6 would be reclaimed with the treatments listed in **Table 2-8**.

2.7.8.7 PCRA Subarea 7

Subarea 7 includes approximately 5.09-acres of disturbance in the easternmost part of the PRCA. It would be reclaimed during Phase 1, with the exception that the existing ravine west of the current crusher location would be armored to accept post-reclamation drainage from the reclaimed Quarry pit at the end of Phase 2, with the exception that the creek restoration measures identified below and in additional detail in the RPA Revegetation Plan (RPA Application Attachment B) would occur in Phase 3. Subarea 7 is composed of areas of mining disturbance and more recent erosion control activities, interspersed with undisturbed areas. It would be reclaimed with the treatments listed in **Table 2-9**. Existing ponds in Subarea 7 would remain for sediment control to protect Permanente Creek.

TABLE 2-7
PRCA SUBAREA 5 RECLAMATION TREATMENTS

Activity	Description
Slide Removal	Slide material near the foundation of the historic crusher would be removed using an excavator. The excavator arm would reach down from the main access road and remove slide material. Areas downslope of this activity would be prepared with silt fencing to prevent material rollback.
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
South-Creek Revegetation	Areas of historic mining disturbance on the south side of the creek would be seeded using a broadcast seeder or by hand-seeding in areas above the ordinary high water mark.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas on the northern and southern sides of the creek would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.
Creek Restoration	In Phase 3, creek restoration would occur to remove an old crusher foundation next to the creek and overburden fills. The removal of the crusher foundation would involve the following restoration measures: • Removal of the concrete structure. • Establish a bankfull bench in the location of the former structure. • The removal of overburden fills would involve the following restoration measures: • Remove overburden material and sediment deposits. • Create a stable channel, subject to geotechnical and groundwater investigations as needed t of bedrock and other constraints on channel design. • Establish a new bankfull bench and floodplain. • Install step pools, drop structures and other stream control devices as needed for a stable ch • Revegetate riparian areas.

SOURCE: EnviroMINE, Inc., 2011b (Table 16)

TABLE 2-8
PRCA SUBAREA 6 RECLAMATION TREATMENTS

Activity	Description
Sheet Pile Installation	Sheet piles would be repaired or replaced in one area in the central portion of this subarea, if determined to be feasible from an engineering and safety standpoint. Piles would be driven into the mid-slope using an excavator arm in the location shown on the engineering plans.
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas on the northern side of the creek would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.

TABLE 2-8 (Continued)
PRCA SUBAREA 6 RECLAMATION TREATMENTS

Activity	Description
North Quarry Basin Outfall	The area immediately west of the existing crusher contains a drainage. In addition to the foregoing revegetation, BMPs and maintenance, the ravine would be armored during Phase 2 to accept flows from Basin 40A on the reclaimed floor of the Quarry pit. The basin would deliver flows to the drainage via pipes installed under the access road. The outfall pipe would release to engineered flow dissipators (grouted rip-rap pads). The grouted riprap would dissipate the outflow energy and provide an armored blanket that protects the ravine against erosion.

Source: EnviroMINE, Inc., 2011b (Table 17)

TABLE 2-9
PRCA SUBAREA 7 RECLAMATION TREATMENTS

Activity	Description
Revegetation	Disturbed areas would be hydroseeded with the seed mix listed below. The hydroseed slurry would include a bonded fiber matrix. Riparian vegetation would be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Slope BMPs	Fiber rolls would be staked in place and spaced at 15-foot intervals in disturbed areas where the slope angle is 2.0H:1.0V or flatter, and at 10-foot intervals in disturbed areas that are steeper than 2.0H:1.0V. Additionally, silt collected at the toe of the slope would be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas on the northern side of the creek would be monitored and maintained according to the reclamation performance standards set forth in Section 2.8.
Creek Restoration	In Phase 3, creek restoration would occur to remove the Pond 13 outflow and to replace the downstream half-culvert with a wider and more natural creek channel. The removal of the Pond 13 outflow would involve the following restoration measures: • Recontouring of the pond floor and sides to establish a new bankfull bench and stable chann • Removal of pond infrastructure and any accumulated sediment. • Install step pools, drop structures and other stream control devices as needed for a stable ch • Revegetate riparian areas. The replacement of the downstream half-culvert would involve the following restoration measures: • Remove half culvert and surrounding fill material. • Establish a new bankfull bench and floodplain. • Install step pools, drop structures and other stream control devices as needed for a stable ch • Revegetate riparian areas.

SOURCE: EnviroMINE, Inc., 2011b (Table 18)

2.7.8.8 Boulder Removal For All Subareas

RPA Attachment J consists of a best management practice (BMP) for removing limestone boulders from the creek. The BMP would be implemented in Phase 1 following approval of the Amendment.

2.7.9 Exploration Area

Reclamation of the Exploration Area already begun. Reclamation activities that would occur as part of the Project consist of finish grading, installation of erosion control measures, reseeding activities, road reclamation, and maintenance and monitoring. Roads and pads that have yet to be revegetated would be regraded to their original contour using soils that were sidecast during road and pad construction (WRA, 2011b). The Applicant would retain access roads in their restored condition for post-mining use. When reclamation performance standards have been met for reclaimed areas, two additional wells and two drill sites and accompanying new access roads that have not yet been reclaimed would be reclaimed. The Applicant does not currently have plans to further disturb the area that has been subject to prior exploration (Lehigh, 2011e).

2.7.10 Buffer Areas

Buffer zones would be established primarily through mapping. In some areas, the Project Area would be protected by signs and fencing to prevent access that would pose risks to persons entering the area. The areas where fencing currently is located and would remain are shown in Figure 2-2.

2.7.11 Other Project Details

2.7.11.1 Haul Roads and Other Internal Site Circulation

Existing roads to be retained or reclaimed within the Project Area are shown on Figure 2-2. Of the existing total of approximately 86,000 linear feet of roadways, approximately 55,000 feet would be reclaimed (the remaining approximately 31,000 feet would remain in place to provide access within the Project Area after reclamation is complete). Reclamation of the internal site circulation roads would consist of ripping, disking and seeding when they no longer would be required based on the progress of revegetation in the area served by the roads. Only those road segments that would be necessary for long-term monitoring and maintenance of the reclamation effort would remain throughout final reclamation (Phase 3). Roads in the EMSA area that are not necessary for long-term monitoring and maintenance would be reclaimed first, since the EMSA would be reclaimed before other areas.

2.7.11.2 Revegetation

Implementation of the Project is intended to restore self-sustaining native vegetation communities and provide visual integration of reclaimed lands with surrounding open space areas to support future open space use of the Project Area. WRA Environmental Consultants prepared a Revegetation Plan on behalf of the Applicant (WRA, 2011b) that provides specific guidance on soil composition and depth, species planting palette, and revegetation success criteria. Implementation of the Revegetation Plan would stabilize the surface against the effects of long-term erosion and future use open space goals for the Project Area.

The Revegetation Plan emphasizes plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments, or fertilizer in accordance with the SMARA reclamation standards. Hydroseeding of the finished slopes with a mixture of native grasses, herbaceous plants, and shrubs would provide surface cover and erosion control for the new slopes. Tree and shrub planting areas would be located on contoured benches and riparian drainages to encourage the long-term development of an oak savannah or forest on north-facing slopes, native scrub on south-facing slopes, and a suitable riparian canopy in drainages.

The RPA (EnviroMINE, Inc., 2011b) summarizes the revegetation strategy proposed for the Project by WRA Environmental Consultants (WRA, 2011b), including soil development and topsoil salvage, replanting and reseeding (including the identification of specific elements of the erosion control seed mix and the processes for hydroseeding, tree and shrub plantings, riparian vegetation, and the timing for same), the Quarry’s test plot program, revegetation maintenance activities (including weed control), and monitoring (including performance standards describing the minimum targets for species richness and percent cover for hydroseeded and planted areas, weed control, and adaptive management provisions). The strategy may be summarized as follows:

- Oak plantings totaling 6.5 acres and over 1,700 trees
- Grey Pine woodland plantings totaling 21.5 acres and over 8,600 trees
- Native shrub and grassland hydroseed mix applied over approximately 600 acres
- Riparian plantings in various areas
- Revegetation using seed collected from onsite
- Use of interim erosion control native seed mixes
- Revegetation with a blend of topsoil material and other native materials available onsite
- Information derived from results of 16 test plots established in two distinct areas
- Performance standards for revegetation
- Monitoring, maintenance and invasive weed controls

The proposed Revegetation Plan has been designed to provide appropriate conditions for native species so that they are not dependent upon irrigation. The need for irrigation during initial establishment would be assessed during the test plot monitoring and adaptive management reclamation efforts. The Applicant currently is testing DriWater gel pac irrigation systems as part of the revegetation test plot program. DriWater is a biodegradable silica-based product that is buried next to the plants and slowly releases stored water into the soil. If monitoring during the first 5 years of the early revegetation stages and test plots indicate significant losses of plant material that threatens achievement of performance standards, the need for irrigation would be re-evaluated (EnviroMINE, Inc., 2011b).

For creek restoration areas in Subareas 3, 4, 5 and 7, the RPA Revegetation Plan sets forth a revegetation design. As explained in section 2.7.8, this reclamation plan treatment will be refined during any necessary permitting processes of all jurisdictional agencies including the RWQCB, the USACE and the CDFG. In no event shall the treatments be less stringent than those required under SMARA. Because the County has concurrent jurisdiction over these issues pursuant to SMARA, the County would also need to approve any alteration of the reclamation activities, which may require amendment of the Quarry’s reclamation plan and additional CEQA review.

2.7.11.3 Site Security

No change to site security is proposed by the Project. A security guard house controls vehicular access 24 hours per day through a gated entrance to the site at the western terminus of Stevens Creek Boulevard. Otherwise, the Quarry is located in a generally isolated area and opportunities for unauthorized public access are limited. In most areas, buffer areas provide adequate distance between mining operations and adjacent non-Applicant-owned lands. Steep slopes and rugged terrain limit the potential for trespassers to enter the site, except from the Mid-Peninsula Regional Open Space District (MPROSD) land to the north. The portion of the site boundary in MPROSD area is fenced and posted with warning signs such as “No Trespassing” and “Private Property.” Security fencing consists of 6-foot chain link fence with angle iron and barbed wire.

Following final reclamation of the Project Area, public access would be controlled in at least three ways: First, access roads would be blocked with a gate, large rocks, or other control mechanism to prohibit vehicular entry. Second, Signs would be posted at key locations around the perimeter of the Project Area adjacent to undeveloped lands to alert potential trespassers of “Private Property,” “No Trespassing,” and “Danger: Steep Slopes.” Third, all final slopes would be certified by a geotechnical engineer to be suitable for the planned open space-related end use.

2.7.11.4 Lighting

All existing lighting within the Project Area would be removed at the completion of Phase 3.

The Quarry does not have a lighting plan. There are five light plants in the Project Area, each is 5,000 watts. Three light plants are located in the Quarry pit, one is located at the EMSA, and one is located at the belt conveyor transfer. The Quarry uses portable lighting that is moved as needed within the Project Area. The Quarry generally uses pole-mounted sodium, metal halide, or fluorescent lighting. Night lighting currently is used within the Rock Plant and at strategic locations around the Quarry. There is no fixed lighting for Quarry access roads. Instead, lighting is provided in the specific locations where nighttime quarrying activities are taking place.

2.7.11.5 Utilities

Utility services currently provided to the Project Area are described below.

Electricity and Natural Gas

The Pacific Gas and Electric Company (PG&E) currently provides electrical service to the Project Area. Electricity is used not only to power lights, the pumps used to obtain water from the bottom of the Quarry pit, conveyors, crushers and other Rock Plant facilities, and Quarry offices, but also to transport water purchased from the City of Cupertino. Ashworth Leininger Group provided data about the electric power demand associated with existing operations in the Project Area in the Air Quality Technical Analysis prepared for the Project (2011). This information is provided in **Table 2-10**.

TABLE 2-10
EXISTING ELECTRICAL POWER DEMAND IN THE PROJECT AREA

Use	Electric Power Use Metric	Annual Use Metric	Annual Electric Power Use (kW-hr)
Quarry Lighting[a]	(Provided by portable light towers)		--
Quarry Dewatering[b]	6, 720 hours/year	274.6 kilowatts (kW)	1,845,043
Purchased Water (Dust Suppression)[c]	0 million gal/yr	3,500 kW-hr/million gal	--
Overland Conveyor System		3,674.1 kilowatts (kW)	--
Quarry Office[d]	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280
		Total Annual Electric Power Use	**1,871,323**

NOTES:
a Quarry lighting provided by diesel-fueled portable light towers, not electricity.
b Quarry dewatering system, powered by two 300 HP electric powered motors, is rated at 2,000 gallons per minute (gpm) but typically runs at 1,860 gpm. Each motor draws on average 33 amps at 4,160 volts. The dewatering system operates on average 24 hours/day, 7 days/week, 40 weeks/year. Source: Lehigh Southwest Cement Company, May 10, 2010.
c For the baseline period, water used for dust suppression is drawn from the quarry dewatering system; no purchased water is used. The water-energy proxy value of 3,500 kW-hr per million gallons is derived from Refining Estimates of Water-Related Energy Use in California (Report No. CEC-500-2006-118), California Energy Commission, December 2006, page 2 (Northern California outdoor uses).
d The quarry office measures 30 feet by 60 feet. The Electricity Energy Intensity (EEI) value of 14.6 kW-hr/square foot-year is derived from the 2003 Commercial Buildings Energy Consumption Survey (CBECS): 2003 Detailed Tables, U.S. Department of Energy - Energy Information Agency, Table C19 (Electricity Consumption and Conditional Energy Intensity by Census Division for Non-Mall Buildings, Part 3), data for office buildings, Pacific Census Division, available at http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.

SOURCE: Ashworth Leininger Group, 2011 (Tables A-17, C-25)

During Project implementation, additional (new) electricity demand would be generated by the proposed WMSA Conveyor, which has not yet been installed. Ashworth Leininger Group calculated the annual electrical power demand expected to be generated by reclamation Phase 1 and Phase 2 in the Air Quality Technical Analysis prepared for the Project (2011). These calculations are provided in **Table 2-11**. Once mining operations and backfilling of the Quarry pit is complete, and the Project Area is being revegetated (i.e., during Phase 3), there would be little or no Project-related demand for electricity in the Project Area.

PG&E also provides natural gas service to the site. However, no facilities in the Project Area use or would use natural gas.

An inactive powerline and a natural gas pipeline currently cross the EMSA. The powerline would be dismantled and natural gas line removed/rerouted before overburden is placed in the affected area. These dismantling and removal/rerouting activities necessarily would occur as part of the existing mining operation, and are not part of the Project.

Water

Water currently is used in the Project Area to wash rocks as part of the Rock Plant's process and for dust suppression. The San Jose Water Company (SJWC) currently provides water service to the Project Area. In 2007, approximately 103.5 million gallons of water were purchased for use at the Quarry (Howell, 2011).

TABLE 2-11
ESTIMATED ANNUAL ELECTRICAL POWER DEMAND OF THE PROPOSED PROJECT

Project Phase	Use	Electric Power Use Metric	Annual Use Metric	Annual Electric Power Use (kW-hr)
1	Quarry Dewatering[a]	6,720 hours/year	274.6 kilowatts (kW)	1,845,043
	Purchased Water (Dust Suppression)[b]	0 million gal/yr	3,500 kW-hr/million gal	---
	Overland Conveyor System[c]	0 hours/year	3,674.1 kilowatts (kW)	---
	Quarry Office[d]	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280
		Subtotal – Phase 1		***1,871,323***
2	Quarry Dewatering	0 hours/year	274.6 kilowatts (kW)	---
	Purchased Water (Dust Suppression)	107 million gal/yr	3,500 kW-hr/million gal	373,653
	Overland Conveyor System	7,200 hours/year	3,674.1 kilowatts (kW)	26,453,160
	Quarry Office	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280
		Subtotal – Phase 2		***26,853,093***
			Total Baseline Annual Electric Power Use (kW-hr)	**28,724,416**

NOTES:

[a] Current quarry dewatering system, powered by two 300 HP electric powered motors, is rated at 2,000 gallons per minute (gpm) but typically runs at 1,860 gpm. Each motor draws on average 33 amps at 4,160 volts. The dewatering system operates on average 24 hours/day, 7 days/week, 40 weeks/year. The calculation assumes that the quarry dewatering system would continue to operate at its present level through reclamation Phase 1. From the start of reclamation Phase 2, it is expected that the quarry dewatering system would no longer be operational, since extraction operations in the Quarry pit would have ceased.

[b] For periods when a quarry dewatering system is operational, assume that water used for dust suppression is drawn from the quarry dewatering system; no purchased water is needed during these periods. For times when purchased water is needed, the quantity of purchased water is the total of water used by the water trucks and water needed to control emissions from the overland conveyor system. Water used by water trucks is calculated assuming a water flow rate of 400 gallons/minute and 60 minutes/hour for each water truck operating hour. Water used for overland conveyor system dust control is calculated assuming a water flow rate of 2 gallons/minute, 60 minutes/hour, and 7,200 hours/year (3 shifts for 300 operating days) for each material transfer point and screen. The water-energy proxy value of 3,500 kW-hr per million gallons is derived from *Refining Estimates of Water-Related Energy Use in California* (Report No.CEC-500-2006-118), California Energy Commission, December 2006, page 2 (Northern California outdoor uses).

[c] The Overland Conveyor System would utilize the following electric motors: heavy duty conveyor (1-500 HP); portable conveyors (up to 31-75 HP); overland conveyor (up to 4-500 HP); and telestacker (1-100 HP). This totals 4,925 in maximum electrical motor capacity. Assuming 746 watts/HP, this is equivalent to 3,674.1 kilowatts (kW). The Overland Conveyor System is assumed to operate 24 hours/day, 6 days/week, 50 weeks/year (7,200 hours/year) during Phase 2.

[d] The Quarry Office measures 30 feet by 60 feet. The Electricity Energy Intensity (EEI) value of 14.6 kW-hr/square foot-year is derived from the 2003 Commercial Buildings Energy Consumption Survey (CBECS): 2003 Detailed Tables, U.S. Department of Energy - Energy Information Agency, Table C19 (Electricity Consumption and Conditional Energy Intensity by Census Division for Non-Mall Buildings, Part 3), data for office buildings, Pacific Census Division, available at: www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.

SOURCE: Ashworth Leininger Group, 2011 (Table C-25)

A combination of SJWC water and recycled water is used at the Rock Plant to control dust and wash aggregate rock products. Approximately 90 percent of the water used in that area is recycled. Water used during processing is collected and pumped to an 865,000 gallon holding tank (called a “clarifier”) located within the Rock Plant site. Solids settle in the tank and periodically are removed and disposed of in one of the material disposal areas. The clean water remaining in the tank is reused.

Additional water, pumped from the bottom of the Quarry pit, currently is used to control dust on unpaved onsite roads. A junction in the Quarry pit dewatering system at the 1,150 foot elevation allows for truck filling. In 2010, the Applicant pumped approximately 18,114,466 gallons of water from the Quarry for dust suppression purposes (Lehigh, 2011d). The Quarry uses up to seven 12,000-gallon water trucks, depending on the level of operations.

Project-related water use would be for dust suppression. During Phase 1, the demand for water for dust control would not change relative to existing conditions. During Phase 2's backfilling process, water for dust control either would be pumped from the Quarry pit or the municipal source, and the demand for dust control water would increase. For purposes of analysis, this EIR assumes that all of the water that would be used to control dust during Phase 2 (i.e., 107 million gallons/year) would come from the municipal source (Hungerford, 2011; Ashworth Leininger Group, 2011). In Phase 3, the demand would diminish greatly because most of the heavy earthmoving work would have ended and the Rock Plant and quarrying operations would have ceased.

Wastewater

Sewage currently generated in the Project Area from Quarry Office use is disposed into a septic system located near the Quarry offices. Portable toilets with hand-wash stations are located strategically throughout the Quarry. The septic system and portable facilities are properly maintained and cleaned. With implementation of the Project, the septic system would be removed and reclaimed in compliance with all legal requirements (Hungerford, 2011). See, for example, County Code Section B11-86, *Abandoned Private Sewage Disposal Systems.*

Stormwater and Erosion Control

The Project has been designed to control surface runoff to protect surrounding land and water resources in accordance with the Porter-Cologne Water Quality Control Act, the Federal Clean Water Act, and other applicable local, state, and federal requirements. In November 2011, Chang Consultants prepared an updated Drainage Report on behalf of the Applicant that identifies a series of Best Management Practices (BMPs) to achieve these goals (Chang Consultants, 2011), and in March 2010, URS Corporation prepared a Storm Water Pollution Prevention Plan (SWPPP) on behalf of the Applicant that covers existing operations on the site (URS, 2010). The SWPPP includes provisions to prevent the discharge of pollutants caused by equipment operation, fueling, and maintenance as well as a description of containment controls and site-specific erosion and sediment control criteria. The SWPPP for the Project Area would be amended following Project approval to include the additional drainage and erosion controls specified in the RPA.

Existing and proposed drainage and erosion controls are designed to exceed the 20-year storm event. In small portions of the Project Area, channels would be constructed to connect ephemeral drainages with receiving waters. These areas would be reclaimed using native riparian species where channel hydrology can support these species. Interim erosion control measures would be implemented (such as hydroseeding and the installation of silt fences and straw waddles) to provide temporary protection for disturbed areas until such time that they would be reclaimed.

Sediment basins (known as "ponds") provide stormwater detention and sediment control over the site and are maintained according to the Applicant's SWPPP and applicable NPDES permits.

Figure 2-5 shows (and **Table 2-12** describes) the location of all of the existing and planned ponds within the Project site. Each would continue to be used for these purposes during the implementation of the Project. Existing ponds in the Project Area include: 4A, 4B, 4C, 5, 6, 9, 13A, 13B, 17, 30A, 30B, 30C, 30D, 30E, 31B, 31C, and 40J. Ponds 13, 14, and 22 are in-line with Permanente Creek and reasonably can be expected to accommodate some Project-related stormwater flows from upstream areas. Ponds outside the Project Area serve Cement Plant uses and would not be changed by the Project.

TABLE 2-12
SEDIMENTATION BASINS IN THE PROJECT AREA

Basin	Description/Location
Existing Ponds	
4A	Southern portion of the site, near former rock crusher adjacent to Permanente Creek access road
4B	Southern portion of site, east of Pond 4A
4C	Southern portion of site, east of Pond 4B
5	Within the Project Area (Quarry pit): Located in the Quarry pit
Basin E (formerly Pond 6)	Within the Project Area (Crusher Area): Adjacent to Primary Crusher
9	Within the Project Area (Rock Plant): North of Screen Tower 4.
11	Outside the Project Area: Located in the main cement plant area.
13	Central portion of site, south of Pond 13A and Pond 13B
13A	Central portion of site, north of Pond 13 and 13B
13B	Central portion of site, north of Pond 13 and south of Pond 13A
14	Northeast corner of site, north of Pond 22
Dinky Shed Basin (formerly Pond 16)	North of Pond 17
17	Within the Project Area (Rock Plant): Located in the southeast portion of site, northeast of Screen Tower 4
18	Outside the Project Area: East of cement plant, near rail spur
19	Outside the Project Area: East of cement plant, near rail spur
20	Outside the Project Area: East of cement plant, near rail spur
21	Outside the Project Area: East of cement plant, near rail spur
22	Northeast corner of site, south of Pond 14
30A	Within the Project Area (EMSA): Final basin at toe of EMSA
30B	Eastern slope north of 30A
30C	Northern slope west of 30B
30D	Northern slope west of 30C
30E	Northern slope west of 30D
31B	Southern slope southwest of 30A
31C	Southern slope west of 31B
40J	Within the Project Area (Rock Plant and Surge Pile): northeast of the Rock plant and southeast of the haul road.
Planned (Future) Ponds	
40A	Within the Project Area (Quarry pit): To be located on Quarry pit final floor
40B	Within the Project Area (WMSA): To be located on the WMSA south slope
40C	Within the Project Area (WMSA): To be located on the WMSA south slope
40I	Within the Project Area (Rock Plant and Surge Pile): south of the Surge Pile.

SOURCE: EnviroMINE, Inc., 2011b (Table 8)

Implementation of the Project would result in the construction, maintenance, and monitoring of new basins. Construction of ponds 40A through 40C would occur pursuant to the grading and contouring of the Quarry pit and WMSA, respectively, and would use the same equipment (Lehigh, 2011d). Pond 40I would be constructed as part of the reclamation of the Rock Plant and Surge Pile during Phase 3. Specifics about new ponds are provided in Section 4.10, *Hydrology and Water Quality*.

Maintenance and monitoring would include the identification and repair of erosion damage. Sedimentation basins and other erosion control measures would be monitored annually during the wet season by field investigation and visual observations. Soil and slope conditions would be inspected to identify significant new erosion, including rills and soil loss, and the need for maintenance. In general, areas receiving an average score of Class 3, 4, or 5 would receive slope treatment. Any observable reason for failure would be noted and the appropriate remedial measure stated as part of the annual monitoring report. The conditions and any need for maintenance would be recorded, and the appropriate remedial measure identified. Sedimentation basins would be maintained until areas of disturbance are revegetated sufficiently to provide for self-sustained erosion control, based on the revegetation monitoring reports prepared by a qualified biologist. Basins then would be allowed to reclaim naturally over a period of years by allowing them to accumulate sediment and vegetation. After maintenance ceases, basins would continue to be monitored annually for a period of at least three wet seasons to ensure that the discharge from the spillway is functioning properly and is not causing erosion. Basin 40A would be actively revegetated with wetlands vegetation to serve as eventual wetland habitat (EnviroMINE, Inc., 2011b). Proposed performance criteria and slope treatment for erosion control are based on the qualitative descriptions and remedial measures described in **Table 2-13** and **Table 2-14**.

Other interim erosion control measures also would be used in the Project Area during and immediately following reclamation. Such measures would focus on control of sediment and could include desiltation basins, drainage ditches, down drains, silt fencing, and hydroseeding. Different interim erosion control measures could be used if determined to be equally or more effective. Interim erosion control measures would be removed, recontoured, and/or revegetated when no longer needed for sediment control due to the establishment of vegetative cover. These measures would be installed within the Project Area as described in the Drainage Report (Chang, 2011), the SWPPP (URS, 2010), and the Revegetation Plan (WRA, 2011b).

Non-hazardous Solid Waste

Except for what would required for long-term monitoring and maintenance purposes, all equipment and structures would be removed from the Project Area during final reclamation. This includes all rolling stock such as loaders, dozers, excavators, haul trucks, storage vans and water trucks. This also includes conveyors, crushers, trailers, maintenance buildings, storage sheds and other buildings. All surplus equipment and supplies stored within the Project Area would be transported offsite. Any remaining equipment left in the Project Area would be salvaged or otherwise disposed of. All trash and miscellaneous debris would be collected by the solid waste service provider (currently, Recology–South Bay), and hauled to the appropriate waste disposal facility pursuant to local and state health and safety ordinances.

TABLE 2-13
QUALITATIVE DESCRIPTIONS OF SOIL SURFACE STATUS

CLASS 1	No soil loss or erosion; topsoil layer intact; well-dispersed accumulation of litter from past year's growth plus smaller amounts of older litter.
CLASS 2	Soil movement slight and difficult to recognize; small deposits of soil in form of fans or cones at end of small gullies or fills, or as accumulations back of plant crowns or behind litter; litter not well dispersed or no accumulation from past year's growth obvious.
CLASS 3	Soil movement or loss more noticeable; topsoil loss evident, with some plants on pedestals or in hummocks; rill marks evident, poorly dispersed litter and bare spots not protected by litter.
CLASS 4	Soil movement and loss readily recognizable; topsoil remnants with vertical sides and exposed plant roots; roots frequently exposed; litter in relatively small amounts and washed into erosion protected patches.
CLASS 5	Advanced erosion; active gullies, steep sidewalls on active gullies; well-developed erosion pavement on gravelly soils, litter mostly washed away.

SOURCE: EnviroMINE, Inc., 2011b (Table 9)

TABLE 2-14
REMEDIAL MEASURES FOR EROSION CONTROL

CLASS 1	No action necessary.
CLASS 2	Monitor to see if any further deterioration and action is required.
CLASS 3	Any rills or gullies in excess of 8 square inches in cross sectional area and more than 10 linear feet located on finished slopes shall be arrested using straw mulch or the equivalent.
CLASS 4	Replant and cover with straw mulch and install silt fences. If necessary, re-grade and compact with equipment.
CLASS 5	Replant and cover with straw mulch and install silt fences. If necessary, re-grade and compact with equipment.

SOURCE: EnviroMINE, Inc., 2011b (Table 10)

The process for dismantling and removing equipment from the Project Area after mining activities end is described in detail in the April 2011 financial assurance cost estimate (FACE) for the Quarry (EnviroMINE, Inc., 2011a). Section 2.1 of this document includes the estimated number of hours and equipment types used for dismantling and transport of all equipment. The cost estimate identifies Valley Recycling Center as the destination for dismantled equipment, a distance of approximately 13 miles. Transport would require an estimated 111 truck trips for transporting dismantled overland conveyors, 106 truck trips for transporting dismantled Rock Plant equipment, and 45 truck trips for transporting mobile equipment, using the types of vehicles listed in the cost estimate. It is likely that some portion of Lehigh's equipment would be reused or recycled rather than scrapped. To be conservative, the FACE assumes that all equipment would be scrapped (Lehigh, 2011d).

2.7.11.6 Hazardous Materials and Hazardous Waste

A small amount of hazardous materials currently are stored in the Crusher and Quarry Office Support Area at the equipment maintenance facility and at the Rock Plant in the light vehicle maintenance facility. These include fluids for vehicle operation and maintenance such as fuels, oils, liquid polymer, battery acid, coolant, and cleaner, which are stored either in 25- and 55-gallon drums or in 150- to 1,000-gallon above-ground storage tanks. Other chemicals such as paints are stored in smaller (less than 1 gallon) quantities. With the implementation of the Project, containers holding these materials would be transported offsite by an approved carrier in accordance with state and local regulations. The Hazardous Materials Compliance Division of Santa Clara County oversees storage of hazardous chemicals, and existing above-ground storage tanks are operated in accordance with County-issued permits (Lehigh 2011d). There are a number of permitted hazardous waste haulers in the County, and facilities in San Jose and Alviso that could take oil, antifreeze and solvents; other materials would be transported to a landfill such as the Kettleman Hills Landfill or Buttonwillow Landfill.

When the 12,000-gallon above-ground fuel tank located adjacent to the Quarry Office no longer would be needed for operations, a licensed contractor would drain it and pressure-wash the inside of the tank. The contractor would pump the used wash water into a tank truck that would transport the water offsite for disposal. The emptied and cleaned tank would be tested per state and local regulations before being transported offsite by an approved carrier, either for reuse or for scrap disposal at Valley Recycling (Lehigh, 2011d).

2.7.11.7 Offsite Traffic and Onsite Circulation

Existing mining activities in the Project Area generate onsite and offsite traffic associated with customer haul trucks, delivery trucks carrying materials and supplies, Quarry employee and reclamation work crewmembers’ cars and light trucks, and contractor vehicles traveling between the guard house at the entrance to the site and points beyond. A guard house is located at the entrance to the property at the western terminus of Stevens Creek Boulevard. To and from that point, trucks and other vehicles use Stevens Creek Boulevard, Foothill Boulevard, Interstate 280, and the Foothill Expressway. These same routes would be used to access the site for Project purposes. Upon entry through the main gate, haul trucks currently proceed south along a private road to the Rock Plant. Loaded haul trucks depart using the reverse course. Customer haul trucks leaving the site travel an average distance of 20 miles to their destination. Other types of onsite traffic, including employees’, contractors’, visitors’, and delivery vehicles, enter the site at the same point and travel to various areas of the Quarry using the existing road network.

With the implementation of the Project, existing offsite Project-related traffic for hauling, deliveries, commuting, and visiting would continue during Phase 2 while excavation of the WMSA would be underway. Reclamation-related traffic is expected to result in approximately 300 trips per year, with a peak of an estimated 12 additional daily vehicle trips during the fall months when most revegetation activities would occur, for delivery of materials, contractor visits and work crews (EnviroMINE, Inc., 2011b).

Minimal additional short-distance offsite traffic would be generated by the Project in connection with revegetation efforts. Although the majority of seed and container plants to be used in the reclamation revegetation effort would come from onsite sources, some of the seed that has been collected onsite has been contract-grown by local seed growing facilities. The resulting seeds would be used for revegetation efforts. When onsite seed or plants are not available, local sources would be used with an attempt to obtain the most local stock possible (EnviroMINE, Inc., 2011b). Organic material and/or top soil would be imported to the Project Area from offsite sources as part of the proposed reclamation of the EMSA and Quarry pit (EnviroMINE, Inc., 2011b).

2.7.11.8 Hours of Operation and Employees

No change is proposed to the Quarry's existing hours of operation. Quarrying activities currently may take place in the Project Area 24 hours per day, 365 days per year, although actual operating days and hours vary depending on market conditions and the level of production. For purposes of analysis in this EIR, it is assumed that reclamation activities and vehicle trips associated with these activities would occur 24 hours a day, 6 days a week, and 50 weeks per year (i.e., for approximately 300 workdays a year) (ALG, 2011). As indicated in **Table 2-15**, Quarry operations have slowed over the past decade and, in past 2 years, the Quarry did not operate three shifts per day. Most Quarry operations occur in 8-hour shifts. Currently, shift hours are from 6:00 a.m. to 2:30 p.m., and from 2:30 p.m. to 12:00 midnight.

TABLE 2-15
SUMMARY OF QUARRY WORK DAYS AND SHIFTS WORKED: 2000-2010

	Work Days with One Shift	Work Days with Two Shifts	Work Days with Three Shifts	Total Quarry Work Days	Total Days in Year
2000	37	16	251	304	366
2001	43	10	249	302	365
2002	27	10	242	279	365
2003	46	19	224	289	365
2004	47	12	244	303	366
2005	40	61	196	297	365
2006	34	212	40	286	365
2007	32	218	25	275	365
2008	68	187	1	256	366
2009	35	201	0	266	365
2010	87	178	0	265	365

SOURCE: Ashworth Leininger Group, 2011 (Table B-2)

An average of 35 people has been employed at the Quarry over the last 10 years, in addition to onsite employees of the Cement Plant. Existing employees include equipment operators, maintenance personnel, plant operators, site managers, plant engineers, administrators, weigh masters, and quality control technicians. As the proposed reclamation proceeds, an average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. As a result, Phase 1 activities would generate approximately 14 daily employee commute trips (28 one-way trips) and Phase 2 activities would generate approximately three daily employee commute trips (six one-way trips).

No additional employees would be required during Phase 3 activities and would generate no new trips (ALG, 2011; Table D-14).

2.8 Reclamation Monitoring, Maintenance and Conformance with Standards

Reclamation efforts would be monitored pursuant to the requirements of SMARA, and the County's conditions of Project approval, including compliance with a mitigation monitoring program developed as part of the CEQA process. The Applicant would be required to submit annual status reports on a form provided by OMR and the County would conduct annual inspections. Any noted deficiency would require prompt attention.

SMARA requires that reclamation plans incorporate verifiable standards to assure adequate completion of reclamation plan objectives (14 Cal. Code Regs. §3700 et seq.). The RPA discusses in detail the adopted reclamation standards that apply to the Project and include:

- Wildlife habitat (§3703)
- Backfilling, Regrading, Slope Stability and Recontouring (§3704)
- Revegetation (§3705)
- Drainage, Diversion Structures, Waterways and Erosion Control (§3706)
- Building, Structure and Equipment Removal (§3709)
- Stream Protection, Including Surface and Groundwater (§3710)
- Topsoil Salvage, Maintenance, and Redistribution (§3711)
- Mine Waste Management (§3712)

This section summarizes how these standards are addressed by the Project. Adopted reclamation standards relating to open pit surface mining operations for metallic minerals (§3704.1), prime and other agricultural land (§§3707, 3708) and the closure of surface openings (§3713) do not apply to the Project and are not discussed.

2.8.1 Wildlife Habitat

Implementation of the Project is intended to establish wildlife habitat in the Project Area in a condition that is equal or superior to existing conditions. Reclamation would occur using native vegetation representative of oak woodland, chaparral, and grassland communities similar to naturally occurring conditions in the vicinity of the Project Area. Revegetation objectives have been established for particular areas: For north-facing slopes, revegetation would mimic shrub and herbaceous species present in adjacent undisturbed communities with "islands" of shrub and tree plantings on the benches that eventually would contribute to the regeneration of scrub, woodland, and forest in these revegetated areas. Shrub cover on north-facing slopes is expected to provide shade and appropriate growing conditions for natural recruitment of tree species in the future. Native grey pine would be planted in some more visible bench areas because this species is hardier and faster-growing than oak trees. For south-facing slopes, revegetation would mimic the scrub communities present on south-facing slopes in adjacent open space areas by seeding with native grasses and shrubs that eventually would contribute to the establishment of similar scrub communities. Proposed revegetation efforts are further described in Section 2.8.3.

Two types of wetlands have been mapped in the project Area: wetland seeps and freshwater emergent wetlands. Wetland seeps are characterized by a dominance of perennial herbs and ferns that are adapted to wetland conditions and occur along slopes where freshwater intersects the soil surface, or along intermittent spring-fed streams. Emergent freshwater wetlands occur in the Project Area adjacent to Permanente Creek and are characterized by perennial emergent grasses and herbs. Four existing sedimentation basins (Ponds 13, 14, 21 and 22) have been mapped as freshwater marshes based on their recruitment of the characteristic plant community in the sediment that accumulates between pond maintenance cycles.

The Applicant identified a number of applicant proposed measures (APMs) that would avoid or reduce potential impacts of the Project related to biological resources including special-status avian species (APM-BIO-1 and APM-BIO-2), roosting bats (APM-BIO-3, -4, and -5), and the San Francisco Dusky-footed Woodrat (APM-BIO-6) (EnviroMINE, Inc., 2011b). All of these APMs would be implemented as part of the Project, and are not considered "mitigation measures" in this EIR. If the EIR is certified and the Project is approved, the Applicant's implementation of and compliance with these APMs would be monitored and enforced by the County. These measures are described in detail in the December 2011 Biological Resources Assessment prepared by WRA Environmental Consultants on behalf of the Applicant (WRA, 2011a) and summarized below.

APM-BIO-1: Special Status Avian Species, Non-breeding season. If nesting birds are encountered during mining or reclamation activities in the non-breeding season, defined for purposes of the EIR as September 1 to January 31, activities within a minimum of 50 feet of the nest will be postponed. Activities within this area will remain halted until the nest is abandoned or the young birds have fledged.

APM-BIO-2: Special Status Avian Species, Breeding season. During the breeding season (defined for purposes of the EIR as February 1 to August 31), pre-activity surveys will be conducted by a qualified biologist prior to ground disturbance activities. Surveys will be conducted for all suitable nesting habitat within 250 feet of potentially affected areas. All active non-status passerine nests identified will be protected by a 50-foot radius minimum exclusion zone. Active raptor or special status species' nests will be protected by an exclusion buffer with a minimum radius of 200 feet. A minimum 500 foot buffer will be established around active White-tailed Kite nests. Exclusion zones will remain in place until the nest is abandoned or the young have fledged. Should ground disturbance commence later than 14 days from the survey date, surveys will be repeated.

APM-BIO-3: Roosting Bats, Non-roosting season. Where evidence of roosting is observed within or immediately adjacent to the RPA Area during non-breeding season (defined for purposes of the EIR as September 1 to October 31), activities will be halted within an appropriately-sized exclusion buffer to be determined by a qualified bat biologist.

APM-BIO-4: Roosting Bats, Hibernation season. During hibernation season (defined for purposes of the EIR as November 1 to March 31), no activities will take place within 100 feet of identified hibernation areas, unless a qualified bat biologist has determined that a given area does not provide suitable hibernating conditions and that bats are unlikely to be present in the area.

APM-BIO-5: Roosting Bats, Maternity roosting season. During maternity roosting season (defined for purposes of the EIR as April 1 to August 31), pre-activity surveys (night-time evening emergence surveys and/or internal searches) will be conducted within large tree cavities to determine the presence of bat maternity roosts within areas identified in the Biological Resources Assessment (WRA, 2011a). All active roosts identified during surveys will be protected by an appropriately-sized buffer to be determined by a qualified bat biologist. The buffer will be determined by the type of bat observed, topography, slope, aspect, surrounding vegetation, sensitivity of roost, type of potential disturbance, etc. Each exclusion zone would remain in place until the end of the maternity roosting season. If no active roosts are identified then activities may commence as planned. Survey results are valid for 30 days from the survey date. Should work commence later than 30 days from the survey date, surveys should be repeated.

APM-BIO-6: San Francisco Dusky-footed Woodrat. Active woodrat houses will be flagged and avoided whenever feasible. If avoidance is not feasible, the houses shall be dismantled by hand under the supervision of a biologist. If young are encountered during the dismantling process, the material will be placed back on the house and the house will remain unmolested for two to three weeks in order to give the young enough time to mature and leave the house on their own accord. After two to three weeks, the nest dismantling process may begin again. Nest material will be moved to suitable adjacent areas (oak woodland, scrub, or chaparral) that will not be disturbed.

2.8.2 Backfilling, Regrading, Slope Stability and Recontouring

Reclaimed slopes would conform to the surrounding hillside topography, which is variable but consistently rises in elevation in the east to west direction. Based on existing conditions, ultimate fill slopes in the final Project Area would be located primarily in the EMSA and the Quarry pit, with both cut and fill slopes in the WMSA. Current elevations within the Project Area range from approximately 500 feet to 2,000 feet msl. Reclaimed slopes would be generally consistent with natural contours.

Under SMARA’s reclamation standards, reclaimed slopes shall not exceed 2.0H:1.0V except when site-specific geologic and engineering analysis demonstrate that the proposed final slope would have a minimum slope stability FOS that is suitable for the proposed end use, and when the proposed final slope can be successfully revegetated. A Project-specific geotechnical evaluation of the final proposed landforms has been prepared for the Applicant by Golder Associates, Inc. (Golder Associates, 2011). Although Project implementation would result in some reclaimed slopes in excess of 2.0H:1.0V, Golder and Associates, Inc., has determined that all final overall reclaimed slopes that would be stable under static and seismic loading conditions as well as suitable for the end use. Reclaimed fill slopes would occur over an appropriate foundation pursuant to the recommendations within the Project-specific geotechnical report

(Golder Associates, 2011). Fill slopes in the EMSA would be reclaimed at a maximum overall slope inclination of 2.6H:1V. The Quarry pit would be reclaimed to maximum slope angles of 2.5H:1.0V overall, although some areas of steep highwall would remain in the Quarry pit with interbench slopes up to 70 degrees, which the Applicant's consultant has deemed stable in the current configuration. Final overall slope angles in the WMSA would not exceed 2.5H:1.0V in steepness. All final reclaimed slopes would have a minimum factor of safety appropriate to the planned end use as described in the Project-specific geotechnical report (Golder Associates, 2011). Further, although certain areas of the remaining upper Quarry pit highwall would not receive an application of growth medium due to the steepness of the slopes, all highwalls would receive a high-mulch hydroseeding (EnviroMINE, 2011b).

2.8.3 Revegetation, Topsoil Salvage, Maintenance and Redistribution

Proposed revegetation performance standards are described in the Revegetation Plan prepared by WRA Environmental Consultants (2011b) and summarized in **Table 2-16** and **Table 2-17**. They establish minimum targets for species richness and percent cover for hydroseed and planting areas, and reflect the expected growth of trees and shrubs in the first five years after planting. It is expected that the revegetated areas would continue to develop, eventually dominating the benches and slopes over several decades through tree growth and natural regeneration.

TABLE 2-16
PROPOSED FIVE-YEAR PERFORMANCE STANDARDS FOR REVEGETATION IN THE PROJECT AREA

	Oak Woodland (north- and northeast-facing benches)		Pine Woodland (east-facing benches)		Hydroseed Areas[a] shrub/ grassland mix		Riparian Areas	
	Woody Plants	Herbs	Woody Plants	Herbs	Woody Plants	Herbs	Woody Plants	Herbs
Richness[b] (average native species per plot)	5	3	4	3	3	3	4	3
Density (average native individuals per acre)	470	--	345	--	--	--	470	--
Canopy Cover	40%		40%		40%		40%	

NOTES:
[a] Performance standards for hydroseed areas may need to be adjusted to reflect feasible five-year results of the species mix ultimately selected based on test plot results and early revegetation efforts during the reclamation period. In particular, the balance between shrub and herbaceous species cover may vary.
[b] Richness standards are based on plot sizes used in reference data collection and described in the Revegetation Plan: 10m-radius plots for trees, 5m-radius plots for shrubs, and 1m-radius plots for herbs/grasses.

SOURCE: WRA Environmental Consultants, 2011b (Table 17)

TABLE 2-17
PROPOSED FIVE-YEAR PERFORMANCE STANDARDS FOR REVEGETATION IN THE PCRA

	Hydroseed Areas Shrub/Grassland Mix		Riparian Area
	Shrub	Herb	
Richness (average species per plot)	2	2	NA
Canopy Cover	45%	45%	NA
Density (average individuals per acre)	200	NA	NA
Percent Survival	NA	NA	60%
Percent Survival			

SOURCE: WRA Environmental Consultants, 2011b (Table 18)

Performance standards for the control of weeds (non-native invasive plants) also are proposed (WRA Environmental Consultants, 2011b). Weeds accounted for over 50 percent of the vegetative cover in reference plots surveyed during the preparation of the Revegetation Plan, and the proposed performance standards take this information into account. Specifically, for the purposes of RPA maintenance and monitoring, non-native non-graminoid plants listed in the Cal-IPC Inventory (2006) as highly invasive will be considered invasive weeds subject to control and performance standards. Additional species listed as moderately invasive by Cal-IPC also will be considered invasive weeds subject to control and performance standards because they currently are present in large numbers in the Project Area and would impede establishment of native cover. As stated in Section 6.4 of the Revegetation Plan, the proposed performance standards for weed control are as follows:

> If invasive weeds are found to exceed a combined 5 percent relative cover over all sampled quadrats, weed abatement activities will commence. The following species should be included as subject to this performance standard: yellow star thistle (*centaurea solstitialis*, annual), black mustard (*brassica nigra*, annual), stinkwort (*dittrichia graveolens*, annual), pampas grass (*cortaderia spp.*, perennial), and fennel (*foeniculum vulgare*, perennial).

2.8.4 Drainage, Diversion Structures, Waterways and Erosion Control and Stream Protection, Including Surface and Groundwater

To protect water quality in stormwater runoff and in the backfilled and reclaimed Quarry pit, the Project proposes two water management strategies: The first would protect surface runoff quality in the EMSA, Quarry pit, and WMSA using a cover system. The second would protect groundwater seepage from the backfilled Quarry pit with the introduction of organic matter into the backfill material. These measures are summarized here and described in more detail in the RPA Water Quality Report (RPA Application Attachment G).

Surface water would be protected by isolating runoff from limestone materials by applying a cover system in the EMSA, Quarry pit backfill, and WMSA, and by making certain surface drainage improvements. The cover would be installed during reclamation (but prior to resoiling or revegetation) by applying a 1-foot thick layer of run-of-mine non-limestone rock (i.e., greywacke, chert, and greenstone) over areas of exposed limestone or limestone-containing fills. The runoff-mine non-limestone rock would be identified and sequenced for delivery under the guidance and recommendations of a qualified geologist. The surface drainage system would include construction of drainage improvements and sedimentation ponds with non-limestone materials (EnviroMINE, Inc., 2011b).

Introducing organic matter into the backfill material would assure that conditions in the saturated backfill of the Quarry pit are sufficiently "reducing" (i.e., anoxic or anaerobic) and conducive to the control of certain constituents. The organic matter would be introduced either by mixing the material in overburden conveyed from the WMSA, or placing the organic matter directly on the backfill and using a dozer to spread it with the backfill. It is likely that the organic amendment would be needed only in the upper layer of the backfill that would be saturated (i.e., in a 25 or 50 foot layer). Mulched green waste tentatively has been selected for this purpose because of its availability at composting centers in the vicinity of the Project Area. Approximately 63,000 tons (approximately 170,000 cubic yards) of green waste would be required. The addition of the organic material would take approximately 3 years during the placement of the 25 to 50 feet of fill in the quarry area near the end of Phase 2 (EnviroMINE, Inc., 2011b).

See also Section 2.7.10.5 related to stormwater management in, and in the immediate vicinity of, the Project Area.

2.8.5 Building, Structure and Equipment Removal

See Section 2.7.10.5 related to non-hazardous solid waste and Section 2.7.10.1 related to haul roads.

2.8.6 Mine Waste Management

The State Water Resources Control Board (SWRCB) regulates the disposal and reclamation of "mining waste," which includes overburden, waste rock, and the solid residues, sludges, and liquids from the processing of mineral commodities (27 Cal. Code Regs. 22470 et seq.). Mining wastes are classified as Group A, Group B, or Group C depending on their characteristics. Group A wastes must be managed as hazardous waste pursuant to Chapter 11 of Division 4.5, of Title 22 of this code and have been found by the Regional Water Quality Control Board (RWQCB) to pose a significant threat to water quality. The Project Area is within the jurisdiction of the San Francisco RWQCB. For purposes of analysis this EIR assumes that water generated in the Project Area is Group B waste, which either contain nonhazardous soluble pollutants of concentrations that exceed water quality objectives for, or could cause degradation of, waters of the state, or contains hazardous wastes but have been found by the RWQCB to pose a low risk to water quality. Group C wastes include discharges that would comply with the applicable water quality control plan, including water quality objectives other than turbidity. The Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin provides the standards that apply to water quality in a 4,603-square-mile area including the San Francisco Bay and waterways in the vicinity of the Quarry (San Francisco RWQCB, 2010). The final cover material for the EMSA is expected to constitute Group C waste.

Title 27 of the California Code of Regulations (§22510 et seq.) requires that threats to water quality be addressed during mine closure and reclamation. A Drainage Report has been prepared for the Project, which determined that once reclamation is completed, the Project Area would have a low runoff potential and, therefore, would have a low potential to transport sediment to surface waters (Chang Consultants, 2011). The temporary measures described in Section 2.7.11.5, including sedimentation basins, would further reduce sediment transport, as would revegetation.

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CHAPTER 3
Description of Alternatives

3.1 Overview

CEQA requires an evaluation of the comparative effects of a range of reasonable alternatives to a project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project (CEQA Guidelines §15126.6(a)). The EIR is to consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The nature and scope of the alternatives to be discussed is governed by the "rule of reason." The discussion of alternatives is to focus on 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 (CEQA Guidelines §15126.6(b)).

The range of potential alternatives 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 project's significant adverse effects. The EIR also should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines §15126.6(c)). The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (CEQA Guidelines §15126.6(d)). CEQA requires evaluation of a "No Project Alternative" to allow agencies and the public to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The "No Project" analysis shall discuss existing conditions at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved (CEQA Guidelines §15126.6(e)).

This Chapter describes the process that was used to identify and screen alternatives for consideration, provides the rationale for why some alternatives were eliminated from consideration, and describes those alternatives that were carried forward for analysis in this EIR. The potential environmental impacts of the alternatives carried forward are analyzed in comparison to the proposed Project in each of the 18 resource areas in Sections 4.1 through 4.18. The results of the comparative analysis of each of the 18 resource areas are summarized in Chapter 5, which compares the conclusions of the impact analyses for both alternatives against the conclusions for the Project.

3.2 Alternatives Development and Screening Process

To develop a range of alternatives for analysis, the following methodology was used:

1. Develop an understanding of the Project, identify the need for and basic objectives of the Project, and consider the significant adverse impacts that the Project may have;
2. Consider input received during the scoping process that relates to Project alternatives;
3. Identify and evaluate reasonable feasible alternative locations to the proposed site, if any;
4. Identify and evaluate other reclamation technology alternatives, if any, that have the potential to avoid or substantially lessen any of the significant effects of the Project;
5. Identify and evaluate whether alternative approaches could provide a reasonable feasible alternative to the Project; and
6. Consider the scenario of not implementing reclamation as proposed, i.e., the No Project Alternative.

The Project is described in Chapter 2; the statement of Project Purpose and Need is provided in Section 2.4, and Project Objectives are presented in Section 2.5. The Scoping Report is provided in Appendix A. Because all of the surface mining-related disturbances subject to reclamation under SMARA are located in the Project Area, no alternative sites were suggested during scoping or are analyzed in the EIR. However, the offsite disposal of overburden is evaluated as a possible alternative. The process used to identify and screen alternatives to the Project is described in the following sections.

3.2.1 Alternatives Screening Methodology

The screening of alternatives to the proposed Project was completed using a three-step process:

***Step 1*:** Clarify the description of each alternative to allow comparative evaluation.

***Step 2*:** Evaluate each alternative using CEQA criteria (defined below).

***Step 3*:** Determine the suitability of each alternative for full analysis in the EIR. Infeasible alternatives and alternatives that clearly offered no potential for overall environmental advantage were removed from further analysis.

Following the three-step screening process, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to CEQA's criteria for consideration of alternatives:

- Does the alternative meet most basic project objectives?
- Is the alternative feasible from a legal, regulatory, and technical perspective?

- Does the alternative avoid or substantially lessen any significant effects of the Project (including consideration of whether the alternative could create significant effects potentially greater than those of the Project)?

- Is the alternative reasonable, in that its analysis will foster informed decision making and meaningful public participation?

3.2.2 Consistency with Project Objectives

Alternatives considered must be capable of eliminating or reducing significant environmental effects even if they "impede to some degree the attainment of project objectives" (CEQA Guidelines §15126.6(b)). Therefore, it is not required that each alternative meet all of the Applicant's objectives. The objectives of the Project are discussed in Section 2.3.

3.2.3 Feasibility

CEQA Guidelines §15364 defines feasibility as ". . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." In addition, CEQA requires that the County, as CEQA lead agency for the Project, consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, and jurisdictional boundaries in determining the range of alternatives to be evaluated in the EIR (CEQA Guidelines §15126.6(f)). The three principal feasibility components evaluated in the screening analysis were:

- ***Environmental Feasibility*****:** Is the alternative feasible from an environmental perspective, i.e., would it result in the reclamation of mined lands to a usable condition that is readily adaptable for open space land uses and would not create a danger to public health or safety?

- ***Legal Feasibility*****:** Does the alternative comply with the requirements of SMARA (Pub. Res. Code §§2772 through 2773), its implementing regulations (14 Cal. Code Regs. §§3500 through 3505), other legally-applicable regulations (e.g., air and water quality standards), and County standards regarding reclamation of mined lands?

- ***Technical Feasibility*****:** Can the alternative be accomplished considering available technology?

If an alternative was found not to meet one of the primary feasibility criteria, it was deemed infeasible without reviewing whether it met the other feasibility criteria. Furthermore, per CEQA Guidelines §15091, as part of project approval, findings would be made regarding the alternatives' ultimate feasibility: "No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding."

Consistent with CEQA Guidelines §15126.6(b), this initial screening analysis does not focus on relative economic factors or costs of the alternatives (as long as they are found to be potentially economically viable).

3.2.4 Potential to Eliminate Significant Environmental Effects

To be considered fully in an EIR, an alternative must have the potential to "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines §15126.6(a)). At the screening stage, it is neither possible nor legally required to evaluate all of the impacts of the alternatives in comparison to the Project with absolute certainty, nor is it possible to quantify impacts.

The potential significant environmental effects of the Project are listed in **Table 3-1**. This impact summary was prepared using a liberal definition of "potentially significant" so as to avoid excluding alternatives that could provide some overall environmental benefit. Also, because this screening-level impact summary was developed prior to completion of the EIR analysis, identifies more "potentially significant" impacts than subsequently were identified in the detailed analysis presented in Section 4 of this EIR.

TABLE 3-1
SUMMARY OF PRELIMINARY SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS OF THE LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Issue Area	Impact
Aesthetics	• Potential interim effects (i.e., during the proposed reclamation period) on views from the valley floor and more distant locations of activities and conditions in the EMSA
Air Quality	• Potential for interim construction dust and/or equipment exhaust emissions exceeding local air district significance thresholds; potential for long-term adverse health risk implications from Toxic Air Contaminant emissions
Biological Resources	• Potential interim and/or long-term impacts to aquatic habitat in Permanente Creek and the watershed downstream of the Project Area resulting from runoff from the Project Area that contains selenium and/or from offsite peak flows from a 100-year storm event
Cultural Resources	• Potential demolition of contributing structures to a proposed Kaiser Permanente Quarry Mining District
Hydrology and Water Quality	• Potential interim and/or long-term impacts to water quality in Permanente Creek and the watershed downstream of the Project Area resulting from runoff from the EMSA that contains selenium and/or from offsite peak flows from a 100-year storm event
Noise	• Potential nighttime noise impacts to the sensitive receptor nearest to the northern end of the EMSA

Based on this methodology, each potential alternative was evaluated for its ability to meet most of the basic Project objectives, its feasibility, and its ability to avoid or substantially lessen one or more of the potential significant effects of the Project and not create significant unmitigable impacts of its own.

3.2.5 Reasonableness

The range of alternatives required in an EIR is governed by a "rule of reason," which requires an EIR to consider only those alternatives that are necessary to permit a reasoned choice. In other words, alternatives considered fully in an EIR must be reasonable, selected to foster meaningful public participation and informed decision making (CEQA Guidelines §15216.6(f)). The selection of unrealistic alternatives whose implementation is speculative or remote, or whose environmental impacts cannot reasonably be ascertained, would not contribute to a useful analysis.

3.3 Summary of Screening Results

The alternatives summarized in Table 3-2 are those that have been selected through the alternative screening process for consideration in the EIR. Of them, two reclamation alternatives would substantially meet most of the basic project objectives, would be feasible, and would avoid or reduce potentially significant environmental effects of the Project; the No Project alternative also is included as required by CEQA. These alternatives have been carried forward for more detailed analysis in the EIR:

- Alternative 1: Complete Backfill Alternative
- Alternative 2: Central Materials Storage Area Alternative
- No Project Alternative

The remaining alternatives summarized in **Table 3-2** have been rejected from further consideration in the alternatives analysis due to infeasibility, not achieving project objectives, or not avoiding or substantially lessening significant environmental effects of the Project.

3.3.1 Alternatives Evaluated in Detail in this EIR

3.3.1.1 Alternative 1: Complete Backfill Alternative

Description

The Complete Backfill Alternative would be similar to the Project in all respects except that overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities. The EMSA was designed to accept total overburden placement of approximately 6.5 million tons (approximately 4.8 million cubic yards) and to provide overburden storage for the surface mining operation until approximately 2015, when final contouring and revegetation would occur. Under Alternative 1, the approximately 4.8 million cubic yards of overburden stored in the EMSA would be returned to the Quarry pit during reclamation Phase 2.

As a result, final contours in the EMSA would be comparable to what is shown in Figure 5 of the 1985 Reclamation Plan, the Quarry pit’s lowest areas would be raised and thereby provide additional support to quarry walls. Removal of mining overburden from the EMSA would abate the notice of violation related to mining related use of this area, remove an existing source of selenium and thereby preclude its mobilization into downstream waterways, and return views from the valley floor and beyond to a pre-mining condition.

Removing the EMSA also would not meet an objective of the Project, which is the screening of views of and noises associated with the industrial uses occurring at the Cement Plant from the valley floor and recreational areas in the vicinity of the Project Area.

TABLE 3-2
SUMMARY OF ALTERNATIVES SCREENING ANALYSIS
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Alternative	Project Objectives Criteria	Feasibility Criteria	Reasonableness	Environmental Criteria
Passes Screening				
Alternative 1: Complete Backfill Alternative • EMSA materials would provide additional backfill materials for the Quarry pit. • Elevation and contours of the post-reclamation EMSA would be comparable to conditions existing before overburden storage began in that area • Elevation and contours of the Quarry pit would reflect the addition of materials against the north wall. • Interim BMPs would be implemented to manage stormwater run-off pending final reclamation. • Final reclamation of the EMSA would occur during Phase 3, upon the completion of which views could be available from the Valley into the (reclaimed) Quarry pit	Passes. Alternative 1 would enable the Applicant to continue operations and, thereby, maintain a local, reliable, and economic source of Portland cement-grade limestone and construction aggregate for the same duration as the Project; reclaim the site, apply applicable SMARA reclamation standards, and avoid or eliminate residual hazards to the environment and public health and safety.	Passes. No elimination factors were identified.	Passes. Effects reasonably could be ascertained; implementation would be neither speculative nor remote.	Meets environmental criteria. Aesthetics: Would not avoid or substantially lessen effects of the Project on views of the EMSA, since transport of the overburden materials back into the pit could extend the duration before work in the EMSA is complete. Air Quality: Would not avoid or substantially lessen significant air quality or health risk-related effects because work would be required in the EMSA over a longer period than under the Project. Biological Resources: Would avoid or substantially lessen long-term selenium-related water quality effects to downstream aquatic habitats by precluding runoff containing selenium from this area. Cultural Resources: Would not avoid or substantially lessen significant impacts to historic resources because demolition of contributing structures to the Kaiser Permanente Quarry Mining District would continue to occur. Hydrology and Water Quality: Would avoid or substantially lessen long-term selenium-related water quality effects to downstream watercourses by precluding runoff containing selenium from this area. Noise: Would not avoid or substantially lessen significant nighttime noise impacts related to work at the northern end of the EMSA because additional work would be required in that area that could be undertaken during nighttime hours. New Impacts: Could cause new long-term aesthetic impacts associated with increasing the visibility of industrial components in and adjacent to the Project Area, including industrial uses associated with the Cement Plant, for visitors to adjacent recreation areas, nearby scenic roadways, and the valley floor.
Alternative 2: Central Materials Storage Area Alternative • Stockpiling of overburden materials from the Quarry pit in the EMSA would cease immediately; • Stockpiling would begin in a 52.2-acre area located east of the Quarry pit and immediately west of (and contiguous with) the EMSA. • Development of the CMSA would allow reclamation activities in the western and central parts of the EMSA, which are closer to sensitive receptors than the CMSA, to begin immediately upon Project approval.	Passes. Alternative 2 would enable the Applicant to continue operations and, thereby, maintain a local, reliable, and economic source of Portland cement-grade limestone and construction aggregate for the same duration as the Project; reclaim the site, apply applicable SMARA reclamation standards, and avoid or eliminate residual hazards to the environment and public health and safety.	Passes. No elimination factors were identified.	Passes. Effects reasonably could be ascertained; implementation would be neither speculative nor remote.	Meets environmental criteria. Aesthetics: Would avoid or substantially lessen short-term impacts of the Project on views of the EMSA because reclamation of the most visible areas of the EMSA could begin immediately upon project approval. Air Quality: Would lessen health risks, since activities at the CMSA would be located further from the nearest residential receptors. Biological Resources: Would reduce short-term selenium-related impacts from the EMSA because the EMSA would be capped sooner than would occur under the Project (thereby shortening the duration in which selenium-containing runoff could leave the area and drain to Permanente Creek) and because interim drainage controls would be implemented at the CMSA to manage run-off until final reclamation of the area is achieved.

TABLE 3-2 (Continued)
SUMMARY OF ALTERNATIVES SCREENING ANALYSIS
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Alternative	Project Objectives Criteria	Feasibility Criteria	Reasonableness	Environmental Criteria
Passes Screening (cont.)				
Alternative 2: Central Materials Storage Area Alternative (cont.)				Cultural Resources: Would not avoid or substantially lessen significant impacts to historic resources because demolition of contributing structures to the Kaiser Permanente Quarry Mining District would continue to occur. Hydrology and Water Quality: Would reduce short-term drainage impacts from the EMSA because the EMSA would be capped sooner than would occur under the Project (thereby shortening the duration in which selenium-containing runoff could leave the area and drain to Permanente Creek) and because interim drainage controls would be implemented at the CMSA to manage run-off until final reclamation of the area is achieved. Noise: Would avoid or substantially lessen nighttime noise impacts of the Project because of the CMSA's increased distance between active work areas and the nearest receptors. New Impacts: Would not cause new impacts relative to the Project.
No Project Alternative • The Permanente Quarry would continue operations at the baseline mining rate, which is less than the maximum rate expected under the Project • Mining the same total amount of material from the Quarry pit would take approximately 7 years longer than under the Project • No overburden would be stored at the EMSA; all overburden would instead go to the Quarry west wall • Reclamation would occur approximately 7 years later than for the Project, but would be substantially similar in scope and duration	Passes. Although the No Project Alternative would result in a reduced rate of mining compared to the Project, a local source of limestone and construction aggregate would be maintained and reclamation of the site in accordance with SMARA reclamation standards would occur, albeit at a later date.	Passes. No elimination factors were identified.	Passes. Effects reasonably could be ascertained; implementation would be neither speculative nor remote.	Meets environmental criteria. Aesthetics: Would not avoid or substantially lessen aesthetic impacts of the Project because, although no further overburden storage would occur at the EMSA, reclamation of visible portions of the Project Area would begin later than is proposed in the RPA. Air Quality: Would avoid or substantially lessen air quality impacts of the Project because annual and maximum daily emissions would be lower than under the RPA. Would lessen health risks, since overburden placement activities would be located further from the nearest residential receptors. Biological Resources: Would avoid or substantially lessen long-term aquatic habitat impacts of the Project because no additional selenium-bearing overburden material would be stored at the EMSA. Cultural Resources: Would not avoid or substantially lessen significant impacts to historic resources because demolition of contributing structures to the Kaiser Permanente Quarry Mining District would continue to occur, albeit 7 years later than is proposed for the RPA. Hydrology and Water Quality: Would avoid or substantially lessen interim water quality impacts of the Project because no additional selenium-bearing overburden material would be stored at the EMSA. Noise: Would avoid or substantially lessen nighttime noise impacts of the Project because overburden placement activities would be located further from the nearest receptors. New Impacts: Would not be expected to cause new impacts relative to the Project.

TABLE 3-2 (Continued)
SUMMARY OF ALTERNATIVES SCREENING ANALYSIS
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Alternative	Project Objectives Criteria	Feasibility Criteria	Reasonableness	Environmental Criteria
Fails Screening				
Offsite Disposal of Overburden • Overburden storage in the EMSA would cease and reclamation of the EMSA would begin immediately • Any overburden not stored in the Quarry pit would be transported offsite by truck or rail.	Passes. Would meet most of the basic objectives of the Project.	Passes. No elimination factors were identified.	Fails. Effects could not reasonably be ascertained; implementation would be speculative.	Fails. Aesthetics: Could substantially lessen significant effects of the Project related to views of reclamation activities in the EMSA by initiating and completing re-vegetation of the EMSA on an expedited basis. Air Quality: Would not avoid or substantially reduce air quality or health risk-related impacts due to the duration necessary to complete reclamation. Cultural Resources: Would not avoid or substantially lessen significant impacts to historic resources because demolition of contributing structures to the Kaiser Permanente Quarry Mining District would continue to occur. Hydrology and Water Quality: Would not avoid or substantially reduce water quality impacts related to polluted runoff or potential violations of existing water quality standards. Noise: Would not avoid or substantially lessen significant effects of Project-related noise associated with work in the EMSA. New Impacts: Could cause new ore more intense air quality impacts related to offsite transport of the materials. Could cause significant impacts related to waste disposal.

Project Objectives

Alternative 1 would meet all of the basic Project objectives.

Feasibility

No legal, regulatory, or technical feasibility issues were identified that would eliminate Alternative 1 from consideration.

Lessen Significant Environmental Impacts

Alternative 1 would not lessen impacts related to interim (reclamation-phase) activities in the EMSA because activities would continue to occur in that area that would be visible from nearby recreational areas, the valley floor, and more distant locations in the viewshed. It also would not avoid or reduce interim impacts to Permanente Creek related to surface runoff that would continue to be generated in this area until the area is capped and revegetated. Over the longer term, Alternative 1 would eventually remove limestone material in the EMSA during reclamation that could oxidize and thereby cause selenium to mobilize in stormwater runoff that could affect water quality conditions, including secondary effects on aquatic habitat, in downstream watercourses. It also would create certainty that, following the completion of reclamation, selenium-containing runoff from this area would not reach Permanente Creek.

Potential New Impacts Created

Alternative 1 would be expected to cause new long-term aesthetic impacts associated with increasing the visibility of industrial components in the vicinity of the Project Area, and would reduce or eliminate the beneficial environmental effects of the Project related to reducing the visibility of the Cement Plant, adjacent to the Project Area. Visitors to the adjacent RSA County Park/Preserve, motorists on nearby scenic roadways including I-280, and other viewers on the valley floor would have clearer views of the Cement Plant than under the Project. Alternative 1 also would eliminate an existing feature (the EMSA), which shields some of the noise generated within the site from being heard by offsite sensitive receptors.

Reasonableness

The effects of Alternative 1 reasonably could be ascertained and its implementation would be neither speculative nor remote.

3.3.1.2 Alternative 2: Central Materials Storage Area Alternative

Description

The Central Materials Storage Area (CMSA) Alternative would be similar to the Project in all respects except that reclamation of the eastern and central portions of the EMSA (as it exists as of reclamation plan amendment approval) would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored in an area farther removed from the closest viewers and air quality- and noise-sensitive receptors. Reclamation activities in the EMSA would be the same as under the Project (including installation of a "cap" to prevent selenium-containing surface runoff from reaching Permanente Creek) except that such activities would begin immediately upon reclamation plan amendment approval and no new materials would be stockpiled in that area. Mitigation measures recommended to address interim Project impacts (i.e., impacts that could occur while reclamation activities are underway) for the EMSA also would be implemented to avoid or reduce impacts associated with the CMSA before final reclamation of the CMSA begins, which would occur upon the conclusion of mineral extraction in the Quarry pit during reclamation Phase 2.

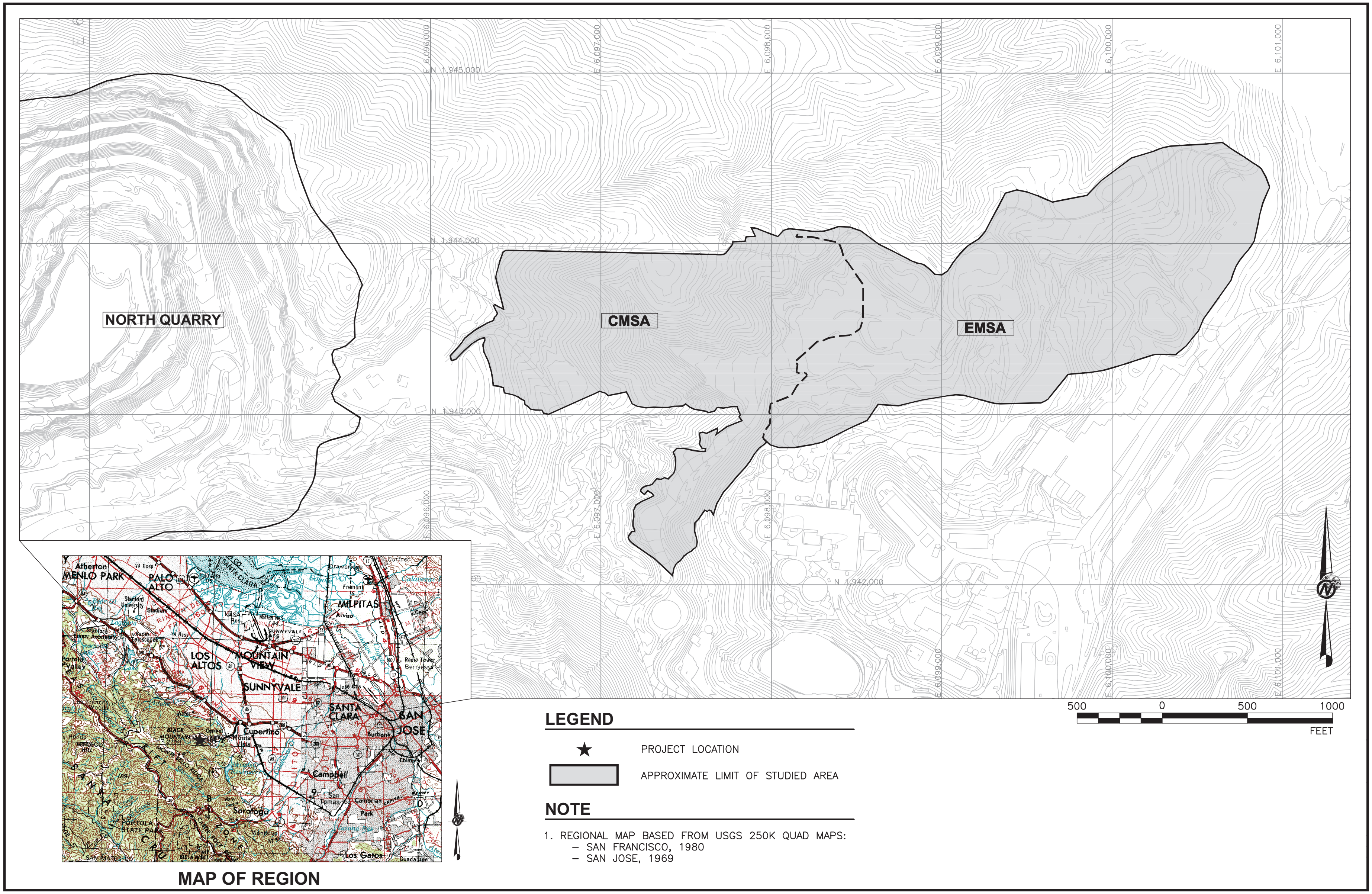
The description of Alternative 2 is based on an overburden storage area included in the Comprehensive RPA, which the Applicant submitted to the County in 2010 and which has been superseded by the Project. It is informed by details and analysis provided in the Comprehensive RPA, including the supporting reports listed below. Implementation of Alternative 2 would occur in accordance with the engineering and other expectations established in these reports, except as noted below.

- Chang Consultants, 2010. *Drainage Report for the Permanente Quarry* (May 21, 2010)
- Golder Associates, Inc., 2010. *Geotechnical Evaluations and Design Recommendations, Permanente Quarry Reclamation Plan Update, Santa Clara County, California* (May 2010)
- Golder Associates, Inc., 2010. *Geotechnical Evaluations and Design Recommendations, East and Central Materials Storage Areas, Permanente Quarry Reclamation Plan Update, Santa Clara County, California* (May 2010).

The CMSA would be approximately 52.2 acres located east of the Quarry pit and contiguous with the western edge of the EMSA. It would accommodate overburden generated by mining of the Quarry pit during reclamation Phase 1 and then would be reclaimed. Development of the CMSA would allow reclamation activities in the eastern and central parts of the EMSA, which are closer to sensitive receptors than the CMSA, to begin immediately upon Project approval.

During the development of the CMSA, its elevations would range from 775 to 1,270 feet amsl. Final overall slopes would be 2:6(H):1.0(V) or flatter. Benches generally would be established at 40-foot vertical intervals. Interbench slopes would be 2H:1V. The static factor of safety (FOS) for global stability (crest of slope to toe of slope) would be approximately 1.7; the static FOS for interbench slopes would be 1.4. These factors are considered acceptable. Seismically-induced displacements would range from 3 to 13 inches, which also is considered acceptable.

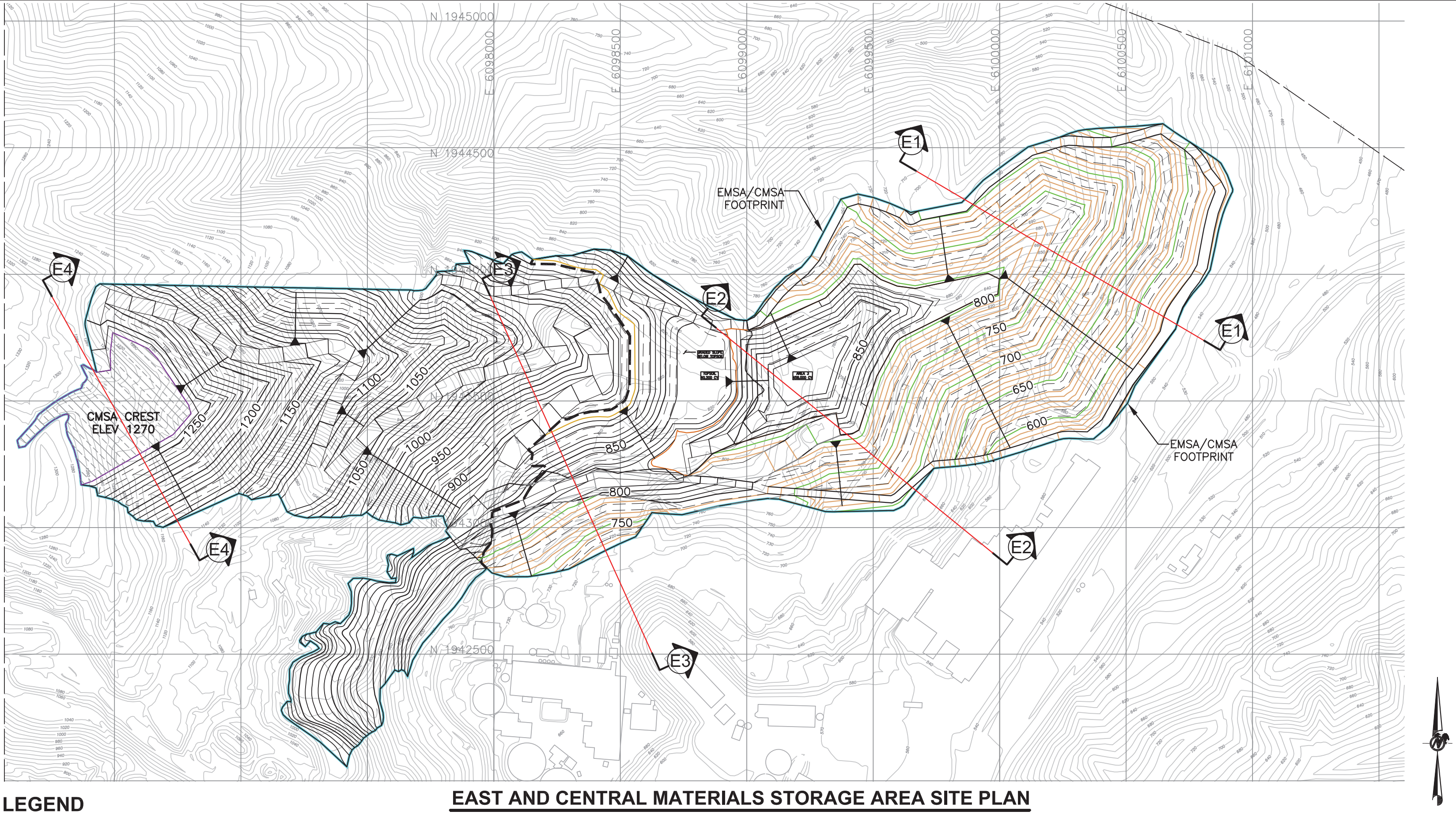
Connection between the CMSA's eastern edge and the flat pad at the western end of the EMSA would be accomplished via an approximately 11-acre area that overlaps the western edge of the EMSA. This linkage would be designed to minimize any interference with reclamation activities in the EMSA. To the extent that minor portions of the EMSA would be affected by connection activities, affected areas would be reclaimed as part of the CMSA. See **Figure 3-1** and **Figure 3-2**.



SOURCE: Golder Associates

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 3-1
Site Location Map



EAST AND CENTRAL MATERIALS STORAGE AREA SITE PLAN

CONTOUR INTERVAL = 10'

400 0 400 800

SCALE FEET

LEGEND

1550 PREDUMP TOPOGRAPHY AS OF APRIL 2007 (10 FT INTERVAL)

DESIGN TOPOGRAPHY

ADJACENT STRUCTURES AND FACILITIES

E2 SECTION ID

CMSA CREST ELEV. 1270

EMSA/CMSA FOOTPRINT

BOUNDARY BETWEEN EMSA AND CMSA

NOTE

1. PRE–DUMP TOPOGRAPHIC INFORMATION PROVIDED BY HAMMON, JENSEN, WALLEN AND ASSOCIATES. DATE OF TOPOGRAPHY: 4–9–07.

SOURCE: Golder Associates

Figure 3-2

Site Plan East and Central Materials Storage Area

A perimeter road would be graded around the CMSA, and a series of drainage ditches, swales, and sedimentation basins would provide drainage control. The erosion control methods would be designed to accommodate a 20-year storm event, and would control erosion and sedimentation during operations in the CMSA as well as after reclamation of the area is complete. For example, during reclamation activities, the following actions would be implemented to protect surface water quality: runoff from limestone materials would be isolated by capping reclaimed areas and by constructing an effective surface drainage system. The cap system would involve placement of 1-foot thick layer of run-of-mine non-limestone rock (i.e., greywacke, chert, and/or greenstone) over areas where limestone materials are used as general fill for reclamation; plus the placement of a minimum of 6 to 12 inches of growth media over all disturbed areas. The run-of-mine non-limestone rock could be stockpiled during the remainder of mining in the Quarry pit or taken from the portion of the WMSA where borehole logs indicate pockets of non-limestone material may be found. Reclamation in the CMSA would be accomplished by grading to final contours, preparing a suitable growing zone (including by ripping, discing or other means as necessary), applying a growth medium, instituting erosion control measures, and then revegetating the area. Maintenance and monitoring would occur as proposed for the EMSA.

Project Objectives

Alternative 2 would meet all of the basic Project objectives.

Feasibility

No legal, regulatory, or technical feasibility issues were identified that would eliminate Alternative 2 from consideration.

Lessen Significant Environmental Impacts

Alternative 2 would avoid or substantially lessen impacts of the Project related to views of the Project Area from the valley floor and as far away as I-680 because reclamation of the most visible areas of the EMSA from those vantages would begin immediately upon project approval. Further, because the CMSA would be located adjacent to the western side of the EMSA and would be lower in elevation than the existing height of the EMSA, the reclaimed EMSA would likely shield views of the CMSA from the valley floor. Alternative 2 also would reduce noise and health risk-related air quality effects relative to the Project because overburden storage (and therefore subsequent reclamation) would occur farther from sensitive receptors. Drainage impacts of the Project also would be reduced by Alternative 2 because the EMSA would be capped sooner than would occur under the Project (thereby shortening the duration in which selenium-containing runoff could leave the area and drain to Permanente Creek) and because interim drainage controls would be implemented at the CMSA to manage run-off until final reclamation of the area is achieved.

Potential New Impacts Created

Alternative 2 would not be likely to create any new significant impacts.

Reasonableness

The effects of Alternative 2 reasonably could be ascertained and its implementation would be neither speculative nor remote.

3.3.1.3 No Project Alternative

Description

A traditional No Project Alternative would consist of a scenario in which a Reclamation Plan does not exist. However, such a scenario is not being considered in this analysis because all mining activities are legally required to have a SMARA-compliant Reclamation Plan. As such, the No Project Alternative cannot consider a scenario that does not include some form of SMARA-compliant reclamation, as the Quarry would consequently not be compliant with California law. The No Project Alternative in this document, therefore, identifies a scenario that would be reasonably expected to occur in lieu of approving the proposed Reclamation Plan.

Under the No Project Alternative, it is expected that mining would continue at the Quarry at the baseline rate.[1] However, SMARA mandates that the Project Area be reclaimed in compliance with all regulatory criteria. The Project is intended to fulfill this legal requirement and abate the issues related to Orders to Comply/Notices of Violation (NOVs) issued by the County in 2006 and 2008 related to deviations from the 1985 Reclamation Plan (i.e., engaging in mining activities outside the approved reclamation boundary). Under the No Project Alternative, the proposed Reclamation Plan would not be approved, these NOVs would not be abated, and the Applicant would remain in violation of SMARA and County requirements because an approved reclamation plan would not encompass all mining-related operations and disturbance. This would result in no additional placement of overburden at the EMSA.

Ultimately, however, in order to address the existing NOVs, a SMARA-compliant reclamation plan would have to be developed, approved following its evaluation under CEQA, and implemented by the Applicant. It is expected that such a reclamation plan would be substantially similar in scope and level of activity to that proposed as the Project, including reclamation of the EMSA to address the existing overburden material at that location. So under the No Project Alternative, the principal difference compared to the Project is not <u>whether</u> reclamation would begin, but rather <u>when</u> reclamation would begin.

The baseline (11-year average) annual limestone production rate for the Quarry is reported by the Applicant to be 2,600,000 metric tons (ALG, 2011). The total limestone production under reclamation Phase 1 is estimated by the Applicant to be 42,300,000 metric tons (ALG, 2011). Thus, under the No Project scenario in which mining would continue at the baseline rate, it would take approximately 16 years to reach the same total production as would be reached in 9 years

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1 Quarry operations are characterized by fluctuating production, in response to continually changing market demands. Accordingly, baseline production is based on an average over the 11-year period from January 1, 2000, to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands.

under the Project. It is expected that reclamation Phases 2 and 3 of the Project would occur at the end of the 16-year mining period.

Similar to the Project, the No Project scenario would occur in the three phases shown in **Table 3-3**. The No Project Alternative would occur from 2008 through 2037; a total of 30 years.

TABLE 3-3
"NO PROJECT" PHASING AND RELATED ACTIVITIES

Phase	Years	Start Date	End Date	Activities
Phase 1	16	2012	2027	Quarry operations continue at the baseline rate; EMSA reclamation commences in 2023 and is completed in 2027. Reclamation of the Exploration Area and PCRA occur as under the Project.
Phase 2	5	2028	2032	Quarry infill and WMSA reclamation.
Phase 3	5	2033	2037	Final reclamation, including of the Rock Plant and Surge Pile.

Under the No Project Alternative, quarrying activities have occurred since the baseline date of June 2007 and would continue to occur at the baseline production rate through 2027. Overburden storage at the EMSA is assumed to have occurred from 2008 through 2011. During the first 11 years of Phase 1 (from 2012 through 2022) of the No Project Alternative, Quarry-related operations would occur at the baseline production rate with no overburden storage in EMSA (overburden would instead be placed in the Quarry West Wall). During the next 5 years of Phase 1 (from 2023 through 2027) of the No Project Alternative, Quarry-related operations would continue at the baseline production rate and in addition would include reclamation of the EMSA.EMSA reclamation would be completed in 2027.

During Phase 2 (a total of 5 years from 2028 through 2032) of the No Project Alternative, the WMSA stockpile would be excavated and the Quarry pit would receive the WMSA material as backfill. During Phase 3 of the No Project (a total of 5 years from 2033 through 2037), Quarry pit backfilling would be completed, the Rock Plant would be dismantled and removed, and the remaining disturbed areas would be reclaimed.

Project Objectives

The No Project Alternative would meet all of the basic Project objectives, although reclamation would occur approximately 7 years later than under the Project.

Feasibility

No legal, regulatory, or technical feasibility issues were identified that would eliminate the No Project Alternative from consideration.

Lessen Significant Environmental Impacts

Because the No Project Alternative would not involve additional overburden storage at the EMSA, but would involve reclamation of the currently existing (smaller) EMSA, Project impacts related to the proximity of the EMSA to sensitive receptors would be lessened (namely, noise and health risk). Also, since mining would occur at a lower average rate compared to the Project, the No Project Alternative would result in lessened annual and maximum air pollutant emissions. The No Project Alternative would also avoid or substantially lessen water quality impacts of the Project because no additional selenium-bearing overburden material would be placed at the EMSA.

Potential New Impacts Created

The No Project Alternative would not be likely to create any new significant impacts.

Reasonableness

The effects of the No Project Alternative reasonably could be ascertained and its implementation would be neither speculative nor remote.

3.3.2 Alternatives Rejected from Detailed Consideration

As discussed in Section 3.2, alternatives were assessed for their feasibility, ability to achieve basic project objectives, and ability to reduce the significant environmental impacts of the Project. Based on these screening criteria, the alternatives eliminated from further consideration are presented in Table 3-2 and are summarized as follows:

- Alternative locations to the proposed site; and
- Alternative overburden disposal.

Each of these alternatives is discussed below, including the rationale for not carrying it forward for more detailed environmental review.

3.3.2.1 Alternative Sites

The range of alternatives analyzed in an EIR “shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project” (CEQA Guidelines §15126.6(f)). The County has determined that no feasible alternative locations to the Project Area exist because none of the significant effects of implementing the RPA to effect final reclamation of the Permanente Quarry would be avoided or substantially lessened by implementing reclamation activities in any other location. “Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR” (CEQA Guidelines §15126.6(f)). Consequently, no other locations are analyzed in the EIR.

3.3.2.2 Alternative Overburden Disposal

The County initially considered whether it would be feasible to require the Applicant dispose of overburden generated by continued mineral extraction in the Quarry pit offsite.

Offsite disposal of overburden materials could be affected by transporting the material by truck or rail to another location for permanent placement. Although the concept is clear, too little is known about whether the materials would be transported by truck or rail or some combination of the two, which would affect the analysis of air and GHG emissions, transportation and traffic, noise and other resources. Too little also is known about the range of possible destinations, distances, remaining capacities of solid waste disposal facilities that could accommodate the overburden and about whether some marketable or other use could be made of the materials, thereby avoiding their disposal in a landfill. Further, because the rate of mining is driven by market forces, there also is insufficient certainty about how much material would be transported each year, much less about whether any truck transport would occur during peak or non-peak hours. Specifics about the myriad possible temporary onsite collection locations and systems also would be speculative. For example, would materials be moved from the point of extraction to the collection location by conveyor or truck? Given the general lack of certainty or definition of an offsite disposal alternative, the County has determined that any analysis of potential environmental impacts would be too speculative for evaluation (see CEQA Guidelines §15145).

References – Description of Alternatives

Ashworth Leininger Group (ALG), 2011. *Air Quality Emission Calculation Worksheets for the "No Project"*. December 5, 2011.

CHAPTER 4
Environmental Analysis

4.0 Introduction to Environmental Analysis

4.0.1 Overview

This chapter provides discussion and public disclosure of the potential environmental impacts of the Project and alternatives, including the No Project Alternative, as they relate to the following 18 areas of environmental analysis:

- 4.1 Aesthetics, Visual Quality, and Light and Glare
- 4.2 Agriculture and Forestry Resources
- 4.3 Air Quality
- 4.4 Biological Resources
- 4.5 Cultural and Paleontological Resources
- 4.6 Energy Conservation
- 4.7 Geology, Soils and Seismicity
- 4.8 Greenhouse Gases
- 4.9 Hazards and Hazardous Materials
- 4.10 Hydrology and Water Quality
- 4.11 Land Use and Planning
- 4.12 Mineral Resources
- 4.13 Noise
- 4.14 Population and Housing
- 4.15 Public Services
- 4.16 Recreation
- 4.17 Transportation/Traffic
- 4.18 Utilities and Service Systems

Analysis of each of the resource/issue areas considers the following components of the Project:

- Reclamation of the approximately 264.9-acre Quarry pit, which has been the point of mineral extraction at the Quarry for more than 80 years. Quarry pit walls would be stabilized and the pit would be backfilled primarily with material currently stored in the WMSA, resulting in gentler slopes, a shallower pit, and general consistency with the surrounding topography.

- Reclamation of the approximately 172.6-acre WMSA, which is an existing overburden storage area located west of the Quarry pit. Final WMSA elevation and contours would be returned roughly to pre-mining contours by transporting most of the materials currently stored in the WMSA into the Quarry pit and by processing the remaining materials for commercial use.

- Inclusion of the approximately 75.2-acre EMSA within the reclamation plan boundary and reclamation of the area, including the creation of a permanent overburden storage area. Final contours would be achieved, and the area graded and revegetated to be consistent with the surrounding area and topography.

- Reclamation of the approximately 53.4-acre crusher/Quarry office support area, an existing area located east of the Quarry pit and west of the EMSA. This area would be reduced in size relative to its current acreage and then reclaimed.

- Reclamation of the approximately 8.8-acre surge pile, which is an existing stockpile of crushed aggregate located southeast of the Quarry pit.
- Inclusion of the approximately 19.1-acre Rock Plant within the reclamation plan boundary and reclamation of the area. Structures would be dismantled and removed, and the area revegetated.
- Reclamation of an approximately 19.5-acre Exploration Area located south of Permanente Creek that has been subject to mining-related exploratory activities but not mineral extraction. Reclamation that has begun in this area would be completed, including reclamation of roads and pads, revegetation, and monitoring activities.
- Reclamation of approximately 49.2 acres of disturbance within the Permanente Creek Reclamation Area (PCRA), including the removal of limestone boulders from the Permanente Creek area, revegetation, implementation of erosion control measures, slope stabilization work, and restoration of certain portions of the creek channel and riparian corridor. Most of this work would occur using light trucks and foot crews to avoid damaging or destabilizing the creek channel and upslope areas.
- Designation of approximately 599.3 acres of vegetated buffer area where no mining operations would occur.

Within each of the sections in Chapter 4, the following topics are identified, described, and analyzed, respectively:

- Regional and Local Setting
- Regulatory Setting (i.e., applicable laws, plans, and standards)
- Baseline (i.e., the conditions against which the significance of Project impacts are assessed)
- Significance Criteria
- Environmental Impacts and Mitigation Measures for the Project
- Environmental Impacts and Mitigation Measures for the Alternatives to the Project

The following alternatives are fully analyzed in this EIR (each is described in Chapter 3):

- Alternative 1: Complete Backfill Alternative
- Alternative 2: Central Materials Storage Area Alternative
- No Project Alternative

Each environmental issue area analyzed in this EIR provides background information and describes the environmental setting and baseline conditions to help the reader understand the threshold that would cause an impact to occur under CEQA. In addition, each section describes how an impact is determined to be “significant” or “less than significant.” Finally, the individual sections recommend mitigation measures to reduce significant impacts. Throughout Chapter 4, both impacts and the corresponding mitigation measures are identified by a bold letter-number designation (e.g., **Impact 4.1-1** and **Mitigation Measure 4.1-1**).

In performing the analysis for this EIR, the EIR preparers relied on available published studies and reports and conducted independent investigations as needed. Information provided by the Applicant also was considered in the EIR analysis after independent review and assessment by the EIR preparers. The specific documents considered and relied upon are cited and reference information is provided in the relevant section in Chapter 4.

4.0.2 Environmental Assessment Methodology

4.0.2.1 Regional, Local and Regulatory Setting

The analysis of each resource area begins with a characterization of the setting – the environmental and regulatory context – within which the Project has been proposed. Existing physical environmental conditions as well as applicable laws, regulations, ordinances, plans, policies, and standards are described as they relate to each of the resource areas.

4.0.2.2 Environmental Baseline

This subsection identifies the actual existing physical conditions to provide a point of comparison of pre-Project conditions (the baseline) and post-Project conditions to ensure that changes caused by the Project are seen in context and significant effects can be identified accurately.

For purposes of assessing the environmental effects of a proposed project, CEQA Guidelines §15126.2 states, "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." See also, CEQA Guidelines §15125(a). This general rule applies even where the existing conditions include activities that occurred as a result of illegal operations (*Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 321, fn. 7 and cases cited therein). However, there is no uniform, inflexible rule regarding establishment of this "baseline," and a lead agency has discretion to decide how the existing physical conditions without the project can most realistically be measured (*Id*. at p. 328).

For this Project and in this EIR, the County is evaluating changes in the existing physical conditions in the affected area as they existed when the County filed an NOP in response to the Applicant's initiation of the reclamation plan amendment process for the Quarry. By way of background, the County issued the first NOV to the Applicant in October 2006. In response to this NOV, the Applicant filed a reclamation plan amendment to address the noncompliance issues. The County issued an NOP for an EIR to be prepared for this proposal in June 2007. The County issued a second NOV to the Applicant in June 2008 related to the EMSA. This resulted in the Applicant filing two separate reclamation plan amendment proposals: one for the EMSA, and a second to address all other issues that also included a proposed new pit mine. The County issued NOPs related to these proposals in March 2010 and August 2010, respectively. Surface mining operations have continued in the Project Area in the interim in accordance with the Applicant's vested right to mine, and have resulted in surface disturbance and other changes to the physical environment.

Under these circumstances, the County has determined that the appropriate date for establishing the baseline for purposes of evaluating the Project's environmental effects is June 2007, the date the County first issued an NOP to evaluate the environmental effects associated with amendment of the Applicant's existing, approved reclamation plan. As a result, implementation of the Project would result in a greater change in the environment relative to baseline conditions, and so would provide for a more conservative impacts analysis, than would occur if a more recent date had been selected as the baseline.

For one environmental resource area, insufficient data was available to determine the exact state of the environment in the June 2007 timeframe: Section 4.1, *Aesthetics, Visual Quality, and Light and Glare*. Relevant data limitations, the methodology for evaluating the Project's environmental effects with respect to this resource area, and the rationale for the baseline used to assess potential impacts are described in detail in Section 4.1.

In five sections (Section 4.3, *Air Quality*; Section 4.6, *Energy*; Section 4.8, *Greenhouse Gas Emissions*; Section 4.13, *Noise;* and Section 4.17, *Transportation/Traffic*), it is particularly relevant that baseline conditions consist of an existing quarry operation. Such operations are characterized by fluctuating production and associated air emissions, energy needs, and transportation demands in response to continually changing market conditions. An analysis that considers only those conditions that existed in June 2007 (or any other specific point in time) may substantially over- or under-represent typical conditions. Accordingly, the analytical baseline for air emissions (including GHGs), energy use, and traffic are based on an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Quarry, and thereby provides a point of comparison that does not reflect an artificial spike or dip that could skew results.

4.0.2.3 Impact Significance Criteria

Significance criteria are identified for each environmental issue area in each resource section evaluation. For this Project, the environmental criteria and considerations applied to determine the significance of Project-related changes in the environment are as set forth in the CEQA Guidelines Appendix G checklist and as adopted by the County in the *Environmental Checklist and Evaluation for Santa Clara County*. The significance criteria serve as benchmarks for determining if proposed activities or conditions would result in a significant adverse environmental impact when evaluated against the baseline. According to CEQA Guidelines §15382, a significant effect on the environment means "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project."

4.0.2.4 Impact Analysis

This EIR evaluates the environmental consequences and potential impacts that the proposed Project, alternatives, and mitigation measures would create. The impacts identified were compared with predetermined specific, significance criteria, and were classified according to significance categories listed below. The same methodology was applied systematically to each alternative. A comparative analysis of the Project and the alternatives is provided in Chapter 5 of this EIR. The cumulative impacts of the Project, when viewed in conjunction with past, other present, and reasonably foreseeable future projects, are analyzed in Chapter 6.

This EIR lists impacts numerically and sequentially. An impact statement precedes the discussion of each impact and provides a summary of the impact topic. Each impact is categorized as one of the following:

- ***No Impact*****:** would not cause any adverse change in the environment, as measured by the applicable significance criterion; therefore, no mitigation would be required.
- ***Less than Significant*****:** would cause a change, but not a substantial adverse change, in the environment, as measured by the applicable significance criterion; therefore, no mitigation would be required.
- ***Less than Significant with Mitigation*****:** would cause a substantial adverse change in the physical conditions of the environment; one or more feasible mitigation measures would reduce the environmental effects to less than significant levels.
- ***Significant and Unavoidable*****:** would cause a substantial adverse change in the physical conditions of the environment; there is either no feasible mitigation available, or, even with implementation of feasible mitigation measures, the Project would cause a significant adverse effect on the environment.

When significant impacts were identified, feasible mitigation measures were formulated, where possible, to eliminate or substantially reduce the intensity of the impacts. The effectiveness of a mitigation measure subsequently was determined by evaluating the impact remaining after its application. Those impacts meeting or exceeding the impact significance criteria after mitigation measures were incorporated are identified as residual impacts that remain significant and unavoidable. Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance. The mitigation measures recommended in this document are identified where relevant in Sections 4.1 through 4.18.

4.0.2.5 Impacts of Alternatives

This Chapter 4 (Sections 4.1 through 4.18) analyzes the impacts of alternatives to the Project. Chapter 5 provides a summary of the impacts of each alternative in comparison with the impacts of the Project.

4.1 Aesthetics, Visual Quality, and Light and Glare

This section describes the visual resources in the vicinity of the Project Area, and the associated regulatory framework. The impact analysis presents the significance criteria used to evaluate impacts on identified resources as a consequence of implementing the Project or alternatives, the methods used in evaluating these impacts, and the results of the impact assessment based on the applied significance criteria.

4.1.1 Setting

The study area relevant to the analysis of impacts to visual/aesthetic resources encompasses the landscapes directly affected by, and the surrounding areas that would be within the view of, Project-related facilities and activities. This analysis focuses on travel route views, views of and within parks and recreational areas, and views from designated scenic vistas.

4.1.1.1 Definitions Related to Visual Resources

Visual resources consist of the landforms, vegetation, rock and water features, and human modifications that create the visual character and sensitivity of a landscape. A number of factors are documented for the existing visual resources of the study area in order to determine the manner in which those resources or characteristic landscapes may be modified by the Project and alternatives. The primary existing visual condition factors considered in this study area are defined below and include: Visual Quality, Viewer Exposure, Viewer Types and Volumes, and Visual Sensitivity.

Visual Quality is defined as the overall visual impression or attractiveness of an area as determined by the particular landscape characteristics, including landforms, rock forms, water features, and vegetation patterns. The attributes of line, form, and color combine in various ways to create landscape characteristics whose variety, vividness, coherence, uniqueness, harmony, and pattern contribute to the overall visual quality of an area. For the purposes of this EIR, visual quality is defined according to three levels:

- *Indistinctive, or industrial*: generally lacking in natural or cultural visual resource amenities typical of the region
- *Representative*: typical or characteristic of the region’s natural and/or cultural visual amenities
- *Distinctive*: unique or exemplary of the region’s natural or cultural scenic amenities

Viewer Exposure addresses the variables that affect viewing conditions from potentially sensitive areas. Viewer exposure considers the following factors:

- Landscape visibility (i.e., the ability to see the landscape)
- Viewing distance (i.e., the proximity of viewers to the Project)

- Viewing angle – whether the Project would be viewed from above (superior), below (inferior) or from a level (normal) line of sight
- Extent of visibility – whether the line of sight is open and panoramic to the Project Area or restricted by terrain, vegetation and/or structures
- Duration of view

Viewer Types and Volumes of use pertain to the types of use (i.e., public viewers including recreationalist and motorist) and amounts of use (i.e., number of recreational users or motorists) that various land uses receive.

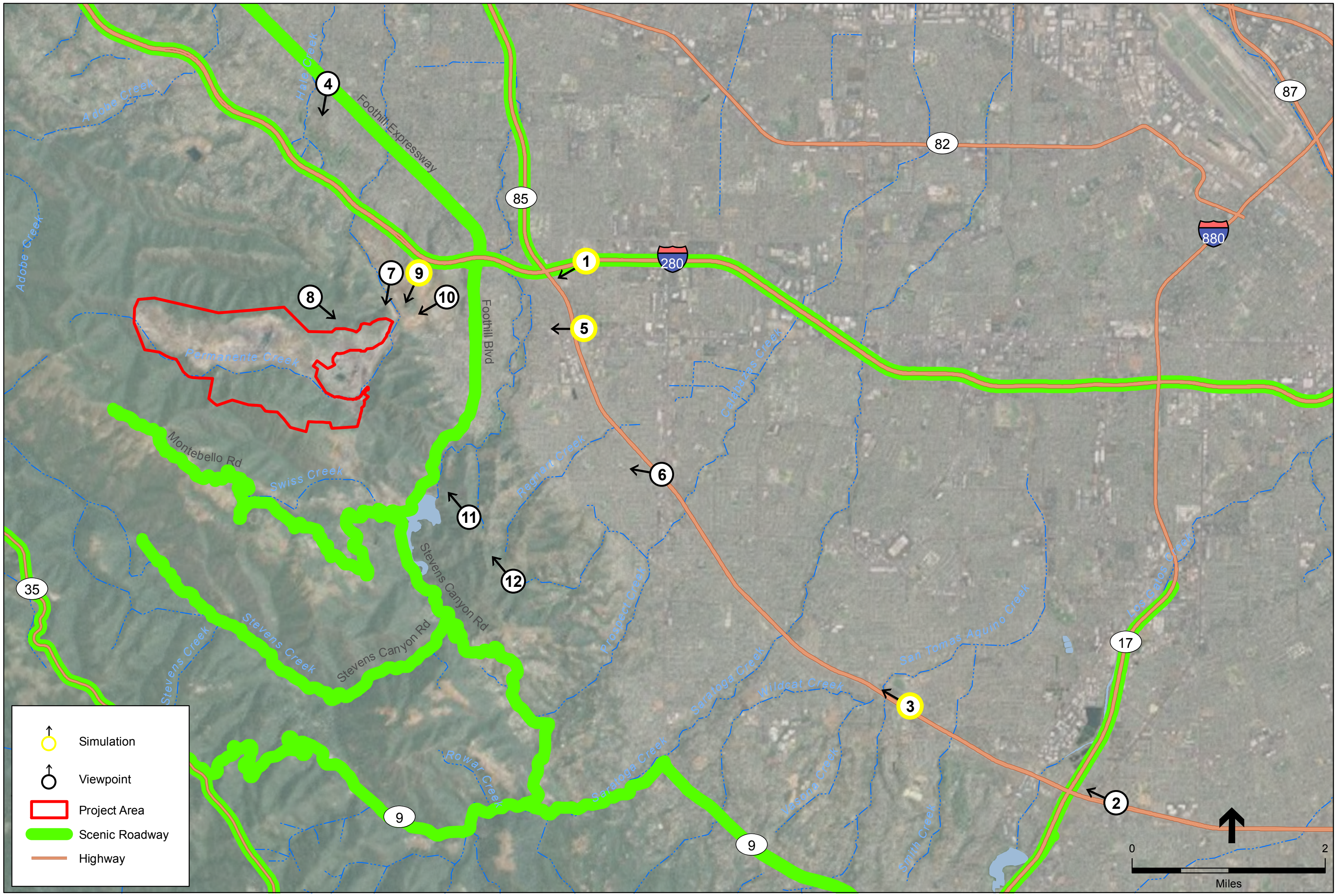
Visual Sensitivity is the overall measure of an existing landscape's susceptibility to adverse visual changes. People in different visual settings, typically characterized by different land uses surrounding a project, have varying degrees of sensitivity to changes in visual conditions depending on the overall visual characteristics of the place. In areas of more distinctive visual quality, such as designated scenic highways, designated scenic roads, parks, and recreation and natural areas, visual sensitivity is characteristically more pronounced. In areas of more indistinctive or representative visual quality, sensitivity to change tends to be less pronounced, depending on the level of visual exposure. This analysis of visual sensitivity is based on the combined factors of visual quality, viewer types and volumes, and visual exposure to the Project and alternatives. Visual sensitivity is reflected according to high, moderate and low visual sensitivity ranges.

4.1.1.2 Regional and Local Setting

A series of photographs taken from representative public vantage points portray the existing visual character of Project Area and surrounding viewpoints. **Figure 4.1-1** is a viewpoint map that depicts, by photograph numbers, the location and directions from which these setting photographs were taken. Figure 4.1-1 also shows scenic roadways in the vicinity of the Project. **Figures 4.1-2a**, **4.1-2b**, and **4.1-2c** present the setting photographs, which were assigned numbers by order of mention in following subsections. The photographs depicting viewsheds are limited in the sense that they provide only fixed viewpoints and cannot demonstrate all views of or from the Project Area or along a site's perimeter.

Existing Visual Quality of the Region

The Project Area is located in an unincorporated area of the western foothills of the County near the City of Cupertino, approximately 2 miles west of the intersection of Interstate 280 and Highway 85. The Project is proposed entirely within the boundaries of the approximately 3,510-acre Lehigh Permanente Quarry (Mine ID No. 91-43-0004) property (the "site"). The Project Area includes the existing Quarry pit, the WMSA, the EMSA, the crusher/Quarry office support area, surge pile, Rock Plant, the Exploration Area, the PCRA, and open space "buffer" areas that serve to physically separate operations at the site from other uses in the surrounding environs.



SOURCE: Environmental Vision, 2011a; County of Santa Clara, 2008

Lehigh Permanente Quarry Reclamation Plan. 211742

Figure 4.1-1

Viewpoint Map with Scenic Roadways

Photo 1: Mary Avenue Bicycle Footbridge looking southwest over Interstate-280

Photo 2: Bascom Avenue overpass looking northwest over State Route 85

Photo 3: Northbound State Route 85 near Quito Road, southeast of Saratoga Avenue on-ramp, looking northwest

Photo 4: South Springer Road at Foothill Expressway looking southwest

SOURCE: Environmental Vision, 2011a

Figure 4.1-2a
Setting Photos

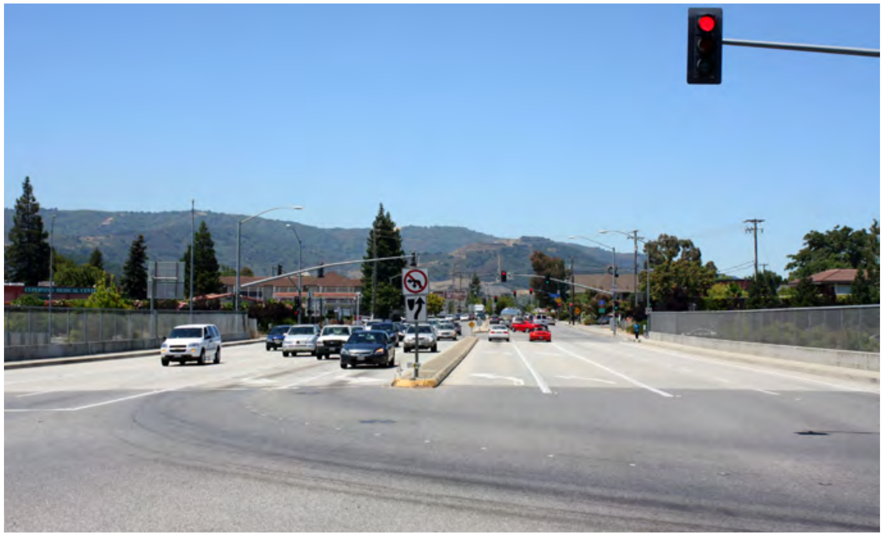


Photo 5: Westbound Stevens Creek Boulevard, just east of the State Route 85 interchange, looking west

Photo 6: Northbound De Anza Boulevard on the State Route 85 overpass, looking west

Photo 7: Entrance to Rancho San Antonio County Park looking southwest

Photo 8: Rancho San Antonio Open Space Preserve, PG&E Trail looking southeast

SOURCE: Environmental Vision, 2011

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Figure 4.1-2b

Setting Photos

Photo 9: Rancho San Antonio County Park, Cristo Rey Drive at Hammond-Snyder Loop Trail looking southwest

Photo 10: Rancho San Antonio County Park, Anza Knoll looking southwest

Photo 11: Fremont Older Open Space Preserve, Coyote Ridge Trail looking northwest

Photo 12: Fremont Older Open Space Preserve, Maisie's Peak looking northwest

SOURCE: Environmental Vision, 2011a

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Figure 4.1-2c
Setting Photos

The Project Area lies within the hilly eastern foothills of the Santa Cruz Mountains, which are part of California's Coast Range and separate the San Francisco Bay from the Pacific Ocean along most of the San Francisco Peninsula. Much of the Coast Range remains undeveloped, and the site includes and is surrounded by large open space areas that serve as buffers between the mining-related uses and the heavily urbanized floodplain, which contains the surrounding cities of Los Altos, Cupertino, and Saratoga, and the town of Los Altos Hills. Natural landforms on and in the vicinity of the Project Area are generally curvilinear and irregular in outline and gently rounded as forms, and are considered visually distinctive.

The site is bordered by large open space areas to the north, south, and west, and is in close proximity to urban areas to the east. To the north and northeast are Rancho San Antonio County Park (which is connected to several open space preserves, including Montebello Regional Open Space and Los Trancos Regional Open Space), and Midpeninsula Regional Open Space District (MROSD) land. The closest residential areas are in the cities of Cupertino, Los Altos, Palo Alto, and Saratoga; and the communities of Loyola and Los Altos Hills. A separate mining operation, the Stevens Creek Quarry, is located immediately south of the Project Area.

Existing Visual Quality of Project Area

Landform

Topography of the Project Area and surrounding area is characterized by a series of east-west trending ridges and valleys with slope gradients ranging from gentle to steep. Steep slopes predominate, with flatter terrain occurring within some previously-disturbed areas in the Project Area. Elevations within the site as a whole generally increase from east to west, ranging from about 500 feet above mean sea level (amsl) near the entrance to the Project Area to about 2,640 feet amsl at the western and southwestern site boundaries. Elevations within the Project Area range from approximately 500 feet amsl at the eastern edge to approximately 2,000 feet amsl at the western edge. The mining-related areas within the Project Area are highly disturbed areas (i.e., industrial), while the surrounding vegetated buffer areas are generally intact (i.e., distinct). Permanente Creek, a stream that is tributary to San Francisco Bay, has its headwaters in the western portion of the site and flows through the Project Area.

On-Site Land Uses

The Quarry primarily produces cement-grade limestone and lower grade limestone and greenstone suitable for use in construction aggregate products. Currently, materials are extracted from the Quarry pit and overburden is disposed of in the EMSA and along the west wall of the Quarry pit. When the EMSA reaches capacity, overburden would be placed in the Quarry pit. In 2007 (the Project baseline), overburden was deposited in the WMSA. The Project Area's mining uses are existing and ongoing. The existing operational areas would be reclaimed by the Project, including: the Quarry pit, WMSA, EMSA, crusher/Quarry office support area, surge pile, and Rock Plant. In addition, an area south of Permanente Creek that has been disturbed by prior exploratory activities (the Exploration Area) and a portion of the Permanente Creek area (the PCRA) also would be reclaimed, although neither area has been subject to mineral extraction.

Settling ponds for Quarry pit run-off and operational water ponds also are operated and maintained within and adjacent to the Project Area.

The predominant visual quality of the Project Area is heavy industrial. This character is conveyed through the mining pits, stockpiles of extracted materials, equipment, buildings, machinery, siltation ponds, and conveyor belts that can be seen throughout. However, the surrounding buffer areas, which are also part of the site, contrast with the industrial uses and provide large areas of relatively undisturbed, densely vegetated, visually distinctive open space. Maintenance of the areas that already have been revegetated includes the monitoring of native grass species, shrubs and trees, irrigation as necessary to encourage the establishment of planted trees and shrubs, and installation, maintenance and monitoring of the protective cages that have been installed around most container plantings to reduce damage caused by browsing deer.

Non-quarrying uses and activities occurring in the Project Area include plowing for fire breaks and construction and maintenance of dirt roads. An inactive powerline and a natural gas pipeline currently cross the EMSA, although they would be removed as part of the ongoing surface mining activities (Lehigh, 2011).

Light and Glare

As discussed in Chapter 2, *Project Description*, there is no existing lighting plan for the Project Area. There are five light plants in the Project Area, each of which is 5,000 watts; three are located in the Quarry pit, one is located at the EMSA, and one is located at the belt conveyor transfer. Portable lighting is moved as needed within the Project Area. Pole-mounted sodium, metal halide, or fluorescent lighting generally is used.

Night lighting currently is used within the Rock Plant and strategically as required for nighttime work within the Project Area. There is no fixed lighting for Quarry access roads. Although existing night lighting has been designed by the Applicant to minimize glare onto neighboring areas, nighttime lighting is visible from surrounding communities on the valley floor and the County has received reports of glare from the residents of the surrounding communities. For example, lights in the WMSA are visible at night from the valley floor and from as far away as Interstate 680.

No public roads exist within the Project Area or the larger site. All sources of light on the site are associated with existing surface mining and Cement Plant operations.

4.1.1.3 Viewer Types and Exposures

The Project Area is not publicly accessible and is separated from public open space, streets, and sidewalks by vegetated buffer areas and a relatively long stretch of private road. Stevens Creek Boulevard transitions to Permanente Road at the site boundary, and marks the beginning of private property. From there, the Project Area is accessible only via the Applicant's internal road network. However, the Project Area is clearly visible from vantages throughout Santa Clara Valley. The WMSA in particular is visible from middleground (0.5 mile to 2 miles), and background (beyond 2 miles) distances, given its elevated, eastern-facing hillside location. As stated above, Quarry lights in the WMSA are visible at night from as far away as Interstate 680.

Given the large geographic area from which the Project would be seen, public viewer groups and vantage points were established to provide a representative cross section of the how the public would perceive the affected landscape, including the most visually sensitive locations. Public viewer groups[1] and vantage points assessed in this section include:

- **Motorists along major and scenic roadways:** Interstate 280 (State Eligible Scenic Highway and County-designated State Scenic Route); State Route (SR) 85 and Foothill Boulevard/Expressway[2] (County Scenic Freeways, Expressways, Arterial, and Rural Routes); Montebello Road (County Local Road Needing Scenic Protection); and Stevens Creek Boulevard and De Anza Boulevard (major roadways in the study area);

- **Visitors to recreational areas:** Rancho San Antonio Open Space Preserve, Rancho San Antonio County Park, and Fremont Older Open Space Preserve; and

- **Designated scenic vistas:** Anza Knoll (Rancho San Antonio County Park), and Maisie's Peak (Fremont Older Open Space Preserve).

For each of the viewer groups identified in the study area, viewer exposure conditions were determined based on knowledge of the Project Area and site visits conducted April 14, 2010; September 3, 2010; September 1, 2011; and November 2, 2011 (ESA, 2010; ESA, 2011). Variables considered include the viewing distance, angle of view, the extent to which views are screened or open, and duration of view. Viewing distances are described according to whether the Project activities would be viewed within a foreground (within 0.5 mile or 2,640 feet), middleground, or background zone. Viewing angle and extent of visibility consider the relative location of the Project Area to the viewer and whether visibility conditions are open or panoramic, or limited by intervening vegetation, structures or terrain.

Duration of view pertains to the amount of time the Project Area or facilities typically would be seen from a sensitive viewpoint. In general, duration of view would be less in instances where the Project would be seen for short or intermittent periods (such as from major travel routes and recreation destination roads) and greater in instances where the Project would be seen regularly and repeatedly (such as from public use areas).

Motorists on Major or Scenic Travel Routes

As discussed above, scenic and major highways and routes in the study area include I-280, SR 85, Foothill Boulevard/Expressway, Montebello Road, Stevens Creek Boulevard and De Anza Boulevard. Traffic volumes are classified as low (less than 10,000 vehicle trips per day), moderate (10,000 to 20,000) and high (more than 20,000 vehicle trips per day), given the average traffic volumes in the vicinity of the Project.

1 Private views are not evaluated in this document because, under CEQA, the question is whether the Project would affect the environment of persons in general, not whether it would affect particular persons. *Mira Mar Mobile Community v. City of Oceanside*, 119 Cal.App.4th 477, 492 (2004) ("neither state nor local law protects private views from private lands"). Although the Project Area is visible from private residences, such views are not considered public views.

2 South of its intersection with I-280, the road is called Foothill Boulevard; north of its intersection with I-280, the road is called Foothill Expressway.

Interstate 280

I-280 is an important regional travel corridor within the study area, with eight-lanes running north-south to connect the cities of San Francisco and San Jose. As indicated in Figure 4.1-1, I-280 is an Eligible State Scenic Highway from SR 17 to the northwest border of the County, and a designated State Scenic Route in the County General Plan (DOT, 2011; County of Santa Clara, 2008). The character of I-280 in the vicinity of the Project is visually distinct; motorists are surrounded by scenic views of the Santa Cruz Mountains to the west, and views of cities to the east of I-280 are screened by intervening hills. The landscape is distinct and dominated by trees, vegetation and hillsides, though views become more representative as the highway travels through urban centers including the City of Cupertino.

The Project Area is located approximately 1 mile southwest of the closest segment of I-280, and would be viewed in middle to background distance. In the study area, traffic volumes are high, estimated at 123,000 to 141,000 vehicles per day (City of Cupertino, 2005). Given the hilly topography and prevalence of tall trees along I-280, views of the Project Area are generally fully screened from motorists' views. However, the Project Area is visible from segments of the highway, particularly for northbound traffic east of the I-280/SR 85 interchange. Figure 4.1-2a, Photo 1, shows the existing view of the Project Area taken from the Mary Avenue Bicycle Footbridge, which spans I-280, approximately 2 miles from the Project Area. This perspective is representative of views seen by motorists traveling north on I-280, looking southwest. As shown in the photo, views of the Project Area are moderated somewhat by the relatively long distance to the Project Area, and by other intervening visual features including highway overpasses, signage, landscaping, roads, and buildings. Views toward the site are dominated by natural features associated with vegetated hillsides and open space uses that surround the site. The industrial uses in the Project Area mark an interruption in vegetation, and the site is perceived as a patch of exposed rock amidst lush open space areas. Motorists' views would be of short to medium duration because they would be exposed partially screened views of the Project Area for short distances. Given the distinct visual quality of the area, the high number of viewers, short to moderate view duration, and distance from which the Project would be viewed, visual sensitivity of I-280 to the proposed changes is considered moderate.

State Route 85

SR 85 is a north-south highway connecting the cities of Mountain View and San Jose. From U.S. Highway 101 south to I-280, SR 85 is designated by the County General Plan as a Scenic Freeway, Expressway, Arterial or Rural Route (County of Santa Clara, 2008). In the vicinity of the Project, the highway is six lanes, and the visual character of the landscape is mixed, comprised of trees and hills in the background to the west, and residential and commercial developments in the fore and middleground to the east and west. Figure 4.1-2a, Photo 2 shows the view of a motorist looking northeast over SR 85 from the Bascom Avenue overpass in the City of Campbell, towards the Hwy 17 interchange (a non-scenic portion of the highway). Utility structures are an established feature along the highway, and highway on-and off-ramps are prominent along SR 85. The visual quality of the portion of SR 85 in the vicinity of the Project is representative of highway-oriented development in the County, with views of visually distinct hills in the background.

Traffic volumes along SR 85 in the study area are high, with an annual average daily traffic (ADT) level ranging from 99,000 to 123,000 vehicles per day (City of Cupertino, 2005). The Project Area is approximately 1.5 miles west of SR 85 at its closest location, and views from SR 85 would be within middleground and background ranges. Because of the orientation of the Project Area and intervening topography and structures, the Project Area (particularly the EMSA) is primarily visible to motorists heading northbound on SR 85. Figure 4.1-2a, Photo 3, shows the view from the perspective of a motorist traveling north on SR 85 near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest. This location represents one of motorists' clearest views of the Project Area, although the location is not part of the designated scenic portion of highway. As shown in this photo, motorists have clear and unobstructed background views of the surface mining operations along the ridgeline. From this vantage point, the Project Area is viewed within the context of other mining-related structures and appears as patches of exposed rock partially covered with stockpiles of overburden deposits. The color of overburden materials appears as tan to grey in long-range views of the site and the contrast between overburden materials and the vegetated, gently sloped surrounding terrain is clearly discernible. Along SR 85 in general, views of the Project Area range from open and panoramic to fully obscured by the surrounding hilly terrain, curves in the road, and structures, depending on the motorist's location. View duration would be short to medium, depending on the length of time the motorist is on SR 85, the location of the motorist, and the speed with which the motorist is traveling. Given the representative to distinct visual quality of the road, the high number of viewers, the short to medium view duration and open visibility, overall viewer sensitivity is moderate to high for SR 85.

Foothill Boulevard/Expressway

Foothill Boulevard/Expressway is a County Scenic Freeway, Expressway, Arterial, and Rural Route that generally runs in a northwest/southeast direction north of I-280 (Foothill Expressway), and a north-south direction south of I-280 (Foothill Boulevard) (County of Santa Clara, 2008). The areas surrounding the four-lane road are flat to the east, and characterized by residential and commercial structures. To the west of the road, the surrounding areas range from flat to hilly, and are dominated by residential structures and associated buildings such as schools and churches, as well as landscaping including trees, shrubs and flowers. Views generally encompass a suburban, residential and commercial landscape. The visual quality of the area is representative of this portion of the County, punctuated by views of distinctive natural scenic amenities, including the Santa Cruz Mountains, to the west.

Foothill Boulevard is located directly east of the site and serves as a connecting road for vehicles traveling between the site and I-280. Views from Foothill Expressway are within middleground and background ranges. In the study area, traffic volumes range from low to moderate, estimated at 8,000 to 16,000 vehicles per day (City of Cupertino, 2005). Figure 4.1-2a, Photo 4 shows the view at the intersection of Foothill Expressway and South Springer Road in the City of Los Altos. The photo represents the perspective of a motorist at the traffic light on South Springer Avenue facing southwest, about to cross Foothill Expressway. As the photo shows, to see the Project Area from Foothill Expressway a motorist would have to turn his head to the southwest, and would only have brief glimpses of portions of the Project Area in an opening between mature stands of trees. Views of Project Area along Foothill Boulevard/Expressway would be fleeting and visible while passing through intersections, with the driver's head turned west toward the Project Area. With the exception of intersection crossings, views are fully obscured by intervening topography. Given the representative and distinct visual quality of the area, the low to moderate number of viewers, short view duration, and low visibility, visual sensitivity to the changes proposed by the Project is considered low to moderate.

Stevens Creek Boulevard

Although not a designated scenic roadway, Stevens Creek Boulevard in the cities of Cupertino and Santa Clara is a major roadway in the study area.[3] Stevens Creek Boulevard is located directly east of the site and serves as a main access point for vehicles traveling between the site and SR 85. The roadway runs east-west and ranges from a two-lane to an eight-lane arterial. Views along Stevens Creek Boulevard are dominated by the urban streetscape, low-rise commercial structures along each side of the boulevard, and a variety of landscaping, ranging from low-lying shrubs to 30-foot mature trees. The visual quality of Stevens Creek Boulevard is representative of the residential/commercial portion of the cities of Cupertino and Santa Clara.

Traffic volumes on Stevens Creek Boulevard in the study area range from moderate west of SR 85 (11,000 vehicles per day) to high east of SR 85 (29,000 vehicles per day) (City of Cupertino, 2005). The Project Area is west of the road, and views of the site would be within middleground and background ranges. Figure 4.1-2b, Photo 5 shows motorists' perspective traveling east on Stevens Creek Boulevard, just east of the SR 85 interchange, approximately 2 miles from the Project site. In this view, the vegetated foothills act as a scenic backdrop to the otherwise urban quality of the boulevard. The Project Area is viewed within the context of other mining-related structures and appears as patches of exposed rock partially covered with stockpiles of overburden deposits. The color of overburden materials appears as mostly grey in long-range views of the site and the contrast between overburden materials and the vegetated, gently sloped surrounding terrain is clearly discernible. However, views of the Project Area from the boulevard are moderated somewhat by the relatively long distance to the Project Area, and by other intervening visual features, including landscaping, roads, and buildings. Given the representative character of the road, the moderate to high number of viewers, the medium view duration and partially screened to open visibility, overall viewer sensitivity is moderate for Stevens Creek Boulevard.

De Anza Boulevard

De Anza Boulevard is a major roadway in the vicinity of the Project. South De Anza Boulevard traverses SR 85 in City of Campbell, approximately 3 miles southeast of the Project Area, and provides views of the Project Area from several intersections along the roadway. The roadway runs north-south and with six lanes near the SR 85 interchange. Views along De Anza Boulevard are dominated by the urban streetscape, consisting of low-rise commercial structures along each side of the boulevard including shopping centers, gas stations, and office buildings, and a variety of landscaping. The visual quality of De Anza Boulevard is representative of urban development in the County.

3 Stevens Creek Boulevard becomes Permanente Road west of Foothill Boulevard, near the Project site.

Traffic volumes on De Anza Boulevard in the study area are high, estimated at 25,000 to 48,000 vehicles per day (City of Cupertino, 2005). The Project Area is west/northwest of the roadway, and views of the area would be within background range. Figure 4.1-2b, Photo 6 shows motorists' perspective traveling north on De Anza Boulevard, stopped at traffic signal on the SR 85 overpass, approximately 3 miles from the Project Area. Given the orientation of the Project Area, a motorist would have to turn his head to the west to see the area. In this view and other views from De Anza Boulevard, the Project Area is viewed in the distance as patches of exposed rock partially covered with stockpiles of overburden deposits on the otherwise vegetated scenic foothills. However, views of the Project Area from De Anza Boulevard are generally partially to fully screened by intervening topography and buildings, and are moderated somewhat by the relatively long distance to the Project Area, and by other intervening visual features, including landscaping, roads, and commercial and residential buildings. Given the representative character of the road, the high number of viewers, the short view duration and partially to fully screened visibility, overall viewer sensitivity is low to moderate for De Anza Boulevard.

Montebello Road

Montebello Road, located south of the Project Area in an unincorporated area of the County, is designated as a County Local Road Needing Scenic Protection (see Figure 4.1-1) (County of Santa Clara, 2008). However, the Project Area is not visible from Montebello Road (County of Santa Clara, 2011c). As such, views from this road are not analyzed in this EIR.

Parks, Recreation Areas, and Scenic Vistas

Section 4.16, *Recreation*, provides a full list of parks and recreational areas near the Project Area. Views of the Project Area are visible from only a few of these areas, because of screening by intervening topography, structures, trees and other vegetation. Specifically, the following recreational areas provide views of the Project Area: Rancho San Antonio Open Space Preserve, Rancho San Antonio County Park, and Fremont Older Open Space Preserve.

Rancho San Antonio Open Space Preserve and County Park

The 3,988-acre Rancho San Antonio Open Space Preserve, managed by the MROSD, is located adjacent to north of the site boundary and a portion of the Project Area. The 165-acre Rancho San Antonio County Park, located adjacent to the eastern edge of the Open Space Preserve and approximately 0.25 mile north of the EMSA, is owned by Santa Clara County Parks and Recreation Department (SCCPRD) but is leased to and operated by MROSD. Because visitors to the Rancho San Antonio Open Space Preserve must park at the Rancho San Antonio County Park, and because trails are contiguous between the Preserve and the Park, the Rancho San Antonio Open Space Preserve and Park is discussed as one entity in this document (the RSA Preserve/Park). The RSA Preserve/Park provides 2,300 acres of hiking, bicycling and/or equestrian trails, as well as other recreational features. The RSA Preserve/Park is the most frequented preserve in the MROSD, with an estimated 491,000 annual visitors (Baldzikowski, 2011).

The RSA Preserve/Park provides views of the Project Area from many locations. Visitors first have a brief glimpse of the tip of the EMSA overburden deposit at the RSA Preserve/Park entrance. As shown in Figure 4.1-2b, Photo 7, the overburden deposit is subordinate in the landscape and appears as a small brown ridge lacking vegetation, anterior to an oak-covered ridgeline. Visitors have more pronounced views of the Project Area while hiking the PG&E Trail and the Hammond-Snyder Loop Trail. The PG&E Trail is mostly situated on the north-facing slope of the hillside approximately 0.25 mile north of the Quarry surface mining operations areas, forming the northern property line of the site for most of the western portion of the property (SCCPRD, 2011). The visual quality of the PG&E Trail is distinct and exemplary of the region's natural scenic amenities, and the trail provides panoramic views of the San Francisco Bay, Santa Clara Valley, and surrounding mountains. Views of the Project Area from the PG&E Trail are predominantly fully screened by intervening topography and vegetation. However, partially screened views of the EMSA overburden deposit are visible from a short segment of the trail approximately 1.5 miles from its beginning, where the trail passes under a transmission line. Hikers on the trail do not directly face the Project Area, but can see the tip of the overburden deposit as a grey/brown ridge in the distance to the south, if scanning the horizon (Figure 4.12-b, Photo 8). Views are visible from a short stretch of trail (less than 0.25 mile); as such, duration of view would be short. Given the distinct visual quality, foreground viewing distance, fully to partially-screened landscape visibility, short duration of view and high number of viewers, the overall visual sensitivity of the viewshed is moderate.

Figure 4.1-2c, Photo 9, provides the view from Cristo Rey Drive in the City of Cupertino, adjacent to the Hammond-Snyder Loop Trail, approximately 1 mile northeast of the Project Area. The Project Area represents an industrial component in a generally distinct viewshed that also includes residential areas representative of the local suburban landscape. From this vantage point, the Project Area appears visually connected to the surrounding Quarry-related structures and only the upper elevations of overburden deposits are visible. The Project Area sits lower than the highest ridgeline and this somewhat tempers its prominence among the vegetated hillsides. The distinctive domes and towers of the Cement Plant are visible from this vantage point, including the preblend dome, the steel silos, the tertiary crusher, and the preheater/precalciner tower. Views of the Project Area are visible off and on during the approximate 3-mile Hammond-Snyder Loop Trail, though the location in Photo 9 represents one of the viewsheds with the clearest views of the Project Area. Given the distinct/representative/industrial visual quality of the site, the partially- to fully-screened views of the Project Area, the middleground viewing distance, the medium duration of view, and the high number of viewers, the overall visual sensitivity of the viewshed is high.

The Anza Knoll is a designated scenic vista off of the Hammond-Snyder Loop Trail, approximately 1 mile northeast of the Project Area. The Anza Knoll provides a bench overlooking the San Francisco Bay, Santa Clara Valley, and surrounding mountains. Views are scenic and distinct for visitors facing north (San Francisco Bay), east (Santa Clara Valley), and south (surrounding mountains). Views to the west are industrial, as the viewshed includes a large substation and clear views of Quarry operations. Specifically, as shown in Figure 4.1-2c, Photo 10, views of the distinctive domes and towers of the Cement Plant are clearly visible behind the bench, including the preblend dome, the steel silos, the tertiary crusher, and the preheater/ precalciner tower. In the foreground, next to the Quarry is a large substation. So although the scenic vista includes open and panoramic views of the Project Area within the foreground, given the direction of the bench and the informational placard facing east, the Project Area is not a part of what makes the designated vista scenic. Nevertheless, because of the distinct visual quality surrounding the vista, the fact that visitors would likely turn around and face the Project Area while visiting the vista, the high number of visitors, and short to medium view duration, visual sensitivity at Anza Knoll is considered moderate to high.

Fremont Older Open Space Preserve

The 793-acre Fremont Older Open Space Preserve (Fremont Older Preserve) is located approximately 1.5 miles south of the Project site. The Fremont Older Preserve includes 14.7 miles of hiking, equestrian, and bicycle trails, and connects to additional trails within the adjacent Stevens Creek County Park (MROSD, 2011). The Fremont Older Preserve receives over 164,000 visitors annually, and is the second-most highly frequented preserve in the MROSD (Baldzikowski, 2011).

Views of the Project Area are visible primarily from the Coyote Ridge Trail, a roughly 2.1 mile trail that traverses the Fremont Older Preserve in a north/south direction. The visual quality of the trail is generally distinctive, with intermittent views of industrial transmission towers and lines, and nearby residences. Views of the Project Area along the lower (northern) portion of the trail range from fully to partially-screened by intervening topography and trees. Figure 4.1-2c, Photo 11 shows a view of the Project Area approximately 0.5 mile from the northern trailhead within Fremont Older Preserve. As shown in Photo 11, the WSMA, Quarry pit, and Cement Plant all are visible in the viewshed background. Other features in the viewshed include the Stevens Creek Quarry in the middleground, a transmission line that runs over the trail in the foreground, and chaparral and oak-covered ridges in all directions. As the trail climbs steeply to Maisie’s Peak, a designated scenic vista and the highest point in Fremont Older Preserve, the intermittent views of the Project Area become more open and panoramic. Figure 4.1-2c, Photo 12 shows the view from Maisie’s Peak. The Project Area is clearly visible, including the WMSA, the Quarry pit, a small portion of the ESMA, as well as the roads within the Quarry and the Cement Plant. However, given the 360-degree sweeping view afforded from Maisie’s Peak, the Project Area is a small feature in a wide and stunning viewshed. From Maisie’s Peak and other locations on the Coyote Ridge Trail, views also include the Mount Hamilton and Diablo Ranges, the San Francisco Bay, East Bay cities as far north as Berkeley, the Santa Clara Valley, Monte Bello and Picchetti Ranch Open Space Preserves, the Stevens Creek Quarry, several transmission lines, and nearby residences (ESA, 2011). Duration of view is short for visitors to Maisie’s Peak, but medium for hikers on the Coyote Ridge Trail. Trail users primarily have their backs to the Project Area while ascending the trail, and have views of the Project Area off and on for the roughly 2.1 mile descent. Given Fremont Older Preserve’s distinct visual quality, fully screened to open and panoramic visibility, medium view duration, and high number of viewers, visual sensitivity within this viewshed is high.

Table 4.1-1 summarizes the visual sensitivity findings of major travel routes, scenic travel routes, recreational areas, and designated scenic vistas from which the Project Area is visible.

**TABLE 4.1-1
SUMMARY OF VISUAL SENSITIVITY FINDINGS
VIEWER TYPES, VISUAL EXPOSURES, AND VISUAL QUALITY**

Viewer Type/Location	Visual Quality	Viewer Exposure and Volumes	Visual Sensitivity
Motorists			
Interstate 280	Distinct	Partially to Fully Obstructed Views in Middleground and Background High Number of Viewers Short to Medium View Duration	Moderate
SR 85	Distinct/ Representative	Open and Panoramic to Fully Obstructed Views in Middleground and Background High Number of Viewers Short to Medium View Duration	Moderate to High
Foothill Boulevard/ Expressway	Distinct/ Representative	Partially to Fully Obstructed Views in Middleground and Background Low to Moderate Number of Viewers Short View Duration	Low to Moderate
Stevens Creek Boulevard	Representative	Open to Fully Obstructed Views in Middleground and Background Moderate to High Number of Viewers Medium View Duration	Moderate
De Anza Boulevard	Representative	Partially to Fully Obstructed Views in Background High Number of Viewers Short View Duration	Low to Moderate
Montebello Road	Distinct	Fully Obstructed Views in Background Low Number of Viewers No View Duration	None
Recreational Areas			
RSA Preserve/Park, PG&E Trail	Distinct	Partially to Fully Obstructed Views in Foreground High Number of Viewers Short View Duration	Moderate
RSA Preserve/Park, Hammond-Snyder Loop Trail (Cristo Rey Drive)	Distinct/ Representative/ Industrial	Partially to Fully Obstructed Views in Middleground High Number of Viewers Medium View Duration	High
Fremont Older Preserve, Coyote Ridge Trail	Distinct	Open and Panoramic to Fully Obstructed Views in Background High Number of Viewers Medium View Duration	High
Scenic Vistas			
RSA Preserve/Park, Anza Knoll	Distinct/ Industrial	Open and Panoramic Views in Middleground High Number of Viewers Short View Duration	Moderate to High
Fremont Older Preserve, Maisie's Peak	Distinct	Open and Panoramic Views in Background High Number of Viewers Short View Duration	High

4.1.1.4 Regulatory Setting

State of California

California Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands next to the highways. The state statutes governing the Scenic Highway Program are found in the Streets and Highways Code, §260 et seq. A highway may be designated as "scenic" depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon travelers' enjoyment of the view. New visual intrusions in views from State Eligible Scenic Highways could impact their future designation as Scenic Highways.

There is one state scenic highway in the study area; as discussed in Section 4.1.1.3, I-280 is an Eligible State Scenic Highway from SR 17 to the northwest border of the County (DOT, 2011). From the Santa Clara-San Mateo County line north to San Bruno, I-280 is an Officially Designated Scenic State Highway.

County of Santa Clara

General Plan

The County General Plan, initially adopted in 1994 and amended in August 2010, is a comprehensive, long-term plan for the physical development within the County. As discussed above in Section 4.1.1.3, *Viewer Types and Exposures*, the General Plan designates many scenic resources in the County, including roads and highways. In its Regional Parks and Scenic Highways map (County of Santa Clara, 2008), the County General Plan designates Highway 85, Foothill Expressway (north of I-280), and Stevens Canyon Road (south of Stevens Creek Boulevard) as "Scenic Freeways, Expressways, Arterial and Rural Routes." These roads are generally to the west, northwest, and southwest of the Project Area and are publicly accessible. Montebello Road, south of the Project Area, is designated as a "Local Road Needing Scenic Protection" and is also publicly accessible. All of the aforementioned roads are within approximately 2 miles of the Project Area. Scenic roadways in the Project vicinity are shown in Figure 4.1-1.

The General Plan also identifies the West Valley Hillsides Preservation Area (the foothills of the Santa Cruz Mountains), within which the Project Area is located. The West Valley Hillsides Joint Planning Review, a collaborative effort of the cities of Cupertino, Monte Sereno, Saratoga, Los Gatos and the County, has developed joint land use principles and objectives to minimize the visual impacts of hillside development and to provide mechanisms for resolution of future hillside land use issues. The primary purpose of this Special Area Policy within the County General Plan is to limit the expansion of urban development into hillside areas. However, the following policies are applicable to the Project:

West Valley Hillsides Preservation Area

Policy R-LU 197**:** The natural beauty of the West Valley hillsides area should be maintained for its contribution to the overall quality of life of current and future generations.

Policy R-LU 199: New land uses within the West Valley hillsides area should be limited to non-urban uses that are compatible with the preservation of the natural appearance of the hillsides.

Policy R-LU 201**:** The West Valley cities and the County should work cooperatively to maintain the natural appearance of the West Valley hillsides and should establish procedures for resolving inter-jurisdictional land use issues that may arise in this area.

The General Plan contains additional goals and policies that are applicable to all development projects in the unincorporated areas of the County. The Countywide and Rural Unincorporated Areas chapters of the General Plan contain various policies associated with visual quality, which are pertinent to the Project (County of Santa Clara, 1994):

Growth and Development Chapter

Policy R-GD 17: Design Review Zoning Districts, including Design Review Guidelines, shall apply to primary viewshed areas most immediately and directly visible from the valley floor, lands up to and including the first ridge, or those within approximately one to two miles distance from the edge of the valley floor.

Policy R-GD 31: Ridgelines and ridge areas have special significance for both public policy and private interests. Ridgeline and hillside development that creates a major negative visual impact from the valley floor should be avoided or mitigated, particularly for those areas most immediately visible from the valley floor. Ridgeline development policy should also take into account the need to allow reasonable use and development of private land.

Land Use Chapter

Policy R-LU 16**:** Hillsides: Mountainous lands and foothills unsuitable and/or unplanned for annexation and urban development. Lands so designated shall be preserved largely in natural resource related and open space uses in order to:

a. support and enhance rural character;
b. protect and promote wise management of natural resources;
c. avoid risks associated with the natural hazards characteristic of those areas; and
d. protect the quality of reservoir watersheds critical to the region’s water supply.

Policy R-LU 17**:** These lands also contain such important resources as grazing lands, mineral deposits, forests, wildlife habitat, rare or locally unique plant and animal communities, historic and archeological sites, and recreational and scenic areas of regional importance, which serve to define the setting for the urbanized portions of the County. Given the importance of these lands to the County’s overall quality of life, allowable uses shall be consistent with the conservation and wise use of these resources and levels of development shall be limited to avoid increased demand for public services and facilities.

Parks and Recreation Chapter

Policy R-PR 39: The natural scenery which exists along many of the County's highways should be protected from land uses and other activities which would diminish its aesthetic qualities.

Resource Conservation Chapter

Policy R-RC 98: Hillsides, ridgelines, scenic transportation corridors, major County entryways, stream environments, and other areas designated as being of special scenic significance should receive utmost consideration and protection due to their prominence, visibility, and overall contribution to the quality of life in the County.

Policy R-RC 102: Structures on ridgelines must be located, constructed or landscaped so that they do not create a major negative visual impact from the Valley floor. Land should be divided in such a way that building sites, if possible, are not located on ridgelines.

Policy R-RC 103: Development in rural areas should be landscaped with fire resistant and/or native plants which are ecologically compatible with the area.

The Project would be consistent with these policies.

Zoning Ordinance

The Project Area is within the Design Review Combining District, Santa Clara Valley Viewshed (d1). As stated in §3.20.040 of the County Code, "the -d1 combining district is intended to conserve the scenic attributes of those hillside lands most immediately visible from the valley floor. It is intended to minimize the visual impacts of structures and grading on the natural topography and landscape, using a combination of supplemental development standards, design guidelines, design review, and use of process incentives for smaller and less visible projects." Development standards and procedures use a tiered regulatory structure based primarily on building size: the"-d1" district applies to construction or modification of buildings, such as residences and accessory structures. Because the Project is a modification of an existing reclamation plan, and because no new buildings are proposed, the guidelines associated with the "-d1" district would not apply to the Project.

Surface Mining and Land Reclamation Standards

The County Surface Mining and Land Reclamation Standards (Standards) were approved by the Board of Supervisors (BOS) on March 20, 1993 (and revised by the BOS on August 29, 2000) in order to comply with and implement the provisions of the State Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code §2710 *et seq.*) as amended, and the Public Resources Code sections by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of the County (County of Santa Clara, 2000). The Standards set forth the general procedural, operational, and reclamation requirements that must be complied with, where applicable, by aggregate mining and production operations in the County. With regard to visual quality, the following sections are applicable to the Project:

Section 11: Standards for Land Reclamation

b. ***Staging.*** Reclamation may be done in stages compatible with continuing operations, or on completion of all excavation, removal, or fill as approved by the Planning Commission. Reclamation may be in the form of preparation for use of the land for agricultural, residential, commercial, industrial, or open space and recreational use; or other appropriate use of the property.

h. ***Replanting.*** Within six months, or a time period as approved by the Planning Commission, after surfaces have been graded to their final contours suitable measures shall be taken to establish vegetation capable of stabilizing the soil on areas where revegetation is possible and rock is not exposed. The vegetation types shall be approved by the Planning Commission and shall be cared for by the applicant until the soil is adequately stabilized to withstand the elements without erosion. When necessary provisions for irrigation shall be made.

(1) When quarrying progresses in stages of a series of benches, the Planning Commission may require each bench or group of benches to be landscaped when the excavation is completed on that particular bench or benches.

(2) Vegetation. Permittee shall make use of available research regarding vegetation methods and the selection of species having good survival characteristics for the topography, resoiling characteristics, and climate of this area. Native species are recommended wherever practicable. Reclamation plans may also include development of screens and roadside plantings at mines currently in operation, where such screens and plantings are practicable and desirable.

i. ***Removal of Structures, Equipment and Stockpiles.*** All structures, equipment, and stockpiles, except required fences, shall be entirely removed from excavations within six (6) months after termination of operations, or such other time as determined by the Planning Commission. Within the same period, individual sewage disposal systems shall be removed in accordance with the recommendations of the County Environmental Health Services.

4.1.2 Baseline

The overall baseline date for this EIR is June 2007, the date of the County's Notice of Preparation of an EIR to evaluate potential environmental effects of the Applicant's first application to amend the approved 1985 Reclamation Plan. Documentation establishes that, by 2007, some materials storage already had occurred in the EMSA (OMR, 2006; County of Santa Clara, 2006, 2007).

4.1.2.1 Project Area Except the EMSA

The County and the EIR preparers have reviewed the available setting photographs against the land use patterns surrounding the Project and have concluded that views of the Project Area (except for the EMSA) as viewed from major and scenic roadways and other public vantage points did not change considerably between 2007 and 2010, or between 2010 and 2011. For non-EMSA Project Areas, setting photographs are available from 2008 (**Figure 4.1-3**, Photo 7), 2010 and 2011 (Figures 4.1-2a, 4.1-2b, and 4.1-2c). Figure 4.1-3, Photo 7, provides a view of the Project Area taken from Stevens Creek Boulevard just west of the SR 85 interchange (at the U.S. Post Office parking lot), in 2008. This photo can be compared to Figure 4.1-2b, Photo 5,

Photo 1: Hammond-Snyder Loop Trail near Cristo Rey Drive in 2007

Photo 2: Hammond-Snyder Loop Trail near Cristo Rey Drive in 2007

Photo 3: Hammond-Snyder Loop Trail near Cristo Rey Drive in 2008

Photo 4: Hammond-Snyder Loop Trail near Cristo Rey Drive in 2008

SOURCE: County of Santa Clara, 2011b

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Figure 4.1-3a
Baseline Photos

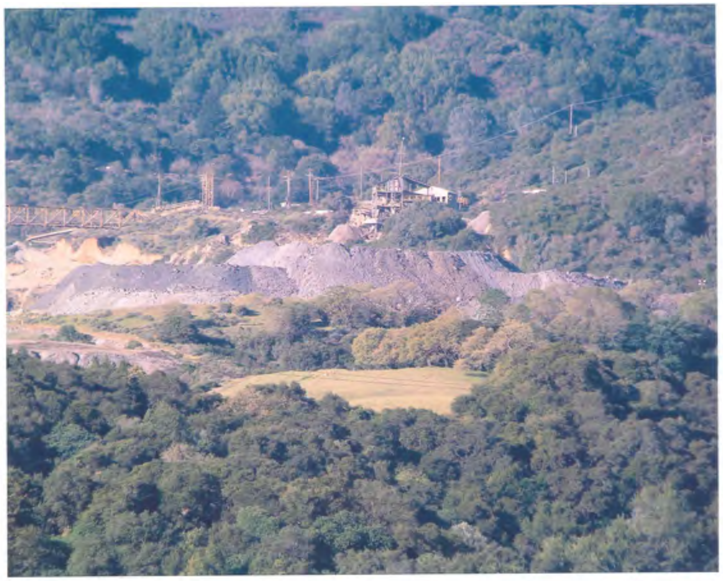

Photo 5: Hammond-Snyder Loop Trail near Cristo Rey Drive in 2008

Photo 6: Interstate 280 west of State Route 85 interchange in 2007

Photo 7: Stevens Creek Boulevard west of State Route 85 interchange in 2008

SOURCE: County of Santa Clara, 2011b

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Figure 4.1-3b
Baseline Photos

which shows a view from Stevens Creek Boulevard taken in 2010, just east of the SR 85 interchange. The photo in Figure 4.1-3, Photo 7 is significantly more focused in on the Project Area than Figure 4.1-2b, Photo 5, which amplifies the perceived visual prominence of the Project Area. However, a close analysis of Figure 4.1-2b, Photo 5 shows that the Project Area, as perceived from this viewpoint, is visually unchanged between 2008 and 2010. Consequently, with the exception of the EMSA, the available setting photographs adequately represent visual conditions substantially similar to what would have been observed in June 2007. For this reason, the 2010 and 2011 photographs are relied upon in this EIR as the baseline for analysis of all components of the Project other than the EMSA.

4.1.2.2 The EMSA

For purposes of evaluating aesthetic impacts related to the proposed reclamation of the EMSA, although the setting photographs referenced in Section 4.1.1.3 (Figures 4.1-2a, 4.1-2b, and 4.1-2c) were taken in 2010 and 2011, the analytical baseline takes into consideration photographs taken in 2007 and 2008 (County of Santa Clara, 2011b). Figure 4.1-3 provides photographs of views of the EMSA taken from or near Cristo Rey Drive at the Hammond-Snyder Loop Trail in 2007 and 2008 (Photos 1 through 5), and a view from I-280 east of the SR 85 interchange in 2007 (Photo 6). To account for visual changes that occurred in the EMSA between 2007 and 2010, this analysis contrasts Figure 4.1-3, Photos 1 through 5, with Figure 4.1-2b, Photo 9, which shows a similar viewpoint in 2010. The analysis also contrasts Figure 4.1-3, Photo 6, with Figure 4.1-2a, Photo 1. As shown in the comparisons, in 2007 the height of the EMSA overburden pile appears to be slightly lower than in 2010, resulting in an increased visibility of some industrial Quarry structures, including Cement Plant conveyor belts. Overall, Figure 4.1-3, Photos 1 through 6, in conjunction with the setting photos taken in 2010 and 2011, accurately depict the physical environmental condition that would be subject to change as a result of the Project or alternatives. Given the availability of data at the time visual simulations were created, the setting photographs used to create simulated post-Project conditions were taken in 2010 and 2011; however, this analysis of potential impacts of the Project compares simulated post-Project conditions to the baseline conditions captured in the 2007 and 2008 setting photographs.

4.1.2.3 Other Areas to be Reclaimed

Other areas now proposed for reclamation as part of the Project (including, for example, the Quarry pit, onsite private roadways, the surge pile, structures and facilities in the Rock Plant, Exploration Area and PCRA) would not have been visible in 2007 from the viewpoints described above for the same reasons of topography and public inaccessibility that they are not currently visible from those locations.

4.1.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Have a substantial adverse effect on a scenic vista;

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

c) Substantially degrade the existing visual character or quality of the site and its surroundings;

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area;

e) If subject to Architecture and Site Approval (ASA), be generally in non-compliance with the Guidelines for ASA; or

f) If within a Design Review Zoning District for purposes of viewshed protection (d, -d1, -d2), conflict with applicable General Plan policies or Zoning Ordinance provisions.

4.1.3.1 Definition and Use of Significance Criteria

The determination of impact significance is based on combined factors of visual sensitivity and the degree of adverse visual change that the Project would cause. In this context, an adverse impact to visual/aesthetic resources may occur when: (1) an action perceptibly changes the existing physical features of the landscape that are characteristic of the region or locale; (2) an action introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or locale, or become visually dominant in the viewshed; or (3) an action blocks or totally obscures aesthetic features of the landscape. Determining the significance of visual changes in the landscape depends on how noticeable the Project features would be from different views, and varying viewing conditions (angle of view, distance, and primary viewing directions) from which the Project could be seen. The primary elements in determining the significance of overall visual change caused by the Project are visual contrast, Project dominance, and view blockage, as discussed below.

Visual Contrast

Visual contrast is a measure of the degree of change in line, form, color, and texture that the Project would create, when compared to the existing landscape. Visual contrast ranges from none to strong, and is defined as:

- ***None*** – The contrast between Project elements and the existing landscape is not visible or perceived.
- ***Weak*** – The element contrast can be seen but does not attract attention.
- ***Moderate*** – The Project elements begin to attract attention, but are not so strong that they could dominate the characteristic landscape.
- ***Strong*** – The element contrast demands the viewer’s attention and cannot be overlooked.

Project Dominance

Visual dominance is a measure of a project feature’s apparent size relative to other visible landscape features in the viewshed, or seen area. A feature’s dominance is affected by its relative location in the viewshed and the distance between the viewer and feature. The levels of visual dominance are:

- ***Subordinate*** – Where the new feature(s) would be visible, but would not be the primary object(s) in the view;
- ***Co-dominant*** – Where the new feature(s) share the viewers attention with other existing features in the view; and
- ***Dominant*** – Where the new feature(s) demand the viewer's attention over existing features of the view.

View Blockage or Impairment

View blockage or impairment is a measure of the degree to which a project's features would obstruct or block views to aesthetic features due to the project's position and/or scale. Blockage of aesthetically pleasing landscape features or views can cause adverse impacts, particularly in instances where scenic or view orientations are important to the use, value or function of a particular land use.

Overall Adverse Visual Impact

As stated above, the determination of impact significance is based on combined factors of visual sensitivity and the degree of visual change that the Project would cause. The inter-relationship of these two overall factors in determining whether adverse visual impacts are significant is shown in **Table 4.1-2**. For reference, visual sensitivities are identified in Table 4.1-1 and the Overall Degree of Visual Change is addressed in the impact discussions in Section 4.1.5.

TABLE 4.1-2
GUIDELINES FOR DETERMINING ADVERSE VISUAL IMPACT SIGNIFICANCE

	Overall Degree of Visual Change				
Overall Visual Sensitivity	**Low**	**Low to Moderate**	**Moderate**	**Moderate to High**	**High**
Low	Not Significant	Not Significant	Adverse, but Not Significant	Adverse, but Not Significant	Adverse, but Not Significant
Low to Moderate	Not Significant	Adverse, but Not Significant	Adverse, but Not Significant	Adverse, but Not Significant	Adverse, but Not Significant
Moderate	Adverse, but Not Significant	Adverse, but Not Significant	Adverse, but Not Significant	Adverse and Potentially Significant	Adverse and Potentially Significant
Moderate to High	Adverse, but Not Significant	Adverse, but Not Significant	Adverse and Potentially Significant	Adverse and Potentially Significant	Significant
High	Adverse, but Not Significant	Adverse and Potentially Significant	Adverse and Potentially Significant	Significant	Significant

Not Significant impacts may or may not be perceptible and are considered minor in the context of existing landscape characteristics and view opportunity.

Adverse, but Not Significant Impacts are perceived as negative but would not substantially alter the landscape to a degree that would conflict with significance criteria.

Adverse and Potentially Significant Impacts are perceived as negative and may, depending on Project- and site-specific circumstances, substantially alter the landscape to a degree that would conflict with significance criteria.

Significant impacts with feasible mitigation may be reduced to less than significant levels or avoided altogether. Without mitigation or avoidance measures, significant impacts would conflict with significance criteria.

4.1.3.2 Visual Simulations

Visual simulations, presented as part of this aesthetic analysis, illustrate representative “before” and “after” visual conditions in the Project Area and surrounding environs. In the text below, the evaluation of potential impacts associated with the Project is based, in part, on comparing the “before” and “after” visual conditions as portrayed in the set of simulations and assessing the degree of visual change that the Project would bring about. The significance determination is based on the evaluation criteria described above.

The simulations presented in this section illustrate the location, scale, and conceptual appearance of the Project as seen from three key viewing locations. The set of images shows views of the Project Area from various local major and/or scenic roadways. Figure 4.1-1 depicts the simulation photo viewpoint locations for the visual simulations in **Figures 4.1-4a** through **4.1-7c**.

The visual simulations of the Project portray representative public views. The simulation vantage points are as follows:

1. View from Mary Avenue Bicycle Footbridge spanning I-280 looking west (Figures 4.1-4a, b, and c)
2. View from SR 85 near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest (Figures 4.1-5a, b, and c)
3. View from Stevens Creek Boulevard at SR 85 looking west (Figures 4.1-6a, b, and c)
4. View from Cristo Rey Drive at Hammond-Snyder Loop Trail looking southwest (Figures 4.1-7a, b, and c)

These visual simulations are presented in color, two images per page. For all figures the top photo portrays the existing visual condition photograph, and the bottom photo shows the visual simulation. The existing visual condition image for Figures 4.1-4 and 4.1-7 were photographed in July 2010, and the existing visual condition images for Figures 4.1-5 and 4.1-6 were photographed in September 2011[4]. All photographs were taken using a digital single lens reflex (SLR) camera. All of the images use a 50 mm lens which represents a horizontal view angle of approximately 40 degrees, which is the “normal” field of view for the average human observer (Environmental Vision, 2011b).

Figures 4.1-4a and 4.1-7a show simulations of the EMSA (the only portion of the Project Area visible from the represented viewpoints) at the completion of Phase 1, which represents the end of Project construction within the EMSA. Figures 4.1-4b and 4.1-7b show simulations of the EMSA 5 years after the completion of Phase 1, and Figures 4.1-4c and 4.1-7c show simulations of the EMSA 20 years after the completion of Phase 1, both considered the long-term (i.e. permanent) visual conditions associated with the maintenance phase of the Project.

4 See Section 4.1.3 for a discussion of development of the baseline used in this analysis. Analyses of impacts to views of the EMSA take into consideration the setting photo used in Figures 4.1-4 and 4.1-7 (taken in 2010), as well as the baseline setting photos in Figure 4.1-3 (taken in 2007 and 2008). Analyses of impacts to views of the

Existing view from Mary Avenue Bicycle Footbridge looking southwest over Interstate-280

Visual Simulation of Project site at completion of Phase 1 (i.e., the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

Figure 4.1-4a
Existing and Visual Simulation Photos

Existing view from Mary Avenue Bicycle Footbridge looking southwest over Interstate-280

Visual Simulation of Project site five years after completion of Phase 1 (i.e., five years after the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

Figure 4.1-4b
Existing and Visual Simulation Photos

Existing view from Mary Avenue Bicycle Footbridge looking southwest over Interstate-280

Visual Simulation of Project site 20 years after completion of Phase 1 (i.e., 20 years after the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

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Figure 4.1-4c
Existing and Visual Simulation Photos

Existing view from northbound State Route 85 near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest

Visual Simulation of Project site at completion of Phase 2

SOURCE: Environmental Vision, 2011a

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Figure 4.1-5a
Existing and Visual Simulation Photos

Existing view from northbound State Route 85 near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest

Visual Simulation of Project site at completion of Phase 3

SOURCE: Environmental Vision, 2011a

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Figure 4.1-5b
Existing and Visual Simulation Photos

Existing view from northbound State Route 85 near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest

Visual Simulation of Project site 20 years after completion of Phase 3

SOURCE: Environmental Vision, 2011a

Figure 4.1-5c
Existing and Visual Simulation Photos

Existing view from westbound Stevens Creek Boulevard, just east of the State Route 85 interchange, looking west

Visual Simulation of Project site at completion of Phase 2

SOURCE: Environmental Vision, 2011a

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Figure 4.1-6a
Existing and Visual Simulation Photos

Existing view from westbound Stevens Creek Boulevard, just east of the State Route 85 interchange, looking west

Visual Simulation of Project site at completion of Phase 3

SOURCE: Environmental Vision, 2011a

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Figure 4.1-6b

Existing and Visual Simulation Photos

Existing view from westbound Stevens Creek Boulevard, just east of the State Route 85 interchange, looking west

Visual Simulation of Project site 20 years after completion of Phase 3

SOURCE: Environmental Vision, 2011a

Figure 4.1-6c
Existing and Visual Simulation Photos

Existing view from Cristo Rey Drive at Hammond-Snyder Loop Trail looking southwest

Visual Simulation of Project site at completion of Phase 1 (i.e., the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

Figure 4.1-7a
Existing and Visual Simulation Photos

Existing view from Cristo Rey Drive at Hammond-Snyder Loop Trail looking southwest

Visual Simulation of Project site five years after completion of Phase 1 (i.e., five years after the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

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Figure 4.1-7b
Existing and Visual Simulation Photos

Existing view from Cristo Rey Drive at Hammond-Snyder Loop Trail looking southwest

Visual Simulation of Project site 20 years after completion of Phase 1 (i.e., 20 years after the completion of construction in the EMSA)

SOURCE: Environmental Vision, 2010

Figure 4.1-7c
Existing and Visual Simulation Photos

Figures 4.1-5a and 4.1-6a show simulations of the Project at the completion of Phase 2 (i.e., during construction); Figures 4.1-5b and 4.1-6b show simulations of the Project at the completion of Phase 3 (i.e., when the performance standards for revegetation have been achieved); and Figures 4.1-5c and 4.1-6c show a simulation of the Project 20 years after the completion of Phase 3 (i.e., during Project maintenance).

4.1.4 Discussion of Criteria with No Impact to Visual Resources

As explained in this section, the Project would cause no impact related to criteria e) and f). By contrast, it could cause an impact related to criteria a) through d), each of which is analyzed in Section 4.1.5 below.

e) The Project would be generally in compliance with the Guidelines for ASA.

ASA typically is required for commercial, institutional, office, industrial, and multiple-family residential uses. The procedure commonly augments the use permit process to establish detailed conditions on approved developments (County of Santa Clara, 2011). This criterion applies to the construction or major modification of buildings and developments. Because the Project is a modification of an existing reclamation plan, and because no buildings are proposed, these criteria would not apply to the Project, and there would be no impact.

f) Although located within a Design Review Zoning District, the Project would not conflict with applicable General Plan policies or Zoning Ordinance provisions.

This criterion applies to the construction or major modification of buildings and structures. The Project does not propose to construct any buildings. The Project does propose one structure, a conveyor; however, the conveyor would not be subject to d1 regulations. The County Zoning Ordinance §3.20.030 states, “Development within areas zoned “-d” shall be subject to the provisions of Chapter 5.50: Design Review.” The purpose of Chapter 5.50 is “to assure quality residential development in areas deemed visually sensitive.” Moreover, §3.20.040(A) states, “Development standards and procedures shall utilize a tiered regulatory structure based primarily on building size….” The conveyors are not “buildings” (as defined in County Code Chapter 1.30) nor are they a residential development. Because the d1 regulations would not be applicable to the Project, there would be no impact.

4.1.5 Impacts and Mitigation Measures

Temporary (i.e., limited to the period of time when active reclamation activities are occurring) construction-related impacts to visual quality would result from the presence of construction equipment, materials, and work crews within the Project Area, increased levels of dust, and from temporary changes to the visual quality of the site through the alteration of topography and landscaping. Project implementation would occur in three phases over approximately 20 years: Phase 1 (2011-2020), Phase 2 (2021-2025), and Phase 3 (2026-2030). Monitoring and maintenance-related (i.e., long-term) impacts to visual quality would occur after the vegetation planted as part of the Project became established within the viewshed. See Chapter 2, *Project Description*, for descriptions of processes and activities that would be engaged in to accomplish reclamation of each of the Project components, and descriptions of success criteria for reclamation.

a) Would the Project have a substantial adverse effect on a scenic vista?

Impact 4.1-1: Construction of the Project would have a substantially adverse effect on a scenic vista during an interim period. ***(Significant and Unavoidable Impact)***

As discussed in the Setting, there are two designated scenic vistas with views of the Project Area: Maisie's Peak in Fremont Older Preserve, and Anza Knoll in the RSA Preserve/Park.

Maisie's Peak offers 360-degree scenic views that include the Project Area approximately 3 miles to the northwest (Figure 4.1-2c, Photo 12). Given the distance of the Project and the myriad other features that dominate the landscape (i.e., the Mount Hamilton and Diablo Ranges, the San Francisco Bay, east bay cities as far north as Berkeley, the Santa Clara Valley, Monte Bello and Picchetti Ranch Open Space Preserves, the Stevens Creek Quarry, several transmission lines, and nearby residences), the Project Area is a small feature in the viewshed, and construction activities would be generally imperceptible to visitors to the scenic vista. As such, there would be no visual contrast. The Project would not dominate the landscape, and would be subordinate to other features in the viewshed. In addition, construction would not block or obstruct scenic views from Maisie's Peak. The perceived overall visual change from construction activities to visitors at Maisie's Peak would be low. Despite the high visual sensitivity of Maisie's Peak, the overall impact to this scenic vista would be adverse but less than significant.

The Anza Knoll scenic vista looks north, east, and south, facing away from the Project Area. However, visitors to the Anza Knoll would face the Project Area while ascending the trail to the knoll, and would likely turn around and face the Project Area while visiting the knoll, given that the knoll is located atop a hillside and provides 360-degree panoramic views. Project contrast at this location would be strong: given the close proximity of the Project Area (approximately 1 mile to the southwest of the vista), and the strong industrial quality of the Project Area in a generally distinct viewshed (see Figure 4.1-2c, Photo 10), Project construction would demand the viewer's attention and could not be overlooked. (Although there is not a visual simulation showing viewers' perspective from Anza Knoll, Figure 4.1-7a shows a simulation of the Project site at the completion of construction from the Hammond-Snyder Loop, which leads to the Anza Knoll. Viewers at the Anza Knoll would have a less obscured, closer, and more panoramic view of the Project site than is portrayed in Figure 4.1-7a.) Despite the abundance of other elements in the 360-degree view afforded by the vista, the presence of construction equipment and activity would dominate or co-dominate the viewshed. Furthermore, during the establishment of vegetation on the site, the EMSA initially would be grey in color, and then yellow after hydroseeding. This would contrast with the oak woodland and chaparral in the background, which is predominantly green. Because the Project Area would be behind viewers appreciating the vista, construction would not block or obstruct views of the scenic features in the viewshed. Construction activities would also not block views of the scenic ridgeline behind the EMSA, as the EMSA would not rise high enough to impact such views. Nevertheless, during construction of the overburden area and prior to the establishment of vegetation (approximately 10 years), the overall visual change at the Anza Knoll would be moderate to high. Given the moderate to high visual sensitivity of the Anza Knoll, per Table 4.1-2 impacts to this scenic vista would be adverse and potentially significant.

> **Mitigation:** None feasible. Because of the large size of the Project Area and its geographic relation to the scenic vista on the hillside, it would be impossible to screen views of the Project Area. Artificial screening such as fencing would be incapable of obscuring views of the large Project Area, given the viewers' elevated perspective. A more aggressive planting plan to establish mature vegetation (e.g., oak trees, other evergreens) immediately on the EMSA would reduce visual contrast between initial planting, hydroseeding, and eventual maturation under the normal revegetation plan; however, mature trees could not be planted on the intervening slopes, only the benches. Furthermore, such an aggressive planting plan would not address visual contrast that would exist during construction of the overburden pile, particularly the dominant presence of construction equipment and activity.

Significance after Mitigation: Significant and Unavoidable.

____

Impact 4.1-2: Monitoring and Maintenance of the Project would not have a substantially adverse long term effect on a scenic vista. *(Less than Significant Impact)*

For visitors to Anza Knoll and Maisie's Peak, monitoring and maintenance activities in the Project Area would be perceived as an increase in mature vegetated open space. From Anza Knoll, the EMSA overburden stockpile would be transformed from a grey/brown mass to a downward sloping hillside covered with native vegetation and generally consistent with the surrounding natural topography. From Maisie's Peak, the EMSA, WMSA, and Quarry pit all would be transformed such that formerly industrial areas comprised of patches of exposed rock partially covered with grey stockpiles of overburden deposits would appear largely natural and scenic, and the scenic views of the foothills would appear relatively undisturbed. Monitoring and maintenance of revegetation efforts would continue until reclamation is certified as complete. From both scenic vistas, the change in the Project Area would be seen and could begin to attract attention, resulting in a weak to moderate, but positive, visual contrast. However, the Project would not dominate the landscape. On the contrary, the Project would substantially diminish the presence of the Project Area as the site would visually blend with the surrounding natural landscape, adding to the scenic nature of the viewshed and decreasing the presence of industrial components in a distinct viewshed. In neither location would the increased height of the EMSA be sufficient to block views of surrounding scenic mountains. The overall degree of visual impact would be moderate, and positive in comparison with existing conditions. As such, long-term impacts associated with monitoring and maintenance of the Project would be less than significant.

b) Would the Project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

As indicated above in the discussion of the Project's visual setting, I-280 is a State Eligible Scenic Highway with views of the Project Area. Furthermore, there are numerous County-designated scenic highways and routes in the vicinity of the Project Area, including SR 85 and Foothill Boulevard/Expressway. The following viewpoint analysis assesses the impacts from the Project Area to views from these eligible and designated scenic highways and routes. Impacts from non-scenic roadways are assessed below under Impacts 4.1-4 and 4.1-5.

Impact 4.1-3: Construction of the Project would substantially damage scenic resources within a state- or County-designated scenic highway or route during the period of time when active reclamation activities are occurring. ***(Significant and Unavoidable Impact)***

Views from I-280

As discussed above, Figure 4.1-4a shows a simulation of the EMSA (the only portion of the Project Area visible from the Mary Avenue Bicycle Footbridge) at the completion of Phase 1, which represents completion of Project construction within this portion of the Project Area. Motorists traveling on I-280 would have a similar view of the Project Area as shown in the simulation, from a slightly lower elevation as they would be under the footbridge. For motorists on I-280, the re-contoured hillsides during construction would result in a moderate visual contrast in that the Project elements begin to attract attention and begin to dominate the characteristic landscape. The changes to the visual character of the site itself would include, during construction of the EMSA, an increased prominence and extent of disturbed areas, and the creation of a new, distinctly unnatural landform. As shown in Figure 4.1-4a, Project construction would result in areas of graded overburden extending above the height of some of the intervening vegetation and structures. This would be particularly noticeable immediately following the completion of construction but before the vegetation has time to establish and mature. The overburden, predominantly grey in color, would contrast with the surrounding natural features and could be perceived as continuation of the mining-related industrial uses to the west and south. This would not be considered a significant impact to the visual character of the site itself, since the visual quality of the site is already poor. However, development of the EMSA would alter and further disrupt the overall visual character of the West Valley hillsides area, and further degrade this important visual resource. The changes would be incremental and would gradually intensify as overburden material is deposited and graded on the site, and then would gradually diminish as reclamation is completed and vegetation becomes established. Nevertheless, during the several years of Project construction, and for several more years after completion of the fill structure and before establishment and maturation of vegetation, construction activities would result in a moderate to high degree of visual change for motorists on I-280. In conjunction with I-280's moderate visual sensitivity, temporary impacts to scenic views from this scenic roadway resulting from construction activities would be adverse and significant.

Mitigation: No feasible mitigation measures have been identified to reduce the significance of this impact. Artificial screening such as fencing would be incapable of obscuring views of the Project Area, because of the extensive height of the EMSA. A more aggressive planting plan to establish mature vegetation (e.g., oak trees, other evergreens) immediately on the EMSA would reduce visual contrast between initial planting, hydroseeding, and eventual maturation under the normal revegetation plan; however, mature trees could not be planted on the intervening slopes, only the benches. Furthermore, such an aggressive planting plan would not address visual contrast that would exist during construction of the overburden pile, particularly the dominant presence of construction equipment and activity.

Significance after Mitigation: Significant and Unavoidable.

Views from Highway 85

For motorists traveling on SR 85, the re-contoured hillsides would result in a moderate visual contrast as the Project could be seen but would not dominate the characteristic landscape. Figures 4.1-5a and 4.1-5b show the visual effects of construction from the perspective of a motorist on SR 85, northbound near Quito Road, southeast of the Saratoga Avenue on-ramp, looking northwest. As shown in Figure 4.1-5a, and similar to the discussion for views from I-280, Project construction would result in some areas of graded overburden in the WMSA extending above the height of some of the intervening vegetation and structures, particularly at the completion of Phase 2 and before revegetation has become established. The overburden, predominantly grey in color, would contrast with the surrounding natural features and could be perceived as continuation of the mining-related industrial uses to the west and south. In other locations, excavation the WMSA stockpile would reduce the height of overburden material within the viewshed. By the completion of Phase 3 (Figure 4.1-5b), the hillside no longer would consist of grey overburden, and would be covered with vegetation that blends into the surrounding natural hillside. Overall, during construction of the Project, the changes in vegetation created by Project construction could certainly be seen in the early stages, but by later stages would transition the industrial site into revegetated open space. Moreover, mining activities are currently visible within the WMSA, and were visible under 2007 baseline conditions; as such, the presence of equipment and vehicles associated with construction activities would not represent a change above baseline conditions. Given the distance to the Project Area, the Project would be subordinate to or co-dominant with other features in the viewshed, including transmission towers, trees, highway signs, buildings and topography. The Project would not block views of the scenic Santa Cruz Mountains in the background. Ultimately, construction activities would result in a low to moderate degree of visual change for motorists on SR 85, and would represent an improvement above baseline conditions after the completion of Phase 3 (Figure 4.1-5b). In conjunction with SR 85's moderate to high visual sensitivity, temporary impacts to scenic views from this scenic roadway resulting from construction activities would not be significant.

Views from Foothill Boulevard

For motorists on Foothill Boulevard/Expressway, construction of the Project would result in a weak visual contrast. From the select locations from which the Project Area would be visible, the temporarily increased visibility of graded overburden would not attract motorists' attention particularly as a motorist would have to turn his head to view the Project Area. Even when staring towards the Project Area, the Project would be subordinate to other visible landscape features in the viewshed such as the towering trees, streetlights and commercial and residential structures (see Figure 4.1-2a, Photo 4). The Project would not block views of the scenic elements of Foothill Boulevard/Expressway, and the overall visual change would be low. Combined with Foothill Boulevard/Expressway's low to moderate visual sensitivity, impacts from construction would not be significant.

Impact 4.1-4: Neither active reclamation activities nor monitoring and maintenance of the Project would result in long term substantial damage to scenic resources within a state- or County-designated scenic highway or route. *(Less than Significant Impact)*

Figure 4.1-4b shows a simulation of motorists views of the EMSA from I-280 five years after the completion of reclamation activities in this portion of the Project Area. Figure 4.1-4c shows a simulation of the EMSA from I-280 20 years after active reclamation concludes. Figure 4.1-5c shows a simulation of the Project from SR 85 20 years after reclamation activities conclude. These simulations present representative views of the Project Area from scenic roadways during the monitoring and maintenance period of the Project, as vegetation planted as part of the Project would be established within the viewshed at this point in time.

Figures 4.1-4b, 4.1-4c, and 4.1-5c all show that, for motorists on representative scenic roadways, the period of time when reclamation is being monitored and maintained would be perceived as an increase in mature vegetated open space in the Project Area, as the existing contours of the benches and slopes of the excavation would be transformed to a downward-sloping hillside generally consistent with the surrounding natural topography. Formerly industrial areas comprised of patches of exposed rock partially covered with grey/brown stockpiles of overburden deposits would appear largely natural and scenic, and the scenic views of the foothills would appear relatively undisturbed. Long-term monitoring and maintenance of revegetation efforts would continue until reclamation is certified as complete. The change in the Project Area would be seen and could begin to attract attention, resulting in a weak to moderate, but positive, visual contrast. The Project would not dominate the landscape. On the contrary, the Project would substantially diminish the presence of the Project Area as the site would visually blend with the surrounding natural landscape, adding to the scenic nature of the viewshed. The increased height of the EMSA would not be sufficient to block views of surrounding scenic mountains. The overall degree of visual impact would be moderate, and positive. As such, long-term impacts of the Project would be less than significant.

c) Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

Impact 4.1-5: The Project would alter and substantially degrade the existing visual character or quality of the Project Area during the period of time when active reclamation activities are occurring. *(Significant and Unavoidable Impact)*

As discussed in Chapter 2, *Project Description*, the Project is located entirely on private property. Physical access to the area would be allowed only with authorization. As such, the Project Area is primarily visually accessible to the public from local roadways and recreational areas. Public views of the Project Area from scenic roadways are analyzed under Impacts 4.1-3 and 4.1-4. Therefore, the analysis of this potential impact focuses on possible degradation of the existing visual character or quality of the Project Area itself, as well as views of the Project Area from representative major roadways and recreational areas in the vicinity of the Project Area.

As discussed in Section 4.1.1.2 above, the Project Area is characterized by heavy industrial features, including mining pits, stockpiles of extracted materials, equipment, buildings, machinery, siltation ponds, and conveyor belts that are present throughout the site. See Chapter 2, *Project Description*, for a detailed description of the features that would be removed under the Project. The surrounding buffer areas, which are also part of the site, contrast with the industrial uses and provide large areas of relatively undisturbed, densely vegetated, visually distinctive open space.

Visual contrast is a measure of the degree of change in line, form, color, and texture that the Project would create, when compared to the existing landscape. Because the existing landscape reflects past and ongoing surface mining activities, construction of the Project would consist of similar kinds activities and features as the Project (e.g., movement and removal of overburden; excavation of mineral commodities using excavators; hauling of materials using trucks and conveyors; grading final slopes to engineered slopes and benches, etc.) Prior to establishment of revegetation, the Project would not fundamentally change the industrial character of the site when viewed from public viewpoints.

Major Roadways

Because portions of the Project Area, particularly the WMSA, are visible from locations throughout Santa Clara Valley, Stevens Creek Boulevard and De Anza Boulevard were chosen as representative major roadways based on the Project's viewshed, visual exposure and important viewer groups.

The simulations in Figures 4.1-6a and 4.1-6b show the Project Area during active reclamation as seen from Stevens Creek Boulevard, the closest major roadway in the vicinity of the Project. The Project is slightly perceptible in the distant hillside, despite recontouring of the hillside and movement of overburden. Visual contrast from the roadway would be none from some locations, where the contrast between Project elements and the existing landscape is not visible or perceived, and weak in other locations where construction could be seen but would not attract attention. As shown in Figures 4.1-6a and 4.1-6b, Project elements would not dominate the landscape relative to other visible landscape features in the viewshed, and would be subordinate to development along the roadway and scenic foothills in the distance. The general character of the site as a mining facility would not change, and construction of the Project would not block or impair views of the surrounding scenic foothills. Overall visual change would be low. Given the moderate visual sensitivity of Stevens Creek Boulevard, impacts would adverse but less than significant. Changes in the viewshed from De Anza Boulevard and other local roadways would be similar to those described above for Stevens Creek Boulevard, as portrayed in Figures 4.1-6a and 4.1-6b. Given the low to moderate visual sensitivity of De Anza Boulevard, impacts from this location would be less than significant.

Recreational Areas

The simulation in Figure 4.1-7a shows the Project Area during construction as seen from the Hammond-Snyder Loop Trail, adjacent to Cristo Rey Drive, in the RSA Preserve/Park (see Figure 4.1-3 for additional baseline photographs from this location). This viewpoint is one of the most visually sensitive locations within the RSA Preserve/Park, and quarry components are very prominent features within the existing landscape. As shown in Figure 4.1-7a, which depicts the Project Area at the completion of construction but before revegetation has become fully established, during construction the height of the EMSA overburden stockpile would be raised, significantly increasing the presence of grey/brown overburden within the viewshed. Despite the fact that the higher hillside would screen views of industrial components of the Cement Plant, the overall visual contrast between overburden materials and the vegetated, gently sloped surrounding terrain would be clearly discernible, demanding the viewer’s attention. The increased prominence and extent of disturbed areas, and the creation of a new distinctly unnatural landform would be particularly noticeable immediately following the completion of construction but before the vegetation has time to establish and mature. Figure 4.1-7b shows that by 5 years after the completion of construction, the hillside would be begin to blend with the surrounding hillside as vegetation fills in and the site is transformed into a more scenic hillside. As shown in Figures 4.1-7a and 4.1-7b, the increased height of the EMSA during construction would not be sufficient to block views of the surrounding scenic hillsides, or other scenic features in the landscape. Nevertheless, especially given the long construction timeframe (approximately 10 years at the EMSA), the overall visual change during construction would be moderate to high. Given the high visual sensitivity of the Hammond-Snyder Loop Trail, impacts to this recreational area during the implementation of active reclamation activities would be significant.

Other viewsheds within the RSA Preserve/Park also would be impacted by the proposed reclamation activities. As shown in Figure 4.1-2b, Photo 8, the PG&E Trail offers views of the upper elevations of the EMSA overburden deposits. Although the existing overburden deposits are not a dominant feature in the landscape, the substantial increase in the height of the overburden deposit during construction could block views of the scenic mountains behind the EMSA. In conjunction with the presence of off-road trucks and other equipment in an otherwise natural setting, reclamation activities would begin to attract attention and begin to dominate the characteristic landscape. The overall visual change to hikers on the PG&E Trail would be moderate to high. Given the moderate visual sensitivity of this viewshed (i.e., the distinct quality of the surroundings, partially to fully obstructed Project views in the foreground, high number of viewers and short view duration), impacts to PG&E Trail users would be significant.

Mitigation: No feasible mitigation measures have been identified to reduce the significance of this impact. Artificial screening such as fencing would be incapable of obscuring views of the Project Area, because of the extensive height of the EMSA. A more aggressive planting plan to establish mature vegetation (e.g., oak trees, other evergreens) immediately on the EMSA would reduce visual contrast between initial planting, hydroseeding, and eventual maturation under the normal revegetation plan; however, mature trees could not be planted on the intervening slopes, only the benches. Furthermore, such an aggressive planting plan would not address visual contrast that would exist during construction of the overburden pile, particularly the dominant presence of construction equipment and activity.

Significance after Mitigation: Significant and Unavoidable.

Views of the proposed reclamation activities from Fremont Older Preserve would be substantially less perceptible than at RSA Preserve/Park. As seen in Figure 4.1-2c, Photo 11, from Coyote Ridge Trail the Project Area appears within the background zone, behind the Stevens Creek Quarry, a large transmission line, and intervening mountains. Mining activities currently are visible within the WMSA, and were visible under 2007 baseline conditions; as such, the presence of equipment and vehicles associated with construction activities would not represent a change above baseline conditions for this viewshed. Given the distance between Fremont Older Preserve and the Project Area, the Project would be subordinate to or co-dominant with other features in the viewshed, including the Stevens Creek Quarry, transmission towers, trees, and scenic topography. Reclamation activities would not block or obstruct scenic features within the Fremont Older Preserve, and the overall visual change perceived by preserve visitors would be low. Despite the high visual sensitivity of Coyote Ridge Trail, overall impacts to visitors of Fremont Older Park would be adverse but less than significant.

Impact 4.1-6: The implementation of active reclamation activities would alter, but not permanently substantially degrade, the existing visual character or quality of the Project Area. *(Less than Significant Impact)*

The scenic character of Project Area itself ranges from industrial within the site to distinct in the surrounding buffer areas. Figure 4.1-6c portrays the Project Area during the monitoring and maintenance period, 20 years after completion of Phase 3, from the perspective of a motorist on Stevens Creek Boulevard; Figure 4.1-7c shows the Project Area during the monitoring and maintenance period, 20 years after completion of active reclamation activities, from the perspective of a hiker on the Hammond-Snyder Loop Trail in the RSA Preserve. As shown in the simulations, and as is discussed above under Impact 4.1-4, implementation of the Project would remove industrial features within the viewshed and replace them with mature vegetated open space. Specifically, the existing contours of the benches and slopes of the excavation would be transformed to a downward-sloping hillside generally consistent with the surrounding natural topography. Patches of exposed rock partially covered with grey stockpiles of overburden deposits would be graded and replanted with native vegetation and oak woodland habitats to make the Project Area visually consistent with the surrounding vegetation and topography. The end result would be largely natural and scenic, and the scenic views of the foothills would appear relatively undisturbed.

The change in the Project Area would be seen and begin to attract attention from public viewers, resulting in a weak to moderate visual contrast. The Project would substantially diminish the dominance of the Project Area within the visual landscape, by removing industrial features incongruent with surrounding scenic hillsides, and ensuring that the site would visually blend with the surrounding natural landscape. The overall degree of visual change would be moderate, and beneficial; as such, overall impacts to the visual character of quality of the Project Area itself would be less than significant. When viewed from major roadways in the vicinity of the Project, such as Stevens Creek Boulevard, the overall degree of visual change would be moderate and beneficial. Given the moderate visual sensitivity of Stevens Creek Boulevard, and the low to moderate visual sensitivity of De Anza Boulevard, impacts from these and other major roadways would not be significant. For recreational areas, the visual change also would be moderate and beneficial. Even for viewers in the RSA Preserve/Park, despite the fact that the raised height of the EMSA could partially obscure some views of scenic ridgeline, particularly from the PG&E Trail, overall the Project would eliminate industrial features in an otherwise distinct viewshed. As shown in Figure 4.1-7c, the increased height of the EMSA would effectively screen many Cement Plant components, improving the visual quality and character of the site. Given the moderate and beneficial visual change, overall impacts to recreational areas would be less than significant.

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d) Would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Impact 4.1-7: Lighting required for the Project would not adversely affect daytime or nighttime views in the Project Area. ***(Less than Significant Impact with Mitigation Incorporated)***

As discussed in Chapter 2, *Project Description*, the hours of operation and intensity of existing operations is not expected to change during Project implementation, compared to baseline conditions. Surface mining activities currently may take place in the Project Area 24 hours per day, 365 days per year, although actual operating days and hours vary depending on market conditions and the level of production. Most of the work occurs in 8-hour shifts, with shift hours from 6:00 a.m. to 2:30 p.m., and from 2:30 p.m. to 12:00 midnight.

Currently there are no mineral extraction activities taking place in the EMSA; as such, there is no lighting at night in this portion of the Project Area. Because implementation of the Project could take place any time of day, including after dark, any night lighting used in the EMSA would represent an increase above existing night lighting conditions, causing a potentially significant adverse impact to nighttime views from public locations in the study area. With implementation of Mitigation Measure 4.1-5, the Project would not result in new, more frequent, or more intensive daytime or nighttime operations within the Project Area during the active reclamation period, and would not, therefore, result in a substantial new source of light or glare.

> **Mitigation Measure 4.1-7:** No night lighting shall be allowed permitted on the east-facing slope of the EMSA or any other location within the EMSA that would be visible from public locations on the Santa Clara Valley floor including roadways.

Significance after Mitigation: Less than Significant.

Impact 4.1-8: The Project would not create new permanent sources of light or glare that would affect daytime or nighttime views in the area. ***(Less than Significant Impact)***

As discussed in Section 4.1.1.2, the Project Area contains five 5,000-watt light plants. Night lighting currently is used within the Rock Plant and at strategic locations as necessary for work in progress. All existing lighting within the Project Area would be removed at the completion of Phase 3. Therefore, monitoring and maintenance of the Project would result in a reduction of lighting and glare in the Project Area, and impacts therefore would be less than significant.

4.1.6 Alternatives

4.1.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be similar to the Project. Like the Project, Alternative 1 would not conflict with applicable General Plan policies or Zoning Ordinance provisions (No Impact). Alternative 1 would differ from the Project in that overburden materials stored in the EMSA would be back filled into the Quarry pit upon the conclusion of mineral extraction activities. Specifically, approximately 4.8 million cubic yards of overburden stored in the EMSA would be returned to the Quarry pit during reclamation Phase 2. The resulting changes in the contours of the EMSA would be perceptible from scenic vistas, scenic roadways, major roadways, and other locations throughout the Santa Clara Valley floor. Specifically, removing the EMSA would eliminate the screening of views of the industrial uses occurring at the Cement Plant. This removal would result in greater active reclamation-period (short-term) and monitoring and maintenance period (long-term) impacts to the Anza Knoll scenic vista, which were significant and unavoidable and less than significant, respectively, for the Project. Alternative 1 would also result in greater short-term and long-term impacts to motorists on scenic roadways, which were significant and unavoidable and less than significant, respectively, for the Project. Furthermore, Alternative 1 would result in greater short-term and long-term impacts pertaining to the alteration and degradation of the existing visual character or quality of the Project Area, as perceived by nearby recreational users of the RSA Preserve/Park. These impacts were significant and unavoidable and less than significant, respectively, for the Project. With implementation of Mitigation Measure 4.1-5, Alternative 1 would have the same impacts as the Project pertaining to construction lighting (less than significant). Overall, implementation of Alternative 1 would be less environmentally advantageous than the Project relative to aesthetics, visual quality, and light and glare.

4.1.6.2 Alternative 2: Central Materials Storage Area Alternative

Reclamation activities associated with Alternative 2 would be similar to the Project. Like the Project, Alternative 2 would not conflict with applicable General Plan policies or Zoning Ordinance provisions (No Impact). Alternative 2 would differ from the Project in that the reclamation of the eastern and central portions of the EMSA would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored in an area farther removed from RSA Park/Preserve. Because reclamation of the EMSA would begin immediately upon reclamation plan amendment approval, short-term visual impacts as perceived from scenic vistas, scenic roadways, major roadways, and other locations throughout the Santa Clara Valley floor would be less than under the Project (which were significant and unavoidable). However, long-term impacts to visual resources would be greater than under the Project because the EMSA would be shorter than under the Project, and, consequently, less effective in screening views of the industrial uses occurring at the Cement Plant. As such, Alternative 2 would result in greater long-term impacts to the Anza Knoll scenic vista and greater long-term impacts to motorists on scenic roadways, which were each less than significant for the Project. Furthermore, Alternative 2 would result in less short-term and but greater long-term impacts pertaining to the alteration and degradation of the existing visual character or quality of the Project Area, as perceived by nearby recreational users of the RSA Preserve/Park. These impacts were significant and unavoidable and less than significant, respectively, for the Project. With implementation of Mitigation Measure 4.1-5, Alternative 2 would have the same impacts as the Project pertaining to construction lighting (less than significant). Overall, implementation of Alternative 2 would be less environmentally advantageous than the Project relative to aesthetics, visual quality, and light and glare.

4.1.6.3 No Project Alternative

Reclamation activities associated with the No Project Alternative would be similar to the Project, but 7 years later than under the Project. Like the Project, the No Project Alternative would not conflict with applicable General Plan policies or Zoning Ordinance provisions (No Impact). The No Project Alternative would differ from the Project in that overburden would not continue to be stored in the EMSA; as such, the final contours of the EMSA under the No Project Alternative would be lower than under the Project, and consequently less effective in screening views of the industrial uses occurring at the Cement Plant. Short-term visual impacts as perceived from scenic vistas, scenic roadways, major roadways, and other locations throughout the Santa Clara Valley floor would be similar to the Project (which were significant and unavoidable). However, long-term impacts to visual resources would be greater than under the Project, because the industrial uses occurring at the Cement Plant would be more visible to the public. As such, the No Project Alternative would result in greater long-term impacts to the Anza Knoll scenic vista and greater long-term impacts to motorists on scenic roadways, which were each less than significant for the Project. Furthermore, the No Project Alternative would result in less short-term and but greater long-term impacts pertaining to the alteration and degradation of the existing visual character or quality of the Project Area, as perceived by nearby recreational users of the RSA Preserve/Park. These impacts were significant and unavoidable and less than significant, respectively, for the Project. With implementation of Mitigation Measure 4.1-5, the No Project Alternative would have the same impacts as the Project pertaining to construction lighting (less than significant).

Overall, implementation of the No Project Alternative would be less environmentally advantageous than the Project relative to aesthetics, visual quality, and light and glare.

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4.2 Agriculture and Forestry Resources

This section describes the agricultural and forestry resources that could be affected by the Project and alternatives, as well as the associated regulatory framework. The impact analysis presents the significance criteria used to evaluate impacts on identified resources as a consequence of implementing the Project or alternatives, the methods used in evaluating these impacts, and the results of the impact assessment based on the applied significance criteria.

4.2.1 Setting

4.2.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.2.1 provides setting information specific to agriculture and forestry resources.

Agriculture used to be the predominant economic enterprise in the County, and the valley areas of South County, especially south and east of Gilroy, continue to be an important source of cut flowers, vegetables and grains, fruits, nuts, berries, and other crops (County of Santa Clara, 1994). Although industrialized uses rather than agricultural ones now dominate the region's economy, approximately 56 percent of the unincorporated area of the County remains subject to agreements called "Williamson Act contracts" that have been entered into pursuant to the California Land Conservation Act of 1965 (County of Santa Clara, 2011). Between 2000 and 2001, approximately 2,450 acres of privately-owned lands in the County were classified as Timberland Production Zone (TPZ) (Department of Forestry and Fire Protection, 2002). Between 2000 and 2009, an average of approximately 0.6 percent (43,223 acres) of the County's timberland was harvested each year (Department of Forestry and Fire Protection, 2010).

None of the Project area is zoned as forest land, timberland, or Timberland Production.

Consistent with the County General Plan's designation of Hillsides and Other Public Open Lands, certain parcels within the Project Area are zoned for agricultural use (A-d1) (see Figure 4.11-1, *County Zoning Designations*). Nonetheless, there are no areas of agricultural use within the Project Area; no soils within the Project Area are classified as prime farmland according to the California Department of Conservation pursuant to the Farmland Mapping and Monitoring Program (FMMP) (California Department of Conservation, 2009a) or the U.S. Department of Agriculture, Soil Conservation Service report, *Soils of Santa Clara County* (USDA, 1968) or the Western Santa Clara County soil survey (USDA, 2011); and the Project Area is not subject to a Williamson Act contract. The FMMP classifies lands within the Project Area as Other Land, which is a nonagricultural classification that is described in greater detail below. The soil characteristics of the Project Area also are described below.

4.2.1.2 Regulatory Setting

State of California

California Important Farmland Inventory System and Farmland Mapping and Monitoring Program

The California Department of Conservation (DOC), under the Division of Land Resource Protection, has established the Farmland Mapping and Monitoring Program (FMMP). The FMMP monitors the conversion of the state's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use (California Department of Conservation, 2009a).

The suitability of the local soil resources plays a crucial part in the FMMP's farmland classifications. The FMMP uses the U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS) soil survey information, land inventory and monitoring criteria to classify most of the state's agricultural regions into five agricultural and three nonagricultural land types. Every 2 years, the FMMP publishes this information in its Important Farmland map series.

The five agricultural land classifications ("Farmland") include Prime Farmland, which consists of the land best able to sustain long-term crop production; Farmland of Statewide Importance, which are lands with similar land use, irrigation system and physical characteristics as prime farmland but with minor shortcomings such as steeper soils; Unique Farmland, which consists of lands with lesser quality soils but that are used to produce California's leading agricultural cash crops; Farmland of Local Importance, which are designated by individual counties; and Grazing Land, which consists of lands most suited for livestock grazing.

The three nonagricultural lands are classified as: Urban and Built-Up lands, which are occupied by structures with a building density of at least 1 unit to 1.5 acres; Water, including perennial water bodies greater than 40 acres; and Other Land. The Other Land classification includes all lands that are not included in one of the other mapping categories, such as low density rural developments, brush, timber, wetland and riparian areas not suitable for livestock grazing, and vacant and non-agricultural land greater than 40 acres and surrounded on all sides by urban development. Mining uses and borrow pits are classified under the FMMP as Other Lands.

The FMMP is an informational service only and does not constitute state regulation of local land use decisions. Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact. The FMMP classifications for lands within the County are presented in **Table 4.2-1**.

No portion of the Project Area or the site is classified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland under the FMMP. The Project Area is classified as Other Land. The nearest Farmland is located south of the Project Area, along the Monte Bello Ridge and near the Stevens Creek County Park (California Department of Conservation, 2009b).

TABLE 4.2-1
SANTA CLARA COUNTY SUMMARY BY LAND USE CATEGORY

FMMP Land Classification Category	Total Acreage
Important Farmland	
Prime Farmland	18,807
Farmland of Statewide Importance	4,030
Unique Farmland	2,488
Farmland of Local Importance	5,968
Total Important Farmland	31,293
Grazing Land	390,090
Agricultural Land Total	421,383
Urban and Built-Up Land	188,883
Other Land	216,505
Water	8,458
Total Area Inventoried	**835,229**

SOURCE: Department of Conservation, 2009a

California Land Conservation Act of 1965 (Williamson Act)

The Williamson Act (Government Code §51200 et seq.) authorizes local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in exchange for beneficial tax treatment. Its intent is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to the potential market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971 (Government Code §16140 et seq.). The vehicle for these agreements is a rolling term 10 year contract: unless either party files a "notice of nonrenewal," the contract automatically is renewed annually for an additional year. Williamson Act contracts are a tool often used by local governments to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Project Area is not subject to a Williamson Act contract.

California Public Resource Code

The California Public Resources Code governs forestry, forests, and forest resources, as well as range and forage lands, within the state. "Forest land" is defined by Public Resources Code §12220(g) as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Similarly, "timberland" is defined by Public Resources Code §4526 as, "land, other than land owned by the federal government..., which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."

The California Public Resources Code also includes the Surface Mining and Reclamation Act of 1975 (SMARA). The regulations implementing SMARA provide standards for the reclamation of mined lands (14 Cal. Code Regs. §§3700-3713). Among these, §3708 requires that non-prime agricultural lands be reclaimed so as to be capable of sustaining economically viable production of crops commonly grown in the surrounding areas (14 Cal. Code Regs. §3708).

California Government Code

Chapter 6.7 of the California Government Code (§§51100-51155) regulates timberlands within the state. “Timberland production zone” is defined in §51104(g) as an area that has been zoned pursuant to Government Code §51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. In this context, “compatible uses” include any use that “does not significantly detract from the use of the property for, or inhibit, growing and harvesting timber” (Government Code §51104(h)). Watershed management, grazing, and the erection, construction, alteration, or maintenance of electric transmission facilities are examples of compatible uses.

County of Santa Clara

General Plan

The Resource Conservation Chapter of the County General Plan addresses agriculture and agricultural resources (County of Santa Clara, 1994). It recognizes the importance of agricultural uses, products, and jobs to the region’s economy, identifies agricultural preservation as a challenge, and outlines proactive strategies and policies to preserve agricultural lands and the rural character of agricultural areas in the County. However, none of these strategies or policies is applicable to the Project, the implementation of which would result in the final reclamation of lands that have been or will be subject to surface mining operations over the next approximately 20 years. Accordingly, the General Plan’s agriculture and agricultural resource-related strategies and policies are not summarized here. Implementation of the Project would be consistent with these policies.

Zoning Ordinance

The County Zoning Ordinance was adopted in 1937, substantially revised in 2003, and last updated in November 2011. The County Zoning Ordinance implements the County General Plan and manages the future growth of the unincorporated areas within the County in accordance with that plan.

As noted in the Chapter 4.11, *Land Use and Planning*, several parcels within the Project Area are designated as *Exclusive Agricultural* (A-d1) in the County Zoning Ordinance (see Figure 4.11-1, *County Zoning Designations*). The “A” zoning designation aims to preserve the long-term viability of agriculture and agricultural lands, and its intent is to reserve lands most suitable for agricultural production for agricultural and appropriate related uses. This district is also intended to retain lands as open space uses which may be suitable for future urbanization until such time as they are included within a city’s urban service area and public facilities and services can be economically provided, consistent with community plans and objectives.

Williamson Act Ordinance

The County's Williamson Act Ordinance is set forth in Division C13 of the County Code. Its provisions set forth the requirements for County agricultural preserves and contracts pursuant to the Williamson Act.

4.2.2 Baseline

The baseline for purposes of analyzing potential impacts to agriculture and forestry resources is June 2007. Neither the FMMP classification as "Other Lands" nor the agricultural zoning designation has changed in the Project Area since June 2007. Similarly, the Project Area was not in June 2007 and is not now subject to a Williamson Act contract.

4.2.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact related to agriculture and forestry resources if it would:

a) Convert 10 or more acres of farmland classified as prime in the report *Soils of Santa Clara County* to non-agricultural use;

b) Conflict with existing zoning for agricultural use;

c) Conflict with an existing Williamson Act Contract or the County's Williamson Act Ordinance (§C13 of County Ordinance Code);

d) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g));

e) Result in the loss of forest land or conversion of forest land to non-forest use; or

f) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

4.2.4 Discussion of Criteria with No Impact to Agriculture and Forestry Resources

As explained below, the Project would have no impact related to the conversion of prime farmland, forest land, or timberland; or conflicts with agricultural zoning, forest land or timberland zoning, or Williamson Act contracted lands.

a) The Project would not convert 10 or more acres of farmland classified as prime in the report *Soils of Santa Clara County* to non-agricultural use.

None of the lands in the Project Area are farmed, and the Project would not convert any farmland (much less 10 or more acres of farmland) to a non-agricultural use. The County updated its geographic information system (GIS) in October 2011 (Bazhaw, 2011). The new data replaces the outdated report prepared by the U.S. Department of Agriculture, Soil Conservation Service, entitled *Soils of Santa Clara County*, which had been published in 1968 (USDA, 1968; Bazhaw, 2011).

The *Soils of Santa Clara County* did not classify any acres in the Project Area as farmland or as "prime." Instead, it identified native soil types (map units) Countywide, including seven soil types in (and in the immediate vicinity of) the Project Area (USDA, 1968; WRA, 2011). The County's updated GIS information identifies the following nine soil types in (and in the immediate vicinity of) the Project Area. This is consistent with the conclusions of the *Custom Soil Resource Report* prepared by the County for the Project (USDA, 2011). As noted below, none of the nine soil type/ map units in the Project Area is classified as prime farmland. See **Figure 4.2-1**, *Soil Types in the Project Area.*

1. Pits, mine. This map unit includes the WMSA, Quarry pit, EMSA, Crusher/Support area, Surge Pile, Rock Plant, and portions of the PCRA. It is not prime farmland (CSRL, 2011a).

2. Merbeth-Literr complex, 30 to 65, percent slopes. This map unit includes a sliver of the Project Area just east of the Rock Plant. It is not prime farmland (CSRL, 2011b).

3. Airship-Minlum complex, 40 to 65 percent slopes. This map unit includes a portion of the Project Area along the northern side of the EMSA. It is not prime farmland (CSRL, 2011c).

4. Mouser-Maymen complex, 30 to 75 percent slopes. This map unit includes the buffer areas north of the WMSA and Quarry pit, the PCRA, the Exploration Area, and the area west of the Rock Plant. It is not prime farmland (CSRL, 2011d).

5. Katykat-Mouser-Sanikara complex, 30 to 50 percent slopes. This map unit includes a portion of that area north of the Crusher/Support area, northwest of the Quarry pit, and the northeastern edge of the EMSA. It is not prime farmland (CSRL, 2011e).

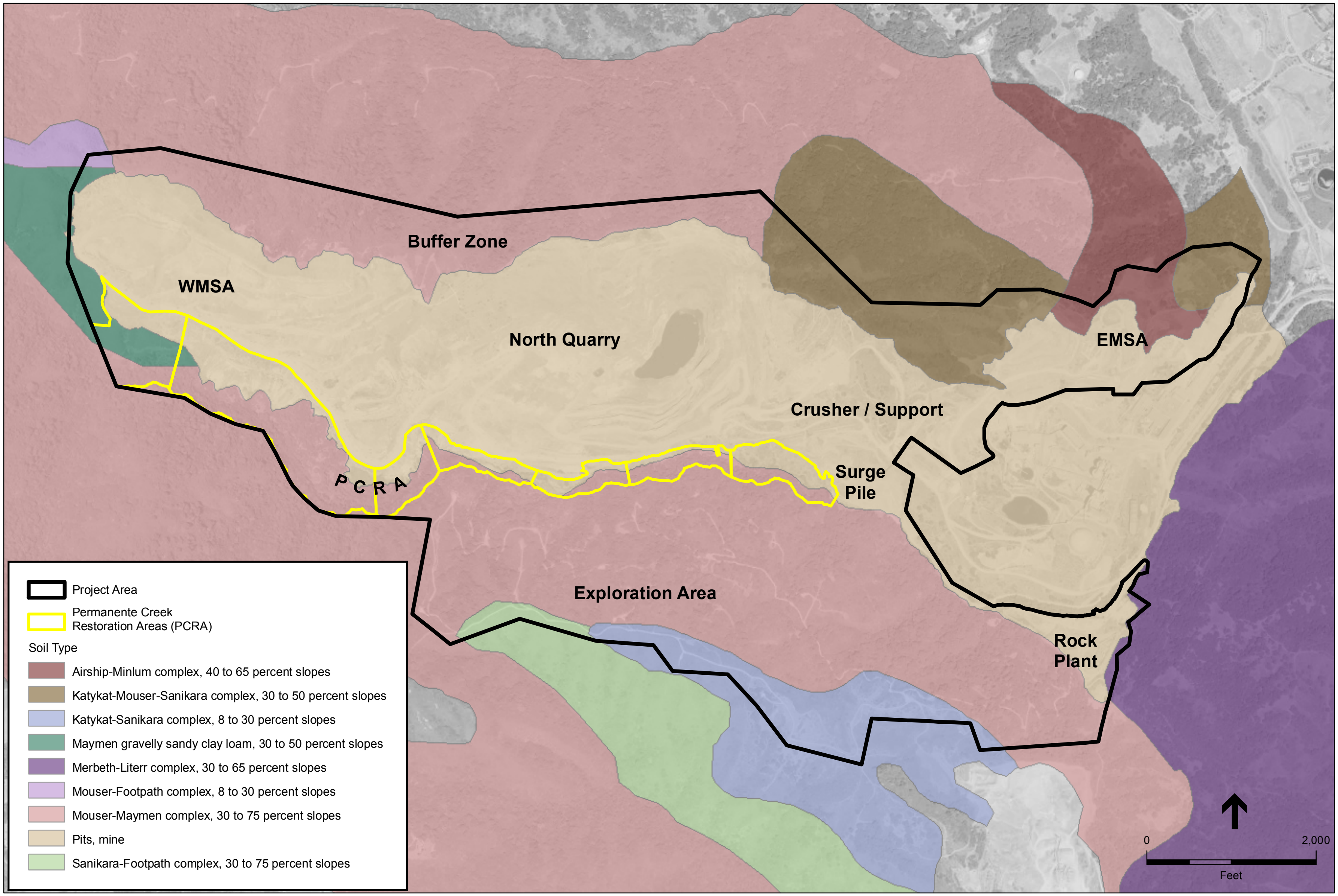
6. Katykat-Sanikara complex, 8 to 30 percent slopes. This map unit includes some of the Exploration Area. It is not prime farmland (CSRL, 2011f).

7. Mouser-Footpath complex, 8 to 30 percent slopes. This map unit includes a sliver of the buffer area in the north-westernmost corner of the buffer area, northwest of the WMSA. It is not prime farmland (CSRL, 2011g).

8. Sanikara-Footpath complex, 30 to 75 percent slopes. This map unit includes a narrow ribbon of land along the southern edge of the Exploration Area. It is not prime farmland (CSRL, 2011h).

9. Maymen gravelly sandy clay loam, 30 to 50 percent slopes. This map unit includes a crescent-shaped area to the northwest, west, and southwest of the EMSA. It is not prime farmland (CSRL, 2011i).

Because none of the soils in the Project Area are classified as prime farmland, the Project would cause no impact related to criterion a).



SOURCE: USDA, 2011

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Figure 4.2-1

Soil Types in the Project Area

b) The Project would not conflict with existing zoning for agricultural use.

As discussed above, several parcels within the Project Area are zoned *Exclusive Agriculture* (A-d1); however, there are no agricultural operations within the Project Area or on the site. No change in zoning is proposed by the Project. As described in Section 4.11, *Land Use*, the A-d1 zoning district applies to lands envisioned in the General Plan for agricultural and open space uses. The Project is designed to make the reclaimed lands suitable for future open space uses. Consequently, implementation of the Project would not conflict with existing zoning for agricultural use. The Project would cause no impact related to criterion b).

c) The Project would not conflict with an existing Williamson Act Contract or the County's Williamson Act Ordinance (§C13 of County Ordinance Code).

The Project Area is not subject to an existing Williamson Act contract. Therefore, the Project would not conflict with the provisions of an existing Williamson Act contract or the County's Williamson Act Ordinance. The Project would cause no impact related to criterion c).

d) The Project would not conflict with existing zoning for, or cause rezoning of forest land or timberland.

The Project Area is not zoned for forestland or timberland, and implementation of the proposed RPA would not cause rezoning of forestland or timberland elsewhere. The Project would cause no impact related to criterion d).

e) The Project would not result in the loss of forest land, or convert forest land to non-forest use.

As noted above, land that can support 10 percent native tree cover of any species under natural conditions and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits, constitutes "forestland" as defined by Public Resources Code §12220(g).

The Biological Resources Assessment prepared by WRA Environmental Consultants for the Project identified the following as among the biological communities present on the site's 3,510 acres: 15.6 acres of buckeye woodland, 438.4 acres of California bay forest, 920.6 acres of oak woodlands and forests, 15 acres of white alder riparian forest, and 4.3 acres of willow riparian forest and scrub, in addition to and 1,050 acres of chaparral (WRA, 2011a). However, as shown in **Table 4.2-2**, *Forest-related Biological Communities in the Project Area*, tree cover is substantially reduced within the portion of the Project Area that has been disturbed by surface mining operations and would be reclaimed by the Project.

Because topsoil and other soils necessary to support growth have been removed as part of the surface mining process or otherwise are not present, the WMSA, Quarry pit, EMSA, crusher/support area, surge pile and rock plant could not support 10 percent native tree cover of any species. Consequently implementation of the Project would not result in the loss of forest land, or convert forest land to non-forest use, in these areas. No trees would be removed in the Exploration Area or PCRA as a result of the Project. Instead, reclamation of these areas would consist

TABLE 4.2-2
FOREST-RELATED BIOLOGICAL COMMUNITIES IN THE PROJECT AREA

Biological Community	Quarry Pit (acres)	WMSA (acres)	EMSA (acres)	Crusher/ Support (acres)	Surge Pile (acres)	Rock Plant (acres)	Exploration Area (acres)	PRCA (acres)
Buckeye Woodland	0	0	0	0	0	0	0	0
California Bay Forest	0.04	0	0	0	0	0	0	0.4
Oak Woodlands, Forests	2.8	0.3	0	0	0.01	0.3	0	1.0
White Alder Riparian Forest	0	0	0	0	0	0	0	1.4
Willow Riparian Forest and Scrub	0	0	0	0	0	0	0	1.6
Chamise Chaparral	2.4	3.4	0	0	0	0	0	3.3
Northern Mixed Chaparral	3.1	0.02	0	0	0	0.4	0	0.2
Oak Chaparral	0	0.1	0	0	0	0	0	0
Total	**8.34**	**3.82**	**0**	**0**	**0.01**	**0.7**	**0**	**7.9**

SOURCE: WRA, 2011 (Table 2)

primarily of revegetation efforts, maintenance of revegetated areas, and continued monitoring until reclamation standards are met. Because no trees would be removed, implementation of the Project would not result in the loss of forest land, or convert forest land to non-forest use, in these areas regardless of whether these areas could, under natural conditions, support 10 percent native tree cover of any species. Finally, the proposed set aside of undisturbed acreage would be accomplished by mapping, and would not require or involve tree removal of any sort.

For these reasons, implementation of the Project would not result in the loss of forestland or the conversion of forestland to any non-forest use, and so would cause no impact related to criterion e).

f) The Project would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

There is no active farmland in the Project Area or adjacent parcels. As discussed above, the Project would increase open space, including forestland, and would not convert forestland to non-forest use. The proposed reclamation of lands in the Project Area that have been or will be affected by surface mining operations is intended to make the reclaimed lands suitable for future open space uses. The slope stabilization, revegetation, and other reclamation-related activities could not result in the conversion of farmland or forestland. The Project would cause no impact related to criterion f).

4.2.5 Impacts and Mitigation Measures

Because implementation of the Project would cause no impact on agriculture or forestry resources, there are no impacts and no mitigation measures to be discussed in this section.

4.2.6 Alternatives

4.2.6.1 Alternative 1: Complete Backfill Alternative

Alternative 1 would have no impact related to the conversion of prime farmland, forest land, or timberland; neither would it conflict with agricultural zoning, forest land or timberland zoning, or with Williamson Act contracted lands. None of the lands that would be affected by Alternative 1 is farmed, none is designated “prime” farmland, and no farmland would be converted to a non-agricultural use as a result of the implementation of Alternative 1. None of the lands that would be affected by the implementation of Alternative 1 is zoned for forest land or timberland, and implementation of this alternative would not cause rezoning of forest land or timberland elsewhere. No zoning change would be required to implement Alternative 1. The uses that would result from its adoption would not conflict with existing zoning. The area that would be affected by Alternative 1, like the rest of the site, is not subject to an existing Williamson Act contract. As shown in Table 4.2-2, there are no forest-related biological communities present in the EMSA, and backfilling the Quarry pit with materials from the EMSA would not cause any greater impact on such communities. For the same reasons described in the analysis of Project impacts, Alternative 1 would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Consequently, the implementation of Alternative 1 would have the same impact (no impact) as implementation of the Project.

4.2.6.2 Alternative 2: Central Materials Storage Area Alternative

Alternative 2 would have no impact related to the conversion of prime farmland, forest land, or timberland; neither would it conflict with agricultural zoning, forest land or timberland zoning, or with Williamson Act contracted lands. None of the lands that would be affected by Alternative 2 is farmed, none is designated “prime” farmland, and no farmland would be converted to a non-agricultural use as a result of the implementation of Alternative 2. None of the lands that would be affected by the implementation of this alternative is zoned for forestland or timberland, and its implementation would not cause rezoning of forestland or timberland elsewhere. No zoning change would be required. The uses that would result from the adoption of Alternative 2 would not conflict with existing zoning. The area that would be affected by Alternative 2, like the rest of the site, is not subject to an existing Williamson Act contract. For the same reasons described in the analysis of Project impacts, Alternative 2 would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use.

The impacts of implementing Alternative 2 would differ from those of implementing the Project in one respect. As shown in Figure 3d of the Biological Resources Assessment prepared on behalf of the Applicant for the Project (WRA, 2011), implementation of Alternative 2 would result in the stockpiling of overburden on currently undisturbed land identified with the following forest-related biological communities: chamise chaparral, northern mixed chaparral, and some oak woodlands and forest. Although the stockpiling of overburden could occur as a vested right, this mining activity could not be conducted in the CMSA unless the CMSA were included within an approved reclamation plan boundary. This analysis conservatively assumes that the inclusion of the CMSA within an approved reclamation plan boundary would convert land that can support 10 percent native tree cover of any species under natural conditions and that allows for management of one or more forest resources, including aesthetics and other public benefits, and so would convert forest land to a non-forest use. The Project would cause no corresponding impact.

Consequently, the implementation of Alternative 2 would cause the same impact as the Project to agriculture, and a greater impact to forestry resources than would be caused by implementation of the Project.

4.2.6.3 No Project Alternative

The No Project Alternative would cause no impact related to the conversion of prime farmland, forest land, or timberland; neither would it conflict with agricultural zoning, forest land or timberland zoning, or with Williamson Act contracted lands. None of the lands that would be affected by the No Project Alternative is farmed, none is designated “prime” farmland, and no farmland would be converted to a non-agricultural use as a result of its implementation. None of the lands that would be affected by the implementation of the No Project Alternative is zoned for forest land or timberland, and implementation of this alternative would not cause rezoning of forest land or timberland elsewhere. No zoning change would be required to implement the No Project Alternative. The uses that would result from its adoption would not conflict with existing zoning. The area that would be affected by the No Project Alternative, like the rest of the site, is not subject to an existing Williamson Act contract. Implementation of the No Project Alternative would cause no greater impact to forest-related biological communities than the Project. For the same reasons described in the analysis of Project impacts, the No Project Alternative would not involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Consequently, the implementation of the No Project Alternative would have the same impact (no impact) as implementation of the Project.

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4.3 Air Quality

This section evaluates the potential impacts of the proposed Reclamation Plan Amendment (RPA or Project) on regional and local air quality from both stationary and mobile sources of air pollutant emissions. Development of this section was based on a review of existing documentation of air quality conditions in the region, air quality regulations from the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD), information related to the Project Description, and the analysis in the Ashworth Leininger Group (ALG) *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011a).

4.3.1 Setting

4.3.1.1 Environmental Setting

General Climate and Meteorology

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

The Quarry, including the Project Area, is located in an unincorporated area of the western foothills of Santa Clara County near the City of Cupertino, within the boundaries of the San Francisco Bay Area Air Basin (Bay Area Air Basin). The Bay Area Air Basin encompasses all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo and Santa Clara Counties, and the southern portions of Solano and Sonoma Counties.

The climate of the San Francisco Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the San Francisco Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants such as ozone.

More specifically, the Project Area is located in the Santa Clara Valley climatological subregion. As summarized by the BAAQMD in the *CEQA Air Quality Guidelines* (BAAQMD, 2011a), the Santa Clara Valley is bounded by the Bay to the north and by mountains to the east, south and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low-80s during the summer and the high-50s during the winter, and mean minimum temperatures range from the high-50s in the summer to the low-40's in the winter. Further inland, where the moderating effect of the Bay is not as strong, temperature extremes are greater. Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer the southern end of the valley sometimes becomes a "convergence zone," when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

Existing Air Quality – Criteria Air Pollutants

The BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants within the Bay Area. Existing levels of air pollutants in the Project Area can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearby monitoring stations. Notably, the Leigh Permanente Quarry and Cement Plant generate emissions that have raised concerns from the surrounding residents and public, and as such, the BAAQMD established a monitoring trailer at Monta Vista Park, near the intersection of South Foothill Boulevard and Voss Avenue, in September 2010 with the data posted on the BAAQMD website (BAAQMD, 2010a). To date, only "raw" unchecked data for this monitoring station are available on the BAAQMD website. However, the nearest permanent station in Santa Clara County to the Project Area is the Jackson Street station in San Jose, approximately 10 miles to the northeast. The Jackson Street station measures criteria pollutants, including ozone, PM10 ("inhalable" particulate matter, with a diameter of 10 microns or less), and PM2.5 ("respirable" particulate matter, with a diameter of 2.5 microns or less). **Table 4.3-1** shows a 4-year summary of monitoring data for ozone and particulates at the Jackson Street station. The table also compares these measured concentrations with state and federal ambient air quality standards.

Motor vehicle transportation, including automobiles, trucks, transit buses, and other modes of transportation, is the major contributor to regional air pollution. Stationary sources were once important contributors to both regional and local pollution, and remain significant contributors in other parts of the state and country. Their role has been substantially reduced in recent years by pollution control programs, such as those of the BAAQMD. Any further progress in air quality improvement now focuses heavily on transportation sources.

Existing Air Quality – Toxic Air Contaminants

The ambient background of toxic air contaminants (TACs) is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources. Both BAAQMD and CARB operate a network of monitoring stations that measure ambient concentrations of certain TACs that are associated with

TABLE 4.3-1
AIR QUALITY DATA SUMMARY (2007-2010) – JACKSON ST. STATION, SAN JOSE

Pollutant	Monitoring Data by Year			
	2007	2008	2009	2010
Ozone				
Highest 1 Hour Average (ppm)[b]	0.083	**0.118**	0.088	**0.126**
Days over State Standard (0.09 ppm)[a]	0	1	0	5
Highest 8 Hour Average (ppm)[b]	0.068	**0.080**	0.069	**0.086**
Days over National Standard (0.075 ppm)[a]	0	2	0	3
Days over State Standard (0.07 ppm)[a]	0	3	0	3
Inhalable Particulate Matter (PM10)				
Highest 24 Hour Average – State/National ($\mu g/m^3$)[b]	**69.1**/64.7	**57.3**/55.0	43.3/41.1	46.8/44.2
Estimated Days over National Standard (150 $\mu g/m^3$)[a,c]	0	0	0	0
Estimated Days over State Standard (50 $\mu g/m^3$)[a,c]	18.1	6.1	0	0
State Annual Average (State Standard 20 $\mu g/m^3$)[a,b]	**21.9**	**23.4**	20.3	19.5
Respirable Particulate Matter (PM2.5)				
Highest 24 Hour Average (μg/m3)[b] – National Measurement	**57.5**	**41.9**	35.0	**41.5**
Estimated Days over National Standard (35 $\mu g/m^3$)[a,c]	9.1	5.1	0	NA
State Annual Average (12 $\mu g/m^3$)[b]	11.0	11.5	10.1	9.0

[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[c] PM10 and PM2.5 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

NA = Not Available. Values in **Bold** exceed the respective air quality standard.

SOURCE: CARB, 2011a

strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. Ambient concentrations of TACs are similar throughout the urbanized areas of the Bay Area.

There is growing evidence that indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, the California Office of Environmental Health Hazard Assessment (OEHHA) issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from diesel PM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound).

Notably, the BAAQMD has prepared a health risk assessment for the Lehigh Southwest Cement Company precalciner kiln (BAAQMD, 2008), adjacent to the Project Area, and determined that the maximum cancer risk is 4.2 in a million and that the maximum chronic and acute hazard indexes are 0.26 and 0.13, respectively. These values are less than the BAAQMD thresholds of 10 in a million for cancer risk and 1.0 for acute and chronic health hazard indices. In March 2011, Lehigh submitted to the BAAQMD and OEHHA a draft revised health risk assessment for the cement plant. According to the BAAQMD, OEHHA had very little substantive comment on the draft report and they concluded that the HRA was prepared in accordance with the state's guidance (BAAQMD, 2011c). The BAAQMD intends to post the HRA, OEHHA's comment letter, the BAAQMD assessment memo, and an errata sheet on the BAAQMD website, although those files were not available at the time of this analysis. According to the 2011 draft report, for the 2013 production scenario, the maximum cancer risk from the cement plant would be 7.0 in a million and the maximum chronic and acute hazard indexes would be 0.078 and 0.025, respectively. These values are less than the BAAQMD thresholds of 10 in a million for cancer risk and 1.0 for acute and chronic health hazard indices (Lehigh, 2011).

In addition, the U.S. EPA conducted outdoor air monitoring at the Stevens Creek Elementary School (located approximately 1.5 miles east-northeast of the cement plant) from June through September 2009 to assess hexavalent chromium level exposure from the cement plant. The U.S. EPA determined that levels of hexavalent chromium at the school were below levels of concern for short-term and long-term exposure during the monitoring period (U.S. EPA, 2010). The BAAQMD has continued monitoring at the school to collect a full year of data pursuant to the BAAQMD's monitoring policy.

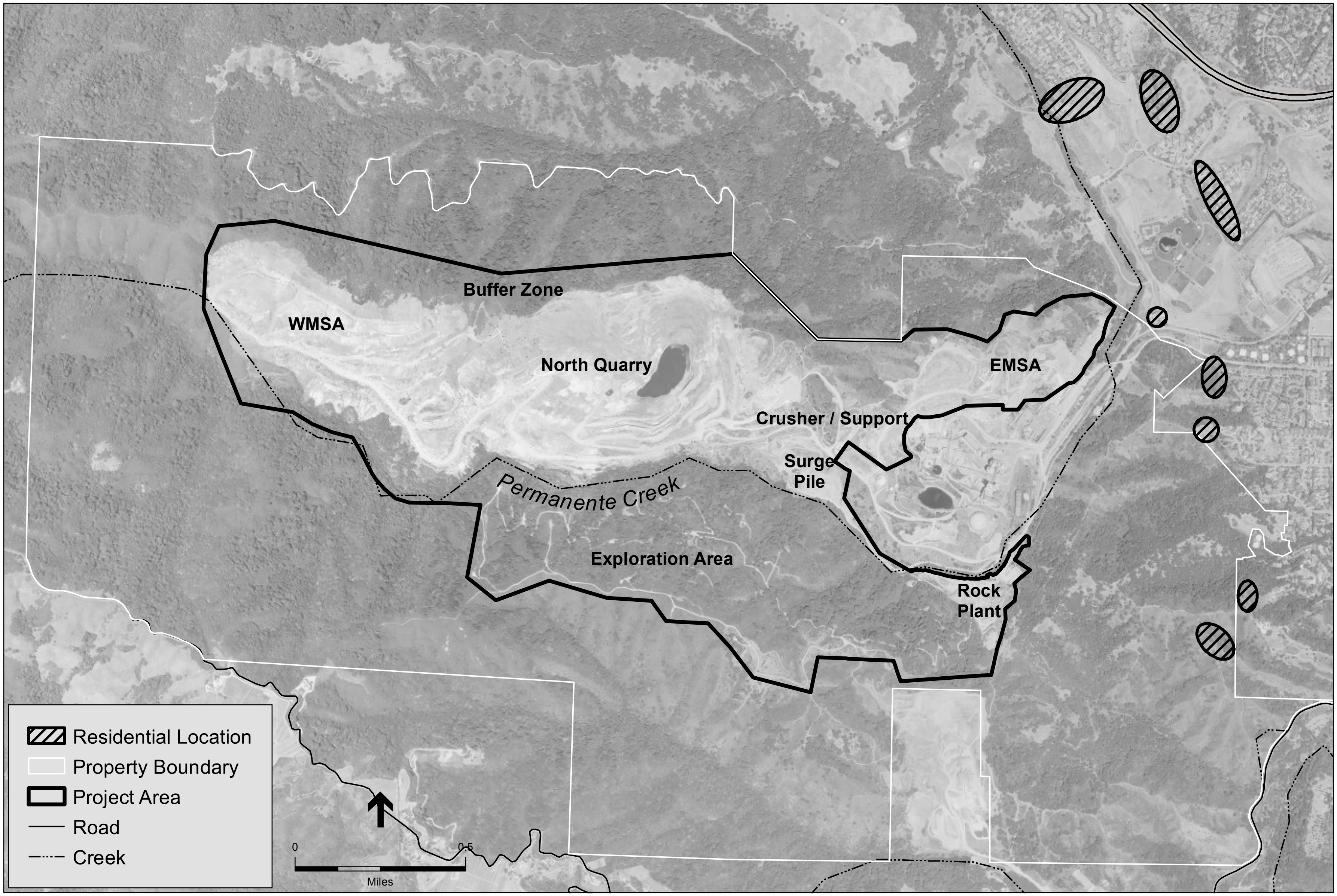
Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

Sensitive land uses in the immediate vicinity of the Project are residential dwellings. The closest residence is a caretaker's residence, associated with the Historical Society, located approximately 700 feet east of the East Materials Storage Area (EMSA), on the north side of Permanente Road. The next closest residences are approximately 2,000 feet to the east, south of Permanente Road. Sensitive land uses close to the Project Area are shown in **Figure 4.3-1**.

4.3.1.2 Regulatory Setting

Established federal, state, and regional regulations provide the framework for analyzing and controlling air pollutant emissions and thus general air quality. The U.S. EPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the federal ambient air quality standards and judging the adequacy of State Implementation Plans (SIPs), described further below. However, the U.S. EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure



SOURCE: SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment . 211742

Figure 4.3-1
Residential Receptor Locations

that the programs continue to be implemented. In California, the CARB is responsible for establishing and reviewing the state ambient air quality standards, developing and managing the California SIP, securing approval of this plan from the U.S. EPA, and identifying TACs. CARB also regulates mobile emissions sources in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality management districts, which are organized at the county or regional level. An air quality management district is primarily responsible for regulating stationary emissions sources at facilities within its geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and 1988 California Clean Air Act. The BAAQMD is the regional agency with regulatory authority over emission sources in the nine county San Francisco Bay Area.

The regulatory settings for the following classes of air pollutants: criteria pollutants, odiferous compounds, and TACs are discussed below.

Regulatory Setting for Criteria Pollutants

As required by the federal Clean Air Act passed in 1970, the U.S. EPA has identified six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. EPA calls these pollutants criteria air pollutants because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead are the six criteria air pollutants.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving volatile organic compounds (VOCs, also called reactive organic gases (ROG)), such as xylene, and nitrogen oxides (NO_x), such as nitric oxide. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Ground level ozone in conjunction with suspended particulate matter in the atmosphere leads to hazy conditions generally termed as “smog.”

Nitrogen Dioxide

Nitrogen dioxide is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen dioxide is produced by fuel combustion in motor vehicles, industrial stationary sources (such as oil refineries), ships, aircraft, and rail transit.

Sulfur Dioxide

Sulfur dioxide is a combustion product of sulfur or sulfur-containing fuels such as coal and oil, which are restricted in the Bay Area. Its health effects include breathing problems and may cause permanent damage to lungs. Sulfur dioxide is an ingredient in acid rain (acid aerosols), which can damage trees, lakes and property. Acid aerosols can also reduce visibility.

Particulate Matter

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. A micron is one-millionth of a meter, or less than one-25,000th of an inch. For comparison, human hair is 50 microns or larger in diameter. PM10 and PM2.5 represent particulate matter of sizes that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of aerosol-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles (PM2.5) of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies conducted since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope 2006). The CARB has estimated that achieving the ambient air quality standards for PM10 could reduce premature mortality rates by 6,500 cases per year (CARB, 2002).

Lead

Leaded gasoline (currently phased out), paint (houses, cars), smelters (metal refineries), manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects; children are at special risk. Some lead-containing chemicals cause cancer in animals.

Carbon Monoxide

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. 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 for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs and most areas of the state, including the Project region, have no problem meeting the CO state and federal standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, fewer emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the CARB *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

> The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard.

Ambient Air Quality Standards

Regulation of criteria air pollutants is achieved through both national and state ambient air quality standards and emissions limits for individual sources. Regulations implementing the federal Clean Air Act and its subsequent amendments established national ambient air quality standards (national standards) for the six criteria pollutants. California has adopted more stringent state ambient air quality standards for most of the criteria air pollutants. In addition, California has established state ambient air quality standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Because of the meteorological conditions in the state, there is considerable difference between state and federal standards in California, as shown in **Table 4.3-2**. The table also summarizes the related health effects and principal sources for each pollutant.

The ambient air quality standards are intended to protect the public health and welfare, and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, elderly, people weak from other illness or disease, or persons engaged in strenuous

TABLE 4.3-2
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.075 ppm	Non-Attainment	Formed when ROG and NO_x react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9 ppm	Attainment	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.18 ppm	Attainment	0.100 ppm	Unclassified	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	0.075 ppm	Attainment	
Respirable Particulate Matter (PM10)	Annual Arithmetic Mean	20 $\mu g/m^3$	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 $\mu g/m^3$	Non-Attainment	150 $\mu g/m^3$	Unclassified	
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 $\mu g/m^3$	Non-Attainment	15 $\mu g/m^3$	Attainment	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NO_x, sulfur oxides, and organics.
	24 hour	---	---	35 $\mu g/m^3$	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 $\mu g/m^3$	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 $\mu g/m^3$	Attainment	---	---	
	3-month Rolling Average	---	---	0.15 $\mu g/m^3$	Unclassified	
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	No Federal Standard	---	Geothermal Power Plants, Petroleum Production and refining
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	Unclassified	No Federal Standard	---	See PM2.5.

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

SOURCE: BAAQMD, 2011b; CARB, 2009

work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

Attainment Status

Under amendments to the federal Clean Air Act, U.S. EPA has classified air basins or portions thereof, as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. The California Clean Air Act, which is patterned after the federal Clean Air Act, also requires areas to be designated as "attainment" or "non-attainment" for the state standards. Thus, areas in California have two sets of attainment / non-attainment designations: one set with respect to the national standards and one set with respect to the state standards.

Table 4.3-2 shows the attainment status of the Bay Area with respect to the national and state ambient air quality standards for different criteria pollutants.

Air Quality Plans

The 1977 Clean Air Act amendments require that regional planning and air pollution control agencies prepare a regional Air Quality Plan to outline the measures by which both stationary and mobile sources of pollutants can be controlled in order to achieve all standards specified in the Clean Air Act. The California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as State Implementation Plans.

For state air quality planning purposes, the Bay Area is classified as a serious non-attainment area for the 1-hour ozone standard. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area update the Clean Air Plan every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area's record of progress in implementing previous measures must also be reviewed. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan - the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010b). The *Bay Area 2010 Clean Air Plan* serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and

- Establish emission control measures to be adopted or implemented in the 2010 – 2012 timeframe.

Bay Area Air Quality Management District Rules and Regulations

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various activities, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants, but also toxic emissions and acutely hazardous non-radioactive materials emissions.

Emissions sources subject to these rules are regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of a project would be subject to the BAAQMD *Rules and Regulations*. Both federal and state ozone plans rely upon stationary source control measures set forth in BAAQMD's *Rules and Regulations.*

Regulatory Setting for Odors and Nuisances

Though offensive odors from stationary sources rarely cause any physical harm, they remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. The BAAQMD's CEQA Guidelines recommends that odor impacts be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

Regulatory Setting for Toxic Air Contaminants (TACs)

TACs are regulated under both state and federal laws. Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds that are referred to as TACs under state law. Both terms encompass essentially the same compounds. Under the 1990 Clean Air Act Amendments, 189 substances are regulated as HAPs.

With respect to state law, in 1983 the California legislature adopted Assembly Bill 1807 (AB 1807), which establishes a process for identifying TACs and provides the authority for developing retrofit air toxics control measures on a statewide basis. Air toxics in California also may be regulated because of another state law, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, or Assembly Bill 2588 (AB 2588). Under AB 2588, TACs from individual facilities must be quantified and reported to the local air pollution control agency. The facilities then are prioritized by the local agencies based on the quantity and toxicity of these emissions, and on their proximity to areas where the public may be exposed. In establishing priorities, the air districts are to consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the air district determines may indicate that the facility may pose a significant risk. High priority facilities are required to perform a Health Risk Screening Assessment (HRSA), and, if specific risk thresholds are exceeded, they are required to communicate the results to the public in the form of notices and public meetings. Depending on the health risk levels, emitting facilities can be required to implement varying levels of risk reduction measures. CARB identified approximately 200 TACs, including the 189 federal HAPs, under AB 2588.

BAAQMD is responsible for administering federal and state regulations related to TACs. Under federal law, these regulations include National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Maximum Achievable Control Technology (MACT) for affected sources. BAAQMD also administers the state regulations AB1807 and AB2588 which were discussed above. In addition, the agency requires that new or modified facilities that emit TACs perform air toxics screening analyses as part of the permit application. TAC emissions from new and modified sources are limited through the air toxics new source review program, which superseded the BAAQMD Risk Management Policy, in BAAQMD Regulation 2, Rule 5 for New Source Review of Toxic Air Contaminants. Sources must use the Best Available Control Technology for Toxics (T-BACT) if an individual source cancer risk of greater than 1 in a million, or a chronic hazard index greater than 0.20, is identified in health risk modeling.

Specific TAC regulations and considerations that apply to the Project are described below.

Diesel Exhaust Control Program

In August of 1998, the CARB identified particulate emissions from diesel-fueled engines [diesel particulate matter (DPM)] as TACs. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* and the *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (CARB, 2000). The CARB goal is to reduce DPM emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020.

Also in 2000, the EPA promulgated regulations (U.S. EPA, 2001) requiring that the sulfur content in motor on-road vehicle diesel fuel be reduced to less than 15 ppm as of June 1, 2006. The EPA also finalized a comprehensive national emissions control program, the 2007 Heavy-duty Highway Diesel Program (also known as the HD 2007 Program), which regulates highway heavy-duty vehicles and diesel fuel as a single system. Under the HD 2007 program, the EPA established new emission standards that would significantly reduce PM and NO_x from highway heavy-duty vehicles by the time the current heavy-duty vehicle fleet has been completely replaced in 2030.

The EPA also promulgated new emission standards for nonroad diesel engines and sulfur reductions in nonroad diesel fuel that would dramatically reduce emissions attributed to nonroad diesel engines. Similar standards have been established by CARB, although more stringent. This affects emissions from construction equipment, locomotives, and marine diesels. The general objective is to reduce DPM emissions to levels of below 0.01 grams per brake horsepower-hour (g/bhp-hr) beginning with 2007 model year engines.

Asbestos Air Toxic Control Measure

In 2002, CARB adopted a new Asbestos Airborne Toxic Control Measure for construction, grading, quarrying and surface mining operations. New emission control measures, such as dust suppressants apply to activities such as road construction and road maintenance, construction, grading, and quarrying and surface mining operations in areas with naturally-occurring asbestos/ serpentine rock. The potential for naturally-occurring asbestos to be present in minerals in the Project Area is discussed in Section 4.7, *Geology, Soils, and Seismicity*. As noted in that section, asbestos has not been detected in numerous samples representative of the onsite geologic materials found at the Permanente Quarry. Accordingly, asbestos is not considered further in this EIR.

Silica Crystalline Dust

In 2005, OEHHA added a chronic reference exposure level (REL) for crystalline silica. Silica is a hazardous substance when it is inhaled, and the airborne dust particles that are formed when the material containing the silica is broken, crushed, or sawn pose potential risks. The potential for crystalline silica to occur in minerals in the Project Area is discussed in the Geology and Soils section, and potential health risks associated with crystalline silica exposure are discussed below.

Local Regulatory Setting

Santa Clara County General Plan

The Health and Safety Chapter of the *Santa Clara County General Plan, 1995-2010* (Santa Clara County, 1994) contains the following air quality policies that would apply to the Project:

> ***Policy C-HS 1*:** Ambient air quality for Santa Clara County should comply with standards set by state and federal law.
>
> ***Policy C-HS 2*:** The strategies for maintaining and improving air quality on a countywide basis, in addition to ongoing stationary source regulation, should include:
>
> a) augmented growth management, land use, and development policies that help achieve air quality standards;
>
> b) transit systems that provide feasible travel options;
>
> c) increased travel demand management and traffic congestion relief; and
>
> d) particulate and small scale emission controls.
>
> ***Policy C-HS 3*:** Countywide or multi-jurisdictional planning by the cities and County should promote efforts to improve air quality and maximize the effectiveness of implementation efforts. Guidance and assistance from the BAAQMD shall be sought in the preparation of coordinated, multi-jurisdictional plans as well as in environmental review of projects that have potential for regionally significant air quality impacts.
>
> ***Policy C-HS 4*:** Future growth and development countywide should be managed and accommodated in such a way that it:
>
> a) minimizes the cumulative impacts on local, regional, and trans-regional air quality; and

b) reduces the general population exposure to levels prescribed by state and/or federal law for urban areas designated as non-attainment areas.

***Policy C-HS 8*:** Employer-based measures for transportation demand management (TDM) should be instituted to the maximum extent possible for large employers in both public and private sectors to encourage ridesharing and increase average vehicle occupancy rates, reduce peak hour congestion, and facilitate use of transit.

***Policy C-HS 9*:** Employer-based ridesharing and TDM should be encouraged as mitigation for traffic generating impacts of new development.

***Policy C-HS 12*:** Measures to reduce particulate matter pollution originating from quarrying, road and building construction, industrial processes, unpaved parking lots, and other sources should be encouraged.

4.3.2 Baseline

The overall baseline for this EIR reflects the physical environmental conditions in the vicinity of the Project as they existed on June 29, 2007, when the County published a NOP in connection with the Applicant's first proposed amendment of the 1985 Reclamation Plan. Pertinent to the air quality analysis, documentation establishes that, by 2007, some materials storage already had occurred in the EMSA.

With regard to air emissions, the proposed Project involves an existing quarry operation. Such operations are characterized by fluctuating production and associated air emissions, in response to continually changing market demands. An emission inventory that considers only conditions existing in June 2007 (or any other specific point in time) may substantially over- or under-represent typical conditions. Accordingly, baseline air emissions for this air quality assessment are based on an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands. The following operations and activities are included in the baseline emissions estimates:

- Quarry operations
- Waste rock (overburden) handling
- Associated mobile sources and portable equipment

Emissions associated with operation of the adjacent cement plant are not included in the baseline analysis since the cement plant is a separately-permitted industrial use, and because the Project would not affect the cement plant's use permit, operating permits, or regulatory status. Emissions from the cement plant have been quantified by Lehigh as part of the BAAQMD's Title V Operating Permit renewal process, and are reported to the BAAQMD.

Although operation of the primary and secondary crushers and the rock plant would be ongoing during the Project, the particulate matter emissions from those sources were not included in either the baseline or Project emission calculations (ALG, 2011a). The reasoning for this is that the rock plant and crusher would be subject to controls under the Project that would reduce particulate emissions in comparison to the baseline.[1] Since this air quality analysis is based on the net change in emissions compared to baseline, excluding those sources simply eliminates from consideration a decrease in particulate emissions.

4.3.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact on air quality if it would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any nonattainment pollutant (including releasing emissions that exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

4.3.3.1 Criteria Pollutants

Updated BAAQMD *CEQA Air Quality Guidelines* (BAAQMD, 2011a) establish the following quantitative and qualitative thresholds of significance for criteria pollutant emissions:

- Result in total construction emissions of ROG, NO_x, or PM2.5 (exhaust) of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed a construction emission threshold for PM10 (exhaust) of 15 tons per year or greater, or 82 pounds per day or greater.
- For PM10 and PM2.5 as part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.
- Result in total operational emissions of ROG, NO_x, or PM2.5 of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed an operational emission threshold for PM10 of 15 tons per year or greater, or 82 pounds per day.
- Result in CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average).

According to the BAAQMD *CEQA Air Quality Guidelines*, a project's contribution to cumulative impacts for criteria pollutants should be considered significant if the project's impact individually would be significant (i.e., exceeds the BAAQMD's quantitative thresholds).

[1] Project controls include replacement of the primary crusher (90% reduction), and implementation of the facility's Fugitive Dust Control Plan submitted to the BAAQMD in September 2010 and revised January 2011 (50% reduction in stockpile wind erosion emissions and 75% reduction in unpaved road wind erosion/dust entrainment emissions).

4.3.3.2 Odors

For odors, the operational threshold is based on complaint history, whereby five complaints per year averaged over three years would be considered significant.

4.3.3.3 Health Risks and Hazards

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs (such as DPM) would be deemed to have a potentially significant impact. More specifically, proposed projects that have the potential to expose the public to TACs in excess of the following BAAQMD CEQA thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million people for 70 year exposure.
- Ground-level concentrations of non-carcinogenic TACs would exceed a Hazard Index greater than 1 for the MEI.
- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.3 micrograms per cubic meter from either project construction or operations.

Under the BAAQMD *CEQA Air Quality Guidelines*, the Project would result in a significant TAC cumulative impact to air quality if it would:

- Result in potential to expose persons to substantial levels of TACs, such that the probability of contracting cancer for the MEI considering all existing sources within 1,000 feet of the Project fence line and proposed Project sources exceeds 100 in one million; or
- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.8 micrograms per cubic meter considering all existing sources within 1,000 feet of the Project fence line and proposed Project sources.

4.3.4 Discussion of Criteria with No Air Quality Impacts

The Project does not have the potential to cause a significant impact in the following areas:

a) The Project would not conflict with or obstruct implementation of the applicable air quality plan.

The most recently adopted air quality plan for the Bay Area is the 2010 CAP. The 2010 CAP is an update to the BAAQMD’s 2005 Ozone Strategy to comply with State air quality planning requirements. The 2010 CAP also serves as a multi-pollutant air quality plan to protect public health and the climate. The 2010 CAP control strategy includes revised, updated, and new measures in the three traditional control measure categories: stationary sources measures, mobile source measures, and transportation control measures. In addition, the 2010 CAP identifies two new categories of control measures, including land use and local impact measures and energy and climate measures.

BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required analyze the project with respect to the following questions: 1) does the project support the primary goals of the air quality plan; 2) does the project include applicable control measures from the air quality plan; and 3) does the project disrupt or hinder implementation of any 2010 CAP control measures? If the answer to questions 1 and 2 is yes and the answer to question 3 is no, then the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area. Any project that would not support the 2010 CAP goals would not be considered consistent with the 2010 CAP. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance. As presented in the subsequent impact discussions, the Project would not exceed the BAAQMD significance thresholds; therefore, the Project would support the primary goals of the 2010 CAP.

Projects that incorporate all feasible air quality plan control measures are considered consistent with the 2010 CAP. One 2010 CAP control measure, MSM C-1, would be applicable to the Project. The intent of MSM C-1 is to reduce diesel particulate emissions from construction equipment through either installation of filters or upgrading to cleaner-burning engines. The Project would be consistent with this measure because the Applicant will be required to comply with phase in of the CARB In-Use Off-Road Diesel Vehicle Regulation (CARB, 2011b).

In summary, with regard to criteria air pollutants and toxic air contaminants, the Project would support the primary goals of the 2010 CAP, it would include all applicable 2010 CAP control measures, and it would not disrupt or hinder implementation of any 2010 CAP control measures. Therefore, the Project would not conflict with or obstruct implementation of with the 2010 CAP. See Section 4.8, *Greenhouse Gas Emissions*, for a discussion of Project consistency with those aspects of the 2010 CAP.

e) The Project would not create objectionable odors affecting a substantial number of people.

Land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. The Project does not include any of these land uses or similar land uses. In addition, the Permanente Quarry is currently operating, and the Project would not result in any new odor sources. Therefore, the Project would not create objectionable odors that would affect a substantial number of people.

4.3.5 Impacts and Mitigation Measures

4.3.5.1 Criteria Air Pollutants

The assessment for criteria air pollutants is based on the ALG report *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011a; included in this EIR as **Appendix D**). The ALG report identified and quantified the emission sources of criteria air pollutants, TACs, and greenhouse gases (GHGs)[2] from existing operations and from the proposed Project. Emission calculations in the ALG report are based on specific equipment and material throughput data provided by the Applicant, as well as emission factors from the following sources:

[2] GHGs are addressed in Section 4.8, *Greenhouse Gas Emissions*.

- *AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition* (U.S. EPA, 1995);
- *Emissions Inventory Guidance – Mineral Handling and Processing Industries* (Mojave Desert Air Quality Management District, 2000);
- CARB's OFFROAD2007 model for off-road vehicles and equipment; and
- CARB's EMFAC2007 model for on-road vehicles.

The assumptions, emission factors, calculations, and other data in the ALG report were independently reviewed by the EIR authors and were determined to be acceptable for incorporation in this analysis.

This analysis is based on the net change in emissions from the Project compared to baseline. As described above in Section 4.3.2, *Baseline*, baseline air emissions for this air quality assessment are determined from an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands. Project emissions are calculated from the proposed operation and reclamation activities at the Quarry. The net change in emissions from the Project compared to baseline is then compared to the CEQA significance thresholds adopted by the BAAQMD.

Impact 4.3-1: The Project would generate emissions of criteria air pollutants which could contribute to existing nonattainment conditions and further degrade air quality. *(Less than Significant Impact)*

As described in Chapter 2, *Project Description*, the Project includes areas that have been disturbed by prior mining operations, areas that will be disturbed by mining operations within the next 20 years, open space areas that serve to physically separate operations at the Quarry from other uses in the surrounding environs (and additional areas that would be for this purpose), and areas that have been partially disturbed by prior exploratory and/or mining activities. The primary areas to be reclaimed include the existing Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area (WMSA) and the East Materials Storage Area (EMSA), the crusher/Quarry office area, surge pile, rock plant, an area south of Permanente Creek that has been subject to mining operation-related exploratory activities, and seven areas along Permanente Creek known as the Permanente Creek Reclamation Areas (PCRA). General emission sources and activities in the baseline include:

- Quarry Operations (drilling of charge holes; blasting; bulldozing, scraping and grading of overburden, waste material, and limestone; material handling; dust entrainment; wind erosion associated with actively disturbed unpaved areas)
- Waste Rock (overburden) Handling (material handling; bulldozing, scraping and grading of material; dust entrainment; wind erosion)
- Fuel Storage and Dispensing (operation of diesel and gasoline storage tanks)

- Combustion Sources (portable internal combustion engines; off-road diesel equipment; on-site work trucks; off-site fuel transport trucks and employee commute vehicles)

During Phase 1 of the Project, the Quarry-related operations listed above would continue to occur. In addition, emission sources and activities specific to the Project would include:

- Reclamation Activities, which encompass reclamation (including contouring, capping, and revegetating) of the Quarry pit, overburden storage and infill areas, and other disturbed areas as identified in the Project.

The following emission reduction measures have been committed to by the Applicant as part of the Project, and are included in the calculation of Project emissions:

- Water unpaved roads;
- Water active areas consistent with a dust mitigation plan submitted to the BAAQMD in 2010;
- Use an Overland Conveyor System, powered by electric motors, to move 75 percent of the waste rock from the WMSA to reclaim the Quarry pit; and
- Water conveyor transfer points and screens associated with the proposed Overland Conveyor System.

Project emissions were calculated for Phases 1 and 2 of the Project. (This analysis does not quantify emissions associated with Phase 3 of the Project because material handling, extent of dust entrainment and wind erosion, off-road vehicle usage, and related activities would be substantially lower in Phase 3 than in Phase 1 or 2.) The net change in emissions was then calculated by comparing the highest Project emissions for each pollutant for each averaging period with the average emissions calculated for the baseline period. With the exception of annual and daily particulate matter (PM10 and PM2.5) emissions, all other criteria pollutant emissions would be highest during Phase 1 of the Project, during which emissions associated with ongoing mining operations would also occur. Annual and daily PM10 and PM2.5 emissions would be highest during Phase 2 of the Project.

The BAAQMD has adopted mass significance thresholds for operations-related emissions in its *CEQA Air Quality Guidelines*. These thresholds are 10 tons per year or 54 pounds per day of ROG, NO_x, or PM2.5 and 15 tons per year or 82 pounds per day for PM10. Baseline and maximum daily Project emissions are summarized in **Table 4.3-3**, and the net change is compared to the BAAQMD daily thresholds. **Table 4.3-4** summarizes the baseline and maximum annual Project emissions and compares the net change to the BAAQMD annual thresholds.

As can be seen from the data in Tables 4.3-3 and 4.3-4, the Project would result in net emissions reductions for all nonattainment air pollutants (PM10, PM2.5, and the ozone precursors NO_x and ROG), and therefore would not exceed the BAAQMD daily or annual thresholds of significance. This would be a less than significant impact.

TABLE 4.3-3
MAXIMUM DAILY CRITERIA AIR POLLUTANT EMISSIONS
(pounds/day)[a]

Scenario	PM10	PM2.5	NO_x	ROG	CO	SO_2
Baseline Emissions	5,411	893	2,440	167	2,641	27
Project Emissions	1,970	311	2,124	123	1,891	32
Maximum Daily Incremental Change[b]	(3,441)	(582)	(316)	(44)	(750)	5
BAAQMD Threshold	82	54	54	54	None	None
Significant Impact (Yes or No)?	No	No	No	No	--[c]	--[d]

[a] Emissions are based on the *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011a) and include watering unpaved roads control for the Baseline scenario and the controls listed above for the Project scenario. Specific assumptions and emission factors incorporated into the calculations are included in Appendix D.
[b] Values in (parentheses) are net reductions for Project minus Baseline emissions.
[c] See Impact 4.3-2 for a discussion of CO significance.
[d] The Bay Area is in attainment for SO_2, so a CEQA threshold of significance has not been established by the BAAQMD.

SOURCE: ALG, 2011a

TABLE 4.3-4
MAXIMUM ANNUAL CRITERIA AIR POLLUTANT EMISSIONS
(tons/year)[a]

Scenario	PM10	PM2.5	NO_x	ROG	CO	SO_2
Baseline Emissions	754	122	324	24	288	1
Project Emissions	291	45	301	18	222	3
Maximum Annual Incremental Change[b]	(463)	(77)	(23)	(6)	(66)	2
BAAQMD Threshold	15	10	10	10	None	None
Significant Impact (Yes or No)?	No	No	No	No	--[c]	--[d]

[a] Emissions are based on the *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011a) and include watering unpaved roads control for the Baseline scenario and the controls listed above for the Project scenario. Specific assumptions and emission factors incorporated into the calculations are included in Appendix D.
[b] Values in (parentheses) are net reductions for Project minus Baseline emissions.
[c] See Impact 4.3-2 for a discussion of CO significance.
[d] The Bay Area is in attainment for SO_2, so a CEQA threshold of significance has not been established by the BAAQMD.

SOURCE: ALG, 2011a

SO_2 emissions are not considered a problem in the Bay Area as the region is in attainment of the state and national air quality standards. Nonetheless, the net increase in SO_2 emissions of 5 pounds/day and 2 tons/year from the Project would be inconsequential and would not substantially degrade air quality, so the impact would be less than significant.

The significance of CO emissions from the Project is addressed in Impact 4.3-2, below.

Impact 4.3-2: Project traffic associated with operational and reclamation activities would generate localized CO emissions on roadways and at intersections in the Project vicinity. *(Less than Significant Impact)*

According to the BAAQMD *CEQA Air Quality Guidelines*, a project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The Project would not exceed the standards included in the Santa Clara County Congestion Management Plan established by the Santa Clara Valley Transportation Authority (SCVTA). In regards to the second and third criteria, intersection traffic volumes (including minimal external Project traffic) would be substantially less than 44,000 and 24,000 vehicles per hour, respectively. The estimated increase in traffic volumes caused by reclamation-related traffic (a maximum of approximately six round trips per day) would not be substantial relative to background traffic conditions, nor would Project traffic significantly disrupt daily traffic flow on area roadways (see Section 4.17, *Transportation/Traffic*).

Based on the BAAQMD's criteria, Project-related traffic would not lead to violations of the carbon monoxide standards and therefore, no further analysis was required for carbon monoxide impacts of the Project and the impact is less than significant.

4.3.5.2 Toxic Air Contaminants (Health Risk)

A health risk assessment (HRA) is an analysis designed to predict the generation and dispersion of air toxics in the outdoor environment, evaluate the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure. An HRA was conducted to evaluate the cancer risks and non-cancer health effects associated with exposure to toxic air contaminants (TACs) emitted as a result of the Project. Cancer risks[3] are evaluated based on assumed lifetime exposure to TACs

[3] Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chances in one million of contracting cancer, for example, 10 cancer cases among one million people exposed.

over the expected lifespan of the Project. Non-cancer health risks[4] evaluated include adverse health effects from both acute (highest 1-hour exposure) and chronic (average annual exposure). As required by BAAQMD, an analysis of PM2.5 concentrations was also conducted. The assessment methods are designed to estimate the highest possible, or "upper bound" risks to the most sensitive members of the population (i.e., children, elderly, infirm), as well as those that are potentially exposed to TACs on a routine and prolonged basis (i.e., residents, recreational area users). Air toxics associated with the Project include various metals within fugitive dust (such as mercury and chromium), crystalline silica, and DPM.

This HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including US EPA, CalEPA, OEHHA *Air Toxics Hot Spots Program Guidance* (OEHHA, 2003), and the BAAQMD's *Health Risk Screening Analysis Guidelines* (BAAQMD, 2005). The HRA is based on estimated emissions of a wide variety of TACs from the Project, and the length of time those living, working, and recreating in the vicinity of the Project could be exposed to TAC emissions. Actual exposures are not measured, but rather are modeled using software that uses local meteorology and topography to predict the dispersion of TACs from their source and the resulting concentrations at receptor sites. The models tend to be conservative, both in terms of the estimated exposure and the toxic effects of the substances to which people are exposed; that is, the models tend to overestimate the adverse health impacts.

This HRA is an incremental health assessment in that it examines the increase or decrease in adverse health impacts associated with the Project as compared to the conditions that would exist without the Project (i.e., the No Project Alternative). That is, the Project-related incremental health impacts are calculated as the health impacts associated with implementation of the Project minus the health impacts which would occur without the Project. Use of the No Project Alternative is an appropriate foundation for the HRA analysis because it reflects the continuation of baseline conditions, and is thus consistent with CEQA Guidelines section 15126.6(e)(1).

Table 4.3-5 describes the emission scenario examined as the No Project Alternative for the HRA (the No Project Alternative is further described in Section 3.3.1.4, *No Project Alternative*). Under this scenario, quarrying activities have occurred since the baseline date of June 2007 and would continue to occur at the baseline production rate through 2027. Overburden storage at the EMSA is assumed to have occurred from 2008 through 2011. During Phase 1A (a total of 11 years from 2012 through 2022) of the No Project Alternative, Quarry-related operations would occur at the baseline production rate with no overburden storage in EMSA (overburden would instead be placed in the Quarry West Wall). During Phase 1B (a total of 5 years from 2023 through 2027) of the No Project Alternative, Quarry-related operations would continue at the baseline production rate and in addition would include reclamation of the EMSA.EMSA reclamation would be completed in 2027.

4 Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the Project to published reference exposure levels (RELs) that can cause adverse health effects.

TABLE 4.3-5
"NO PROJECT" SCENARIO FOR THE HEALTH RISK ASSESSMENT

Phase	Years	Summary of Activities	Annual Production Rate	DPM Emissions (tons/year)	PM2.5 Emissions (tons/year)
"Existing" *(with EMSA)*	2008-2011	Continued Quarry operations; overburden storage occurs in EMSA and Quarry west wall.	5,607,455 tons	19.0	122
Phase 1A	2012-2022	Continued Quarry operations; no overburden storage in EMSA.	5,607,455 tons	7.0	111
Phase 1B	2023-2027	Continued Quarry operations until completion; EMSA reclamation commences in 2023 and is completed in 2027.	5,607,455 tons	8.1	138
Phase 2	2028-2032	WMSA stockpile is excavated and Quarry pit receives this material as backfill.	9,920,854 tons	5.4	109
Phase 3	2033-2037	Quarry pit backfilling is completed; Rock Plant is dismantled then reclaimed; remaining disturbed areas to enter final reclamation.		1.1	26.6
"No Project" Total ***(total is obtained by multiplying the annual emissions in each Phase by the number of years in that Phase, then summing up)***				226	3,077

SOURCE: ALG, 2011b; EnviroMINE, 2011.

During Phase 2 (a total of 5 years from 2028 through 2032) of the No Project Alternative, the WMSA stockpile would be excavated and the Quarry pit would receive the WMSA material as backfill. During Phase 3 of the No Project (a total of 5 years from 2033 through 2037), Quarry pit backfilling would be completed, the Rock Plant would be dismantled and removed, and the remaining disturbed areas would be reclaimed.

The No Project Alternative would occur from 2008 through 2037; a total of 30 years. The total cumulative DPM and PM2.5 emissions from the No Project Alternative would be 226 and 3,077 tons, respectively.

Table 4.3-6 provides the emission scenario examined as the Project for the HRA. Under these conditions, quarrying activities have occurred since the baseline date of June 2007 and would continue to occur at the baseline production rate through 2011. During Phase 1 (a total of 9 years from 2012 through 2020) of the Project, Quarry-related operations would occur at a higher production rate (ALG, 2011a). The ongoing quarrying operations and the initiation of EMSA reclamation activities were analyzed as two separate periods (Phase 1A and 1B). EMSA reclamation would be completed in 2020.

During Phase 2 (a total of 5 years from 2021 through 2025) of the Project, the WMSA stockpile would be excavated and the Quarry pit would receive the WMSA material as backfill. During Phase 3 of the Project (a total of 5 years from 2026 through 2030), Quarry pit backfilling would be completed, the Rock Plant would be dismantled and removed, and the remaining disturbed areas would be reclaimed.

The Project as proposed would occur from 2008 through 2030; a total of 23 years. The total cumulative DPM and PM2.5 emissions from the Project would be 225 and 1,380 tons, respectively.

Tables 4.3-5 and 4.3-6 also provide the estimated DPM and PM2.5 emissions throughout the phases of the Project. As shown, DPM emissions would decrease with time as more efficient engines replace older equipment and as the production rates and hours of equipment operation decrease. Emissions during Phase 3 would be much lower than Phases 1 or 2 due to the less intensive operations during Phase 3.

PM2.5 emissions for the Project reflect the higher production rate that would occur but also reflect emission controls related to the Applicant's fugitive dust management planning. Given that the total PM2.5 emissions from the Project would be much lower than for the No Project Alternative, the health impacts related to fugitive dust would also be lower.[5]

5 Project controls include replacement of the primary crusher (90% reduction), and implementation of the facility's Fugitive Dust Control Plan submitted to the BAAQMD in September 2010 and revised January 2011 (50% reduction in stockpile wind erosion emissions and 75% reduction in unpaved road wind erosion/dust entrainment emissions).

TABLE 4.3-6
"PROJECT" SCENARIO FOR THE HEALTH RISK ASSESSMENT

Phase	Years	Summary of Activities	Annual Production Rate	DPM Emissions (tons/year)	PM2.5 Emissions (tons/year)
"Existing" *(with EMSA)*	2008-2011	Continued Quarry operations; overburden storage occurs in EMSA and Quarry west wall.	5,607,455 tons	19.0	122
Phase 1A	2012-2015	Continued Quarry operations; overburden storage continues in EMSA and Quarry west wall; EMSA storage ends in 2015. PCRA activities occur in 2012.	10,031,085 tons	12.6	43.1
Phase 1B	2016-2020	Continued Quarry operations until completion (within continued overburden storage in EMSA); EMSA reclamation is completed in 2020.	10,031,085 tons	13.7	72.0
Phase 2	2021-2025	WMSA stockpile is excavated and Quarry pit receives this material as backfill. PCRA activities occur in 2025.	9,920,854 tons	5.0	45.4
Phase 3	2026-2030	Quarry pit backfilling is completed; Rock Plant is dismantled then reclaimed; remaining disturbed areas to enter final reclamation.		1.1	26.6
Project Total ***(total is obtained by multiplying the annual emissions in each Phase by the number of years in that Phase, then summing up)***				225	1,380

SOURCE: ALG, 2011a; EnviroMINE, 2011.

DPM emissions for the Project reflect the higher production rate that would occur but also project reflect emission controls related to the Applicant's replacement of older equipment in advance of that required by CARB regulations. The total DPM emission from the Project would be about the same as for the No Project. However, health impacts would not necessarily be expected to be the same because the location (relative to sensitive receptors) in which the emissions occur is as important to the health impacts analysis as the magnitude of the emissions. The Project would involve overburden storage at the EMSA during Phase 1, whereas no additional overburden storage would occur at the EMSA under the No Project Alternative. Thus, the health impacts for receptors near the EMSA are the focus of this HRA.

The HRA is accomplished in four steps: hazards identification, exposure assessment, toxicity assessment, and risk characterization. These steps cover the estimation of air emissions, the estimation of the air concentrations resulting from a dispersion analysis, the incorporation of the toxicity of the pollutants emitted, and the characterization of the risk based on exposure parameters such as breathing rate, age adjustment factor, and exposure duration – each depending on receptor type. **Appendix E** provides the methodology, assumptions, and data used to develop the HRA.

According to CalEPA, an HRA should not be interpreted as the expected rates of cancer or other potential human health effects, but rather as estimates of potential risk or likelihood of adverse effects based on current knowledge, under a number of highly conservative assumptions and the best assessment tools currently available.

Impact 4.3-3: The Project would expose people to increased levels of toxic air contaminants, which could lead to an increase in the risk of cancer. ***(Less than Significant Impact with Mitigation Incorporated)***

Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chances in one million of contracting cancer, for example, ten cancer cases among one million people exposed. If the incremental cancer risk exceeds 10 persons per million, the impact is considered to be significant.

Fugitive Dust Emissions from Quarrying/Overburden Operations

Fugitive dust from quarrying (generally within the Quarry pit) operations occurs as a result of drilling, blasting, grading, material handling, and wind erosion from disturbed areas. Fugitive dust from overburden operations (generally within the EMSA and WSMA) occurs from grading, material handling, and wind erosion from disturbed areas. Fugitive dust also occurs as a result of haul truck traffic on unpaved roads. While these emission sources are part of ongoing Quarry operations, they are included in this HRA because they would occur at different rates and at different locations under the Project compared to the No Project Alternative, and thus would contribute to the calculation of the Project's incremental health risk.

Table 4.3-7 shows the estimated cancer risk at the maximum exposed receptors due to fugitive dust from quarrying/overburden operations. As shown in Table 4.3-7, the incremental risk from all carcinogens from fugitive dust emissions at the maximum exposed residence-adult and

TABLE 4.3-7
ESTIMATED CANCER RISK FOR FUGITIVE DUST – QUARRYING/OVERBURDEN OPERATIONS

Pollutant	Residence – Adult (per million)	Residence – Child (per million)	School (per million)
Arsenic	-0.03	-0.03	-0.01
Beryllium	-0.01	-0.01	-0.00
Cadmium	-0.03	-0.04	-0.01
Lead	-0.00	-0.00	-0.00
Nickel	-0.04	-0.05	-0.01
Chromium VI	-0.18	-0.16	-0.07
Total	-0.28	-0.29	-0.11

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

residence-child receptors would be a decrease of approximately 0.3 in one million. The maximum exposed residence is the caretaker's residence. The incremental cancer risks due to fugitive dust from quarrying/overburden activities would decrease with implementation of the Project, and thus, would be below the BAAQMD CEQA threshold of 10 in a million. The decrease in cancer risk due to quarrying/overburden operations fugitive dust is due to much lower emissions resulting from project controls related to the Applicant's fugitive dust management planning.

DPM Emissions from Off-road Equipment

Off-road equipment would be used for the quarrying and overburden activities and includes drill rigs, graders, loaders, excavators, loaders, and haul trucks As shown in **Table 4.3-8**, the majority of the incremental cancer risk would be associated with DPM emissions from overburden handling. The total cancer risk from off-road equipment would be 18.4 and 8.6 in one million for a residence-adult and residence-child, respectively. The maximum incremental cancer risk would be 4.5 in one million for a nearby school. The results of the analysis indicate that the maximum concentration would occur at a residence (associated with the Cupertino Historical Society) to the northeast of the site. Impacts would decrease steadily to the east, west, and north of this location. The incremental cancer risks due to off-road equipment would be above the BAAQMD CEQA threshold of 10 in a million for the residence-adult but below the threshold for residence-child and school children.[6]

DPM Emissions from On-road Haul Trucks

On-road haul truck activity included in the HRA analysis consists of trucks hauling material to customers from the rock plant and trucks associated with importing mulched green waste to mix with the WMSA material as it is used to backfill the Quarry pit in Phase 2 (cement plant trucks

6 Cancer risks are a function of exposure duration, exposure frequency, breathing rate, and age sensitivity factors (see Appendix E for details), which are dependent on receptor type (residence-adult, residence-child, or school children). These factors together with the pollutant concentration represent an inhalation dose. Although residence-child (or school children) have higher breathing rates and age sensitivity factors, their exposure duration is much lower; resulting in a lower inhalation dose. Chronic and acute impacts, however, do not factor in exposure duration, exposure frequency, breathing rate, and age sensitivity factors; thus, there is no difference for chronic and acute impacts between a residence-adult and residence-child exposed to the same pollutant concentration.

TABLE 4.3-8
ESTIMATED CANCER RISK DUE TO OFF-ROAD EQUIPMENT

Source	Residence – Adult (per million)	Residence – Child (per million)	School (per million)
Quarry Pit Operations	-2.88	-4.57	2.81
Overburden Operations	21.3	13.2	1.71
Total	**18.4**	**8.61**	**4.52**
Location	**Cupertino Historical Society**	**Cupertino Historical Society**	**Lincoln Elementary School**

are included in the cumulative impact analysis). At the maximum exposed receptor, the incremental residence-adult and residence-child cancer risk would be 0.13 and 0.16 in one million, respectively, for on-road haul truck activities, and thus below the BAAQMD CEQA threshold of 10 in a million. This increase in health risks is a result of a slightly higher number of truck trips (due to higher production rates) with the implementation of the Project compared to the No Project Alternative.

Summary of Cancer Risks

A summary of the incremental cancer risks provides the total health impact from fugitive dust and DPM emissions from all sources associated with the Project. **Table 4.3-9** presents the cancer risks by pollutant type, while **Table 4.3-10** presents the cancer risk by emission source category. The total maximum cancer risks for residence-adult and residence-child would be 18.3 and 8.5 in one million, respectively, and would be mostly due to DPM from off-road equipment. The maximum cancer risk for school children would be 4.4 per million. The total cancer risks would be above the BAAQMD CEQA threshold of 10 in a million for the residence-adult but below the threshold for residence-child and school children.

TABLE 4.3-9
ESTIMATED INCREMENTAL CANCER RISK BY POLLUTANT

Pollutant	Residence – Adult (per million)	Residence – Child (per million)	School (per million)
Arsenic	-0.03	-0.03	-0.01
Beryllium	-0.01	-0.01	0.00
Cadmium	-0.03	-0.04	-0.01
Lead	0.00	-0.00	0.00
Nickel	-0.04	-0.05	-0.01
Chromium VI	-0.18	-0.16	-0.07
DPM	**18.6**	**8.77**	**4.50**
Total	**18.3**	**8.48**	**4.39**
Location	**Cupertino Historical Society**	**Cupertino Historical Society**	**Lincoln Elementary School**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

TABLE 4.3-10
ESTIMATED INCREMENTAL CANCER RISK BY EMISSION SOURCE CATEGORY

Source	Residence – Adult (per million)	Residence – Child (per million)	School (per million)
Quarrying/Overburden/Unpaved Areas	-0.28	-0.29	-0.11
Off-road Equipment	18.4	8.61	4.52
On-road Haul Trucks	0.13	0.16	-0.02
Total	**18.3**	**8.48**	**4.39**
Location	**Cupertino Historical Society**	**Cupertino Historical Society**	**Lincoln Elementary School**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

The incremental cancer risk for the five highest receptors is shown in **Table 4.3-11**. Receptor 1 represents the Cupertino Historical Society caretaker's residence and the other receptors represent the nearest residential areas located near Little Stevens Creek Boulevard to the east of the site. Of note, the Cupertino Historical Society caretaker's residence is the only residence in excess of 10 in a million. Thus, any mitigation measures should focus on emissions associated with activities impacting this location (i.e., activities associated with the EMSA). Throughout the receptor grid, some incremental cancer risks are greater than zero and some are less than zero (i.e., a lower cancer risk as a result of the implementation of the Project). The average incremental cancer risk over the entire receptor grid (a total of 535 receptors) is 1.3 per million.

TABLE 4.3-11
ESTIMATED CANCER RISK AT TOP FIVE RECEPTORS

Receptor ID	Residence – Adult (per million)
1	18.3
176	8.98
145	7.92
177	7.61
146	6.75

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

Since the incremental cancer risks at the maximum receptor (the caretaker's residence) would be greater than 10 in one million, the impact is potentially significant without mitigation.

> **Mitigation Measure 4.3-3a:** Within 90 days of Project approval, the Applicant shall submit to the County and the BAAQMD a comprehensive inventory of all Project-related off-road construction equipment expected to be used during any portion of the Project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted annually throughout the duration of the Project.

Mitigation Measure 4.3-3b: Within 90 days of Project approval, the Applicant shall provide a plan for approval by the County and the BAAQMD demonstrating that Project-related off-road equipment would achieve a Project (EMSA-specific) wide fleet-average 35 percent reduction in DPM emissions compared to the proposed fleet in the ALG report (ALG, 2011a) during Phase 1 of the Project. The plan shall be updated and submitted annually throughout the duration of the Project. Options for reducing emissions may include, but are not limited to:

- Using newer model engines (e.g., engines that meet U.S. EPA interim/final Tier 4 engine standards);
- Use of Retrofit Emission Control Devices that consist of diesel oxidation catalysts, diesel particulate filters, or similar retrofit equipment control technology verified by CARB (http://www.arb.ca.gov/diesel/verdev/verdev.htm);
- Use of low-emissions diesel products or alternative fuels;
- Use of alternative material handling options (e.g., conveyor system); or
- Other options as may become commercially available and verifiable.

Alternatively, in lieu of Mitigation Measures 4.3-3a and 4.3-3b, the Applicant may implement Mitigation Measure 4.3-3c:

Mitigation Measure 4.3-3c: The Applicant shall submit evidence establishing to the County's satisfaction that there are legally-binding restrictions precluding any occupancy of the caretaker's residence during the entirety of Phase 1 of the Project.

Significance after Mitigation: Table 4.3-12 presents the mitigated cancer risks by source category with implementation of Mitigation Measures 4.3-3a and 4.3-3b. The total maximum cancer risk for residence-adult would be 8.7 in one million, which would be below the BAAQMD CEQA threshold of 10 in a million and the impact therefore would be less than significant. With implementation of the alternative mitigation described in Mitigation Measure 4.3-3c, wherein the caretaker's residence would not be occupied and thus would not be a residential receptor, the cancer risk at the next highest residential receptor would be 8.98 in one million (see Table 4.3-11) and the impact therefore would be less than significant.

TABLE 4.3-12
ESTIMATED CANCER RISKS BY EMISSION SOURCE CATEGORY - MITIGATED

Source		Residence – Adult (per million)
Quarrying/Overburden/Unpaved Areas		-0.28
Off-road Equipment		**8.81**
On-road Haul Trucks		0.13
	Total	**8.66**
	Location	**Cupertino Historical Society**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

Impact 4.3-4: The Project would expose people to increased levels of toxic air contaminants, which could increase acute and chronic health risks. (*Less than Significant Impact*)

Non-cancer adverse health risks, both for acute (short-term) and chronic (long-term) timeframes, are measured against a hazard index, which is defined as the ratio of the incremental exposure concentrations of the various non-carcinogens from the project to published reference exposure levels (RELs) that can cause adverse health effects. The RELs are established by OEHHA based on epidemiological evidence. The ratio (referred to as the Hazard Quotient) of each substance with a non-carcinogenic effect that affects a certain organ system is added to produce an overall Hazard Index for that organ system. As a worst case, it was assumed that all of the toxic substances with established RELs would affect the same organ and the individual Hazard Quotients were summed to calculate an overall Hazard Index. RELs are not adjusted for breathing rates, age, and receptor type. If the Hazard Index exceeds 1.0, the health impact is considered to be significant.

As shown in **Table 4.3-13**, the maximum acute hazard impact would be 0.52 at the caretaker's residence and would be due primarily to acrolein (as a component in DPM). The acute hazard impact would be below the significance threshold of 1.0 and therefore less than significant. Note that with Mitigation Measures 4.3-3a and 4.3-3b, the maximum acute hazard impact would be even lower.

TABLE 4.3-13
ESTIMATED ACUTE HAZARD IMPACTS

Project Phase	Residence
Phase 1A	0.52
Phase 1B	0.50
Phase 2	-0.08
Phase 3	0.00
Maximum	**0.52**
Location	**Cupertino Historical Society**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

This analysis also examined acute health risks for recreational users of the Rancho San Antonio Open Space Reserve, who could be exposed to Project emissions for a short term while they are close to the Project site. The analysis found that these impacts would decrease as a result of the implementation of the Project (compared to the No Project Alternative) and therefore would be less than significant.

As shown in **Table 4.3-14**, the maximum chronic hazard impact would be 0.13 at the caretaker's residence and would be due primarily to crystalline silica[7] and DPM. The chronic hazard impact

[7] Crystalline silica emissions were estimated using a value for the crystalline silica content of greywacke sandstone, the rock type with the highest crystalline silica content among those mined at the Permanente Quarry.

TABLE 4.3-14
ESTIMATED CHRONIC HAZARD IMPACTS

Project Phase	Residence
Phase 1A	0.13
Phase 1B	0.12
Phase 2	0.04
Phase 3	0.00
Maximum	**0.13**
Location	**Cupertino Historical Society**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

would be below the significance threshold of 1.0 and therefore less than significant. Note that with Mitigation Measures 4.3-3a and 4.3-3b, the maximum chronic hazard impact would be even lower.

Impact 4.3-5: The Project would increase emissions of PM2.5, which could adversely affect human health. ***(Less than Significant Impact with Mitigation Incorporated)***

An analysis also was conducted to determine the maximum annual increase in PM2.5 concentrations for sensitive receptors in the vicinity of the Project. Of note, BAAQMD policy is to conduct this analysis for exhaust emissions only, and that fugitive dust emissions are addressed separately under the application of a fugitive dust plan. Under the Project, the Applicant would continue to comply with their existing Fugitive Dust Control Plan (dated January 21, 2011).

As shown in **Table 4.3-15**, the maximum incremental annual PM2.5 concentration at the caretaker's residence would be 0.40 $\mu g/m^3$, during Phase 1A and 1B, respectively, which would be above the BAAQMD threshold of 0.3 $\mu g/m^3$ and would therefore constitute a potentially significant impact without mitigation.

TABLE 4.3-15
ESTIMATED PM2.5 CONCENTRATION IMPACTS ($\mu g/m^3$)

Project Phase	Residence
Phase 1A	0.40
Phase 1B	0.40
Phase 2	0.10
Phase 3	0.00
Maximum	**0.40**
Location	**Cupertino Historical Society**

SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

Mitigation Measure 4.3-5: Implement Mitigation Measures 4.3-3a and 4.3-3b (or, alternatively, implement Mitigation Measure 4.3-3c).

Significance after Mitigation: With Mitigation Measures 4.3-3a and 4.3-3b, the maximum incremental annual PM2.5 concentration at the caretaker's residence would be 0.29 $\mu g/m^3$, which would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and therefore would be less than significant. With implementation of the alternative mitigation described in Mitigation Measure 4.3-3c, wherein the caretaker's residence would not be occupied and thus would not be a residential receptor, the maximum incremental annual PM2.5 concentration at the next highest residential receptor would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and the impact therefore would be less than significant.

4.3.6 Alternatives

4.3.6.1 Alternative 1: Complete Backfill Alternative

The reclamation activities associated with Alternative 1 would be more extensive than the activities under the Project. Under this alternative, overburden materials stored in the EMSA would be reclaimed and backfilled into the Quarry pit upon the conclusion of mineral extraction. Compared with the Project, that activity would require considerable additional hours of operation for off-road equipment to excavate, transport, dump, and grade the EMSA materials. This additional equipment activity would result in greater emissions of criteria pollutants and TACs compared with the Project, and would therefore have a greater impact with respect to air quality and health risk. Health risk impacts in particular would be greater than for the Project, because the additional equipment activity needed to reclaim the EMSA would generate emissions of TACs in close proximity to the nearest sensitive receptors.

4.3.6.2 Alternative 2: Central Materials Storage Area Alternative

The reclamation activities associated with Alternative 2 would be similar to the activities under the Project, except that under this alternative, overburden materials in the Quarry pit would be moved to new, more-distant locations within the Quarry instead of to the EMSA. That activity would generate additional off-road haul truck travel distance compared with the Project, which in turn would result in greater emissions of criteria air pollutants and TACs. With regard to criteria air pollutants, the increase in emissions compared with the Project would be unlikely to result in a significant impact, as the net change compared to baseline would still be negative and therefore well below the BAAQMD significance levels. However, for TACs, although the emissions would be higher than for the Project, the location of those emissions would be further from the nearest sensitive receptors. Consequently, health risk impacts of this alternative would be similar to or less than for the Project.

4.3.6.3 No Project Alternative

The No Project Alternative would extend the time period in which surface mining activities occur within the Project Area and delay final reclamation conditions by approximately 7 years. Criteria air pollutant emissions under the No Project Alternative would be less on an annual basis and the same or less on a maximum daily basis compared with the Project, but would occur over a longer time. However, since the significance of criteria air pollutant emissions is assessed based on the annual and maximum daily change in emission rates, the No Project Alternative would result in a similar or lesser impact for criteria pollutants compared with the Project.

With regard to health risks from TACs, the HRA prepared for the Project was an incremental analysis that quantified the increase or decrease in health risk for the Project compared with the No Project Alternative. Based on that analysis, the No Project Alternative was found to have lesser impacts related to cancer risk, acute hazards, chronic hazards, and PM2.5 as compared with the Project. Therefore, the No Project Alternative would have overall less impact to health risk than would the Project.

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4.4 Biological Resources

This section analyzes potential impacts to biological resources that could result from implementation of the December 2011 Reclamation Plan Amendment (RPA, or Project) (EnviroMINE, 2011) within the Lehigh/Permanente Quarry (Quarry). The "Project Area" is defined in Chapter 2 (Project Description) and refers to the area within which reclamation activities would occur. The term "Study Area" as used in this section provides an additional 250-foot study buffer in which wetland and biological resources were examined to determine potential Project impacts, which also includes Permanente Creek approximately 1.5 miles downstream of the Project Area.

This evaluation of biological resources includes a review of vegetation communities, wildlife habitat, and jurisdictional waters of the U.S. and of the State that occur or potentially occur in the Study Area, including ecosystems, habitats, plant communities, and special-status plants and wildlife. As part of this analysis, this section identifies the federal, state, and local regulations that pertain to wetlands and other biological resources.

Sources used in support of the analysis include: the RPA (EnviroMINE, 2011); focused biological survey reports for the RPA and Hanson/Lehigh Permanente Quarry (WRA, 2006a; 2006b; 2010a; 2010b; 2011), including a California red-legged frog survey report (Jennings, 2006); the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) (CDFG, 2011); the California Native Plant Society Electronic Inventory (CNPS, 2011); a species list obtained from the U.S. Fish and Wildlife Service (USFWS) (USFWS, 2011), and a reconnaissance-level field survey performed by ESA biologist Bryan Olney on June 3, 2010.

4.4.1 Setting

4.4.1.1 Study Area

The Study Area is located in an unincorporated area of western Santa Clara County. The Quarry is in the eastern foothills of the Santa Cruz Mountains, which are part of the California Coast Range mountains, which separate the San Francisco Bay Area from the Pacific Ocean along most of the San Francisco Peninsula. Much of the Coast Range including areas surrounding the Quarry remains undeveloped; however, lowland areas around San Francisco Bay are highly urbanized. Nearby residential areas include the cities of Cupertino, Los Altos, Palo Alto, and Saratoga, the Town of Los Altos Hills, and unincorporated communities.

The Study Area is located in the Bay Area-Delta Bioregion (as defined by the California Environmental Resources Evaluation System (CERES). This Bioregion is comprised of a variety of natural communities, which range from tidal salt marshes to chaparral to oak woodlands. Both the Santa Cruz and Diablo mountain ranges, as well as areas of the southern Santa Clara Valley, are still generally undeveloped and contain high-quality habitat for a number of sensitive species. Topographic and micro-climate diversity in the County have promoted relatively high levels of endemism[1], and in combination with the rapid pace of development in the region, also have resulted in a relatively high degree of endangerment for local flora and fauna.

4.4.1.2 Local Setting

The Project Area includes each of the primary areas to be reclaimed, which are: the Quarry pit, WMSA, EMSA, the crusher/Quarry office support area, surge pile, rock plant, Exploration Area, and the PCRA. The Rancho San Antonio Open Space Preserve is directly north of the Project Area, which is connected directly to several other open space preserves, including Monte Bello Regional Open Space and Los Trancos Regional Open Space. Areas east of the Project Area include open space, and developed residential and commercial areas in the City of Cupertino. Several large County parks are in close proximity to the Project Area, including Steven's Creek County Park and Sanborn Skyline County Park to the south, and Pescadero Creek County Park to the southwest.

The Project Area is within the Permanente Creek watershed. Permanente Creek descends from relatively undisturbed tributaries in the Santa Cruz Mountains through the Project Area. After passing though sections that have been modified by past onsite operations and a culverted section under the railway east of the Project Area, Permanente Creek runs through mostly culverted reaches in the cities of Los Altos and Mountain View before discharging in the San Francisco Bay at Shoreline Park. The hydrology of the Permanente Creek watershed has been significantly altered to provide greater flood protection. The Permanente Creek Diversion, constructed in 1959, and located about 1.5 miles upstream of Hale Creek confluence, currently diverts stream flows up to 1,500 cubic feet per second (cfs) into Stevens Creek during the winter season (SCVURPPP, 2011).

Biological Communities and Wildlife Habitat Types

Existing biological communities in the portion of the Project Area where reclamation activities would occur are identified in **Table 4.4-1**.

Figures 4.4-1 through **4.4-4** show mapped habitat details for the entire Project Area. However, because no Project activity would occur in the buffer areas, the descriptions and analysis in the sections that follow focus on the communities identified in Table 4.4-1. As shown in Table 4.4-1, much of the Project Area (477.9 acres) is designated "active quarry," signifying active and historic mining areas that remain barren or support opportunistic weed species. Additionally, an approximately 0.2 acre rock outcropping is present in PCRA. The remaining terrestrial and aquatic habitat types found in the Project Area are described below.

Terrestrial Habitat

Areas of mixed scrub, chamise chaparral, and oak woodland are still present in undisturbed sections of the Project Area, particularly near the EMSA and crusher/Quarry office support area (WRA, 2011). Non-native annual grassland also is present in the Project Area. While not a vegetation community native to California, this habitat type has the potential to support special-status species.

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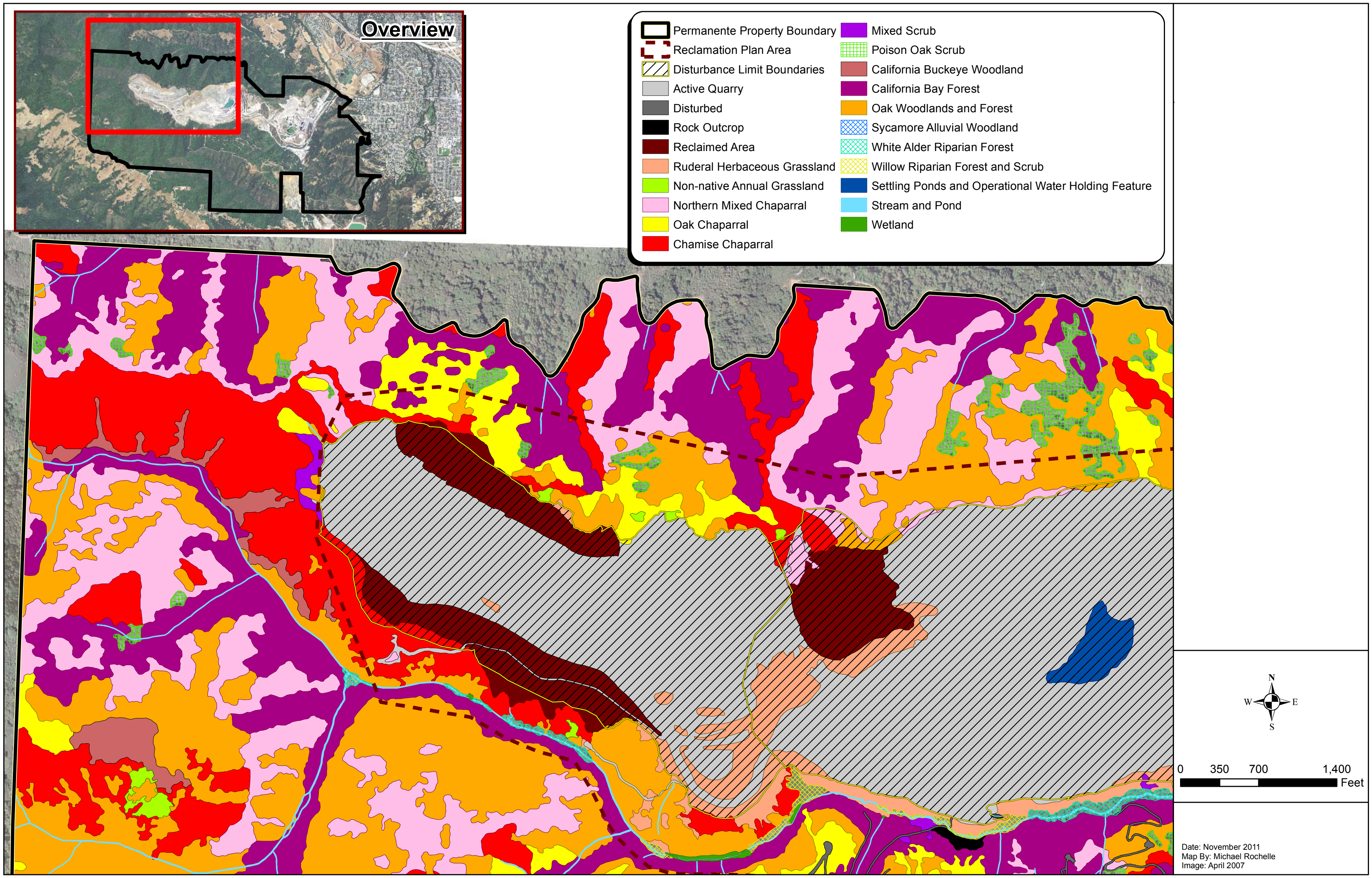
[1] *Endemism* refers to the degree to which the distribution of organisms or taxa is restricted to a geographical region or locality. For example, an organism with worldwide distribution would not be characterized as being endemic to any one place, while an organism found only in California would be characterized as being endemic to the state.

TABLE 4.4-1
EXISTING BIOLOGICAL COMMUNITIES IN THE ACTIVE RECLAMATION AREAS

Biological Community	Quarry Pit (acres)	WMSA (acres)	EMSA (acres)	Crusher/ Support (acres)	Surge Pile (acres)	Rock Plant (acres)	Exploration Area (acres)	PCRA (acres)	Total (acres)
Active Quarry	210.5	124.2	74.1	33.4	8.5	17.3	0	3.3	**471.3**
California Bay Forest	0.04	0	0	0	0	0	0	0.6	**0.64**
Chamise Chaparral	2.4	3.4	0.4	0	0	0	0	3.7	**9.9**
Disturbed	0	0	0	0	0	0.04	19.5	0.1	**19.64**
Mixed Scrub	0.8	0	0	1.1	0	0.05	0	0.8	**2.75**
Non-native Annual Grassland	0.8	0.02	0	0	0	0.01	0	0	**0.83**
Northern Mixed Chaparral	3.1	0.02	0.7	0	0	0.4	0	0.2	**4.42**
Oak Chaparral	0	0.1	0	0	0	0	0	0	**0.1**
Oak Woodlands and Forests	2.8	0.3	0	0	0.01	0.3	0	1.2	**4.61**
Operational Water Holding Feature	6.6	0	0	0	0	0	0	0	**6.6**
Reclaimed Area	21.0	34.6	0	0	0	0	0	22.2	**77.8**
Rock Outcrop	0	0	0	0	0	0	0	0.2	**0.2**
Ruderal Herbaceous Grassland	16.8	10	0	18.8	0.3	0.7	0	12.6	**59.2**
Sediment Ponds	0.04	0	0	0.1	0	0.3	0	0	**0.44**
Streams and Ponds	0	0	0	0	0	0	0	0.66	**0.66**
Wetland	0	0	0	0	0	0	0	0.5	**0.5**
White Alder Riparian Forest	0	0	0	0	0	0	0	1.4	**1.4**
Willow Riparian Forest and Scrub	0	0	0	0	0	0	0	2.0	**2**
Total	**264.88**	**172.64**	**75.2**	**53.4**	**8.81**	**19.1**	**19.5**	**49.46**	**662.99**

SOURCE: WRA, 2011 (Table 2)

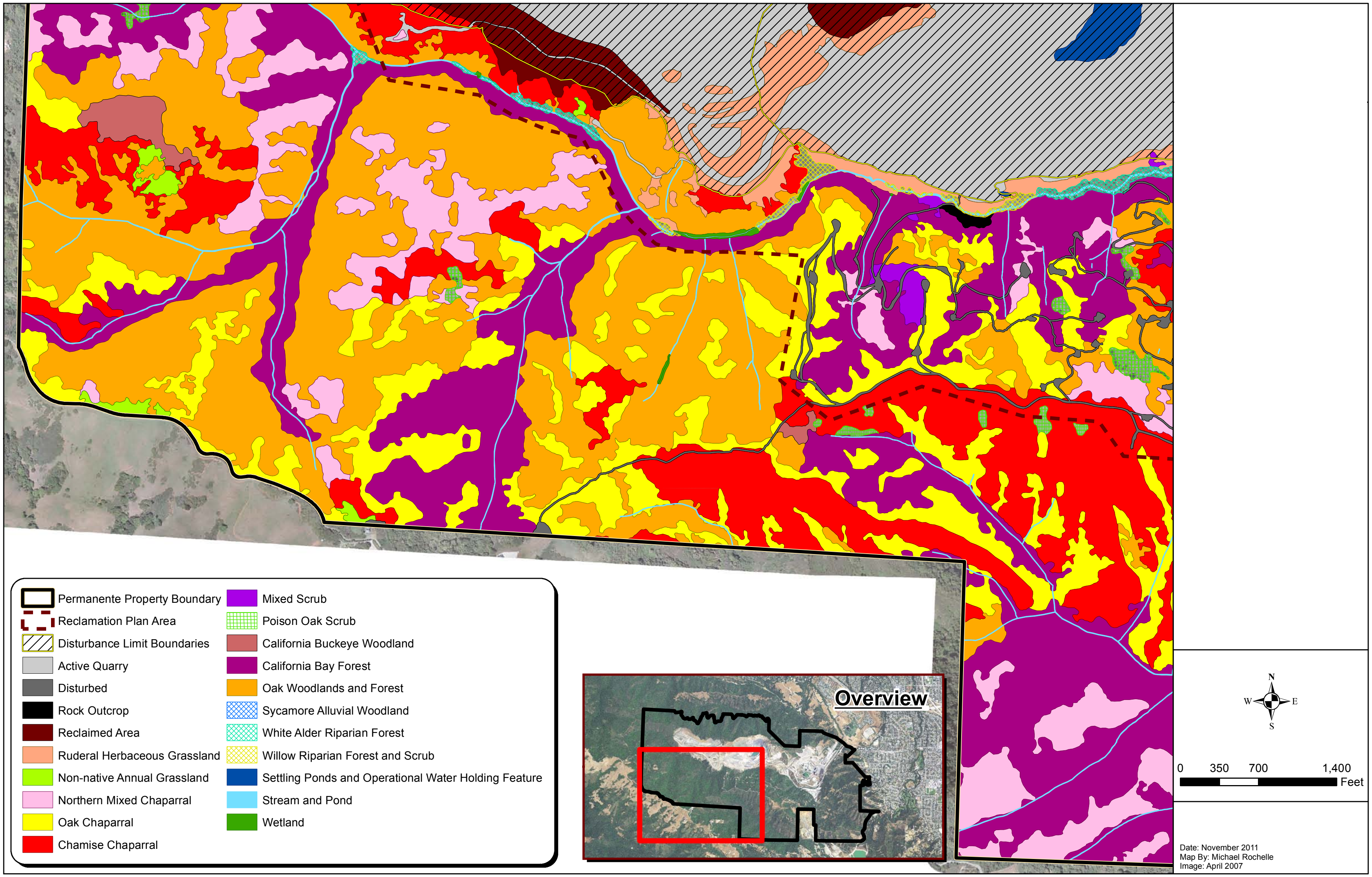
There are nine terrestrial vegetation communities in the Project Area, based in part on Holland's *Preliminary Descriptions of Terrestrial Natural Communities in California* (WRA, 2011; Holland, 1986).



SOURCE: WRA, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

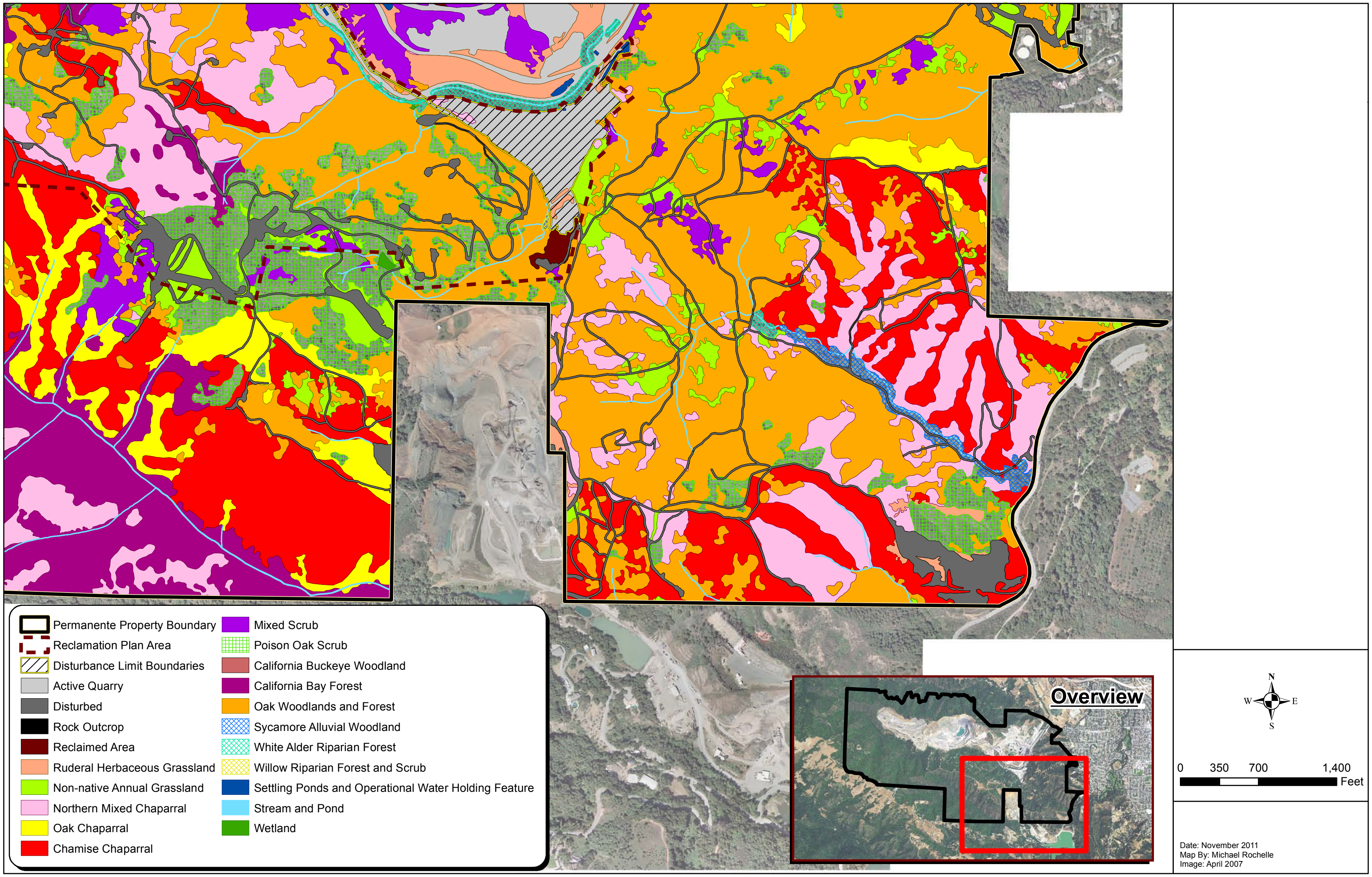
Figure 4.4-1
Mapped Habitat Details



SOURCE: WRA, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

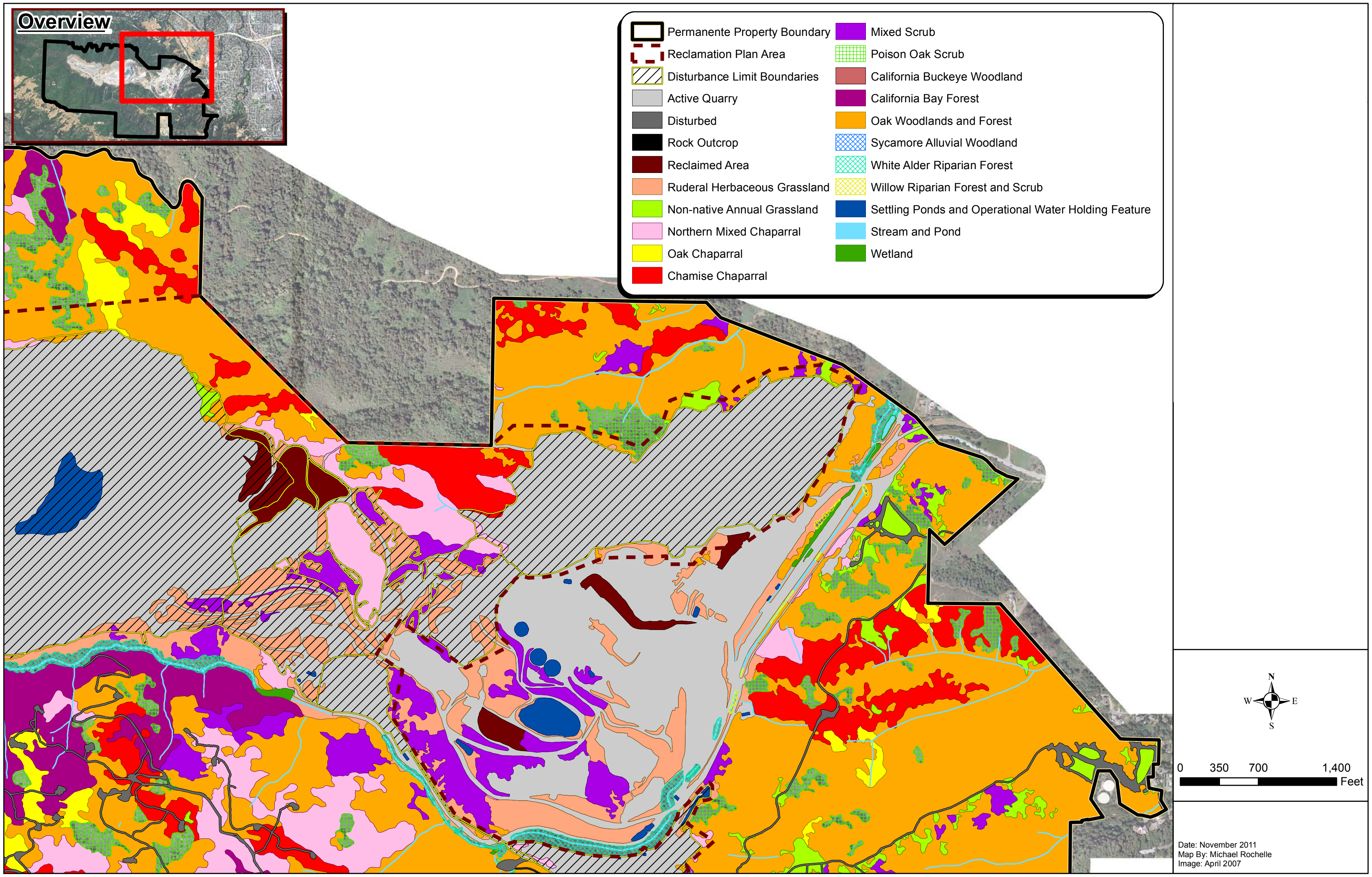
Figure 4.4-2
Mapped Habitat Details



SOURCE: WRA, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 4.4-3
Mapped Habitat Details



SOURCE: WRA, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 4.4-4
Mapped Habitat Details

Oak Woodland and Other Woodland Communities. Oak woodlands are distributed throughout California typically in protected valleys and north-facing slopes, intergrading with chaparral habitat on drier sites and mixed evergreen forests on moister sites. Oak woodlands are a sensitive natural community that is afforded protection through the California Oak Woodlands Conservation Act and the Santa Clara County Oak Woodlands Impact Guidelines (2008), which are discussed in the *Regulatory Setting*.

Oak woodlands within the portions of the Project Area where active reclamation would occur are primarily blue oak (*Quercus douglasii*) woodland and coast live oak (*Quercus agrifolia*) woodland, although a few small pockets of interior live oak (*Quercus wislizenii*) woodlands also are present. This community type is found primarily along north- and east-facing slopes and in small drainages; in isolated relict patches of otherwise disturbed surroundings; and along portions of the Project Area's northern boundary. These areas have dense overstories dominated by oak species without a substantial number of subdominant species. Other overstory species include California buckeye (*Aesculus californica*) and California bay (*Umbellularia californica*). Species characteristic of the understory include poison oak (*Toxicodendron diversilobum*), coffeeberry (*Rhamnus californica*), ocean spray (*Holodiscus discolor*), elderberry (*Sambucus mexicana*), toyon (*Heteromeles arbutifolia*), and gooseberries (*Ribes* spp.) (WRA, 2011). Wildlife observed in the oak woodland community within the Project Area include white-tailed kite (*Elanus leucurus*), oak titmouse (*Baeolophus inornatus*), black-tailed deer (*Odocoileus hemionus columbianus*), and California deer mouse (*Peromyscus californicus*) (WRA, 2011).

Other woodland communities identified in the Project Area include 0.64 acre of California Bay Forest, found predominantly in the PCRA, and 0.1 acre of Oak Chaparral, found in the WMSA.

Mixed Scrub. Mixed scrub occurs on shallow rocky soils, typically on hot southern exposures of the coast range from Oregon to Central California in areas out of the range of coastal fog incursion. Within the portions of the Project Area where active reclamation would occur, mixed scrub is found in the Quarry pit, crusher/Quarry office support area, Rock Plant, and PCRA on southern exposures, and intergrades with chaparral and oak woodland. It is a shrub-dominated community with little to no understory vegetation, dominated by coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), and California buckwheat (*Eriogonum fasciculatum*). This community is partially described as Diablan Sage Scrub by Holland (1986). Wildlife observed in this community type at the site include hermit thrush (*Catharus guttatus*), northern Pacific rattlesnake (*Crotalus viridis oreganus*), and wrentit (*Chamaea fasciata*) (WRA, 2011).

Northern Mixed Chaparral. Northern mixed chaparral is a community of broadleaved sclerophyll shrubs forming dense, often impenetrable stands dominated by chamise (*Adenostoma fasciculatum*), scrub oak (*Quercus berberidifolia*), various manzanitas (*Arctostaphylos* spp.), and various members of the genus *Ceanothus* (Holland, 1986). When present, a diverse shrub layer forms dense impenetrable stands up to 10-feet tall that intergrades with oak woodlands on deeper soils, and chamise chaparral on dry, rocky, steep, typically south-facing slopes with shallow soils. Within the portions of the Project Area where active reclamation would occur, Northern mixed chaparral is found on east and south-facing slopes in the Quarry pit, WMSA, EMSA, Rock Plant, and to a lesser extent, in the PCRA.

Species typical of this community type in the Project Area include chamise, scrub oak, Eastwood's Manzanita (*Arctostaphylos glandulosa* ssp. *glandulosa*), jimbrush (*Ceanothus oliganthus* var. *sorediatus*), buckbrush (*Ceanothus cuneatus*), birch-leaf mountain mahogany (*Cercocarpus betuloides*), poison oak, yerba santa (*Eriodictyon californicum*), white pitcher sage (*Lepichinia calycina*), coffeeberry (*Rhamnus californicus*), and redberry (*Rhamnus crocea*) (WRA, 2011). Wildlife observed in northern mixed chaparral at the site includes brush rabbit (*Sylvilagus bachmani*), California thrasher (*Toxostoma redivivum*) and California quail (*Callipepla californica*) (WRA, 2011).

Chamise Chaparral. This is a chaparral community dominated by chamise with associated species contributing little to overall cover, and mature stands containing very little herbaceous understory (Holland, 1986). Associated species typically include manzanita species (*Arctostaphylos* spp.), scrub oak, buckbrush, birch-leaf mountain mahogany, yerba santa, sage (*Salvia* sp.), and California buckwheat. Within the portions of the Project Area where active reclamation would occur, chamise chaparral occurs generally on southern exposures with shallow soils in the Quarry pit, WMSA, and the PCRA. It ranges from 1 to 10 feet tall with impenetrable shrub stands and no herbaceous understory, and intergrades with northern mixed chaparral on eastern exposures. It abruptly borders oak woodland and oak chaparral at ridgelines. Occasional associates include scrub oak, toyon (*Heteromeles arbutifolia*), and madrone (*Arbutus menziesii*) (WRA, 2011). Wildlife observed in this community type at the site includes spotted towhee (*Pipilo maculatus*), Bewick's wren (*Thryomanes bewickii*), and Anna's hummingbird (*Calypte anna*) (WRA, 2011).

Non-native Annual Grassland. This community type is distributed throughout the valleys and foothills of California below 3,000 feet. It comprises a dense to sparse cover of annual grasses and herbs up to 1.5 feet high (Holland, 1986). Non-native annual grassland intergrades with chaparrals and oak woodlands on slopes and ridgelines. Less than 1 acre of non-native annual grassland is found within the portion of the Project Area where active reclamation would occur: small patches of it are found in the Quarry pit, WMSA, and Rock Plant. Species typical of this community type in the Project Area include wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Italian ryegrass (*Lolium multiflorum*), filaree (*Erodium botrys and E. cicutarium*), small fescue (*Vulpia microstachys*), California poppy (*Eschscholzia californica*), bird vetch (*Vicia cracca*), and birdfoot trefoil (*Lotus corniculatus*) (WRA, 2011). Wildlife observed in this plant community at the site include western meadowlark (*Sturnella neglecta*), violet-green swallow (*Tachycineta thalassina*), and bobcat (*Lynx rufus*) (WRA, 2011).

Ruderal Herbaceous Grassland. This community type includes habitats previously disturbed and/or reclaimed that have been inactive long enough to recruit a plant community dominated by herbaceous weeds and non-native grasses. Species typical of this plant community in California include brome grasses (*Bromus* spp.), wild oats, Italian thistle (*Carduus pycnocephalus*), wild mustard (*Brassica* sp.), and filaree (*Erodium* sp.) (WRA, 2011). With the portions of the Project

Area where active reclamation would occur, ruderal herbaceous grassland is found primarily on slopes between quarry roads, in areas with recent disturbance, or in areas adjacent to quarry activities. Wildlife observed in this plant community at the site include Pacific ring-necked snake (*Diadophis punctatus*), dark-eyed junco (*Junco hyemalis*), and California towhee (*Pipilo crissalis*) (WRA, 2011).

Riparian Forest and Scrub. Two riparian communities are present within the portion of the Project Area where active reclamation would occur: white alder riparian forest and willow riparian forest and scrub. Willow riparian forest and scrub has a canopy dominated by arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and black willow (*S. gooddingii*), and occurs in flat areas adjacent to creeks and wet tributaries (WRA, 2011). Canopy cover ranges from dense to sparse, and typical understory species include short spike hedge nettle, stinging nettle, poison oak, California blackberry (*Rubus ursinus*), and western creek dogwood (*Cornus sericea* ssp. *occidentalis*). These riparian communities occur along Permanente Creek and wet tributaries within the PCRA.

While alder riparian forest forms along rapidly flowing, steep-sided canyons, and is dominated by white alder (*Alnus rhombifolia*) with abundant willows, poison oak, California wild rose (*Rosa californica*), and snowberry in the understory. Associated species include bigleaf maple (*Acer macrophyllum*), western creek dogwood, and Oregon ash (*Fraxinus latifolia*) (WRA, 2011).

Wildlife associated with riparian areas includes a diverse assemblage of bird species, including Lincoln’s sparrow (*Melospiza linconii*), Wilson’s warbler (*Wilsonia pusilla*), great blue heron (*Ardea herodias*), Nuttall’s woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), and Pacific slope flycatcher (*Empidonax difficilis*) (WRA, 2011). Dusky-footed woodrat (*Neotoma fuscipes annectens*), a California species of special concern, can also occur in riparian habitat.

Revegetated (Reclaimed) Area. Revegetated areas include historically disturbed slopes that have been reclaimed by grading to a final contour, planted with native grass species, and/or planted at a low to moderate density with native shrubs and trees including coyote brush, chamise, and oaks from locally collected cuttings and acorns. Irrigation has been applied to some of the more recent, large-scale revegetated areas to encourage the establishment of planted trees and shrubs, and protective cages have been installed around most container plantings to reduce damage from deer browsing. Generally, these areas are dominated by grass species including wild oats, brome grasses, small fescue, and Italian rye-grass with some establishment of yellow star thistle throughout the open areas (WRA, 2011).

Wildlife observed in this plant community at the site include grasshopper sparrow (*Ammodramus savannarum*), Bewick’s wren, and spotted towhee (WRA, 2011).

Disturbed. “Disturbed” areas do not comprise a vegetation community per se, but the term is used here to describe areas with active Quarry operations. This habitat is characterized by a small number of weedy and/or rapidly seeding native plants that include yellow star thistle, coyote bush, chamise, wild oats, sweet fennel (*Foeniculum vulgare*), and field mustard. Generally, plant cover in these areas is sparse due to the lack of topsoil (EnviroMINE, 2011).

Aquatic Habitat

As shown in Table 4.4-1, aquatic habitat in the Project Area includes natural and built features. Natural features include 0.66 acre of streams and ponds and 0.5 acre of wetland, each located in the PCRA. Built features include 6.6 acres within the Quarry pit that are designated as "operational water holding feature" and a total of 0.44 acre of sediment ponds, of which 0.04 acre is located in the Quarry pit, 0.1 acres is located in the crusher/Quarry office support area, and 0.3 acre is located in the Rock Plant. Each of these aquatic habitat types is described below.

Streams and Ponds. Permanente Creek flows across the site from its headwaters in the west to the northeastern boundary of the site. The creek's western reaches within the Project Area follow the stream's natural course, although downstream reaches outside of the Project Area have been realigned, impounded, and culverted. Ohlone Creek to the north and Monte Bello Creek to the south of the site are outside the Project Area (WRA, 2011).

Aquatic biota surveys were conducted in Permanente Creek in 2009, including fish sampling, amphibian surveys, and macroinvertebrate sampling. The results of these sampling efforts were reported in the *Biological Resources Assessment for the Lehigh Permanente Quarry*, which was prepared by WRA for the Project (WRA, 2011). For sampling purposes, the largely natural portion of Permanente Creek was designated the "upper reach" and the active quarry area starting near the Rock Plant was designated the "lower reach." Three fish species were found within the site boundary, including resident non-anadromous Rainbow Trout (*Oncorhynchus mykiss*), Sacramento Sucker (*Catostomus occidentalis*), and Western Mosquito Fish (*Gambusia affinis*). Within the upper reaches of Permanente Creek, only Rainbow Trout were observed. All three species were observed within the lower reach. Nine amphibian species were found within the site boundary, including the California red-legged frog. Within the upper reaches of Permanente Creek, five amphibian species were observed: California giant salamander (*Dicamptodon ensatus*), California newt (*Taricha torosa*), rough-skinned newt (*Taricha granulosa*), ensatina salamander (*Ensatina eschscholtzii*) and Pacific tree frog (*Hyla [=Pseudacris] regilla*). Within the lower reach, six aquatic species were observed: the rough-skinned newt, California red-legged frog, Pacific tree frog, California newt, ensatina salamander, and Western toad (*Bufo [=Anaxyrus] boreas*). California red-legged frog egg mass, juvenile and adult life stages were observed in the lower reach. For macroinvertebrates, sampling results indicate that the physical habitat quality is very high in the upper and lower reaches: 26 species were documented in the upper reach, and 24 species were documented in the lower reach.

Wetlands. Emergent freshwater wetlands and wetland seeps both occur in the PRCA. Emergent freshwater wetlands are associated with Permanente Creek, especially within constructed sediment basins 13, 14, 21, and 22, as slower-flowing water and accumulated sediments enable the growth of wetland vegetation. Species typical of emergent wetlands areas include cattails (*Typha* sp.), watercress (*Rorippa nasturtium* ssp. *aquaticum*), field horsetail (*Equisetum arvense*), stinging nettle (*Urtica dioica*), and short spike hedge nettle (*Stachys pycnantha*) (WRA, 2011). Wildlife observed in emergent freshwater wetland habitat on the site include song sparrow (*Melospiza melodia*), Pacific tree frog (*Pseudacris regilla*), and red-winged blackbird (*Agelaius phoeniceus*) (WRA, 2011).

Wetland seeps are present on steep slopes where groundwater intersects the soil surface or along intermittent spring-fed streams. Typical wetland vegetation in seep habitats in the PCRA include California elk clover (*Aralia californica*), wild ginger (*Asarum caudatum*), giant chain fern (*Woodwardia finbriata*), maiden hair fern (*Adiantum jordanii*), and five-fingered fern (*Adiantum aleuticum*) (WRA, 2011). Wildlife observed in wetland seep habitat at the site include Stellar's jay, Bewick's wren, and California newt (*Taricha torosa*) (WRA, 2011).

Settling Ponds. As described in Table 2-12 of the Project Description, there are 26 existing ponds or basins on site, of which 21 are located in the Project Area. Of the Project Area ponds/basins, two (Ponds 14 and 22) have been determined to provide habitat for aquatic species including the California red-legged frog (*Rana draytonii*) (CRLF). The remaining ponds have not been determined to hold water for a sufficient period of time to support breeding of aquatic species and are not connected by undisturbed habitat to any other breeding ponds (WRA, 2011).

Jurisdictional Waters and Wetlands

A jurisdictional determination report was submitted to the U.S. Army Corps of Engineers in January 2010 that described tributaries to Permanente Creek as well as tributaries to two creeks located outside the Project Area (i.e., Ohlone Creek to the north and Monte Bello Creek to the south) (WRA, 2011). Within the Project Area, the PCRA contains stream and wetland habitat that are considered wetlands under the CWA, and so are subject to the jurisdiction of the USACE and CDFG. The settling ponds noted above are not considered waters of the U.S. or of the State.

Special Status Species

A number of species known to occur in the vicinity of the Project are protected pursuant to the federal and/or state endangered species laws described in the Regulatory Setting, or have been designated species of special concern by the CDFG. In addition, CEQA Guidelines §15380(b) provides a definition of rare, endangered or threatened species that are not included in any listing.[2]. 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 the USFWS as Species of Concern or by CDFG as species of special concern.
- Species protected by the federal Migratory Bird Treaty Act and the California Fish and Game Code.
- Species such as candidate species that may be considered rare or endangered pursuant to CEQA Guidelines §15380(b).

2 For example, vascular plants listed as rare or endangered or as List 1 or 2 by CNPS are considered to meet §15380(b).

The *Biological Resources Assessment* (WRA, 2011) provides a comprehensive list of the special-status plant and wildlife species that have been documented from, or have suitable habitat in the Study Area. This list was compared with lists obtained from the CNDDB, California Native Plant Society (CNPS) Electronic Inventory (CNPS, 2011), and the USFWS (2011), and results between these two sources were consistent. Based on a review of the biological literature of the region, recent biological reports for the Project Area, and an evaluation of habitat conditions based on ESA reconnaissance survey, ESA determined whether each species has a Low, Medium, or High potential to occur in the Project Area.

Species with a Low potential to occur are species whose known current distribution or range does not include the Study Area, or species whose specific habitat requirements are not present (e.g., tidal salt marsh). Species with a Moderate potential to occur are those for whom suitable foraging, breeding, or movement habitat is present in the Project Area, even though the species has not been observed locally. A species was determined to have a High potential for occurrence if moderate to high quality habitat is present within the Project Area in addition to the site being included in the documented range of the species. Species observed or with a Moderate to High potential to occur within the Project Area are discussed in detail below. Species documented by the CNDDB within 5 miles of the Project Area are shown in **Figure 4.4-5**.

Special Status Species Assessed in Detail

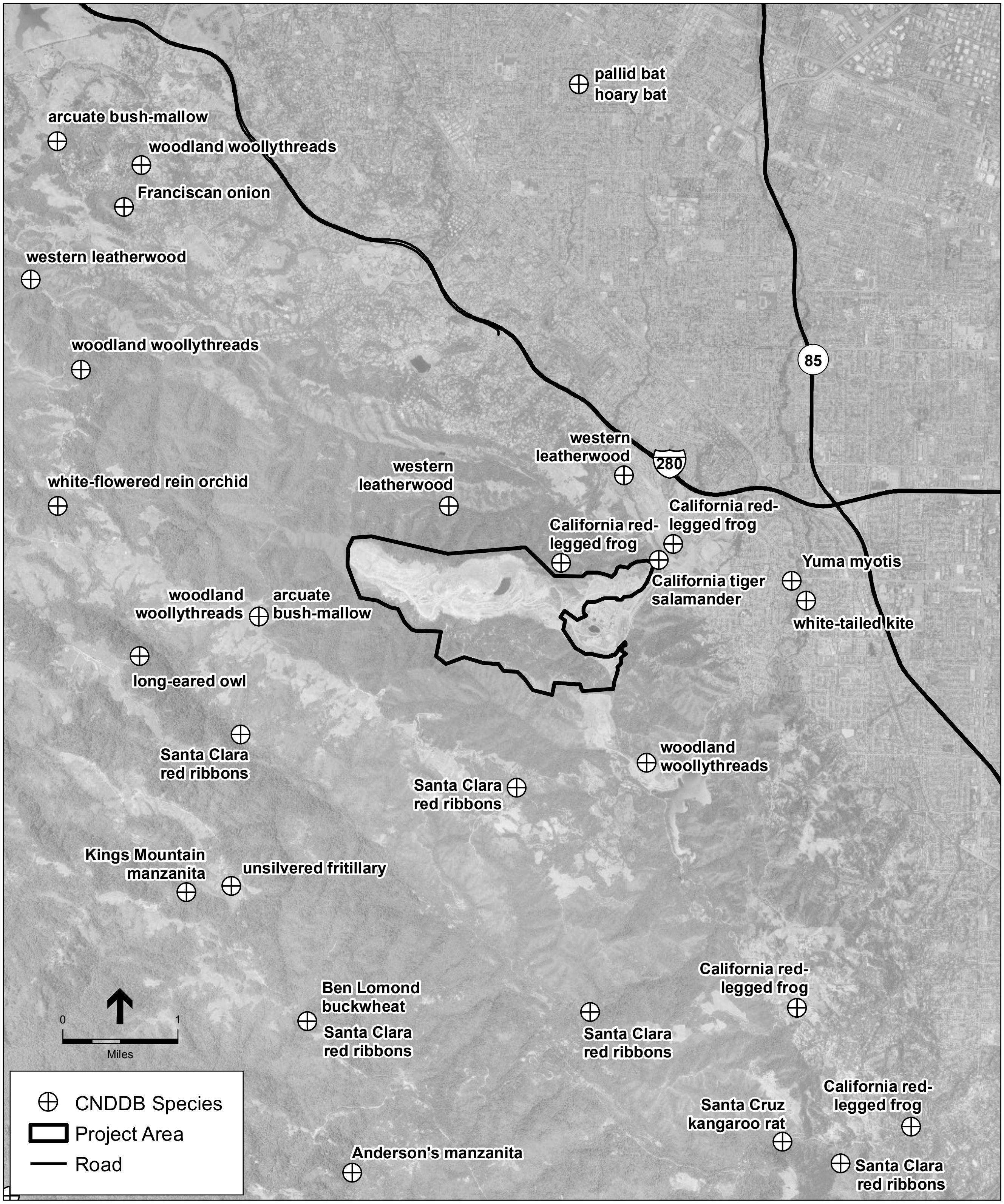
Of the special-status plants and animals described in the *Biological Resources Assessment* (WRA, 2011), along with the regulatory basis for their status, only the following species were observed or determined to have a high or moderate potential to occur within the Project Area:

- California red-legged frog
- White-tailed kite
- Grasshopper sparrow
- Olive-sided flycatcher
- Yellow warbler
- Long-eared owl
- Loggerhead shrike
- San Francisco dusky-footed woodrat
- Pallid bat
- Western red bat

These species are described in detail below.

Special Status Plants

Although 81 special-status plant species are reported in the nine U.S. Geological Survey quadrangles within and surrounding the Project Area, no special-status plant species have been identified in the Project Area (WRA, 2011). In 2008, two protocol level rare plant surveys were conducted (one early season, the other late season) in compliance with guidelines recommended by CNPS, CDFG, and USFWS. The entire site was surveyed, with the exception of areas with excessively dense poison oak and where extreme terrain prevented safe access. For those areas that were inaccessible, inspection was conducted using aerial photographs and referencing to areas observed on foot. No special-status plant species were observed during the onsite surveys (WRA, 2011). As a result, special-status plants are deemed absent from the Project Area.



SOURCE: Lehigh, 2011; ESRI, 2011; CNDDB, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 4.4-5
CNNDB - Documented Distribution of Plants and Wildlife within 5 miles of the Project Area

Special Status Wildlife Species

Six special status wildlife species have been observed on the site: one amphibian (CRLF), four birds (white-tailed kite, olive-sided flycatcher [*Contopus cooperi*], yellow warbler [*Dendroica petechia*], and grasshopper sparrow) and one mammal (San Francisco dusky-footed woodrat). One additional special status species, the pallid bat (*Antrozous pallidus*), has a high potential to occur on the site, and three additional species have a moderate potential to occur: loggerhead shrike (*Lanius ludovicianus*), long-eared owl (*Asio otis*), and western red bat (*Lasiurus blossevillii*).

Special Status Amphibians. CRLF is listed as federally threatened species and is a California species of special concern. CRLF reside in lowlands and foothills in or near permanent or semi-permanent water sources, such as lakes, stock ponds, and slow moving streams with deep pools and dense shrubs or emergent aquatic vegetation. Where water sources are not permanent, CRLF require access to dry-season upland aestivation habitat in the form of mammal burrows. They require at least 11 weeks of permanent water after egg laying for larval development. The Project Area does not occur within the USFWS-designated critical habitat for this species (USFWS, 2010).

CRLF surveys were conducted by herpetologist Dr. Mark Jennings at the site in 1997, 2000, 2006, 2007, 2008, 2009, and 2010 (WRA, 2011). Within the Project Area, CRLF were positively identified in Ponds 14 and 22, which are located along lower Permanente Creek in the northeast portion of the Quarry, approximately 300 feet east of the EMSA. Outside the Project Area but on the site, CRLF were identified in Pond 21 and in Monte Bello Creek in the southern portion of the site. Dr. Jennings concludes that it would be difficult and unlikely for CRLF to disperse through the intermediate landscape between these two occupied areas of the site, because the landscape is dominated by heavily trafficked roads, paved industrial areas, and unvegetated arid slopes. Furthermore, the ephemeral nature of the intervening creeks and ponds (specifically of the sediment pond in the EMSA), the long distance (1.75 miles), and the steep terrain precludes CRLF movement between the lower Permanente Creek and Monte Bello Creek drainages (WRA, 2011). Based on these results, CRLF are not expected within the Project Area.

Special Status Birds. The white-tailed kite is a California fully protected species that occurs in low elevation grassland, agricultural, wetland, oak woodland, and savannah habitats. Riparian zones adjacent to open areas also are used. Vegetative structure and prey availability seem to be more important to this species than specific associations with plant species or vegetative communities. Kites primarily prey on small mammals, although occasional birds, reptiles, amphibians, and insects also are taken. This species nests in trees ranging from small shrubs less than 10 feet tall, to trees greater than 150 feet tall. White-tailed kites are present in the Project Area. They have been observed onsite, foraging and exhibiting pair bonding behavior, and suitable foraging and nesting habitat is present. The nearest documented nest is located 1.7 miles east of the site (WRA, 2011).

The olive-sided flycatcher is a California species of special concern typically associated with open to semi-open forest stands, including coniferous forest openings, forest edges, or human-made openings. This species typically appears near stream and ponds due to the natural mosaic of wooden and open areas as well as greater insect prey availability near water bodies. The olive-sided flycatcher has moderate potential to occur in the Project Area. While no documented occurrences of this species are present within five miles of the site, one female was observed in 2008. This individual may have been a migrant, but breeding occurrences have been recorded at lower elevations near Santa Clara and Berkeley (WRA, 2011).

The yellow warbler is a California species of special concern typically found in wet thickets dominated by willows, deciduous riparian habitats, and early successional habitats. This species primarily feeds on small insects and berries. Main threats to the yellow warbler include habitat destruction and brood parasitism by brown-headed cowbirds (*Molothrus ater*). The yellow warbler is present in the Project Area. Members of this species have been observed regularly in the Project Area in both breeding and migration season, and could nest in riparian vegetation associated with Permanente Creek (WRA, 2011).

The grasshopper sparrow is a California species of special concern. It generally prefers moderately open grasslands and prairies with patchy bare ground, and avoids grasslands with extensive shrub cover. This species feeds primarily on insects. The grasshopper sparrow is present in the Project Area. This species has been observed consistently within sparsely vegetated areas in active quarry areas, and suitable foraging and breeding habitat for this species is present where shrub, grasslands and bare ground create a habitat mosaic (WRA, 2011).

The loggerhead shrike is a California species of special concern typically occurring in open habitats with scattered trees and abundant perches, including shrubs, posts, fences, and utility lines. Nests usually are built on a stable branch in a densely-foliaged shrub or small tree and are usually well-concealed. This species eats mostly arthropods, but is known to take amphibians, small reptiles, small mammals, other birds, and can scavenge on carrion. The loggerhead shrike has a moderate potential to be present in the Project Area. While no documented occurrences of this species are present within 6 miles of the site, suitable nesting and foraging habitat is present in the Project Area (WRA, 2011).

The long-eared owl is a California species of special concern that nests in riparian groves, planted woodlots, and belts of live oaks paralleling streams. Nests almost exclusively consist of old stick nests building by crows, magpies, ravens, hawks, or herons. Foraging habitat for this species includes woodland, forest, and riparian habitats. The long-eared owl has a moderate potential to be present in the Project Area. Suitable foraging and breeding habitat exists in the Project Area, including mature riparian vegetation undisturbed by noise from adjacent quarry activities. A breeding pair of long-eared owls was has been documented 1.3 miles west of the site (WRA, 2011).

Special Status Mammals. The San Francisco dusky-footed woodrat is a California species of special concern. It prefers brushy riparian habitats, coast live oak woodland, and dense scrub communities, and lives in stick houses 3-feet tall or larger. Several woodrat nests are present in the Project Area. The species may be present along the northern disturbance limit boundary within the Quarry pit, where 9.1 acres of marginal woodrat habitat exists; in the vegetated scrub and woodland perimeter of the WMSA, where 8.6 acres of marginal woodrat edge habitat exists; in the crusher/Quarry office support area, where 1 acre of suitable mixed scrub habitat exists; or in the Rock Plant, where 0.9 acre of suitable scrub and chaparral edge habitat exists for the species (WRA, 2011).

Special Status Bats. The pallid bat is a California species of special concern. It is found in a variety of low elevation habitats throughout the state. Roosts generally include rock outcrops, hollow trees, caves, mines, buildings, and bridges. Pallid bats are sensitive to roost disturbance. The species preys primarily on large ground-dwelling arthropods; prey typically is taken on the ground. There is a moderate to high potential for the pallid bat to be present in the Project Area. The site contains potentially suitable roosting habitat in the form of hollow trees, rock outcrops, and cracks and crevices in the Quarry pit wall. The former aluminum plant building at the north east corner of the site outside the Project Area is known to support bat roosting. (WRA, 2011).

The western red bat is a highly migratory, broadly distributed species (it ranges from southern Canada and through much of the western United States). Typical roosts include the foliage of trees or shrubs. Roosting in urban areas can occur in association with riparian habitat. There is a moderate potential for this species to occur on the site. Suitable habitat could be present in the white alder riparian forest and willow riparian forest in the PCRA, and in the sycamore alluvial woodlands present on the site. Edge habitat suitable for foraging also is present. (WRA, 2011).

Sensitive Natural Communities

Other natural communities are present on the site that have special values or fulfill special functions. These communities are considered “sensitive natural communities” if they are identified by the CDFG or in local or regional plans, policies, and regulations. CDFG ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in its Natural Diversity Database. Sensitive plant communities are also identified by CDFG on its List of California Natural Communities Recognized by the CNDDB. (WRA, 2011).

The CNDDB identifies several sensitive natural communities in the nine U.S. Geological Survey quadrangles including and adjacent to the site: valley oak woodland, serpentine bunchgrass, northern interior cypress forest, and northern coastal salt marsh (CDFG, 2011). The Resource Conservation Element of the County’s General Plan identifies the following habitats for conservation: bayland habitats, riparian and freshwater habitats, grassland/savanna habitats, and chaparral/mixed woodland/evergreen forest areas.

4.4.1.3 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 Project.

Special-Status Species and Sensitive Communities

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 marine 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 agencies' 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 that its decision may affect a listed species. 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.

FESA Section 9's take prohibition applies only to listed wildlife and fish species. Candidate species and species that are proposed for listing or are under petition for listing receive no protection under Section 9. Section 9 prohibits the removal, possession, damage or destruction of any endangered plant from federal land, as well as acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass.

FESA Section 10 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. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur incidental to implementation of otherwise lawful activities by providing for the overall preservation of the affected species through specific conservation measures.

Under the FESA, the Secretary of the Interior (or the Secretary of Commerce, as appropriate) formally designates critical habitat for certain federally listed species and publishes these designations in the Federal Register. Critical habitat is not automatically designated for all federally listed species; thus, many do not have designated critical habitat.

Critical habitat is defined as the specific areas that are essential to the conservation of a federally listed species, and that may require special management consideration or protection. Critical habitat is determined using the best available scientific information about the physical and biological needs of the species. These needs, or primary constituent elements, include: space for individual and population growth and for normal behavior; food, water, light, air, minerals, or other nutritional or physiological needs; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

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 eggs.

[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 which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering. "Harm" is defined as an act which actually kills or injures wildlife. This may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

Surface Mining and Reclamation Act Performance Standards

The regulations implementing SMARA require that the reclamation of mined lands be implemented in conformance with specified standards (14 CCR § 3700 et seq.). Standards regarding wildlife habitat and stream protection are outlined below.

Wildlife and wildlife habitat shall be protected in accordance with the following standards:

(a) Rare, threatened or endangered species as listed by [CDFG], (14 CCR, §§ 670.2 - 670.5) or the U.S. Fish and Wildlife Service, (50 CFR 17.11 and 17.12) or species of special concern as listed by [CDFG] in the Special Animals List, Natural Diversity Data Base, and their respective habitat, shall be conserved as prescribed by [FESA] and the California Endangered Species Act, Fish and Game Code §2050 et seq. If avoidance cannot be achieved through the available alternatives, mitigation shall be proposed in accordance with the provisions of the California Endangered Species Act, Fish and Game Code § 2050 et seq., and the [FESA].

(b) 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, unless the proposed end use precludes its use as wildlife habitat or the approved reclamation plan establishes a different habitat type than that which existed prior to mining.

(c) 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.

Streams, including surface water and groundwater, shall be protected in accordance with the following standards:

(a) Surface and groundwater shall be protected from siltation and pollutants which may diminish water quality as required by Federal Clean Water Act §301 et seq. (33 U.S.C. §1311) and §404 et seq. (33 U.S.C. §1344), the Porter-Cologne Water Quality Control Act §13000 et seq., County anti-siltation ordinances, the Regional Water Quality Control Board or the State Water Resources Control Board.

(b) In-stream surface mining operations shall be conducted in compliance with Section 16000 et seq. of the California Fish and Game Code, §404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403).

(c) Extraction of sand and gravel from river channels shall be regulated to control channel degradation in order to prevent undermining of bridge supports, exposure of pipelines or other structures buried within the channel, loss of spawning habitat, lowering of ground water levels, destruction of riparian vegetation, and increased stream bank erosion (exceptions may be specified in the approved reclamation plan). Changes in channel elevations and bank erosion shall be evaluated annually using records of annual extraction quantities and benchmarked annual cross sections and/or sequential aerial photographs to determine appropriate extraction locations and rates.

(d) In accordance with requirements of the California Fish and Game Code §1600 et seq., in-stream mining activities shall not cause fish to become entrapped in pools or in off-channel pits, nor shall they restrict spawning or migratory activities.

California Environmental Quality Act

The intent of CEQA is to maintain “high-quality ecological systems and the general welfare of the people of the State.” It is the policy of the State to “prevent the elimination of fish or wildlife species due to man’s activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.” CEQA forbids agencies from approving projects with significant adverse impacts when feasible alternatives or feasible mitigation measures can substantially reduce such impacts.[4]

CEQA requires consultation with CDFG on any project an agency initiates that is not statutorily or categorically exempt from CEQA (CDFG, 2011b). CEQA Guidelines Section 15065(a) indicates that impacts to State- and federally listed rare, threatened, or endangered plants or animals are significant if they significantly reduce the number or restrict the range of an endangered, rare, or threatened species. Under CEQA Guidelines Section 15380, impacts to other species (“special status species”) that meet certain criteria (i.e., it can be shown that the species’ survival in the wild is in jeopardy or it is at risk of becoming endangered in the near future) but are not officially listed also may be considered significant by the lead agency under CEQA, depending on the applicability of other laws (e.g., Migratory Bird Treaty Act) and the discretion of the lead agency. For example, CDFG interprets Lists 1A, 1B, and 2 of the CNPS Inventory of Rare and Endangered Vascular Plants of California to consist of plants that, in a majority of cases, would qualify for listing as rare, threatened, or endangered. However, the determination of whether an impact is significant is a function of the lead agency, absent the protection of other laws. Projects subject to CEQA review must specifically address potential impacts to listed species and provide mitigation measures if the impact is significant.

California Oak Woodlands Conservation Act

California Senate Bill 1334, the Oak Woodlands Conservation Act, became law on January 1, 2005 and was added to CEQA as Public Resources Code §21083.4. This law protects oak woodlands that are not protected under the Z’Berg-Nejedly Forest Practice Act (Pub. Res. Code §§4511-4628). This Act requires a county to determine whether or not a project would result in a significant impact on oak woodlands. If the project would result in a significant impact on oak woodlands, then the county must implement mitigation measures as prescribed under the Public Resources Code to reduce or compensate for the loss of oak woodlands.

California Environmental Quality Act Guidelines §15380

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines §15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the CEQA Guidelines primarily to deal with situations in

4 CEQA also provides that a project might be approved in spite of residual, unmitigated significant impacts, by adoption of a statement of overriding social and economic considerations in situations where mitigations or alternatives are deemed infeasible.

which a public agency is reviewing a project that may have a significant effect on, for example, a "candidate species" that has not yet been listed by either the USFWS or CDFG. Thus, CEQA provides a CEQA lead agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

California Fish and Game Code

California Endangered Species Act

Under the California Endangered Species Act (Fish and Game Code §2070 et seq.) (CESA), CDFG has the responsibility for maintaining a list of threatened and endangered species. CDFG also maintains a list of "candidate species," which are species formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. In addition, CDFG maintains lists of "species of special concern," which serve as "watch lists." 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 area affected by the project and determine whether the proposed project could have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may affect a candidate species.

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 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.

Nesting Birds

Under §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. In turn, §3503.3 prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs.

Fully Protected Species

The California Fish and Game Code also allows the designation of a species as Fully Protected (see §3511 regarding birds, §4700 regarding mammals, §5050 regarding reptiles and amphibians, and §5515 regarding fish). This designation provides a greater level of protection than is afforded by the CESA, and until recently, fully protected species could not be taken at any time. On October 18, 2011, Senate Bill 618 was signed into law, which permits take of fully protected species where a Natural Communities Conservation Plan has been approved and is being implemented to ensure protection of those species.

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.

Wetlands and Jurisdictional Waters

U.S. Army Corps of Engineers

Wetlands and other waters (e.g., rivers, streams, and natural ponds) are a subset of "waters of the U.S.,"[5] and receive protection under §404 of the Clean Water Act (CWA). The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. In this regard, the Corps acts under two statutory authorities: the Rivers and Harbors Act (§§9, 10), which governs specified activities in "navigable waters,"[6] and the CWA (§404), which governs specified activities in waters of the U.S., including wetlands. The U.S. Environmental Protection Agency (U.S. EPA) has the ultimate authority for designating dredge and fill material disposal sites and can veto the USACE's issuance of a permit to fill jurisdictional waters of the U.S.

USACE requires a permit if a project proposes placement of structures within navigable waters and/or alteration of waters of the U.S. Some classes of fill activities may be authorized under Regional General or Nationwide permits if specific conditions are met. 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). The Nationwide permit outlines general conditions and may specify project-specific conditions as required by USACE during the §404

5 The term "waters of the U.S.," as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]), includes: (1) all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that 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), mud flats, sand flats, 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 that 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 U.S. under the definition; (5) tributaries of waters identified in numbers (1) through (4); (6) territorial seas; and (7) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in numbers (1) through (6).

6 Navigable waters are defined as those waters that are subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

permitting process. When a project's activities do not meet the conditions for a Nationwide Permit, the USACE may issue an Individual Permit or Letter of Permission.

The USACE and 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 3 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 USACE decide jurisdiction over the following waters based on a fact-specific analysis: 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 USACE 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 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.

San Francisco Bay Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates waters of San Francisco Bay under the Porter-Cologne Water Quality Control Act (Water Code §13000 et seq.). Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the State. Under the Porter-Cologne Act, anyone who discharges waste or proposes to discharge waste within any region that could affect the quality of the waters of the state must file a "report of waste discharge" with the applicable Regional Water Quality Control Board. The regional board then would issue a permit (called "waste discharge requirements" or WDRs) implementing relevant water quality control plans and taking into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisances (Water Code §13263).

In addition, California has been delegated CWA §404 permit authority for the National Pollutant Discharge Elimination System (NPDES) permit program including stormwater permits. Although the issuance of §404 permits remains the responsibility of the USACE, the state actively uses its CWA §401 water quality certification authority to ensure that §404 permits protect state standards. The RWQCB has a policy of no net loss of wetlands and typically requires mitigation for all impacts to wetlands before it will issue a water quality certification under CWA §401.

California Department of Fish and Game

Under Fish and Game Code §§1600–1616, the CDFG regulates activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams, and lakes. The jurisdictional limits of the CDFG are defined in §1602 as the “bed, channel, or bank of any river, stream, or lake.” In practice, the CDFG may exert authority over activities near such features that adversely affect fish and wildlife resources associated with them. Activities that would “deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake” are prohibited by the CDFG unless a streambed alteration agreement is issued. Potential impacts to CDFG jurisdictional areas would be considered significant in this EIR.

Local Plans and Policies

Santa Clara County General Plan (1994)

Several policies and goals in the Santa Clara County General Plan (1994) provide for the protection of biotic resources. Resource Conservation Policies and Implementation measures relevant to the Project include:

> ***C-RC 2.*** The County shall provide leadership in efforts to protect or restore valuable natural resources, such as wetlands, riparian areas, and woodlands, and others:
>
> a. for County-owned lands; and
> b. through multi-jurisdictional endeavors.
>
> ***R-RC 19.*** Habitat types and biodiversity within Santa Clara County and the region should be maintained and enhanced for their ecological, functional, aesthetic, educational, medicinal, and recreational importance.
>
> ***R-RC 20.*** Strategies and policies for maintaining and enhancing habitat and biodiversity should include the following:
>
> 1. Improve current knowledge and awareness of habitats and natural areas.
> 2. Protect the biological integrity of critical habitat areas.
> 3. Encourage habitat restoration wherever possible.
> 4. Evaluate the effectiveness of project mitigations as required under CEQA.
>
> ***R-RC 31.*** Natural streams, riparian areas, and freshwater marshes shall be left in their natural state providing for percolation and water quality, fisheries, wildlife habitat, aesthetic relief, and educational or recreational uses that are environmentally compatible. Streams which may still provide spawning areas for anadromous fish species should be protected from pollution and development impacts which would degrade the quality of the stream environment.
>
> ***R-RC 32.*** Riparian and freshwater habitats shall be protected through the following general means: a. setback of development from the top of the bank; b. regulation of tree and vegetation removal; c. reducing or eliminating use of herbicides, pesticides, and fertilizers by public agencies; d. control and design of grading, road construction, and bridges to minimize environmental impacts and avoid alteration of the streambed and stream banks (freespan bridges and arch culverts, for example); and e. protection of endemic, native vegetation.

***R-RC 37*.** Lands near creeks, streams, and freshwater marshes shall be considered to be in a protected buffer area, consisting of the following: 1. 150 feet from the top bank on both sides where the creek or stream is predominantly in its natural state; 2. 100 feet from the top bank on both sides of the waterway where the creek or stream has had major alterations; and 3. In the case that neither (1) nor (2) are applicable, an area sufficient to protect the stream environment from adverse impacts of adjacent development, including impacts upon habitat, from sedimentation, biochemical, thermal and aesthetic impacts.

***R-RC 38*.** Within the aforementioned buffer areas, the following restrictions and requirements shall apply to public projects, residential subdivisions, and other private non-residential development: a. No building, structure or parking lots are allowed, exceptions being those minor structures required as part of flood control projects. b. No despoiling or polluting actions shall be allowed, including grubbing, clearing, unrestricted grazing, tree cutting, grading, or debris or organic waste disposal, except for actions such as those necessary for fire suppression, maintenance of flood control channels, or removal of dead or diseased vegetation, so long as it will not adversely impact habitat value. c. Endangered plant and animal species shall be protected within the area.

***R-RC 43*.** Large scale grading and clearing of land should not be allowed if it will significantly degrade valuable habitat or impair surface water quality.

***R-RC 49*.** Retention and planting of native plant species shall be encouraged, especially for landscape uses.

***R-RC 53*.** Restoration of habitats should be encouraged and utilized wherever feasible, especially in cases where habitat preservation and flood control, water quality, or other objectives can be successfully combined.

Implementation of the Project would be consistent with these policies and goals.

Santa Clara County Oak Woodlands Impact Guidelines (2008)

In accordance with the Oak Woodlands Conservation Act, Santa Clara County created the *Santa Clara County Planning Office Guide to Evaluating Oak Woodlands Impacts* (last updated November 18, 2008). According to the County's guidelines, a land development project is considered to have a *significant* direct impact on oak woodlands if the project will result in a decrease of 0.5 acre or more of native oak canopy within oak woodland on the project site. The County requires the following mitigation measures for significant impacts to oak woodlands, which are based on the mitigation measures required under Public Resources Code §21083.4:

(A) **Planting Replacement of Oak Trees.** Pursuant to Public Resources Code §21083.4, the planting of oaks shall not fulfill more than 50 percent of the mitigation requirement for the project.

Tree replacement can be dependent upon the size of the canopy of the removed trees, the number of trees to be removed, the size of trees to be removed, the type of trees to be removed, the steepness of the slope on which trees will be removed, or the amount of room on a parcel in which trees can be planted. The objective of tree planting shall be to restore former oak woodland at a ratio of one acre of oak woodland for every one acre of impacted woodland on the project site.

The following standard mitigation ratios shall be used unless otherwise accepted by the Planning Office based on site specific characteristics:

- For the removal of one small tree (5-18 inches): two 24-inch boxed trees or three 15 gallon trees.
- For the removal of 1 medium tree (18-24 inches): three 24-inch boxed trees or four 15 gallon trees.
- For the removal of a tree larger than 24 inches: four 24-inch boxed trees or five 15 gallon trees.

All tree replacement shall be with in-kind species.

A Tree Planting and Maintenance Plan shall be submitted showing species, size, spacing and location of plantings and the location and species of established vegetation. The plan may be required to be prepared by a Licensed Landscape Architect will be subject to approval by the County Planning Office.

(B) **Conservation Easement.** Protect existing native oak trees on or off the project site from future development through a conservation easement or fee title dedication to the County or a land conservation group approved by the County.

Oak woodland offered as mitigation must be configured in such a manner as to best preserve the integrity of the oak ecosystem and minimize the ratio of edge to area. Priority should be given to conserving oak habitat adjacent to existing woodlands under conservation easements, public lands or open space lands.

As a general guide, the protection of existing oak woodlands through conservation easements should mitigate for the loss of oaks at a ratio equal to 3,000 square feet of oak woodland habitat for each oak tree impacted which is 5 inches or more in diameter. Land proposed as mitigation, when viewed with adjacent conservation land, should not result in conserved parcels of less than one acre.

(C) **Other Options.** If the onsite preservation of oak woodlands and/or tree planting is not feasible, oak woodland mitigation may occur in the form of in lieu fees paid to an agency, acceptable to the Planning Office, which shall use the fees for the preservation, restoration, or creation of oak woodland habitat. There must be a direct nexus between the amount of fees paid and mitigation required in terms of oak tree replacement and oak woodland preservation.

4.4.2 Baseline

While the description of the Project Area in Section 4.4.2.1, *Vegetative Communities and Wildlife Habitat Types*, is based on current conditions at the Quarry, the CEQA baseline against which Project impacts are assessed consists of the biological setting of the Project Area in June 2007. This section summarizes the biological communities and wildlife habitat, jurisdictional waters and wetlands, special status species, and sensitive natural communities present in the Project Area as of the June 2007 baseline as described in the *Biological Resources Assessment* completed by WRA in 2006 in support of the Applicant's original reclamation plan amendment application. This document (WRA, 2006a) is provided as **Appendix C** to this EIR.

4.4.2.1 Biological Communities and Wildlife Habitat Types

Terrestrial Habitat

The terrestrial habitat types described in Section 4.4.1.2 also were present, or presumed present, in the Project Area in June 2007.

Northern Mixed Chaparral/Coast Live Oak Woodland

Northern mixed chaparral/coast live oak woodland has been identified as one of seven distinct biological communities present in the Project Area in 2007 (WRA, 2006a). Under baseline conditions, this vegetation community was present in the buffer area north of the Quarry pit, in the vicinity of the EMSA, and in the PCRA. The Exploration Area was not within the initially proposed reclamation plan amendment boundary for the site, and so vegetation communities were not mapped in the Exploration Area as part of that proposal. However, based on the demonstrated presence of Northern mixed chaparral/coast live oak woodland habitat in the PCRA and to the west, south, and east of the Rock Plant (see Appendix C, Figure 3) and botanists' presumption that this community once dominated the Project Area, it is likely that Northern mixed chaparral/coast live oak woodland was present in the Exploration Area in 2007.

Mixed Scrub

Mixed scrub has not been identified as such in the Project Area under baseline conditions (WRA, 2006a).

Chamise Chaparral

Chamise chaparral has not been identified as such in the Project Area under baseline conditions (WRA, 2006a).

Non-native Annual Grassland

Annual grassland was present within the Project Area under baseline conditions primarily in undisturbed areas in the northeastern and eastern portions of the Project Area. Dominant non-native annual grasses included wild oat, rip-gut brome, soft chess, hare barley, and Italian ryegrass.

Ruderal Herbaceous Grassland

Ruderal herbaceous grassland has been identified as one of seven distinct biological communities present in the Project Area in 2007 (WRA, 2006a). Under baseline conditions, this vegetation community was present northwest and south of the WMSA, to a limited extent withinin the Quarry pit, the PCRA, the crusher/Quarry office support area, and Rock Plant. Although vegetation communities were not mapped in the Exploration Area as part of the Applicant's initial reclamation plan amendment proposal, ruderal herbaceous grassland is presumed to have been present in the Exploration Area in 2007 (see Appendix C, Figure 3).

Riparian Forest and Scrub

Permanente Creek and its associated riparian corridor are shown on Appendix C, Figure 3 under baseline conditions, and "riparian corridor" has been identified as one of seven distinct biological communities present in the Project Area in 2007 (WRA, 2006a). The mapped area designated as "riparian corridor" contained a dense overstory of mature riparian trees, including white alder, willow, bigleaf maple, madrone, and cottonwood (*Populus balsamifera ssp. trichocarpa*), with an understory dominated by poison oak and California blackberry.

Revegetated (Reclaimed) Area

Under baseline conditions, approximately 64 acres of the Project Area had been revegetated. Revegetation had occurred north of the WMSA, the northwestern and eastern portions of the Quarry pit, and in the western portions of the PCRA (see Appendix C, Figure 3). Revegetated areas typically were planted at a low to moderate density with native shrubs and trees including coyote brush, chamise, and oaks from locally collected cuttings and acorns. Grass species predominated, including wild oats, brome grasses, small fescue, and Italian rye-grass with some establishment of yellow star thistle throughout the open areas (WRA, 2006a).

Disturbed

Disturbed portions of the Project Area included the pit, storage areas, the Rock Plant and related areas. Plant cover in disturbed areas was sparse in light of the lack of topsoil, although some weedy and/or native plant species including yellow star thistle, coyote brush, chamise, wild oats, sweet fennel, and black mustard were present (WRA, 2006a).

Aquatic Habitat

Streams and Ponds

In June 2007, Permanente Creek traversed the PCRA and several settling ponds were present in the Project Area (see Appendix C, Figure 3).

Leidy (2007) characterized fish species in Permanente Creek in 2007 and Cleugh and Mcknight (2002) described steelhead migration barriers and the restoration potential for this stream. Leidy noted four fish introduced fish species in this creek: common carp (*Cyprinus carpio*), bluegill (*Lepomis macrochirus*), rainwater killifish (*Lucania parva*), and mosquito fish (*Gambusia affinis*); and three native species: Sacramento sucker (*Catostomus occidantalis*), threespine stickleback (*Gasterosteus aculeatus*), and California roach (*Lavinia symmetricus*) (Leidy, 2007).

CRLF had been found to inhabit four off-stream sediment settling ponds, including Pond 13, and portions of Permanente Creek (WRA, 2006a). This is consistent with the conclusions of the Habitat Assessment conducted in the Project Area in 2010, which concludes the creek does not support aquatic or upland dispersal habitat for CRLF in this region.

Wetlands

As described above, there are existing emergent freshwater wetlands and wetland seeps in the PRCA. These features, and the vegetation and wildlife species typically associated with them, also existed in 2007.

Settling Ponds

The settling ponds that existed in the Project Area under baseline conditions are shown in Appendix C, Figure 3.

4.4.2.2 Jurisdictional Waters and Wetlands

The waters in the Project Area that are described above as jurisdictional based on a 2009 report, i.e., the stream and wetlands associated with Permanente Creek, were present in 2007 and likely would have been determined to be jurisdictional if a determination had been made at that time.

4.4.2.3 Special-status Species

Special-status species observed or with a Moderate to High potential to occur within the Project Area in 2007 are identified below.

- Special status plants: Three special status plant species were determined to have a high or moderate potential to occur in the Project Area under baseline conditions: Western leatherwood, Loma Prieta hoita, and Mount Diablo cottonweed (WRA, 2006a). However, as noted above, no special-status plant species were observed during protocol level surveys that were conducted on the site in 2008.

- Special status wildlife: One special status wildlife species was determined to be present in the Project Area under baseline conditions: CRLF. Although no special status wildlife species were determined to have a high potential to occur in the Project Area, two special status species were determined to have a moderate potential to occur in woodlands and/or chaparral within or immediately adjacent to the Project Area: Cooper’s hawk and long-eared owl.

4.4.2.4 Sensitive Natural Communities

Results of a CNDDB query initiated in support of the County’s preliminary consideration of potential effects of the Applicant’s initially proposed reclamation plan amendment identified seven sensitive natural community types: North Central Coast California Roach/Stickleback/ Steelhead Stream; North Central Coast Drainage Sacramento Sucker/Roach River; North Central Coast Steelhead/Sculpin Stream; Northern Coastal Salt Marsh; Northern Interior Cypress Forest; Serpentine Bunchgrass, and Valley Oak Woodland. However, none of the terrestrial sensitive natural community types identified from the database queries occurred within the site boundary as it existed in 2007.

Permanente Creek was identified as capable of supporting North Central Coast California Roach/Stickleback/Steelhead Stream and North Central Coast Drainage Sacramento Sucker/Roach River habitat for native fish species.

4.4.3 Significance Criteria

Consistent with the County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact on biological resources if it would:

(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.

(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS.

(c) Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

(d) Have a substantial adverse effect on oak woodland habitat as defined by Oak Woodlands Conservation Law (conservation/loss of oak woodlands) – Pub. Res. Code §21083.4.

(e) 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.

(f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

(g) Conflict with any local policies or ordinances protecting biological resources:

    i. Tree Preservation Ordinance [Section C16]
    ii. Wetland Habitat [GP Policy, R-RC 25-30]
    iii. Riparian Habitat [GP Policy, R-RC 31-41]

CEQA Guidelines §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."

CEQA Guidelines § 15065 directs lead agencies to find that a project may have a significant effect 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, or reduce the number or restrict the range of an endangered, rare, or threatened species.

CEQA Guidelines §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.

In addition to the above, the CDFG and USFWS consider a project to have a significant impact if it were to cause a change in species composition or result in the measurable degradation of sensitive habitats, such as wetlands.

4.4.4 Discussion of Criteria with No Biological Resources Impacts

The Project does not have the potential to cause a significant impact related to criteria e), f), or g). The potential of the Project to cause an impact related to the remaining significance criteria is analyzed in Section 4.4.5.

(e) Implementation of the Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Permanente Creek functions as a wildlife corridor for a variety of native wildlife species. Impediments along the creek and ephemeral sections, however, prevent the creek from being a continuous wildlife corridor of aquatic habitat within the Study Area. Modifications within the creek, such as a diversion channel downstream of the Project Area, result in substantial barriers that prevent migration of anadromous fish. Additionally, upland migration habitat for CRLF is not present in the Project Area, preventing significant movements of this species in the Project Area (WRA, 2011). While native birds, bats, and mammals (including the San Francisco dusky-footed woodrat) use riparian habitat along Permanente Creek as a wildlife corridor, aquatic habitat is somewhat fragmented along the creek.

While some activities associated with the PCRA would occur within the riparian corridor of Permanente Creek, the wildlife corridor function of the creek would not be affected. PCRA activities would be conducted using minimal heavy equipment to prevent further degradation of slope stability, and the majority of ground disturbance would occur in habitats already impacted by mining activities. Additionally, Applicant proposed measures considered part of the Project would require surveys for nesting birds, roosting bats, and San Francisco dusky footed woodrat (see measures BIO-1 through BIO-6, below). These measures would prevent impacts on breeding special-status species within PRCA work areas, and maintain wildlife nursery habitat within Permanente Creek riparian corridor. Ultimately, implementation of reclamation activities would result in beneficial effects to the Permanente Creek riparian corridor.

Permanente Creek flows would be altered by the Project, and different phases of the Project continuing through the year 2030 would have varying effects on flows in Permanente Creek. Groundwater input into Permanente Creek is not projected to decrease by greater than 10 percent in any given phase, and the post-reclamation (2030) groundwater input into the creek is estimated to be almost 50 percent greater (+0.47 cubic feet per second) than 2008-2009 flow levels as the groundwater levels equilibrate after reclamation of the Quarry pit (Golder Associates, 2010). Any changes in base flow and groundwater elevations should be sufficient to maintain the existing riparian habitats and flow levels in Permanente Creek. Thus, the Project would not be expected to interfere substantially with the movement of any native resident or migratory fish or wildlife species in Permanente Creek.

In a broader context, habitats surrounding the Project Area provide large amounts of natural oak woodland habitat, which serve as a larger wildlife corridor for species dependent on this habitat. Small reductions in wooded habitats during implementation of the Project would be compensated for by the substantial increases in wildlife habitat upon final reclamation; completion of the Project would greatly increase the function of wildlife corridors surrounding the Project Area. Therefore, the Project is not expected to impact wildlife corridors present within the Project Area or the Study Area.

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f) The implementation of the Project would not fundamentally conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

A Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) currently is being prepared for the Santa Clara Valley. However, the Project site is not within the proposed boundaries of the HCP/NCCP.

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g) Implementation of the Project would not conflict with local Santa Clara County policies, including a tree removal ordinance.

Tree removal would occur during implementation of the Project, including the removal of 3.4 acres of oak woodland comprised of approximately 170 oak trees. Tree removal and replanting would be addressed by the County of Santa Clara through the RPA, and application for a tree removal permit would not be required by the Project. The Revegetation Plan would include the establishment of 6.5 acres of replacement oak woodland and the planting of 1,745 oak trees (WRA Inc., 2011).

4.4.5 Impacts and Mitigation Measures

(a) Would the Project 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?

Impact 4.4-1: Project activities could result in adverse effects on special-status and migratory birds. ***(Less than Significant Impact)***

Habitat for nesting birds is present in many undisturbed communities in the Project Area, including oak woodlands, patches of scrub, and chaparral communities. Raptors protected under the MTBA and California Fish and Game Code could nest in oak woodlands within or bordering the Project Area, including white-tailed kite, long-eared owl, and Cooper's hawk, are all considered special-status species. Shrub and chaparral areas mixed with open grassland, as well as riparian and oak woodlands, provide foraging and nesting habitat for grasshopper sparrow, loggerhead shrike, olive-sided flycatcher, and yellow warbler, all California species of special concern. In addition to nesting species of concern, nests of nearly all other native birds are protected by the MTBA and California Fish and Game Code. Within the Project Area, other nesting birds may include but are not limited to: acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), and western bluebird (*Sialia mexicana*).

Disturbed areas within the Project Area also could provide habitat for disturbance-averse native birds. Killdeer (*Charadrius vociferus*) are known to nest on open ground, and are regularly found nesting in gravel parking lots. Few other native birds species are able to nest in cleared areas, but many species can forage in heavily impacted areas, including common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), and dark-eyed junco (*Junco hyemalis*).

Tree and shrub removal and grading could directly impact nesting birds by damaging nests, causing adults to abandon nests, or directly killing or injuring nesting birds. Additionally, elevated sound levels from heavy equipment could cause adult birds to abandon nests, especially for larger bird species or birds that are accustomed to relative low ambient noise levels. Any Project activities directly or indirectly causing nest abandonment would be considered a significant impact.

Three Applicant Proposed Measures were proposed in the *Biological Resources Assessment* (WRA, 2011) to reduce Project impacts on special-status and migratory birds. As presented in Chapter 2, *Project Description*, these are:

> **APM-1: Special Status Avian Species, Non-breeding Season.** Conduct as much ground disturbance and vegetation (tree and shrub) removal as is feasible between September 1 and January 30, outside of the breeding season for most bird species.
>
> **APM-2: Special Status Avian Species, Breeding Season Surveys.** If ground disturbance or removal any trees or shrubs within the Project Area occurs between February 1 and June 15, preconstruction surveys will be performed within 14 days prior to such activities to determine the presence and location of nesting bird species. If ground disturbance or removal of vegetation occurs between June 16 and August 31, pre-construction surveys will be performed within 30 days prior to such activities.
>
> **APM-3: Special Status Avian Species, Use of Buffers for to Avoid Nests.** If active nests are present, establishment of temporary protective breeding season buffers will avoid direct mortality of these birds, nests or young. The appropriate buffer distance is dependent on the species, surrounding vegetation and topography and will be determined by a qualified biologist as appropriate to prevent nest abandonment and direct mortality during construction

With incorporation of nesting bird surveys and the establishment of variable buffers for nesting birds (depending on habitat and species) during the nesting bird season, impacts on these species would be less than significant.

Impact 4.4-2: Project activities could result in adverse effects on special-status bats. ***(Less than Significant Impact with Mitigation Incorporated)***

Habitats within and adjacent to the Project Area have the potential to support roosting special-status bat species, including western red bat and pallid bat. Specifically, these species are known to roost in buildings, in tree cavities, and under exfoliating bark (particularly the pallid bat), and in tree foliage (particularly the western red bat). Structures at the Rock Plant and within the crusher/Quarry office support area may support bat roosting, and oak woodland surrounding the Project Area contain suitable roosting habitat for bats. Additionally, smaller oak stands within the Project Area could support roosting bats, although many of these habitats may be too disturbed for bat roosting. Wooded habitats within and directly adjacent to the Quarry pit, WMSA, Surge Pile, Rock Plant, Exploration Area, and PCRA have large trees and snags capable of supporting roosting bats. Additionally, any Project components adjacent to wooded areas of the Buffer Zone could be in close proximity to roosting bats.

Tree and shrub removal and grading could directly impact roosting bats, and elevated sound levels from heavy equipment could cause adult bats to abandon maternity roosts. In addition, any increase in night lighting for the Project (see, for example, Impact 4.1-5) could result in disturbance to bat movement and behavior and may be a potential indirect impact. Any Project activities directly or indirectly causing roost abandonment would be considered a significant impact.

Measures proposed by the Applicant to address potential Project impacts to bats include:

> **APM-4: Non-Roosting Season Minimization Measures.** Removal of potential bat roost habitat (buildings, large trees, snags, vertical rock faces with interstitial crevices; described above under impact 4.4.3) or construction activities within 250 feet of potential bat roost habitat will take place in September and October to avoid impacts to bat maternity or hibernation roosts.
>
> **APM-5: Hibernation Season Minimization Measures.** If the above work window is not feasible, prior to construction, bat roost surveys will be conducted in the Project Area to determine if bats are occupying roosts. If bats are present, a suitable buffer around the roost site will be instated or bats will be excluded from the roost using methods recommended by a qualified biologist.
>
> **APM-6: Maternity Season Emergence Minimization Measures.** Any trees felled during vegetation removal will not be chipped or otherwise disturbed for a period of 48 hours to allow any undetected bats potentially occupying these trees to escape

However, additional mitigation is necessary to provide greater detail about the required bat surveys and avoidance measures that would be implemented to reduce potential impacts to bats to a less-than-significant level:

Mitigation Measure 4.4-2a: Use of Buffers near Active Roosts. During the November 1 to March 31 hibernation season, work shall not be conducted within 100 feet of woodland habitat that provides suitable bat roosting habitat. Bat presence is difficult to detect using emergence surveys during this period due to decreased flight and foraging behavior. If a qualified bat biologist determines that woodland areas do not provide suitable hibernating conditions for bats and they are unlikely to be present in the area, work may commence as planned.

Mitigation Measure 4.4-2b: Roosting Bats, Maternity Roosting Season. Nighttime evening emergence surveys and/or internal searches within large tree cavities shall be conducted by a qualified biologist during the maternity season (April 1 to August 31) to determine presence/absence of bat maternity roosts within 100 feet of wooded Project boundaries. All active roosts identified during surveys shall be protected by a buffer to be determined by a qualified bat biologist. The buffer shall be determined by the type of bat observed, topography, slope, aspect, surrounding vegetation, sensitivity of roost, type of potential disturbance, etc. Each exclusion zone shall remain in place until the end of the maternity roosting season. If no active roosts are identified, then work may commence as planned. Survey results are valid for 30 days from the survey date. Should work commence later than 30 days from the survey date, surveys shall be repeated.

Operations may continue for many years. Surveys do not need to be repeated annually unless additional clearing of potential roosting or hibernation habitat could occur outside of the non-roosting season.

Mitigation Measure 4.4-2c: Bat Roost Replacement. All special-status bat roosts destroyed by the Project shall be replaced by the Applicant at a 1:1 ratio onsite with a roost suitable for the displaced species (e.g., bat houses for colonial roosters). The design of such replacement habitat shall be coordinated with CDFG. The new roost shall be in place prior to the time that the bats are expected to use the roost (e.g., prior to April 1 if the roost destroyed by the Project was used by a maternity colony), and shall be monitored periodically for 5 years to ensure proper roosting habitat characteristics (e.g., suitable temperature and no leaks). The roost shall be modified as necessary to provide a suitable roosting environment for the target bat species.

Significance after Mitigation: Less than significant. Seasonal restrictions on Project activities near wooded portions of the Project Area, along with bat surveys during the maternity roosting season and replacement of destroyed roosts with bat boxes, would reduce impacts on special-status bat species to a less-than-significant level.

Impact 4.4-3: Project activities could result in adverse effects on the San Francisco dusky-footed woodrat. *(Less than Significant Impact)*

San Francisco dusky-footed woodrat are known to nest in several vegetated areas of the Project Area containing oaks and dense shrub cover. Vegetation removal, grubbing, grading, or other ground disturbance activities in wooded or scrub habitats could result in direct impacts on dusky-footed woodrats. Direct impacts could include mortality of adults or young, as well as destruction of woodrat stick nests. Indirect impacts to dusky-footed woodrat could include increased predation caused by expanding the range of urban adapted predators, such as raccoon and coyote, into habitats that were previously inaccessible. Additionally increased night time lighting, noise or other human disturbances could cause abandonment of young. Any of these direct or indirect impacts would be considered significant.

The following measure has been proposed by the Applicant to address potential Project impacts to San Francisco dusky-footed woodrat:

> **APM-BIO-7a: San Francisco Dusky-footed Woodrat.** Within 30 days prior to initial ground disturbance in woodland or scrub/chaparral communities, the Applicant shall conduct pre-construction surveys for active woodrat stick nests that could be directly impacted. Surveys should take place in all suitable habitat types within the Project Area. Any stick nests within active work areas will be flagged and dismantled under the supervision of a biologist. If young are encountered during the dismantling process, the material will be placed back on the nest and remain unmolested for two to three weeks in order to give the young enough time to mature and leave of their own accord. After two to three weeks, the nest dismantling process may begin again. Nest material should be moved to suitable adjacent areas (oak woodland, scrub, or chaparral) that will not be disturbed. If construction does not occur within 30 days of the pre-construction survey, surveys should be repeated.

> **APM-BIO-7a: San Francisco Dusky-footed Woodrat.** To reduce indirect impacts on San Francisco dusky-footed woodrat by attracting urban-adapted predators, trash and food waste should be disposed of in proper waste receptacles and emptied on a regular basis. Additionally, quarry personnel, contractors, and visitors should be dissuaded from feeding wildlife within the Permanente Property.

With incorporation of San Francisco dusky-footed woodrat preconstruction surveys with avoidance measures, dismantling of nests without young, and relocation of nest material, impacts on this species would be less than significant.

Impact 4.4-4: Project activities could result in adverse effects on special status aquatic organisms. *(Less than Significant Impact)*

As described above in Section 4.4.2.3, *Special-status Species*, CRLF is the only special status aquatic species of concern in the Study Area. However, no CRLF have been found during surveys in the Project Area. Upland migration habitat for CRLF is not present in the Project Area, preventing significant movements of this species in the Project Area (WRA, 2011).

Consequently, it is considered unlikely for the species to occur in the Project Area and therefore no direct impacts to special status aquatic species would be expected to result from Project activities. The potential for indirect impacts is discussed under Impact 4.4-8, below, and determined to be less than significant.

Impact 4.4-5: Project activities could result in selenium-burdened runoff reaching aquatic habitats and, thereby, in deleterious effects to aquatic organisms and their prey base. (*Significant and Unavoidable Impact)*

Selenium is a bioaccumulative pollutant. Aquatic life is exposed to selenium primarily through their diet. Risks stem from aquatic life eating food that is contaminated with selenium rather than from direct exposure to selenium in the water. Although selenium bioaccumulates, that is, accumulates in tissues of aquatic organisms, it is not significantly biomagnified. Unlike mercury or PCBs, concentrations of selenium do not increase significantly in animals at each level of the food chain going from prey to predator. For aquatic life, the toxic effects with the lowest thresholds are effects on the growth and survival of juvenile fish and effects on larval offspring of the adult fish that were exposed to excessive selenium. In the latter case, besides reducing survival, selenium causes skeletal deformities. Selenium risks to birds that eat aquatic organisms have been observed in some locations, such as Kesterson Reservoir in California.

As discussed in the Section 4.10, *Hydrology and Water Quality*, the Project would span a period of about 20 years. During that time, active ground disturbance would occur in the Project Area as a result of excavation, grading, contouring, hauling, and, in the PCRA, boulder removal from Permanente Creek and affected upslope areas. If the appropriate type of limestone were to be exposed to air and precipitation, then selenium could be produced and reach Permanente Creek in the form of runoff. This would cause a significant adverse impact to aquatic habitat. The implementation of Mitigation Measures 4.10-2a and 4.10-2b would reduce the potential for this impact to occur during the 20-year Project.

> **Mitigation Measure 4.4-5: Selenium-related Impacts to Aquatic Habitat.** Implement Mitigation Measures 4.10-2a: Interim Stormwater Control and Sediment Management, and 4.10-2b: EMSA Interim Stormwater Monitoring Plan.

Significance after Mitigation: Significant and Unavoidable. Implementation of Mitigation Measure 4.10-2a would establish additional BMPs to ensure that over the 20-year duration of the Project a rigorous stormwater and sediment control implementation plan is developed and implemented. Implementation of Mitigation Measure 4.10-2b would supplement preexisting surface water monitoring required by the General Industrial Storm Water and Sand and Gravel NPDES Permit and be designed specifically to monitor surface water during reclamation activities in active and inactive excavation and backfill areas. Together, these measures would reduce the potential for stormwater runoff to deliver sediment and selenium to Permanente Creek during the Project activities, but would not be sufficient to fully eliminate the possibility.

Therefore, this interim impact would remain significant and unavoidable until final reclamation is complete.

After reclamation is complete, selenium-related impacts to Permanente Creek would be addressed through the implementation of Mitigation Measures 4.10-1a and 4.10-1b, which would require verification that non-limestone materials are used as the final reclamation cover, and that water monitoring is conducted to ensure stormwater and non-stormwater discharges do not contain selenium concentrations exceeding Basin Plan Benchmark values. Implementation of these measures would ensure that post-reclamation selenium impacts to aquatic species in Permanente Creek would be less than significant.

(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community indentified in local or regional plans, policies, and regulations by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

The Project would potentially impact riparian habitat associated with Permanente Creek, freshwater wetlands associated with Permanente Creek, and oak woodlands present in several different Project areas. Impacts to freshwater wetland are considered under (c) discussing impacts to jurisdictional waters and wetlands.

Impact 4.4-6: Project activities could result in the loss or degradation of riparian habitat associated with Permanente Creek. ***(Less than Significant Impact)***

Reclamation treatments, channel modifications, and removal of man-made facilities associated with the PCRA would occur within riparian habitat along Permanente Creek. Many treatments would be located in disturbed or scrub habitats upslope of the Permanente Creek riparian corridor, and would not impact riparian habitats. Treatments that may impact riparian vegetation include boulder removal, slide removal, or soil treatment using heavy equipment, or installation of outfall pipes and flow dissipators in PCRA Subarea 2. While tree removal is not proposed in the PCRA, removal of understory vegetation including herbs and shrubs could alter the function and character of riparian habitats.

The goal of the PCRA is to reclaim reaches of the Permanente Creek riparian corridor disturbed by mining activities by stabilizing slopes and revegetating affected areas. This would include hand planting of woody riparian vegetation, as well as seeding for understory riparian vegetation. Five-year performance standards identified in the Revegetation Plan (WRA Inc., 2011) include:

- Species richness of two tree or shrub species per plot;
- 45percent canopy cover;
- Average density of 200 individuals per acre;
- 60 percent survival of planted individuals.

Impacts from initial PRCA treatments would be minimal, as hand methods would be implemented when feasible to avoid further slope destabilization and tree removal is not anticipated. Impacts in the PRCA would also be temporary in nature, and revegetation adhering to performance standards would ensure affected areas would eventually function as riparian habitat. The PRCA would have a net benefit on riparian habitat in the long-term, through creation of additional riparian habitat along Permanente Creek. Based on these factors, impacts from the PRCA on riparian habitat are considered less than significant.

Impact 4.4-7: Project activities could result in the loss of native oak woodland habitat as defined by Oak Woodlands Conservation Law. ***(Less than Significant Impact with Mitigation Incorporated)***

Oak woodlands are susceptible to loss in the County as a result of urban development, lack of oak regeneration, Sudden Oak Death, invasive species, changes in the frequency and intensity of fires within oak woodlands, and habitat fragmentation. Under California Public Resources Code §21083.4, counties are required to evaluate impacts to oak woodlands as part of the environmental analysis conducted in compliance with CEQA, and determine whether a project's impacts to oak woodlands are significant. In response to this statute, the County developed its own set of significance criteria for impacts to oak woodlands, whereby a decrease of 0.5 acre or more in the native oak canopy of an oak woodland is considered a significant impact.

As shown in Appendix C Figure 3, chaparral/oak woodlands communities were present in the Project Area under baseline conditions at the westernmost tip of the WMSA, some areas of the pit, EMSA, surge pile, Rock Plant, and PCRA. As shown in Table 4.4-1, approximately 2.8 acres of oak woodlands and forest communities currently are present in the Quarry pit, 0.3 acre in the WMSA, none in the EMSA, 0.01 acre in the surge pile, 0.3 acre in the Rock Plant, and 1.2 acres in the PCRA.

Reclamation of the Project Area would include removal of the materials from the WMSA to the Quarry pit for use as backfill; stabilization, contouring, grading, and revegetation of the EMSA. The surge pile and Rock Plant also would be reclaimed and revegetated. Reclamation of the PCRA also would involve some ground disturbance. Equipment use and other reclamation activities could affect existing oak woodland habitat. However, as part of the Project's Revegetation Plan, approximately 1,745 oak trees would be planted on north-facing benches using a mixture of acorn and container plantings, and approximately 21.7 acres of more visible east-facing benches would be planted with 75 percent (approximately 8,660) grey pine and 25 percent other native tree and shrub plantings that are common to oak woodland habitats. Grey pines establish more readily than oak seedlings in sunnier and harsher conditions and, and the developing pines would provide a protected microclimate that would support oak woodland establishment. Consequently, implementation of the Project would cause a less than significant impact to oak woodland habitat while active reclamation is in progress, and, once complete, would improve oak woodland habitat conditions relative to baseline conditions.

Oak woodlands in the Project Area may be indirectly impacted by Project activities should they introduce non-native plant species that outcompete native oak trees, or introduce Sudden Oak Death into the oak woodlands. Sudden Oak Death is caused by *Phytophthora ramorum*, an invasive water mold of unknown origin. This pathogen produces small sacs (sporangia) of swimming spores that readily break off and can spread in rain splash, drip, stem flow, wind, and by contaminated materials. It has killed millions of trees since it first became evident in the mid-1990s, and resulted in reduced ecosystem functions, increased fire and safety hazards, and reduced property values in developed areas (BLM, 2009). No focused surveys for sudden oak death have been conducted on the site; however, it is assumed that sudden oak death does occur within the site due to the close proximity of known infected areas (WRA, 2011). Humans and construction equipment working in areas that are infected with Sudden Oak Death could spread this disease to non-infected areas of the Project Area. Common host species that may be present within or near the Project Area include coast live oak, madrone, bay laurel, and manzanita. The introduction of non-native species or Sudden Oak Death into healthy oak woodlands in the Project Area as a result of contaminated construction equipment would result in significant indirect impacts on oak woodlands.

The following measure has been proposed by the Applicant to address potential Project impacts related to the introduction of invasive plants and pathogens:

> **APM-BIO-8: Introduction of Invasive Plants or Pathogens.** If regulated or restricted plant materials are to be transported between the Project Area and a location in a non-infested county or state, the spread of the Sudden Oak Death pathogen shall be avoided by obtaining the necessary certificates of transport pursuant to the regulations described in the Biological Resources Assessment prepared for the Lehigh Permanente Quarry by WRA Environmental Consultants, dated December 2011.

To supplement APM-BIO-8, the implementation of Mitigation Measure 4.4-7 would further reduce potential impacts that could result from the inadvertent introduction of invasive plants or pathogens.

> **Mitigation Measure 4.4-7: Sudden Oak Death Minimization Measures.** To reduce the possibility of spreading Sudden Oak Death to oak woodlands in the Study Area, the Applicant shall implement the following measures:

- Prior to any reclamation work within the Project Area, equipment shall be sanitized, including shoes, pruning gear, trucks, and heavy equipment such as earthmoving, tree trimming, chipping, or mowing equipment. Except for trucks, this equipment shall remain onsite for the duration of Project activities and shall not be transferred between this and other worksites, as doing so increases the potential of transferring infected spores to or from another site.
- After the completion of work activities, any accumulation of plant debris (especially leaves), soil, and mud shall be washed off of equipment or otherwise removed onsite, and air filters shall be blown out.
- All contractors shall have sanitation kits onsite for cleaning equipment. Sanitation kits should contain chlorine bleach (10/90 mixture bleach to water) or Clorox Clean-Up or Lysol, scrub brush, metal scraper, boot brush, and plastic gloves.
- All organic material imported for mixing with Quarry pit backfill shall have been composted at a facility that meets the standards of Title 14 California Code of Regulations, Division 7, Chapter 3.1; alternative sources of organic material may be

used if approved by the County of Santa Clara Agricultural Commissioner as being as effective as the composting process to sanitize SOD-infected materials.

- All other imported fill material, soil amendments, gravel, etc. required for construction and/or restoration activities to be placed within the upper 12 inches of the ground surface shall be free of vegetation or plant material.

Significance after Mitigation: Less than significant. Oak woodland impacts would be mitigated to a less-than-significant level through establishment of a conservation easement, preventing and monitoring invasive weed establishment, and taking precautions to slow the spread of Sudden Oak Death.

(c) Implementation of the Project could adversely affect wetlands as defined by §404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.

Impact 4.4-8: Project activities could result in substantial adverse effects on wetlands and jurisdictional waters associated with Permanente Creek through direct removal, filling, hydrological interruption, or other means. ***(Less than Significant Impact with Mitigation Incorporated)***

Direct Impacts

Restoration activities associated with elements of the PCRA, including channel modifications and removal of man-made facilities, have the potential to impact jurisdictional waters and wetlands. Many treatments associated with the PCRA would occur in areas that have been heavily disturbed and do not contain wetlands, such as areas dominated by overburden materials associated with the WMSA. However, erosion control measures involving ground disturbance, BMP installation, and revegetation would occur within largely undisturbed scrub or riparian habitats directly adjacent to tributaries and wetlands associated with Permanente Creek. A wetland delineation was conducted along Permanente Creek in 2008 which identified all wetlands and drainages within 100 feet of the creek, including any drainages or features that could be impacted by implementation of the PCRA (WRA, 2008). Several wetland features associated with Permanente Creek were identified within the PRCA, as well as one drainage classified as “non-relatively permanent waters”; these features are all considered potentially jurisdictional by both the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board. According to the delineation report, these features include:

- W11, a wetland directly abutting Permanente Creek located within PCRA Subarea 2;
- T13, a non-relatively permanent drainage located within PCRA Subarea 2;
- W10, a wetland directly abutting Permanente Creek located within PCRA Subareas 2 and 3;
- W9, a wetland directly abutting Permanente Creek located within PCRA Subarea 3;
- W8, a wetland directly abutting Permanente Creek located within PCRA Subarea 4;

- Pond 13, an impoundment of jurisdictional waters located within PCRA Subarea 7.

Direct wetland impacts could occur if any equipment or foot traffic occurs within jurisdictional waters or wetlands, soil treatment or boulder removal using heavy equipment results in dirt or other materials entering jurisdictional wetlands or waters, or hydroseed is deposited in jurisdictional waters or wetlands. All these activities would be considered fill, and would result in significant wetland impacts.

Specifically, improvements to Basin Outlets and Flow Controls in PRCA Subarea 2 could potentially impact a jurisdictional drainage tributary to Permanente Creek. Installation of outfall pipes or energy dissipaters discharging water from two proposed sediment basins are constructed within a drainage identified as T13 in the wetland delineation would result in significant impacts on potentially jurisdictional waters. These direct impacts would be mitigated to less-than-significant levels through implementation of Mitigation Measures 4.4.8a and 4.4.8b.

Mitigation Measure 4.4-8a: Wetland Identification and Avoidance. A qualified wetland biologist shall physically delineate all wetland features mentioned above before any PCRA activities begin, and when feasible, reclamation activities shall completely avoid these areas. Silt fence shall be installed between jurisdictional waters or wetlands and areas sprayed with hydroseed to prevent filling of wetlands with tackifier or other hydroseed material. Use of hand-seeding or working with hand tools may be required to avoid equipment impacting wetlands.

Mitigation Measure 4.4-8b: Wetland Mitigation Plan. If avoidance of jurisdictional waters or wetlands is not feasible, the following measures shall be implemented:

A qualified wetland biologist shall prepare a wetland Mitigation and Monitoring Plan (MMP). The MMP shall outline the anticipated mitigation obligations for temporary and permanent impacts to waters of the U.S., including wetlands, resulting from PCRA activities. The MMP shall include:

- Baseline information;
- Anticipated habitat enhancements to be achieved through compensatory actions, including mitigation site location and hydrology;
- Performance and success criteria for wetland creation or enhancement including, but not limited to, the following:
  - At least 70 percent survival of installed plants for each of the first three years following planting.
  - Performance criteria for vegetation percent cover in Years 1-4 as follows: at least 10 percent cover of installed plants in Year 1; at least 20 percent cover in Year 2; at least 30 percent cover in Year 3; at least 40 percent cover in Year 4.
  - Performance criteria for hydrology in Years 1-5 as follows: Fourteen or more consecutive days of flooding, ponding, or a water table 12 inches or less below the soil surface during the growing season at a minimum frequency of three of the five monitoring years; OR establishment of a prevalence of wetland obligate plant species.

- Invasive plant species that threaten the success of created or enhanced wetlands should not contribute relative cover greater than 35 percent in year 1, 20 percent in years 2 and 3, 15 percent in year 4, and 10 percent in year 5.
- If necessary, supplemental water shall be provided by a water truck for the first two years following installation. Any supplemental water must be removed or turned off for a minimum of two consecutive years prior to the end of the monitoring period, and the wetland must meet all other criteria during this period. At the end of the five year monitoring period, the wetland must be self sufficient and capable of persistence without supplemental water.
- At least 75 percent cover by hydrophytic vegetation at the end of the five-year monitoring period. In addition, wetland hydrology and hydric soils as defined by the Corps (ACOE, 2008) must be present and defined as follows:
  - *Hydrophytic vegetation* – A plant community occurring in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.
  - *Wetland hydrology* – Identified by indicators such as sediment deposits, water stains on vegetation, and oxidized rhizospheres along living roots in the upper 12 inches of the soil, or satisfaction of the hydrology performance criteria listed above.
  - *Hydric soils* – Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions, which are often characterized by features such as redox concentrations, which form by the reduction, translocation, and/or oxidation of iron and manganese oxides. Hydric soils may lack hydric indicators for a number of reasons. In such cases, the same standard used to determine wetland hydrology when indicators are lacking can be used.
- Five years after any wetland creation, a wetland delineation shall be performed to determine whether created wetlands are developing as planned. If they are not, remedial measures shall be taken to ensure that the Project's mitigation obligations are met.

• Monitoring and reporting requirements.

The WMP would also include conceptual site specific plans to compensate for wetland losses resulting from the project. These may include, but are not be limited to, the provision of onsite mitigation through wetland creation or enhancement of existing jurisdictional features; additional onsite wetland creation or enhancement; or off-site mitigation.

Significance after Mitigation: Less than significant.

Indirect Impacts

Impacts to water quality or alterations to flow as a result of the Project could impact sensitive riparian or wetland communities and protected and non-protected aquatic organisms. Permanente Creek has ephemeral hydrology, and changes of the creek's hydrology would occur throughout the proposed Project. These include fluctuations in groundwater flows and discharge and surface water runoff, and these mechanisms are discussed in depth in Golder's Hydrologic Investigation -

Permanente Quarry Reclamation Plan Update (2010). The effects of the potential changes in hydrology on sensitive biological habitats and species are discussed below.

Groundwater modeling conducted by Golder Associates (2010) predicts that during the final years of quarrying within the Quarry pit, groundwater input to Permanente Creek would be reduced by approximately 10 percent (-0.11 cfs; as modeled on the 2008-2009 water year). As the Quarry pit is reclaimed, the groundwater percolation into the Quarry pit would equilibrate resulting in an increase in groundwater flows into Permanente Creek by approximately 40 percent (+0.46 cfs). The final reclaimed flows (approximately year 2030) are estimated to be almost 50 percent greater (+0.47 cfs) than 2008-2009 flow levels as the groundwater levels equilibrate after reclamation of the Quarry pit. As the Quarry pit is filled with overburden, active pumping of groundwater seepage from the Quarry pit into Permanente Creek would be reduced. This reduction in flows would be countered by the rise in groundwater elevation which would result in an increase in direct groundwater discharge into Permanente Creek. This increase in base flow and groundwater elevations should be sufficient to maintain the existing riparian habitats and flow levels in Permanente Creek. The combination of annual stormwater flows in addition to the overall increase in groundwater discharge would be sufficient to maintain the existing habitats along Permanente Creek below the Quarry pit discharge area (Pond 4a). In a technical memo prepared by the Project engineer (Chang, 2010), annual precipitation in the Permanente watershed is of sufficient quantity to fill Pond 17 which supports CRLF. A calculation of monthly evaporation rates in the same memo shows that a maximum of 2.5 feet of water would evaporate from the pond over the dry summer months. This would leave over 3 feet of water in the pond, an amount sufficient to support CRLF breeding and development. The ephemeral reach of Permanente Creek does not convey surface flow except for several weeks during the wettest portion of the year. The Habitat Assessment conducted by Dr. Jennings (2010) concludes the creek does not support aquatic or upland dispersal habitat for CRLF in this region, and no CRLF have been observed during protocol level surveys for CRLF in 2006 and 2007.

A small but self-sustaining population of resident rainbow trout is known to inhabit and spawn upstream of the ephemeral reach of Permanente Creek. Rainbow trout have been observed outmigrating through the ephemeral reach when surface flow is present. If indirect impacts to Permanente Creek were to take place during the period when surface flow is present, outmigration of Rainbow Trout may be disrupted or mortality to fish may result from alterations to water chemistry, sedimentation, or desiccation. This population is not considered special-status, as it is geographically separated from steelhead populations associated with San Francisco Bay.

Hydrology calculations show that Pond 14, the primary CRLF breeding pond in the northeast of the Permanente Property but outside of the RPA, would be filled during the rainy season in an average rainfall year (Chang, 2010). While a maximum of 2.5 feet of water would be lost from the pond due to evaporation, the pond would retain at least three feet of water, sufficient to sustain CRLF through development, at least into August, which is the longest that CRLF juveniles would take to develop. This does not take into account additional water that the pond may receive in the dry season as a result of groundwater discharge into Permanente Creek upstream of Pond 14. Therefore there would be sufficient water discharging into Pond 14 annually such that the CRLF population would not be adversely affected by any changes to creek flows during Project implementation. The increase in base flow as a result of final reclamation is expected to increase both creek depth and wetted width and should increase connectivity of Permanente Creek through the ephemeral reach resulting in an increase of available habitat for fish and aquatic amphibians. This should result in an improvement over existing conditions including recruitment of riparian and wetland vegetation along the ephemeral reach and associated recruitment of benthic macroinvertibrates and amphibians as well. This impact would be less than significant.

(d) Could the Project have a substantial adverse effect on oak woodland habitat as defined by Oak Woodlands Conservation Law (conservation/loss of oak woodlands) – Pub. Res. Code §21083.4?

See discussion in Impact 4.4-7, above.

4.4.6 Alternatives

4.4.6.1 Alternative 1: Complete Backfill Alternative

In the Complete Backfill Alternative, all material would be removed from the EMSA upon the conclusion of mining activities and deposited into the Quarry pit. Similar to the proposed Project, both the EMSA and the Quarry pit would be reclaimed and revegetated after mining and overburden storage are complete. The Complete Backfill Alternative would result in similar potential impacts as the proposed Project, including potential impacts to nesting birds, roosting bats, dusky-footed woodrat nests, and the potential spread of plant pathogens to oak woodlands. Potential impacts to these resources would be similar in duration and intensity to impacts described for the proposed Project, as no additional areas would be impacted or reclaimed, but only the location of final materials storage would change. No new impacts on biological resources would occur from the implementation of this alternative.

Short-term impacts on biological resources due to selenium-laden runoff entering Permanente Creek would be essentially the same as the Project, as runoff could continue to enter the creek prior to final reclamation. Long-term impacts on biological resources due to selenium-laden runoff entering Permanente Creek would be somewhat lessened in this alternative compared to the Project. The Complete Backfill Alternative would result in impacts on aquatic wildlife in Permanente Creek similar to the proposed Project until final reclamation of the EMSA begins. However, unlike the proposed Project, the entirety of limestone-created sediment-laden runoff would be physically removed from the EMSA after final reclamation. This would potentially result in less selenium entering Permanente Creek after final reclamation has been completed. Following the application of APMs and mitigation measures, each of the above impacts was less than significant for the proposed Project. With implementation of Mitigation Measures 4.4-2a, b, and c, (special-status bats), 4.4-5 (selenium impacts to aquatic habitats), 4.4-7 (oak woodland), and 4.4-8a and b (wetlands and jurisdictional waters), Alternative 1 would have impacts similar to the proposed Project.

4.4.6.2 Alternative 2: Central Materials Storage Area Alternative

In the Central Materials Storage Area Alternative, the EMSA would be immediately reclaimed and capped, and new overburden would be stored in an area directly west of the western edge of the EMSA, referred to as the Central Materials Storage Area (CMSA). The CMSA alternative would result in the same potential impacts to biological resources as the proposed Project, including potential impacts on nesting birds, roosting bats, dusky-footed woodrat nests, and the potential spread of plant pathogens to oak woodlands. Potential impacts to these resources would be greater in intensity than the proposed Project, as a larger area would be disturbed and would need to be reclaimed (i.e., both the EMSA and the new CMSA would be constructed and require reclamation, rather than solely the EMSA). These areas would not, however, generate any impacts that have not been described and addressed in the analysis of the proposed Project. The CMSA would be similar to the EMSA in character and surrounding habitat, and the use and reclamation of both these areas would not significantly differ from the EMSA under the proposed Project.

Both short- and long-term impacts on biological resources due to selenium-laden runoff entering Permanente Creek would be reduced under the CMSA Alternative relative to the proposed Project. Reclamation of the EMSA would begin immediately, which would include capping overburden and containing drainage of selenium-laden runoff. Unlike in the proposed Project, this alternative would result in an immediate reduction in selenium concentrations of runoff impacting aquatic wildlife in Permanente Creek. Additionally, interim drainage controls would be implemented in the CMSA, which would contain selenium-laden runoff in the CMSA and further reduce impacts on aquatic wildlife in Permanente Creek.

Following the application of APMs and mitigation, each of the above impacts was less than significant for the proposed Project. With implementation of Mitigation Measures 4.4-2a, b, and c, (special-status bats), 4.4-5 (selenium impacts to aquatic habitats), 4.4-7 (oak woodland), and 4.4-8a and b (wetlands and jurisdictional waters), Alternative 2 would have impacts similar to the proposed Project.

4.4.6.3 No Project Alternative

In the No Project Alternative, a SMARA-compliant reclamation plan would still need to be established and overburden storage in the EMSA would cease due to Orders to Comply/Notices of Violation issued by Santa Clara County in 2006 and 2008. This alternative would be similar to the proposed Project. The No Project Alternative would result in similar impacts as the proposed Project during reclamation, including potential impacts on nesting birds, roosting bats, dusky-footed woodrat nests, and the potential spread of plant pathogens to oak woodlands. Potential impacts to these resources would be similar to the proposed Project in intensity and duration.

Short-term impacts on biological resources due to selenium-laden runoff entering Permanente Creek may be greater than for the Project, as final reclamation of the EMSA would occur later under the No Project Alternative resulting in a longer interim period before effective controls would be in place. Long-term impacts on biological resources due to selenium-laden runoff entering Permanente Creek would be reduced under the No Project Alternative, relative to the proposed Project. While runoff from the EMSA would still enter Permanente Creek with elevated selenium levels until final reclamation, no additional overburden would be stored in the EMSA, preventing an increase in source material for selenium-laden runoff. In contrast, overburden storage in the EMSA under the proposed Project would continue until the area has reached storage capacity, resulting in continuous and potentially increased selenium-laden runoff from the EMSA until final reclamation occurs. Under the No Project Alternative, an approved reclamation plan amendment would be prepared that would likely incorporate the same APMs to address biological resources as for the proposed Project. With implementation of Mitigation Measures 4.4-2a, b, and c, (special-status bats), 4.4-5 (selenium impacts to aquatic habitats), 4.4-7 (oak woodland), and 4.4-8a and b (wetlands and jurisdictional waters), the No Project Alternative would have impacts similar to the proposed Project.

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4.5 Cultural and Paleontological Resources

Cultural resources include historic-period resources (buildings, structures, objects, and districts), and prehistoric resources including archaeological resources, paleontological resources, and human remains. This section describes the cultural resources present in the vicinity of the proposed Project, evaluates the potential impacts of the Project on those resources, and describes mitigation measures to reduce impacts to a less than significant level. This section is based on the cultural resources investigations in the Project Area conducted on the County's behalf by Archives and Architecture in 2011 (Maggi et al., 2011).

4.5.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.5.1 provides setting information specific to cultural and paleontological resources.

4.5.1.1 Paleontological Setting

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered nonrenewable resources because the organisms they represent no longer exist. The following sections discuss existing conditions with respect to paleontological resources in the Project Area.

Paleontological Assessment Standards

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources (SVP, 1995). Most practicing paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists and are the standard against which paleontological monitoring and mitigation programs are judged.

The SVP (1995) outlined criteria for screening the paleontological potential[1] of rock units and established assessment and mitigation procedures tailored to such potential. **Table 4.5-1** lists the criteria for high-potential, undetermined, and low-potential rock units.

1 Paleontological potential refers to the likelihood that a rock unit will yield a unique or significant paleontological resource.

TABLE 4.5-1
PALEONTOLOGICAL POTENTIAL CRITERIA

Paleontological Potential	Description
High	Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
Undetermined	Geologic units for which little to no information is available.
Low	Geologic units that are known not to have produced a substantial body of significant paleontological material.

SOURCE: SVP, 1995.

Paleontological Resource Potential

The fossil-yielding potential of a particular area is highly dependent on the geologic age and origin of the underlying rocks. As discussed in Section 4.7, *Geology, Soils and Seismicity*, the Project Area is largely underlain by land previously disturbed by active mining in the Quarry pit, the placement of waste rock in storage areas (EMSA and WMSA), aggregate stockpiling, quarry operations areas such as the rock crusher, and a network of earthen access roads. Undisturbed areas within the Project Area are underlain by a combination of surficial deposits such as alluvium of Permanente Creek, colluvium that accumulates in hollows and swales, and native soils. Generally, for a fossil to have value as a cultural or scientific resource, it must be identifiable (diagnostic), and found in-place (*in-situ*). Thus, undisturbed sedimentary bedrock formations are generally the most likely settings for discovery of unique or significant vertebrate fossils. Human-placed fills, waste rock and aggregate product, as well as colluvial deposits and native soils overlying bedrock have a low potential to yield unique or significant fossils. In the Project Area, underlying the surficial materials are two bedrock formations, the Franciscan Complex and the Santa Clara Formation (see Section 4.7, *Geology, Soils, and Seismicity*).

Most of the Project Area is underlain by rocks of the Franciscan Complex (Cretaceous-aged greywacke and sheared rocks). There are no records of vertebrate fossils within the Franciscan Complex in the University of California Museum of Paleontology database (UCMP, 2010). Vertebrate fossils are rarely found in Franciscan bedrock due to its long history of shearing and deformation from tectonic processes and its deep-ocean origin. Any fossils originally present in rock units of the Franciscan Complex have generally been destroyed because they have been altered under high heat and pressures, chaotically mixed, or severely fractured. Thus, Franciscan Complex bedrock has a low potential to yield paleontological resources per Table 4.5-1.

A small portion of the Project Area is underlain by the Santa Clara Formation in the eastern portion of the EMSA. It is a sedimentary rock unit that is Pliocene (1.8 to 5.3 million years old) to Pliestocene (1.8 million to 10 thousand years old) in age has yielded fossilized plants and animals in other locations in the Bay Area. The University of California Museum of Paleontology database contains five records of vertebrate fossils that originated in the Santa Clara Formation, including teeth and bone fragments from several extinct species of hoofed mammals (UCMP, 2010). The vertebrate fossil localities are not in close proximity to the Project Area, but include areas along Scott Creek east of Milpitas, a part of the Stanford Campus, and Anderson Lake east of Morgan Hill. Plant fossils found within the unit include petrified wood fragments as large as 60 centimeters (cm) in diameter at Coal Mine Ridge, South of Portola Valley, in the Santa Cruz Mountains (USGS, 2000). Fossil discoveries of this kind provide scientific value because they help establish a historical record of past plant and animal life and can assist geologists in dating rock formations. Because the Santa Clara Formation has yielded vertebrate fossils, it qualifies under the Society of Vertebrate Paleontology guidelines as a unit of high paleontological potential (Table 4.5-1).

4.5.1.2 Prehistoric Setting

Categorizing the prehistoric period into broad cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. This section provides a brief discussion of the chronology for the general vicinity of the Project Area.

A framework for the interpretation of the San Francisco Bay Area is provided by Milliken et al. (2007), who have divided human history in the San Francisco Bay Area into four broad periods: the *Paleoindian Period* (11,500 to 8000 B.C.), the *Early Period* (8000 to 500 B.C.), the *Middle Period* (500 B.C. to A.D. 1050), and the *Late Period* (A.D. 1050 to 1550). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

Evidence of human habitation during the *Paleoindian Period* (13,500 to 10,000 before present [B.P.]), characterized by big-game hunters occupying broad geographic areas, has not yet been discovered in the San Francisco Bay Area. During the *Lower Archaic* (10,000 to 5500 B.P.), geographic mobility continued from the *Paleoindian Period* and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are documented in burials during the *Early Period* (*Middle Archaic*; 5500 to 2500 B.P.), indicating the beginning of a shift to sedentism. During the *Middle Period*, which includes the *Lower Middle Period* (*Initial Upper Archaic*; 2500 to 1570 B.P.), and *Upper Middle Period* (*Late Upper Archaic*; 1570 to 950 B.P.), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich-black middens (indicating long periods of occupation) are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the *Upper Middle Period*, mobility was being replaced by the development of numerous small villages. Around 1570 B.P. a “dramatic cultural disruption” occurred evidenced by the sudden collapse of the *Olivella* saucer bead trade network. During the *Initial Late Period* (*Lower Emergent*; 950 to 450 B.P.), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

4.5.1.3 Ethnographic Setting

The Project Area is within the traditional territory of the Costanoan or Ohlone people (Levy, 1978:485–495). These people were collectively referred to by ethnographers as Costanoan, but were actually distinct sociopolitical groups that spoke at least eight languages of the same Penutian language group. The Ohlone occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The primary sociopolitical unit was the tribelet, or village community, which was overseen by one or more chiefs. The Project Area is in the greater *Ramaytush* tribal area occupied by the *puyšon* group (Levy, 1978:485).

Economically, the Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals. The Ohlone acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources. They appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught. After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement.

Native American Contact

PBS&J (2007) and Jensen (2009a) contacted the Native American Heritage Commission (NAHC) regarding the Sacred Lands File for the Project Area. The NAHC provided a list of Native American tribes and individuals who may have an interest in the Project Area. Each individual on the list was contacted by letter. One response was received by PBS&J in 2007. Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan, expressed concerns over activities in the Project Area, specifically near Permanente Creek. She requested that an archaeologist and a Native American monitor be present during ground-disturbing activity along Permanente Creek (PBS&J, 2007).

4.5.1.4 Historic Setting

The property history has been adapted from Maggi et al. (2011). For information on the early historic-period including the first Euroamerican exploration in the region; the Spanish, Mexican, and Early American-periods; Horticultural Expansion; the Interwar Period; the Industrialization and Suburbanization Periods, a Mining History of Santa Clara County; and a biography of Henry J. Kaiser, please see Maggi et al. (2011) included as Appendix D, *Cultural Resources*. References in the following section are also included in the Maggi et al. (2011) report.

Property History

Early History Prior to Permanente Facilities

The western foothills of the Santa Cruz Mountains above present-day Cupertino were considered rough and unfit for cultivation when they were first surveyed by the United States General Land Office (GLO) in 1866. The 1876 *Thompson & West Atlas* 10 years later still labels parts of the subject property as “unsurveyed,” despite the fact that some parcels had owners of record. The subject property is located within Township 7 South, Range 2 West, covering some or all of the area of Sections 16, 17, 18, 19, 20, and 21.

In 1859 George and Frank Grant purchased over 350 acres in Fremont Township, in the foothills along the Permanente Creek, and resided there until the early twentieth century. Early land records indicate that in 1867 Frank Grant purchased 118.67 acres of the southeast quarter of the southwest quarter in Section 18 (in the Quarry area). It is possible that what is known today as the Henry J. Kaiser Cabin and Accessory structure located along the banks of the Permanente Creek adjacent the Quarry is connected to the ownership of part of Section 18 by the Grant brothers. Therefore, it is possible these cabins date to the late-1850s or 1860s. An 1883 survey by the GLO does not show standing structures on Grant’s land along Permanente Creek, although other cabin locations are evident nearby, including one located south of Permanente Creek at the west end of Section 18.

By 1890, the land upon which the Henry J. Kaiser Cabin stands was owned by Revillo Appleton Swain and his wife Alice H. Swain. In 1890 Revillo Swain is listed in a local directory as being a farmer in Cupertino, but most other records from the 1860s through 1900 show him as a resident of San Francisco. It is not known when Grant sold the property to the Swains, although it appears to have occurred sometime between 1880 and 1890.

By 1902, County Tax Maps show W.W. Brirer owned the southeastern quarter parcel of Section 18. The Alameda Sugar Company purchased the parcel shortly thereafter. A May 23, 1903 article in the *San Jose Mercury News* entitled “Santa Clara County Lime Industry Growing” states that during the past year production of limestone in the County has increased rapidly due to mining along the Permanenta (sic) Creek. The article states the mining is occurring “where a huge landslide occurred many years ago, thousands of tons of lime rock were exposed to view. This site was located on the Swain property, a few miles up the main stream of the Permanenta (sic) above the John Snyder farm.

The limestone quarry, located in the southeast quarter section of Section 18 and the southwest quarter section of Section 17, provided high-grade limestone ideal for use in sugar refining. It is not known when the Alameda Sugar Company ceased mining operations at the site, although it can be assumed that the company continued through the late-teens and into the early 1920s. The Santa Clara Holding Company began operating the quarry in the early 1930s.

John R. McCarthy was another one of the subject property’s early Santa Clara County homesteaders. A native of Ireland who came to San Jose in 1876, McCarthy began his new life in America by picking cherries for $1.50 a day. By the early 1880s, he was renting a ranch on

Permanente Creek, and in 1882 he took a homestead option on 160 acres in the foothills above Cupertino, on the northwest quarter section of Section 20 within T7S, R2W. McCarthy Road, which traverses Sections 17 and 20 on the subject property, is named for this early homesteader. The origins of the homestead site recorded in this survey and located in Section 20 make it most likely connected with McCarthy, according to a Deed dated August 16, 1890 (SCC Deeds 128, Page 616) from Henry K. Jackson to McCarthy. It is known that Henry Jackson resided and worked in Oakland at this time, so John McCarthy most likely rented the land from Jackson, and constructed any buildings on the parcel, and finally purchased/recorded his ownership of the parcel in 1890 despite his occupation of the land sometime in the 1880s (the Deed also makes a reference to buildings being located on the parcel although a description is not given). According to County Tax maps, McCarthy retained ownership of at least three quarters of this quarter section through the early twentieth century. Two structures on the homestead site are visible on the 1899 USGS map, and their remnants remain extant on the site today, in addition to an olive and walnut trees and wire fencing.

The western half of the McCarthy quadrant was purchased by George Campbell (although Campbell may have occupied part of, or the entire McCarthy parcel beginning around 1895) from John R. McCarthy on September 16, 1905 (SCC Deeds 297, Page 636). The land remained in the Campbell family until it was sold by the Estate of Sena Campbell to the Kaiser Cement & Gypsum Corporation in 1969 (SCC OR 8757, Page 470). The property rights included the right-of-way for the wagon road easement through the property.

The eastern half of the McCarthy quadrant of Section 20 was occupied by J. Bernard (in addition to George Campbell) perhaps as early as 1895, although McCarthy is still recorded as the owner of the entire parcel through at least 1902.

The northeast quarter section in Section 20 (directly east of the homestead site) was first recorded as belonging to the CPRR in 1865, and then Henry Kennedy Jackson in 1886. The 1890 Santa Clara County Tax Map still lists Henry Jackson as the owner of the quarter section, but an 1895 McMillan Survey Map shows the section had been divided into two 83-acre sections, running width-wise at an angle across the section, with the northern half of the quarter section owned by A.S. Spence, and the southern half of the quarter section owned first by P.J. and then J.R. Kenna. Kenna also owned the nearly 160-acre southeast quarter section of Section 20 connected to the southern half of the northeast quarter section. Just to the south of McCarthy Road, an orchard is recorded in the 1895 survey on the Kenna property. The survey also records multiple structures probably associated with the orchard, as well as the structure known as the Sugar Shack. The remnants of this building are still extant on the site today. The Kenna lands were eventually sold to Blanche K. Rouleau (later Morris) sometime after 1914. Morris then sold the property to the Permanente Corporation in 1942 (SCC OR 1103, Page 591).

John Snyder was another early settler who came to the area and owned part of the subject property. Snyder initially came to California to try his luck at gold mining. By the late-1850s, he had settled near Permanente Creek and purchased much of the San Antonio Rancho. Snyder’s extensive lands were eventually bought by Kaiser Permanente, Maryknoll, Gates of Heaven

Cemetery, Interstate 280, and Mid-Peninsula Parks. The house Snyder constructed for his daughter as a wedding present around 1881 still remains near the Gates of Heaven Cemetery entrance.

John Snyder owned the northeast quarter section of Section 17, which was a part of the first purchase Permanente Corporation made from Santa Clara Holding Company in 1939 (SCC OR 942, Page 290). The land purchased from Santa Clara Holding Company also included the parts of Section 16 not within the boundaries of San Antonio Rancho, as well as the northwestern quarter section of Section 21. Deeds indicate that Santa Clara Holding Company assumed ownership of the various parcels in 1933. When Henry Kaiser (who had been searching for a limestone source in the area) realized how abundant the limestone vein was, the Henry J. Kaiser Company signed a Use Permit and Lease and Option to Purchase agreement for the limestone quarry.

Permanente Cement Plant – Construction

In 1939, Kaiser lost the bid for the construction of Shasta Dam by bidding with a consortium of builders called the Six Companies who his company had worked with on other New Deal projects. In order to win the supplier contract for the cement, he ventured out without the full consent of the Six Companies to underbid the reigning cement monopolies. These cement monopolies had been winning much of the supplier contracts in the United States and abroad. Kaiser was determined to undercut the cost and win the contract. He secured the bid to supply sand and gravel for the dam. To provide the low bid of $1.19 a barrel of cement at Shasta Dam, Kaiser needed to produce cement under his own business model. Acquiring a cement plant was of paramount necessity to be successful in the Shasta Dam project. Although Kaiser was well versed in the sand and gravel business, he lacked knowledge of cement production. He instructed his key engineering people to study cement manufacturing techniques and to locate a property containing adequate amounts of high-quality limestone. Drilling at Permanente Canyon found enough limestone for the project and an anticipated production life-span of 50 years.

During initial construction of the Shasta Dam, sand and gravel was extracted from Kaiser-owned pits near Redding, about 10 miles from the dam site. Moving of material during this period was generally accomplished by railroad, however, Kaiser ran into costs that were prohibitive and decided to exclude the railroad from the project. Instead, an ‘ingenious’ conveyor belt was built to move the sand and gravel to the construction site. This conveyor belt was built 1,500 feet up a mountain and down the other side and moved 1,000 tons of material in an hour. It proved cheaper than using the railroad and the technology was subsequently transferred to the Permanente Cement Plant where a large conveyor belt system was developed in the early 1940s to transfer rock from the quarry to the crushers and cement plant.

On May 8, 1938 Santa Clara Holding Company, Ltd, and Henry J. Kaiser Company signed a Use Permit and Lease and Option to Purchase agreement to erect, construct and operate a cement mill and storage facility. The 1,300-acre site was legally described as Sections 16, 17, 18 and part of part of Section 20, T7S, R2W (Use Permit File No. 173.23). On February 13, 1939 the Amended Articles on Incorporation for Permanente Corporation were filed in the office of the Secretary of

State of California along with by-laws and election of officers. On July 10, 1939 Santa Clara Holding Company formally transferred title of the land to Permanente Corporation (SCC OR 942, Page 290). Santa Clara Holding Company sold the property to Permanente Corporation for the sum of $235,000. By 1942, the site would quickly become the largest cement manufacturing plant in the world and was also regarded as one of the most efficient.

Kaiser began work at the site in June 1939 with a bank loan of $3 million to finance the building of the Permanente plant. By Christmas of that year, the plant had produced its first bag of cement. The initial construction included a two-kiln plant, processing and storage buildings and a two mile conveyor belt. “A giant power shovel scoops up the raw material, six tons to the bite, and dumps it into crushers that feed a two-mile conveyor belt which carries the material by gravity down to the plant in the canyon. The brakes on the steeply inclined belt are generators which produce the power needed to harvest the limestone.” At the cement plant, Kaiser continued to use the conveyor belt technology that was developed at Shasta Dam for moving limestone down to the mill. The original conveyor belt began at what was initially known as the Upper Quarry and ended at the west side of the mill site where two stockpile sites were established. By the time a survey was made of the quarry in 1942-1943, the conveyor system had two long legs: 1) the original conveyor extending from the terminus northwesterly about 1,300 and then westerly about 2,500 feet to a crusher at the northeast corner of the Upper Quarry (no longer extant); and 2) a second conveyor extending slightly south of westerly through a 560 foot tunnel, 4,500 feet total, to a crusher near Permanente Creek. The second conveyor was completed by mid-1943, and included two extensions northward from the Lower Quarry to crushers mid-way to the Upper Quarry. It is not known if the two-mile long conveyor mentioned in the 1941 article included the portion through the tunnel, although a 1943 article mentioned that the tunnel had just been completed at that time. It was claimed the 48-inch belt moved 1,000 tons of material in an hour. Limestone was quarried from up to 2 miles back in the hills and then cascaded off the end of the conveyor belt into the backyard of the plant. Once in the yard, the limestone is crushed and powdered, turned into cement, sacked, or sent directly into boxcars.

In 1943, the Permanente Cement plant formally established a post office at the plant with the new address of Permanente, California. During this year the name of the company was changed to Permanente Cement Company. In the 1944 edition of *Permanente News* and the 5-year anniversary of the founding of the company, the firm reflected on the construction of the site “The accomplishment represented a period of feverish construction with men and machine gnawing at the very foundation of Black Mountain to build roads, flatten hilltops, and erect the giant of the cement industry. Mighty rotary kilns were hauled in sections up precipitous roads in some of the most spectacular feats of modern engineering. One of the major operations was excavation of hundreds of thousands of yards of earth. Countless equipment of a specialized nature was used in dirt moving-shovel kippers, dragline buckets and bulldozers.”

Shipments were moved out of the plant via railroad which paralleled the side of the plant. The railroad was constructed 1939-1940 to move the quarried material to be shipped. In late 1941, an agreement was signed between Permanente Corporation and the SPRR Company to extend the railroad into the Quarry (SCC OR 1087, Page 157). This railroad was served by 1,200 freight cars per month. SPRR owned three transfer tracks east of the plant, while Permanente owned a network of 10 tracks inside the plant operated by two locomotives. Each day, two SPRR trains steamed into the yard to pick up freight cars of material to be delivered. By 1941, a fourth kiln was installed which one article noted “will make the mill the fastest producing cement plant in the country”. By 1947, the conveyor belt had been lengthened by 2 miles and “after induction motors start the conveyors, generators driven by gravity flow supply enough electricity to operate a five-yard shovel in the quarry”.

Various articles note that when Permanente Cement Company purchased the property there was an extant stone and redwood building that was renovated as a lodge and that Kaiser built a road to the site from the plant. This building is now in ruins and is known as the Henry J. Kaiser Cabin. It is located southwest of the Quarry pit on the north side of Permanente Creek and what was once Permanente Road.

Permanente Cement Corporation was supplying not only Shasta Dam, but Navy construction sites in Hawaii, Guam, and Wake Island. Company owned ships, the S.S. Philippa and the S.S. Permanente Cement, carried bulk cement shipments into Hawaii and the Pacific. Transporting bulk cement in the hulls of the shipping boats would lead Henry J. Kaiser into a new endeavor, the shipbuilding business and establishing of the Kaiser Shipyards in Richmond, California. Kaiser was constantly expanding the capacity of the companies he operated into new areas, mostly associated with government construction contracts or materials supply for building and transportation, particularly during World War II. After initial construction of the cement plant, the Permanente Cement Corporation constructed a magnesium processing plant on the site.

Magnesium Plant

Covering 30 acres of land, the Magnesium Plant was constructed in 1941, adjacent to the Cement Plant. Kaiser was interested in a myriad of different materials, including light metals that could be used for the production of war-related items such as airplanes, jeeps and automobiles. Kaiser also thought the light metals could be used as a building material. Initially, choosing aluminum to produce, he was set back by government regulations and rival aluminum manufacturer, Alcoa. In an attempt to meet the increasing demand for light metal, Kaiser chose a different material – magnesium – which could be used for aircraft, as well as an incendiary product. Germany produced most of the magnesium products at that time. In the United States, Dow-American Magnesium had a corner on the market. Kaiser utilized a new untested process by which to refine magnesium and hired the inventor of the process to oversee operations. Backed by the Todd California Shipbuilding Company, Kaiser constructed a magnesium refinery in 1941 adjacent to the cement plant. Although brucite (the raw material used to make magnesium) was not readily available nearby, the material was shipped from Nevada to the plant in Cupertino. At the Magnesium Plant, existing piped gas was used for a dual purpose. The cold gas shot through the magnesium kilns to form the metal, and then again was used for the cement operation to burn limestone in the kilns. The magnesium fabrication also produced “goop,” an incendiary bomb material which was eventually used in the final air attack on Japan in World War II.

The magnesium was produced under the company name of Permanente Metals. In 1943, Permanente Metals opened a plant in Natividad, Monterey County that processed pure white dolomite into magnesium. Magnesium production was somewhat volatile and not as successful as had anticipated. By 1947, the production of magnesium had ended and the company entered into the production of aluminum on the site backed by a loan from the Reconstruction Finance Corporation. Henry J. Kaiser was interested in using aluminum for boats, as well as a building material, particularly in geodesic domes which he hoped would expand the demand for aluminum. The predominant manufacturing site for aluminum for Permanente Metals was in Mead and Trentwood, Washington State. It appears the facility at Permanente Quarry was used mostly for the production of aluminum foil. In 1949, the company name was changed to Kaiser Aluminum & Chemical Corporation. Demand for aluminum increased during the Korean War and the company met the challenge to increase aluminum output which occurred mostly at a large plant in Louisiana. It is during this time that aluminum began to be used as a building material on large office buildings. At the Permanente Quarry site a new foil mill was installed in 1950 for the manufacturing of aluminum foil. Aluminum extruded products were manufactured at the site until 1990, when the plant was closed. Aluminum production would ultimately be the most profitable of all the companies started by Henry J. Kaiser, including those in the steel, cement, and gypsum industries.

Permanente Cement Plant – Production

In early 1941, the capacity of the Permanente Cement plant was 12,000 barrels. The capacity was increased to 16,000 barrels in late 1941 - at the beginning of the war with Japan. In 1942, the production record of 5,066,060 barrels was reached. That year's level of production made the Permanente plant the largest cement plant in the world at the time, and remained the company record for most cement produced in a year. As reported in the 1943 issue of the *Permanente News*, the catalyst for achieving this record was the bombing of Pearl Harbor on December 7, 1941 and an increase in the need for cement to fortify the Pacific Island bases. The two freighters, S.S. Permanente and S.S. Philippa were converted to bulk carriers to ship the large amounts of concrete from Redwood City to Honolulu during the war. By 1943, capacity was again increased and the plant was producing 500,000 barrels or two million sacks of cement. In one year, the quarry moved 1,500,000 tons of limestone downhill to the processing plant with a staff of 19 men. By 1945, war orders by Navy and Army contracts had put cement production into overdrive as over 18,000 barrels of cement was shipped daily. High quality raw materials and new facilities peaked production. New facilities included four coolers for the four kilns, an additional kiln fed slurry tank, new clinker conveying and crushing facilities, additional cement pumping equipment under the storage silos, and enlargement of the packhouse. The packhouse addition consisted of a four-compartment, 5,000 barrel packer bin which helped control the 17 types of cement being produced at the site. The 17 different types of cement included: Standard Portland, Modified Portland, Hi-Early Strength, Low Heat, Sulphate Resisting, Plastic, Concrete Pipe Cement, three types of oil well cement, Plastite, and Brick Mix. Permanente Cement furnished the entire 6,800,000 barrels of cement used for Shasta Dam and by the end of World War II, had filled major government contracts for $25,000,000. During World War II, production increased as demand grew and many women joined the Permanente workforce as men went off to war. By 1947, Permanente Cement took over operation of plants in Seattle, Merced, and Redwood City, as well as Honolulu, Hawaii.

By 1949, the plant produced 1.1 million tons of cement a year and Permanente's reach continued to expand with new distribution facilities in the Pacific Northwest. As the West began to grow after World War II, the demand for cement for new construction increased. Reinforced concrete was also in high demand for commercial and industrial uses. Cement continued to be utilized in large public work projects, such as dams and highways. Cement maintained a stable pricing level during the ten years after 1939, while other building materials costs increased due to inflation. By 1949, Permanente sold 8 to 10 percent of the cement produced in the United States and was second only to Atlas Portland Cement.

The 1950s were an era of expansion for Kaiser Permanente Cement with distribution and manufacturing plants being constructed or acquired throughout the west coast, including the Olympic plant in Bellingham, Washington and Cushenbury plant in Southern California. By 1951, five kilns were in operation at the Permanente Cement Plant increasing the annual output to 7,000,000 barrels. (Division of Mines: 365) In 1956, a sixth kiln was added which increased production by 20 percent and an aggregate plant was installed to supply material for highway construction.

By the end of the 1950s and into the early 1960s, the distribution of cement products widened as the company constructed plants in Honolulu and acquired interest in cement plants in Japan (Okinawa), Thailand and in the Southwest United States, merging with Longhorn Portland Cement Company in Texas. In 1964, Kaiser Gypsum was manufacturing wallboard and other gypsum products and with new plants in the East, the company named changed to Kaiser Cement and Gypsum Corporation. At the Permanente Cement Plant, kilns were made more efficient and a rod ball mill was added to the plant for raw grinding. On August 24, 1967, Henry Kaiser died in Honolulu, Hawaii.

In the 1970s, environmental concerns weighed heavily on the company and some of the processes in place for many years were changed to accommodate the shortage of fuel and natural gas. This included replacing the six kilns with a single dry-process kiln, which was more cost effective and environmentally sound. In early 1970s, construction began on the Preblend Dome, now a commanding feature on the Quarry landscape. In the 1980s, rebuilding of the plant began as a kiln and raw grinding mill were completely rebuilt. In 1981, the six old kilns were shut down. The two 220-foot concrete stack kilns were demolished in 1982. In 1986, Kaiser Cement was purchased by the British firm, Hanson PLC. By 1989, the plant supplied nearly one-third of the all the cement used in California. Improvements continued at the plant, including installing computerized systems to increase efficiency and a rock plant was constructed to convert excess mining rock into washed concrete aggregate. In the 1990s, Hanson Permanente Cement supplied the cement and aggregate for the construction of nearby Highway 85. In 2007, Heidelberg Cement purchased Hanson PLC and the Permanente plant was merged with Heidelberg's Lehigh Cement companies and renamed Lehigh Southwest Cement Company, Permanente Plant.

4.5.1.5 Summary of Research

A records search was conducted in 2008 by Sean Michael Jensen for Lehigh Southwest Cement Company at the Rohnert Park Northwest Information Center (NWIC) for both recorded prehistoric and historic sites and field surveys within or near the subject property (Jensen, 2009a). This records search identified four prior investigations, including included Holman (1983 and 1988), Ruth and Going (1984), and PBS&J (2007).

The Ruth and Going report (1984) reviewed archival information and included a limited field investigation. Conducted for the County of Santa Clara, Ruth and Going identified an early road that had potential historical significance. This site feature was subsequently recorded in 2007 by Jurich and Grady.

The 2007 partial survey by Jurich and Grady was conducted for the County of Santa Clara, and included intensive-level investigations into selected sites within or immediately adjacent the active quarry. Jurich and Grady prepared DPR523 series forms that record the Henry J. Kaiser's Cabin and Accessory Structure, Hanson Permanente Quarry Pumphouse, Permanente Creek Road and Permanente Creek Road Retaining Wall, and identified a historic district – the Kaiser Permanente Quarry District. Jurich and Grady found the Henry J. Kaiser's Cabin and Accessory Structure, and the Kaiser Permanente Quarry District eligible for listing in the National Register of Historic Places (National Register).

In 2008 and 2009, Sean Michael Jensen conducted a survey and inventory for Lehigh Southwest Cement Company. Jensen reviewed prior surveys and recordings, and conducted a field survey of the site. In his findings, Jensen disputed the evaluation of Jurich and Grady on eligibility of the area as an historic district (Kaiser Permanente Quarry District) and stated that the site and features are ineligible for the National Register due to a general lack of integrity related to their historic period of significance. Jensen stated that the Hanson Permanente Quarry Pumphouse and the Permanente Creek Road and Permanente Creek Road Retaining Wall are ineligible for listing in the National Register. Jensen did not re-evaluate other resources recorded by Jurich and Grady, such as Kaiser's Cabin and Accessory Structure. Jensen also surveyed and evaluated additional potential resources south of Permanente Creek. Jensen identified three potential resources: 1) Cherry Orchard; 2) Sugar Shack; and 3) Homestead. These resources were considered ineligible for listing in the National Register. Jensen did not evaluate these potential resources under the criteria for listing in the California Register of Historical Resources (California Register) or the County of Santa Clara Historic Preservation Ordinance.

The buildings and sites within the project boundaries were examined in September 2011 by Franklin Maggi, Sarah Winder, and Jessica Kusz of Archives and Architecture, under contract for the County of Santa Clara. The site investigation was limited to previously-identified resources and sites within the Project Area. Identification and access to some of the sites was limited due to the terrain and overgrowth. Maggi et al. prepared notes on the architecture and characteristic features of the buildings and structures, and the setting. Photographs of the exteriors of the buildings and structures, and views of the related setting were taken where feasible.

A summary of the resources within and surrounding the project boundaries is provided below in **Table 4.5-2**.

TABLE 4.5-2
CULTURAL RESOURCES IN THE PROJECT AREA VICINITY

Name	Designation	Resource Type	Originally recorded by	Previous Eligibility Determination	Resource Location
Kaiser Permanente Quarry Mining District	P-43-001867	District	PBS&J 2007	PBS&J – eligible Jensen – not eligible Maggi et al. – eligible	RPA Footprint
Permanente Creek Wagon Road (contributing feature)	P-43-001868	Structure	PBS&J 2007	PBS&J – eligible Jensen – not eligible Maggi et al. – eligible	PCRA Treatment Area
Henry J. Kaiser's Cabin (contributing feature)	P-43-001869	Building	PBS&J 2007	PBS&J – eligible Jensen – not eligible Maggi et al. – eligible	PCRA Treatment Area
Hanson Permanente Quarry Pumphouse (non-contributing feature)	P-43-001870	Structure	PBS&J 2007	PBS&J – not eligible Jensen – not eligible Maggi et al. – not eligible	Buffer Zone
Railroad Segment (contributing feature)	CA-SCL-878H	Structure	Jensen 2008	Jensen – eligible Maggi et al. – eligible	East of EMSA
Cherry Orchard	CA-SCL-882H	Site	Jensen 2009b	Jensen – not eligible	Exploration Area
Sugar Shack	CA-SCL-883H	Building	Jensen 2009b	Jensen – not eligible	Exploration Area
McCarthy Homestead	CA-SCL-884H	Building	Jensen 2009b	Jensen – not eligible	Exploration Area

Resources on South Side of Permanente Canyon in the Exploration Area

McCarthy Homestead (CA-SCL-884H)

This early ranch site first owned by homesteader, John R. McCarthy, is located on the south side of Permanente Canyon, on the south side of an unimproved access road that originates at the southwest corner of the Permanente aggregate facility south of the cement plant. The site was recorded by Sean Michael Jensen (Genesis Society) in 2009 (CA-SCL-884H). The site is composed of two separate features which contain debris piles of two buildings.

In the late-nineteenth century, the McCarthy ranch was about 150 acres. The size of the ranch was later reduced to about 112 acres. The 1948 USGS aerial photograph of the site shows two buildings associated with the McCarthy ranch. Two building sites were identified and described by Jensen that are located about 100 feet south and above the road in a terrace. Both building pads are about 65 feet in length, and vary in width from about 25 to 30 feet. The site contains debris piles, some short lengths of wire fencing, and non-native trees (olive, English walnut and plum). Today the area consists of chaparral and some non-native vegetation remaining from the residential occupation. The main access road, referred to in the Jensen evaluation as "Sugar Shack Road," was originally called "McCarthy Road" and provided access to the ranch site.

Kenna Orchard/Ranch (CA-SCL-882H and CA-SCL-883H)

This large ridge-top agricultural site is located on the south side of Permanente Canyon on both sides of an unimproved access road that originates at the southwest corner of the Permanente aggregate facility, south of the cement plant. The Kenna Orchard/Ranch was partially recorded by Sean Michael Jensen (Genesis Society) in 2009 as two separate sites: Cherry Orchard (CA-SCL-882H) and Sugar Shack (CA-SCL-883H). The original agricultural property was approximately 238 acres at the time of initial development in the late-nineteenth century and was later expanded westward approximately another 40 acres. Today, the area consists of chaparral and non-native vegetation remaining from the agricultural and residential occupation. Access roads transverse the site, some appear to date to the late-nineteenth century development of the hillside, and others appear contemporary and relate to testing pads at the Lehigh Southwest operations. The main access road, referred to by the Jensen as "Sugar Shack Road," was originally called "McCarthy Road" and provided access to both the site and the McCarthy Ranch further to the west.

Historical research indicates that P.J. Kenna first owned the orchard and ranch on the site sometime in the early 1890s. The 1895 Survey Map records an orchard on the Kenna property, just south of McCarthy Road, as well as multiple structures probably associated with the orchard (most likely a residence), as well as a structure identified by Jensen in 2009 as the "Sugar Shack." A 1948 USGS aerial photograph of the site appears to show three building sites associated with the Kenna ranch. Two collapsed buildings were identified and described by Jensen (extant to the north of the road). Associated with this structure is an ancillary building (described by Jensen as being to the west and about 20 feet in length by 12 feet wide) and two large non-native trees (cedar and walnut). The structures are described as having post and beam foundations, and are believed to be built of stud wall construction clad with board and batten siding. Today, the "Sugar Shack" site consists of what appears to be two single-story wood buildings that are inaccessible, as the structures are overgrown with Poison Oak. North of the road, a turnoff contains the remains of an early truck body and frame that was identified by Jensen during his archaeological Inventory Survey report prepared in October 2009 subsequent to the site historical recordings.

Above these building sites and road was once a large orchard that extended across the bluff and onto its south side. Jensen identified the remains of this orchard as "Cherry Orchard," and recorded the remaining evidence of the agricultural use as five cherry trees within an area of about 200 feet in length (east-west), a maximum width of 50 feet, and covering about 9,000 square feet. The 1948 USGS aerial photograph shows most of the early 1890s orchard intact at that time, but mid-twentieth century aerial photographs do not show evidence of this agricultural site.

Evaluation of Resources on South Side of Permanente Canyon

The two early agricultural/horticultural sites (McCarthy Homestead Site and the Kenna Orchard/ Ranch) have been abandoned since the mid-twentieth century. Today, little evidence remains of their early occupation and use. The people associated with these sites have been researched, but none appear within local histories for their significance contributions. The remaining remnants of their habitation lack distinction, or have been lost in time. These two sites are not eligible for listing in the California Register and do not appear to qualify as historical resources.

Resources in RPA Footprint, PRCA Treatment Areas, and Buffer Zone

Kaiser Permanente Quarry Mining District (P-43-001867)

Engaged by the County of Santa Clara in 2007, Jurich and Grady identified a potential historic district at Permanente Quarry. Jurich and Grady recommended the boundaries of the potential historic district to include the extent of the Permanente Quarry site, as well as eligible elements Henry J. Kaiser's Cabin and Accessory Structure, and Permanente Creek Road and related Retaining Wall. In addition, Jurich and Grady identified important elements of the setting including intact vegetation communities such as oak woodland, oak savannah, woodland/ chaparral, and chaparral, and Permanente Creek, a perennial stream located along the southern boundary of the Permanente Quarry site.

Jurich and Grady also investigated and recorded the related Pumphouse located between the main pit and the cement plant and determined it not eligible.

Boundaries of the potential historic district as outlined by Jurich and Grady were investigated as a part of the Maggi et al. 2011 investigation and evaluation. Maggi et al. also recorded the primary remains of an early 1940s rock conveyor system built during the early 1940s, as well as railroad segment and shed. A portion of the original conveyor system continues to operate today for the transport of raw material to the processing facility. The railroad segment includes areas where products of the quarry and cement plant are loaded for shipment. Permanente Quarry has continued to evolve over the last 72 years under Kaiser's companies and subsequent owners and contains a large modern cement plant as well as some remaining structures from the early cement, magnesium, and aluminum manufacturing facilities.

Permanente Railroad Segment and Dinky Train (CA-SCL-878H)

The Permanente Railroad segment is a contributing feature to the Kaiser Permanente Mining District. The railroad parallels the southeast side of the EMSA (Aluminum Plant) and enters the quarry operations as it crosses Permanente Road. The railroad segment ends at the train shed located at the base of the aggregate facility. The Permanente Railroad segment was originally constructed circa 1940 and was composed of a network of 10 tracks inside the plant, which was served by two locomotives. SPRR Company owned the three transfer tracks and a station just outside of the cement plant that connected with the Permanente rail segment. Here, freight cars would pick up material at the cement plant, which then would be distributed via rail to various destinations.

The "dinky train" (a narrow-gauge supply railroad) that presently is operational within the railroad segment is considered part of the Permanente Railroad Segment.

Permanente Quarry Conveyor System and Crusher

The rock conveyor system and crusher are contributing features to the Kaiser Permanente Mining District. The system was developed during the first four years after the establishment of operations at the Permanente Quarry in mid-1939. The conveyor started as a rock crusher at the site of the original Upper Quarry, and dropped the material by gravity down an incline to the east and southeast to the stockpiles. By 1943, the conveyor system had been expanded westward through a 560-foot tunnel to the southwest, originating from a crusher near Permanente Creek near the Lower Quarry. The conveyor branched out northward from this location and ultimately extended for two miles. The 48-inch belt of the conveyor initially was claimed to be able to move 1,000 tons of material in an hour. According to historic accounts, the original conveyor contained brakes that generated power needed to harvest limestone. It appears that the inline shed below the tunnel contains the original turbines used to generate electricity.

The original north leg of the rock conveyor system (approximately 4,500 feet) and the lower leg of the rock conveyor system near the creek and related feeding conveyors, are no longer extant. The current lower (east) terminus is housed in an open shed. Rock diverted southward from the terminus is dropped to a stockpile and then loaded to another conveyor that delivers the rock to the aggregate facility located at the south end of the site.

The remnant of the crusher near Permanente Creek is located near what was once the Lower Quarry. The crusher was located at the upper terminus of the conveyor belt. It was here that limestone rock was crushed and then traveled on the conveyor belt to the processing plant. The conveyor branched out northward from this location to two other crushers, between the two quarry locations, and ultimately extended for two miles. The upper terminus and crusher located near the Permanente Creek remains today in ruins, with only some structural members remaining. A new larger crusher has been installed to the east of this terminus.

Permanente Quarry Pump House (P-43-001870)

The Permanente Quarry Pump House was recorded in 2007 by Jurich and Grady. The remnants of the pump house are located north of the conveyor system and east of the quarry and were determined to lack integrity and not qualify as a historical resource. Jensen concurred with those findings in 2009, but Jurich and Grady's description of the resource appears to be sufficient. Their finding that the resource lacks integrity is confirmed by Maggi et al. (2011).

Henry J. Kaiser Cabin and Accessory Structure (P-43-001869)

The Henry J. Kaiser Cabin and Accessory Structure are the remains of two buildings recorded in 2007 by Jurich and Grady. The resource is a contributing feature to the Kaiser Permanente Quarry Mining District. This resource is in the PCRA Subarea 2; however no planned treatment will occur at the specific location of the resource. The Henry J. Kaiser Cabin was resurveyed in September, 2011 by Maggi et al. The field investigation confirmed the findings recorded by Grady in 2007. The Henry J. Kaiser Cabin remains in a deteriorated state and is presently overgrown and difficult to access. The Accessory Structure to the south across Permanente Creek was not accessed and thus is not evaluated as a part of this report. There is little evidence of the larger wood building that once rose about the stone base, aside from the extant chimney. It appears that the building may have been partially deconstructed prior to reaching its advanced state of decline.

In 2007, Grady suggested the Henry J. Kaiser Cabin could have been built as early as 1815, based on nails found at the site. No reference has been found to connect Mission Santa Clara to this site, which was under the jurisdiction of the Mission during both the Spanish and Mexican Periods. Additional archival research was conducted to investigate the origins of the structure. The 1883 GLO map does not show any extant structures on this site, although an “old road” is shown that enters into Permanente Canyon and ends to the east of the cabin site. Early ownership surveyor maps of Theodore F. Grant, George H. Grant, CPRR Company, and Revillo A. and Alice H. Swain do not clarify buildings at the site; however, when the USGS first surveyed the area in 1895 (published in 1899), it recorded four structures in the vicinity of the Henry J. Kaiser Cabin. It is likely that the Henry J. Kaiser Cabin is one of the four buildings surveyed in 1895, and may have been built as early as the early-1860s as a hunting lodge.

When Kaiser commenced operations of the Permanente Cement Plant in 1939, he rebuilt/ expanded the Henry J. Kaiser Cabin that exists today on the north side of Permanente Creek. As noted above, an article written by a historian specializing in the history of Kaiser Permanente states that when Kaiser purchased the property in 1939, a building made of stone and redwood was already extant; this large building served as a speakeasy during the Prohibition Era. The article claimed that upon an initial visit to the property, Mr. Kaiser was so taken with the beauty of the cabin’s location that he had it renovated, and it became a getaway lodge, complete with a patio, for himself and his wife.

Permanente Creek Wagon Road (P-43-001868)

The Permanente Creek Wagon Road begins within the site boundary, down to and across Permanente Creek to the south, and continues along the creek. The resource is a contributing feature to the Kaiser Permanente Quarry Mining District. This resource is in the PCRA Subarea 2; however no planned treatment will occur at the specific location of the resource. Most of the road has been re-graded and widened. The earliest known map showing the road is the 1883 GLO Map, which identifies an “old road” following the alignment of Permanente Road and terminating at the dividing line between Sections 18 and 19. A 1906 California Mining Report discusses the El Dorado Sugar Company’s Quarry (the owner is incorrect, as the quarry was both owned and operated by the Alameda Sugar Company during the first part of the twentieth century) and the fact that mined limestone was hauled out via a 9-mile wagon road (Permanente Road), and then shipped by rail from Mountain View to the company’s factory near Alviso. The report also states that the operation had been going on for 3 years. In later maps, the road is shown passing to the south of the Henry J. Kaiser Cabin and then terminating at a point to the west, near the west end of Section 18 where another cabin site was located. Historic accounts of Kaiser’s occupation indicated that he built a road up from the cabin to the limestone quarry.

Evaluation of Kaiser Permanente Quarry Mining District

Permanente Quarry is locally and regionally significant under National Register Criteria A and C, and the related California Register Criteria (1) and (3) in the areas of engineering and industry and for its direct association with military efforts during World War II. It is also nationally significant under National Register Criterion B and California Register Criterion (2), being the most important representative site related to the life of Henry J. Kaiser, a person important to the history of the United States.

Under National Register-A and California Register-1, the site represents an important event and pattern of development that is understood both locally and regionally as a significant aspect of how the contemporary industrial base of both Santa Clara County and California evolved beginning at the end of the Depression, and during World War II and the post-World War II period. The larger setting of the Quarry property remains intact, although the excavation areas have expanded greatly over the last 72 years from the early Lower Quarry near Permanente Creek.

The direct association of Permanente Quarry with Henry J. Kaiser, one of America's most prolific and successful industrialists, during a pivotal time in his career, is also important in establishing historical significance. The Permanente Quarry and Cement Plant and its rapid development in the late-1930s and early-1940s catapulted Kaiser to national prominence. Permanente Quarry is nationally significant under National Register-B and California Register-2 based on this association.

The rapid development of the site during 1939 and the early 1940s was an engineering accomplishment that was notable for its time, and within the site was perfected a unique quarry transport system that continues to operate today, although at a reduced scale than that at mid-century. The development of the facility represents a distinctive creative act within the field of engineering, and is both locally and regionally significant under National Register-C and California Register-3.

The criteria of the County of Santa Clara implemented under Ordinance No. NS-1100.96 is similar by definition to the criteria for nomination to the California Register. When evaluated under these criteria, Permanente Quarry meets the requirement for designation as a local landmark site or district.

In determining integrity, the National Park Service recommends use of seven aspects (or qualities) of integrity for consideration in determining significance. These seven aspects are codified in California under the Code of Regulations, Section 4852(c). They are location, design, setting, materials, workmanship, feeling, and association. Permanente Quarry, although now greatly expanded since its operation under Henry J. Kaiser, is largely understandable within its historic context. Historic physical aspects of the quarry remain. The location, design characteristics, setting, materials in terms of its original use, evidence of industrial workmanship, feeling, and association can all be found within the boundaries of the site, which has continued to be operated as a quarry and cement plant since the time of Kaiser's involvement. Historic components continue to have a sense of acuity within the larger contemporary setting that helps to visually understand how this site has developed over time.

In reviewing the boundaries of the potential historic district defined by Jurich and Grady, three areas warrant expansion to include: 1) the railroad line extension and engine barn on the site southeast of the cement plant; 2) the hillside above the easterly terminus of the conveyor system and powerhouse, which was the location of the original conveyor system; and 3) the greater area of the Henry J. Kaiser Cabin and Accessory Structure, which includes the road, area of the early Lower Quarry and crusher, and other yet-unidentified ancillary buildings and structures related to the Cabin area on both sides of the creek. Although some of these features pre-date the Kaiser era, they are part of the historic landscape that is discussed in biographies of the early years of the quarry development associated with Henry J. and Bess Kaiser.

4.5.1.6 Regulatory Setting

Numerous laws and regulations require federal, state, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., Office of Historic Preservation (OHP) and the Advisory Council on Historic Preservation). The National Historic Preservation Act (NHPA) of 1966, as amended; the California Register of Historical Resources, Public Resources Code §5024, and CEQA, are the primary federal and state laws governing and affecting preservation of cultural resources of national, state, regional, and local significance. The applicable regulations for the proposed Project are discussed below.

Federal Regulations

National Register of Historic Places

The National Register was established by the NHPA, as “an authoritative guide to be used by federal, State, and local governments, private groups and citizens to identify the Nation’s historic resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR §60.2). The National Register recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1990):

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (U.S. Department of the Interior, 1990).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior, 1990). The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

State of California

Office of Historic Preservation

The State of California implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The OHP, as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

California Register of Historical Resources

The California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (Pub. Res. Code §5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (Pub. Res. Code §5024.1[b]; 14 Cal. Code Regs. §4850 et seq.). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria. The resource:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

An eligible resource for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally Determined Eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and,
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and,
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Environmental Quality Act

Historical Resources

CEQA (Pub. Res. Code §21000 et seq.; 14 Cal. Code Regs. §15000 et seq.) is the principal state law governing environmental review and approval of discretionary projects proposed in the state. CEQA requires lead agencies to determine, prior to approval, if a project would have a significant adverse effect on historical or unique archaeological resources.

The CEQA Guidelines generally recognize that a historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1); (2) a resource included in a local register of historical resources, as defined in Public Resources Code §5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code §5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record (14 Cal. Code Regs. §15064.5[a]).

If a lead agency determines that an archaeological site is a historical resource, the provisions of CEQA §21084.1 of CEQA and CEQA Guidelines §15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of CEQA §21083, which is a unique archaeological resource. As defined in CEQA §21083.2 of CEQA, a "unique" archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource means an archaeological artifact, object or site which does not meet the criteria in Public Resources Code §21083.2(g), and need not be given further consideration other than the simple recording of its existence by the lead agency if it so elects (Pub. Res. Code §21083.2[h]). The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the Project on those resources shall not be considered a significant effect on the environment (14 Cal. Code Regs. §15064.5[c][4]).

Public Resources Code §5024.1(f) requires a lead agency to make provisions for historical or unique archaeological resources accidentally discovered during construction. Provisions include an immediate evaluation of the find by a qualified archaeologist. Work can continue on other parts of the project site while historical or unique archaeological resource mitigation takes place.

In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, Public Resources Code §5024.1(e) requires that there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the county coroner in which the remains are discovered is contacted. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.

Paleontological Resources

Paleontological resources also are afforded protection by environmental legislation set forth under CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that a project will normally result in a significant impact on the environment if it will "…disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study." Section 5097.5 of the Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, the California Penal Code §622.5 sets the penalties for the damage or removal of paleontological resources.

The SVP has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most California State regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

County of Santa Clara

Historic Preservation Ordinance

The County's Historic Preservation Ordinance is set forth in Division C17 of the Municipal Code. Its provisions are intended to preserve, protect, enhance, and perpetuate resources of architectural, historical, and cultural merit within the County and to benefit the social and cultural enrichment, and general welfare of the people (County Code §C17-2). The Ordinance regulates landmark designation, alteration, and demolition; and provides preservation incentives. To further historic preservation efforts, the County maintains an inventory of historic resources and designated Landmarks known as the "heritage resource inventory" (County Code §C17-4). The Permanente Quarry (located at 24001 Stevens Creek Boulevard) is not identified on the heritage resource inventory.

4.5.2 Baseline

The environmental setting described above is consistent with paleontological, prehistoric, ethnographic, and historical conditions in the Project Area as they existed in June 2007, which constitutes the baseline for determining the significance of potential impacts of the Project on cultural resources. Although subsequent surveys and reports have supplemented what is known about these conditions and resources (including by Maggi et al. in 2011), the conditions and resources were extant in 2007. In summary, the Kaiser Permanente Historic Mining District and three contributing features (Permanente Quarry Conveyor System and Crusher, Henry J. Kaiser Cabin, Permanente Quarry Wagon Road) are located in the Project Area. No prehistoric archaeological resources, paleontological resources, or human remains have been identified in the Project Area.

4.5.3 Significance Criteria

Based on CEQA Guidelines §15064.5, CEQA Guidelines Appendix G, and the County's CEQA Guidelines (Initial Study Checklist), a project would cause adverse impacts to cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5 of the CEQA Guidelines, or the County's Historic Preservation Ordinance (§17 of County Ordinance Code) – i.e. relocation, alterations or demolition of historical resources;

b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5 of the CEQA Guidelines;

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;

d) Disturb any human remains, including those interred outside of formal cemeteries; or

e) If within New Almaden Historic area, conflict with General Plan policies of this designated special policy area.

4.5.4 Discussion of Criteria with No Cultural and Paleontological Resources Impacts

As analyzed in this Section, the Project does not have the potential to cause a significant impact related to criterion e). By contrast, the Project could cause a significant impact related the remaining criteria; the potential to cause such impacts is evaluated in Section 4.5.5.

e) The Project is not within the New Almaden Historic area, and so would not conflict with General Plan policies of this designated special policy area.

The New Almaden Historic area, including the village of New Almaden, is located approximately 11 miles south of San Jose to the east of the Project site (National Park Service, 2011). Because the Project Area is not within the New Almaden Historic area, the Project would not conflict with General Plan policies relating to it. The Project would cause no impact related to criterion e).

4.5.5 Discussion of Criteria with Cultural and Paleontological Resources Impacts

The Project has the potential to cause a significant impact related to criteria a), b), c), and d).

a) Would the Project cause substantial adverse change in the significance of a historical resource pursuant to §15064.5 of the CEQA Guidelines, or the County's Historic Preservation Ordinance.

Impact 4.5-1: Project activities could cause an adverse change in the significance of an historical resource pursuant to §15064.5 of the CEQA Guidelines and the County's Historic Preservation Ordinance. ***(Significant and Unavoidable Impact)***

The Project Area is located within the boundaries of a potential Kaiser Permanente Quarry Mining District. Because the potential District is eligible for listing in the California Register, it is considered an historical resource pursuant to CEQA §15064.5. The Project proposes to demolish the following contributing features of the potential District: the existing Permanente Quarry Conveyor System and related tunnel and the remains of the early 1940s crusher. The conveyor would be removed when the crusher is re-located, and the eastern portion close to the tunnel would be removed to accommodate the re-contouring that would occur in this area.

Other contributing features to the Kaiser Permanente Quarry Historic District that exist within the Project Area (including the Henry J. Kaiser Cabin and Accessory Structure and the Permanente Quarry Wagon Road and related wall) would not be affected by the Project. The Henry J. Kaiser Cabin and Wagon Road are within the PCRA Subarea 2, however no proposed treatment is planned at those specific locations and the resources will be avoided.

Potential contributing features to the Historic District within the Cement Plant but outside of the Project Area, including the Railroad Segment and "dinky train," would not be directly or indirectly affected by the Project.

Resources in the Exploration Area (including the McCarthy Homestead and the Kenna/Orchard Ranch) have been recommended not eligible for listing in the California Register and do not appear to qualify as historical resources. No additional consideration is necessary for these resources.

Because the Project would demolish contributing features of the District, the Project would cause an adverse change in the significance of these historical resources, and therefore, a significant impact on the environment under CEQA §15064.5. The overall setting within the District also would be affected by the proposed reclamation activities. While historic settings within mining districts that are currently active are dynamic by nature, reclamation would nonetheless cause an adverse change in the significance of the District relative to baseline conditions and the existing setting.

The loss of the Permanente Quarry Conveyor System and related tunnel and the remains of the early 1940s crusher would cause a substantial adverse change to a historical resource because it would demolish in an adverse manner those physical characteristics that convey the District's historical significance and that justify its eligibility for inclusion in the California Register.

Mitigation measures to reduce the significant impacts to the District are described below. These measures, however, would not mitigate the impact of demolition to a less-than-significant level; consequently, the impact would remain significant and unavoidable.

Typical measures to mitigate adverse impacts to historical resources include application of the *Secretary of the Interior's Standards for the Treatment of Historic Properties Including Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* (USDI, 1995). The intent of the *Standards* and the related *Guidelines* is to assist the long-term preservation of a property's significance through the preservation, rehabilitation, restoration, and/or reconstruction of historic properties and their features. CEQA §15064.5(b)(3) states that a project that follows the *Standards* is considered mitigated to a less-than-significant level.

The conveyor would need to be largely removed when the crusher is re-located. The eastern portion of the conveyor close to the tunnel also would have to be removed to accommodate the proposed re-contouring in this area. As the Project intends to demolish historic features which contribute to a California Register-eligible historic district, such actions would run directly counter to the guidance provided in the *Standards*, and therefore, the *Standards* cannot be applied to mitigate the impacts of the Project to a less-than-significant level.

> **Mitigation Measure 4.5-1a:** The Applicant shall document the physical characteristics and their historic context of the contributing features of the Kaiser Permanente Quarry Mining District, including archival photo-documentation, mapping, and recording of historical and engineering information including measured drawings about the property according to the standards of the Historic American Building Survey/Historic American Engineer Record/Historic American Landscapes Survey (HABS/HAER/HALS), to be placed in a local public archive such as the Archives of the County of Santa Clara;

> **Mitigation Measure 4.5-1b:** The Applicant shall salvage and/or relocate a representative portion of the Permanente Quarry Conveyor System and the remains of the early 1940s crusher, which constitute character-defining features that otherwise would be lost as a part of implementation of the Project; and

> **Mitigation Measure 4.5-1c:** The Applicant shall prepare public information programs to educate the general public on the historic nature of the potential Kaiser Permanente Quarry Mining District, including but not limited to exhibits at the Quarry office, publications available at the Quarry office, and an online presentation available on the Applicant's website (www.lehighpermanente.com).

Significance after Mitigation: Implementation of Mitigation Measures 4.5-1a through 4.5-1c would lessen, but not fully offset, the Project-specific impacts of demolition to a less-than-significant level. Therefore, the impacts would remain significant and unavoidable.

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b) Would the Project cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5 of the CEQA Guidelines?

Impact 4.5-2: Project activities could cause an adverse change in the significance of an archaeological resource as defined in §15064.5 of the CEQA Guidelines. ***(Less than Significant with Mitigation Incorporated)***

The Project involves reclamation and restoration and does not establish new mining areas; very little ground-disturbing activity would occur in areas that have not already been substantially disturbed by mining. Nonetheless, while there is no indication the Project Area contains unrecorded archaeological resources, the possibility of accidentally uncovering undocumented archaeological resources cannot be entirely discounted. Accidental damage to, or destruction of, a previously unrecorded and unique archaeological resource would be a potentially significant impact. In the unlikely event that archaeological materials are discovered during Project activities, implementation of **Mitigation Measure 4.5-2** would ensure that work would cease in the immediate area and a qualified archaeologist would be hired to document the find, assess its significance, and recommend further treatment.

> **Mitigation Measure 4.5-2:** If cultural resources are encountered during Project implementation, the Applicant shall notify the County and all activity within 100 feet of the find shall halt until it can be evaluated by a qualified archaeologist and a Native American representative. Prehistoric archaeological materials might include obsidian and chert

flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the archaeologist and Native American representative determine that the resources may be significant and cannot be avoided, they shall notify the County and an appropriate treatment plan for the resources shall be developed by the Applicant in consultation with the County and the archaeologist. Measures in the treatment plan could include preservation in place (capping) and/or data recovery. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. Ground disturbance shall not resume within 100 feet of the find until an agreement has been reached as to the appropriate treatment of the find.

Significance after Mitigation: Less than Significant.

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c) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As explained below in the context of Impact 4.5-3, the Project could directly or indirectly destroy a unique paleontological resource or site. However, it would cause no adverse effect on a unique geological feature.

Unique geological features include attractive or interesting rock formations, erosional features, and/or landforms that represent a public attraction due to their unusual appearance, exemplary characteristics, and/or educational value. Examples of unique geological features in the greater San Francisco Bay Area include sag ponds, offset creek channels, and unusual scarps created along the San Andreas Fault within the Midpeninsula Regional Open Space District; the coastal rock forms within Natural Bridges State Park along the Pacific Coastline; or the prominent and unusual volcanic features atop Round Top Mountain in the East Bay Regional Park District. The ridgeline and landform that make up the EMSA and other ridgelines that would be affected by the Project do not have geological characteristics that differ from most of the hills along the San Francisco Peninsula and within the greater Bay Area, and therefore do not represent a unique geological feature. Thus, the Project would have no impact on unique geological features. Note that the contribution of ridgelines and landforms with respect to the visual character and quality within and surrounding the project area is discussed in section 4.1, *Aesthetics, Visual Quality, and Light and Glare*.

Impact 4.5-3: Project activities could directly or indirectly destroy a unique paleontological resource or site. *(Less than Significant with Mitigation Incorporated)*

Impacts on paleontological resources are triggered by excavation into paleontologically sensitive rock units that have not been previously disturbed. Because the Project involves the reclamation and restoration of the property, and does not establish new mining areas, it is unlikely that previously undisturbed bedrock units would be excavated. Under the Project, the Quarry pit would be backfilled, the EMSA would undergo active restoration in its current topography, and previously mined overburden stored in the WMSA would be excavated for use as backfill material in the Quarry pit. Reclamation of the crusher/Quarry office area, surge pile, and rock crusher would involve only minor finish grading in previously disturbed areas. Reclamation of the area south of Permanente Creek that has been subject to exploratory activities would involve monitoring of revegetation efforts in progress. Establishment of additional set-asides or buffer areas would be predominantly a mapping exercise and would not involve ground disturbance. While the Project activities in the WMSA call for the removal of previously mined overburden rock and the restoration of pre-mining contours; due to the large excavation volume (48 million tons) and uncertainties regarding the exact timing and configuration of the finished topography, it is conservatively assumed that some undisturbed rock material might be excavated. Nonetheless, the rock formation underlying the WMSA is the Franciscan Complex which is considered to have a low paleontological potential.

While there is no indication that the Project contains unique or significant fossils, or that paleontologically sensitive rock formations would be disturbed, the possibility of encountering fossils in the course of earth-moving operations cannot be discounted entirely, particularly in light of the scale of earth moving operations that are proposed. The presence and significance of a fossil resource is unknown until it is uncovered and examined by a qualified paleontologist. However unlikely, if a fossil is uncovered during earth moving operations, it would represent a potentially significant impact under CEQA. In order to avoid potential damage or destruction of a paleontological resource, the Applicant shall implement **Mitigation Measure 4.5-3**, which requires any potential discovery of a fossil to be examined by a paleontologist, and recovered, if appropriate.

> **Mitigation Measure 4.5-3:** If a paleontological resource is encountered during implementation of the RPA, the Applicant shall notify the County and all activity within 100 feet of the find shall halt until it can be evaluated by a qualified paleontologist as defined by the Society of Vertebrate Paleontology Guidelines (SVP, 1995). The paleontologist shall evaluate the resource and determine its significance. If significant, the paleontologist shall notify the County and the Applicant, in consultation with the County and the paleontologist, shall prepare a treatment plan such that the fossil would be recovered and scientific information preserved. The paleontologist shall implement the treatment plan in consultation with the County and Applicant prior to allowing work in the 100-foot radius to resume.

Significance after Mitigation: Less than Significant.

d) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

Impact 4.5-4: Project activities could disturb human remains, including those interred outside of formal cemeteries. ***(Less than Significant with Mitigation Incorporated)***

While there is no indication that the Project Area has been used for human burials, the possibility cannot be discounted entirely. In the unlikely event that human remains are discovered during Project activities, implementation of **Mitigation Measure 4.5-4** would ensure that work would cease in the immediate area and the County Coroner is contacted to assess the find. The measure would ensure that any discoveries would be handled in accordance with state law and would reduce the significance of this impact.

> **Mitigation Measure 4.5-4:** In the event that human skeletal remains are encountered, the Applicant is required by Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98, Title 14 California Code of Regulations Section 15064.5(e), and County Ordinance No. B6-18 to immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of §7050.5 of the Health and Safety Code and the County Coordinator of Indian affairs. No further disturbance of the site shall be made except as authorized by the County Coordinator of Indian Affairs in accordance with the provisions of state law and the County Ordinance. If artifacts are found on the site, a qualified archaeologist shall be contacted along with the County Planning Office. No further disturbance of the artifacts shall be made except as authorized by the County Planning Office.

Significance after Mitigation: Less than Significant.

4.5.6 Alternatives

4.5.6.1 Alternative 1: Complete Backfill Alternative

Similar to the Project, selection of Alternative 1 would cause the demolition of contributing features of the Kaiser Permanente Quarry Mining District. Alternative 1 would cause an adverse change in the significance of these historical resources; therefore, it would cause a significant impact on the environment under CEQA Guidelines §15064.5. The overall setting within the District also would be affected by Alternative 1. As explained in the context of the Project, while historic settings within mining districts that are currently active are dynamic by nature, reclamation nonetheless would cause an adverse change in the significance of the District.

If Alternative 1 were adopted, the same mitigation measures that have been identified for the Project would be required to reduce the significant impacts to the District. These measures, however, would not mitigate the impact of demolition to a less-than-significant level; consequently, the impact of Alternative 1 also would be significant and unavoidable.

4.5.6.2 Alternative 2: Central Materials Storage Area Alternative

Similar to the Project, selection of Alternative 2 would cause the demolition of contributing features of the Kaiser Permanente Quarry Mining District. Alternative 2 would cause an adverse change in the significance of these historical resources; therefore, it would cause a significant impact on the environment under CEQA Guidelines §15064.5. The overall setting within the District also would be affected by Alternative 2. As explained in the context of the Project, while historic settings within mining districts that are currently active are dynamic by nature, reclamation nonetheless would cause an adverse change in the significance of the District.

If Alternative 2 were adopted, the same mitigation measures that have been identified for the Project would be required to reduce the significant impacts to the District. These measures, however, would not mitigate the impact of demolition to a less-than-significant level; consequently, the impact of Alternative 2 also would be significant and unavoidable.

4.5.6.3 No Project Alternative

Similar to the Project, selection of the No Project Alternative would cause the demolition of contributing features of the Kaiser Permanente Quarry Mining District, albeit 7 years later than is proposed for the Project. Because the No Project Alternative would cause an adverse change in the significance of these historical resources, it would cause a significant impact on the environment under CEQA Guidelines §15064.5. The overall setting within the District also would be affected by the No Project Alternative. As explained in the context of the Project, while historic settings within mining districts that are currently active are dynamic by nature, reclamation nonetheless would cause an adverse change in the significance of the District.

If the No Project Alternative were approved, the same mitigation measures that have been identified for the Project would be required to reduce the significant impacts to the District. These measures, however, would not mitigate the impact of demolition to a less-than-significant level; consequently, the impact of the No Project Alternative also would be significant and unavoidable.

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4.6 Energy Conservation

This section addresses the potential energy conservation-related impacts that could result from implementation of the Project and alternatives. Discussed are the environmental and regulatory setting, the analytical baseline, the criteria used for determining the significance of any change in the environment that would be caused by the Project or alternatives, and potential impacts associated with the activities proposed in the Project Area.

4.6.1 Setting

4.6.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.6.1 provides setting information specific to energy conservation.

Energy Production and Distribution in California

California's energy system includes electricity, natural gas, hydroelectric, nuclear, petroleum, and renewable resources. California's energy system provides 69.0 percent of the electricity, 13.0 percent of the natural gas, and 38.11 percent of the petroleum consumed in or used for the state. The rest of the state's energy is imported and includes: electricity from the Pacific Northwest (7 percent, primarily hydroelectric) and the Southwest (24 percent, primarily coal and nuclear); natural gas purchases from Canada (19 percent), the Rocky Mountain States (22 percent), and the Southwest (46 percent); and crude oil imported from Alaska (14.23 percent) and foreign sources (47.66 percent) (CEC, 2011).

The production of electricity requires the consumption or conversion of energy resources including water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in-state, 53.4 percent is generated by natural gas-fired power plants, 1.7 percent is generated by coal-fired power plants, 14.6 percent comes from large hydroelectric dams, and 15.7 percent comes from nuclear power plants. The remaining in-state total electricity production is supplied by renewable sources (CEC, 2010a).

On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order # S-14-08, which raised California's renewable energy goals to 33 percent by 2020 and improved processes for licensing renewable projects. The Executive Order is intended to advance California's transition into a clean energy economy and directs state agencies to create comprehensive plans to prioritize regional renewable projects based on an area's renewable resource potential and the level of protection for plant and animal habitat. To implement and track the progress of the Executive Order, the CEC and California Department of Fish and Game signed a Memorandum of Understanding formalizing a Renewable Energy Action Team which will concurrently review permit applications filed at the state level to streamline the application process for renewable energy development. Recently, on April 12, 2011 Governor Brown, signed SBX1-2 which puts S-14-08 in to the state code and established the 33 percent renewable portfolio as the state target by December 31, 2020. Currently California receives 14.6 percent of its electricity from renewable sources including small hydroelectric generation (2.2 percent), biomass (2.8 percent), geothermal (6.2 percent), solar (0.4 percent) and wind (3.0 percent) (CEC, 2010a).

The electricity generated and used in California is distributed via a network of transmission and distribution lines commonly called the power grid.

Local Energy Production and Distribution

Electricity is provided to the Project Area by the Pacific Gas and Electric Company (PG&E). PG&E provides service to approximately 13 million people throughout a 70,000 square mile service area in Northern and Central California. PG&E's service area extends from Eureka to Bakersfield (north to south), and from the Sierra Nevada to the Pacific Ocean (east to west). PG&E produces and purchases energy from a mix of conventional and renewable generating sources, which travel through their electric transmission and distribution systems to reach customers. **Table 4.6-1** shows the electric power mix that PG&E delivered to its retail customers in 2010.

TABLE 4.6-1
PG&E'S 2010 ELECTRIC POWER MIX DELIVERED TO RETAIL CUSTOMERS

Power Source	Percent of Total Power Mix Delivered
Nuclear	23.8%
Natural Gas	19.6%
Large Hydroelectric	15.6%
Coal	1.0%
Other Fossil Fuels	1.2%
Unspecified Sources	22.9%
Eligible Renewables	15.9%
Geothermal	30.5%
Biomass and Waste	26.6%
Wind	24.0%
Small Hydroelectric	18.3%
Solar	0.5%

SOURCE: PG&E. 2011.

Within the Project Area, electricity is used for the Quarry pit dewatering system, which operates an average of 24 hours per day, 7 days per week, 40 weeks per year (ALG, 2011, Table A-17); for Quarry office uses; for crushers, conveyors, and screens; and for other uses. The total baseline annual electrical power use in the Project Area is 1,871,323 kilowatt hours (kWh) (ALG, 2011, Table A-17). No natural gas is used in the Project Area; however, fossil fuels (i.e., diesel and gasoline) are.

Based on the fuel purchase records for 2000-2010 (ALG, 2011, Table A-10), approximately 822,554 gallons of diesel per year are used in the Project Area. Diesel is used to power portable welders, off-road equipment (e.g., bore/drill rigs, crawler-tractors, excavators, graders, off-highway trucks, rubber-tired dozers, rubber-tired loaders, water trucks, and portable light towers), on-road on-site vehicles (e.g., work trucks), and on-road off-site vehicles (e.g., fuel transport trucks and employee commute vehicles). Also based on fuel purchase records for 2000-2010, approximately 12,615 gallons of gasoline per year are used in the Project Area (ALG, 2011). Gasoline is used in the Project Area to power portable welders and passenger vehicles.

4.6.1.2 Regulatory Setting

Federal Regulations

Energy Policy and Conservation Act

The Energy Policy Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. to meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to fuel economy standards. This Act indirectly applies to the Project due to its requirements for increased fuel economy standards particularly for the construction equipment to be used.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, buying hybrid vehicles, building energy efficient buildings, and improving the energy efficiency of residential and commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

State of California

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the latest update – the *2010 Update to the Integrated Energy Policy Report* - on January 12, 2011 (CEC, 2011). The update focuses on the potential contribution of American Recovery and Reinvestment Act of 2009 (ARRA) funding to California’s transition to a clean energy economy. The *2009 Integrated Energy Policy Report* focuses on: anticipated operational and physical changes to California's electric system through 2020; how the State's energy efficiency goals interact with electrical and natural gas demand forecasting methods; recommended changes to electricity procurement; vulnerability of the State's nuclear plants to major seismic events; and other energy issues.

County of Santa Clara

General Plan

The County General Plan contains goals, strategies and policies for the County as a whole, as well as rural unincorporated areas outside of cities and remaining unincorporated areas (called pockets and islands) within cities' urban service areas (County of Santa Clara, 2011). The policies relating to energy resources are summarized as follows:

> ***C-RC 77*****:** Energy efficiency and conservation efforts in the transportation, industrial, commercial, residential, agricultural and public sectors shall be encouraged at the local, county (sub-regional), and regional level.
>
> ***C-RC 77*****:** The objectives of the state energy plan should be implemented at the local and regional level through an overall strategy consisting of:
>
> a) reducing transportation energy demand and oil-dependency;
>
> b) conserving energy in residential, commercial, agricultural, and industrial sectors; and
>
> c) increasing consumer and general public awareness through education.
>
> ***C-RC 77*****:** Energy use and fossil fuel dependency in the transportation sector should be reduced by the following general means:
>
> a) growth management policies and implementation to minimize increases in the extent of the urbanized area and to promote balanced, compact urban development;
>
> b) land use and development standards which support alternative transportation modes;
>
> c) travel demand management, TDM, and transportation system operational efficiency;
>
> d) expanded transit service; and
>
> e) increased availability and use of alternative fuels.
>
> ***C-RC 83*****:** Industrial processes should be modified wherever feasible to take advantage of energy savings, to reduce operational costs, and to enhance competitiveness.

Implementation of the Project would be consistent with the policies identified above: It would not discourage energy efficiency and conservation efforts in the industrial or commercial sectors and would have no impact on other sectors. Project implementation would obstruct implementation of state energy plan objectives at the local and regional level. The potential for the Project to induce growth is analyzed in Section 4.14, *Population and Housing*. Transportation and traffic impacts of the Project are analyzed in Section 4.17, *Transportation and Traffic*. Energy conservation aspects of the Project are discussed below.

4.6.2 Baseline

PG&E provided electrical service to the site and the Project Area in June 2007 and continues to do so. With regard to energy use, the Project involves an existing quarry operation. Such operations are characterized by fluctuating production in response to continually changing market demands and changing weather conditions in accordance with the seasons, which would affect how much water is available in the Quarry pit for pumping and use within the Project Area. Energy demand data that considers only conditions existing in June 2007 (or any other specific point in time) may substantially over- or under-represent typical conditions. Accordingly, baseline energy use for this assessment is based on an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production and precipitation as well as relatively low production and precipitation at the Quarry. Existing electricity, diesel, and gasoline demand are described in Section 4.6.1 based on averaged energy demands reported by Ashworth Leininger Group (2011).

4.6.3 Significance Criteria

Appendix F of the CEQA Guidelines provides guidance for assessing energy conservation-related impacts of projects. The goal of this guidance is to conserve energy by:

1. decreasing overall per capita energy consumption;
2. decreasing reliance on natural gas and oil; and
3. increasing reliance on renewable energy sources.

Under CEQA, it is appropriate to evaluate the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. Accordingly, the Project would cause a significant impact to energy resources if it would:

a) Fail to include means for avoiding or reducing wasteful and/or unnecessary consumption of energy; or

b) Not comply with existing energy standards, including standards for energy conservation.

4.6.4 Discussion of Criteria with No Energy Conservation Impacts

The Project does not have the potential to cause a significant impact related to criterion b).

b) The Project would comply with existing energy standards, including standards for energy conservation.

The Project would meet applicable state and federal energy policies or standards. The Project also would comply with the Energy Conservation Policies established in the Resource Conservation Chapter of the County General Plan (see policies in Section 4.6.1.3). To reclaim the Project Area energy-consumptive equipment must be used; however, the Applicant has incorporated elements into the Project that would reduce the energy intensiveness of the reclamation process. For example, a conveyor would be used to move overburden from the WMSA into the Quarry pit to be used as backfill. Use of a conveyor for this purpose, rather than haul trucks, would reduce the Project's use of fossil fuels and make use of cleaner, renewable energy sources as part of the electricity mix provided by PG&E. The applicant proposes to complete the reclamation plan using only the vehicles currently at the Quarry, therefore, no additional vehicles will be introduced but onsite energy consumption will be minimized by the use of electric conveyors. Therefore, the Project would comply with existing energy standards, including, but not limited to, the General Plan standards and policies that call for energy conservation efforts in the industrial sector, reduction in transportation energy demand and oil-dependency, and modification of industrial processes to take advantage of energy savings and to reduce operational costs. Consequently, the Project would cause no impact related to criterion b).

4.6.5 Impacts and Mitigation Measures

a) Would the Project fail to include means for avoiding or reducing wasteful and/or unnecessary consumption of energy?

Impact 4.6-1: The Project would include means for avoiding or reducing wasteful and/or unnecessary consumption of energy. *(Less than Significant Impact)*

Electrical Power Use

Project related electrical power use would be the same for reclamation Phase 1 as it is under existing conditions, i.e., 1,871,323 kilowatt hours (kWh) per year (ALG, 2011, Table C-25).

During reclamation Phase 2, use of the proposed overland conveyor system to transport materials from the WMSA to the Quarry pit would increase the electrical demand within the Project Area, because it would operate 24 hours/day, 6 days/week, 50 weeks/year (7,200 hours/year) and be powered by electric motors. This increased electrical demand would be partially offset because the Quarry dewatering system no longer would be in use during Phase 2. The Project would require a total of approximately 26,853,093 kWh per year during this timeframe, representing an increase in electrical demand of an average of 24,981,770 kWh per year relative to existing conditions (ALG, 2011, Table C-25). The increased power needs would be served by a mix of energy sources, including renewable sources (see Table 4.6-1, *PG&E's Electric Power Mix Delivered to Customers*), which would conserve energy resources and reduce the fossil fuel resource depletion created by the use of trucks (U.S. EPA, 2011).

Diesel Fuel Use

Project-related diesel throughputs have been estimated for the proposed Project by Ashworth Leininger Group based on scheduling information and equipment specifications provided by the Applicant. As reported in Table C-19 of their report (ALG, 2011), reclamation Phase 1 would involve the use of 2,327,866 gallons of diesel per year, resulting in an approximately 183 percent increase in the average annual demand for diesel relative to existing conditions. Reclamation Phase 2 would require 540,188 gallons of diesel per year, resulting in an approximately 34 percent decrease in the average annual demand relative to existing conditions (ALG, 2011, Table C-19).

Gasoline Fuel Use

Project-related gasoline throughputs were estimated based on estimated in-plant vehicle use, mileage accruals, and fuel economy for the Project phases. Reclamation Phase 1 would result in the use of 7,933 gallons of gas per year (a reduction of approximately 37 percent relative to existing conditions) and Phase 2 would result in the use of 6,533 gallons per year (an approximately 48 percent reduction relative to existing conditions) (ALG, 2011, Table C-19).

At the conclusion of reclamation Phase 3, all conveyor systems (existing and new) and other energy-consumptive uses would be decommissioned, dismantled, and removed from the Project Area. No further energy demand would be generated in the Project Area.

Although energy consumption is necessary to complete the Project, the Project includes a means for avoiding or reducing wasteful and/or unnecessary consumption of fossil fuels by avoiding unnecessary reliance on fossil fuels to operate diesel-powered vehicles and instead installing a conveyor system that can be powered in part with energy generated by renewable sources. Based on the resulting energy efficiency, the Project would cause a less than significant impact related to criterion a).

4.6.6 Alternatives

4.6.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be less energy conservative than the Project due to the use of petroleum-fueled trucks to transport backfill material into the Quarry pit from the EMSA during Phase 2. Under Alternative 1 the overburden created by mining would continue to be stored at the EMSA until mining activities cease, at which point the overburden would be transported by trucks from the ESMA to the Quarry pit to be used as backfill material. The fuel required to excavate and move the EMSA materials and thereafter to contour the area would be more than the amount of fuel required by the Project to achieve slope stability and contouring. As stated in Section 4.3.6, in the analysis of Air Quality impacts, the activity required to implement Alternative 1 would involve considerable additional hours of operation for off-road equipment to excavate, transport, dump, and grade the EMSA materials. Consequently, Alternative 1 would be less environmentally advantageous than the Project.

4.6.6.2 Alternative 2: Central Materials Storage Area Alternative

Alternative 2 would result in reduced effort/fuel use to reclaim the EMSA, since the EMSA would not be as extensive as it would be under the Project, and would cause fuel use to reclaim the CMSA. Overall, approximately the same amount of overburden would be reclaimed under Alternative 2 as the Project, since safe extraction levels in the Quarry pit are the prime limiting factor for the amount of overburden to be generated, and not the amount of storage space available. However, because the material would be spread over a larger surface area (i.e., the current EMSA plus a new CMSA), additional use of diesel-fueled off road equipment would be required to implement Alternative 2 than to implement the Project. Consequently, Alternative 2 would be less environmentally advantageous than the Project.

4.6.6.3 No Project Alternative

The No Project Alternative would simply delay the site reclamation for approximately 7 years, but would not substantially affect how much energy would be required to accomplish reclamation. Consequently, the No Project Alternative would cause roughly comparable impacts to energy conservation as the Project.

References – Energy Conservation

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CEC. 2010b. California Electricity Statistics & Data, http://energyalmanac.ca.gov/electricity/index.html (accessed December 14, 2011).

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4.7 Geology, Soils, and Seismicity

This section discusses whether any element of the Project would result in increased exposure of people, structures, and/or the surrounding environment to geologic and seismic hazards such as ground shaking, slope failure, and accelerated erosion. Active surface mining and associated stockpiling and processing activities have been occurring in the Project Area for the past several decades. As a result, a substantial amount of information has been developed on the mineralogy, strength and character of geologic units, the predominant orientation and abundance of geologic contacts and faults, and areas of existing slope instabilities. The conclusions in this section are based on independent review of Project-specific geological data, and analyses and findings that have been developed by the Applicant's geotechnical consultants (Golder Associates, 2009; Golder Associates, 2011a; Terraphase Engineering, 2011).

As required under CEQA, the effects of the Project are analyzed in the existing environmental context, which is that of an active quarry that historically has experienced landslides in the excavated pit walls, and whose existing slopes have been determined to be marginally stable. One of the Project objectives is to correct the areas of instability that have developed as a result of ongoing quarry excavations and material stockpiling activities that have substantially altered the natural topography of the Project Area and steepened slopes beyond their natural condition. This section evaluates the impacts of the Project relative to baseline conditions, including whether its implementation would cause changes during and upon the completion of the proposed reclamation activities, which would adversely affect offsite properties, the public, or the natural environment related to geologic and seismic hazards.

4.7.1 Setting

4.7.1.1 Site Geology and Soils

The Quarry is located in the southeastern foothills of the Santa Cruz Mountains, which are underlain by a set of volcanic and sedimentary rocks of marine origin that have been displaced by hundreds of miles; altered under high heat and pressure (i.e., variably metamorphosed); and faulted, folded, and uplifted by tectonic forces over millions of years. In the Quarry vicinity, past movements along active and formerly-active fault lines have juxtaposed and chaotically mixed rock types of sharply contrasting origin and character. As a result, the rock layers underlying the site are highly variable in their lithology[1], orientation (bedding attitudes), and are frequently cross-cut by relict faults. This set of ancient volcanic and sedimentary rocks is regionally referred to as the "Franciscan Complex" but is locally subdivided into several different fault-bound rock masses, as described below. Among the many rocks underlying the site is cement-grade limestone, which represents the primary resource material that is extracted in the Project Area, although the Quarry also produces aggregate products (e.g., sand and gravel) from other rocks underlying the Project Area (see Section 4.12, *Mineral Resources*).

[1] The lithology of a rock unit is a description of its physical characteristics visible at outcrop, in hand or core samples or with low magnification microscopy, such as color, texture, grain size, or composition.

Topography

The topography in the surrounding area consists of moderately to steeply-sloped terrain with rounded ridges and deeply-incised drainages. Relief at the site ranges from about 2,000 feet above mean sea level (amsl) along the higher ridge crests to the west, to less than 500 feet amsl along the eastern portions of Permanente Creek. Natural slope angles in the vicinity are typically around 25 degrees (above horizontal), although natural slopes can locally be on the order of 40 degrees or greater where underlain by more competent rock, such as limestone.

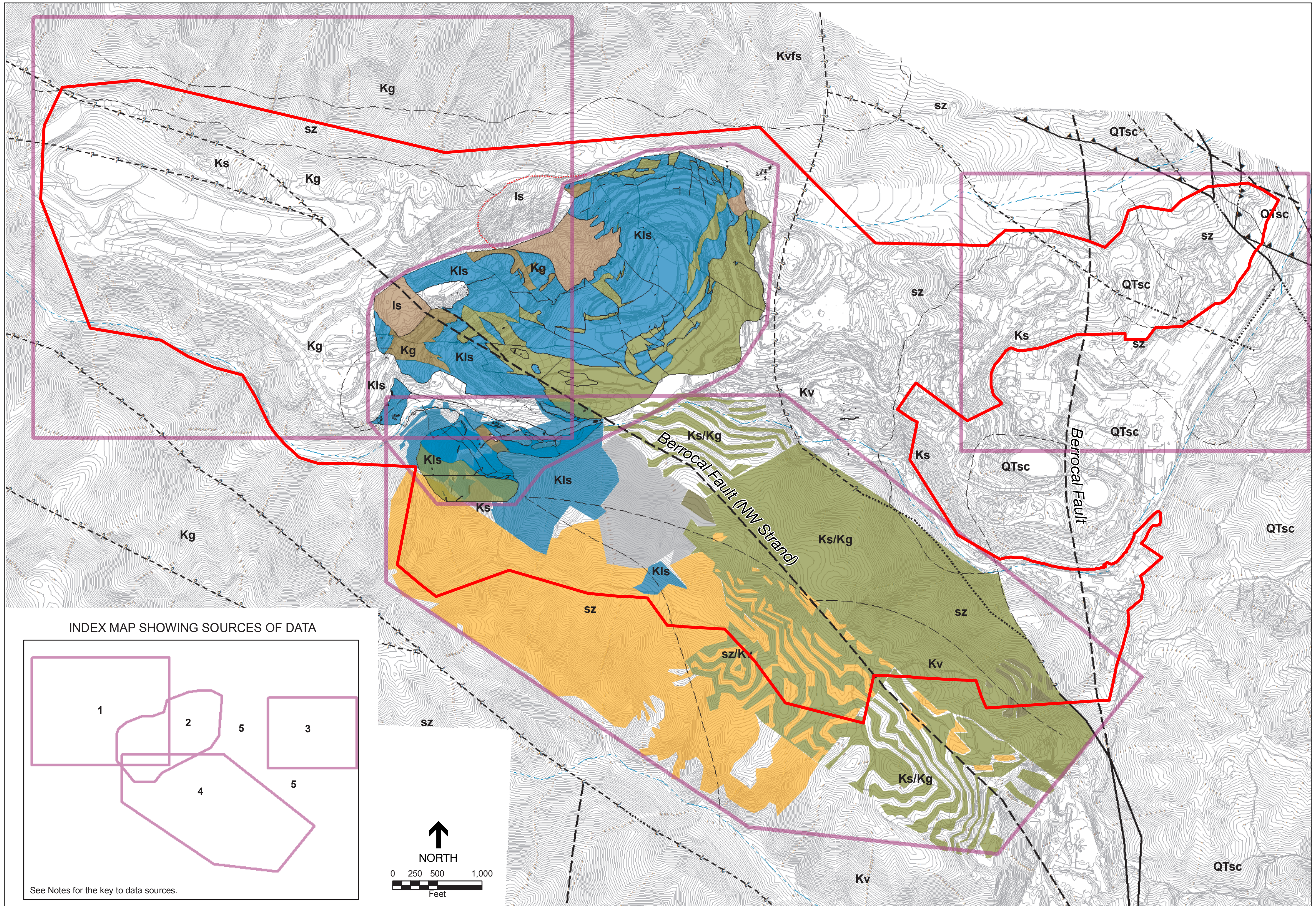
The Project Area has been modified by excavation and stockpiling activities over the course of several decades. In the Quarry pit, which ranges in elevation from about 720 feet amsl at the pit-bottom to 1,400 feet amsl at the crest of the northern wall, extensive benched excavations have substantially steepened the natural topography. Inter-bench slope angles (i.e., from bench face to bench face) vary based on the strength of the underlying rock, but are locally as high as 70 degrees over short distances. Where cuts have been made into weathered or less competent rock, such as greenstone, slope angles typically range from 26 to 34 degrees. Regularly-spaced benches in the quarry walls provide access to the pit-bottom, provide a catchment surface for soil or rock falls, and reduce the overall slope angle. Where quarry walls have been left idle for a long period of time, or where slope failure has occurred, the benches are muted (smoothed-out) by the accumulation of rock or soil debris. In the EMSA, non-saleable or recoverable overburden material has been stockpiled in repeated series of lifts, resulting in similarly benched topography that has elevated the surface by as much as 300 feet in some areas. Overburden material is end-dumped from haul trucks, slowly building up the land surface with slope faces at angles that average about 35 degrees. At nearly 2,000 feet amsl, the top of the WMSA, which is comprised of overburden material, is one of the most elevated areas on the site.

Bedrock Geology

As described above, the primary bedrock unit underlying the Quarry is the Franciscan Complex; however, sandstone, conglomerate, siltstone, and claystone of the geologically younger Santa Clara Formation also occur on the eastern end of the site. These two bedrock units and the various lithologies within the Franciscan Complex are shown in **Figure 4.7-1**, and further described below. Italicized symbols below indicate how the rock units are symbolized in Figure 4.7-1.

The Permanente Terrain of the Franciscan Complex

The Franciscan Complex underlying the site is part of the Permanente Terrain of Jurassic-Cretaceous age (65 to 200 million years old). The limestone and altered basalt layers within the Franciscan reach a minimum subsurface thickness of approximately 1,100 feet and are moderately inclined to the southeast. Specific lithologies found in the Project Area include greywacke sandstone (*Ks*), altered basalt / greenstone (*Kg*), limestone (*Kls*), chert (*Kch*), and localized areas that have been sheared (i.e., ground up or pulverized) to the point that no predominant lithology is discernable (*sz/Kv*). Near the ground surface, many of these rocks



LEGEND

- Geologic contact, certain
- Geologic contact, approximate
- Geologic contact, concealed
- Landslide

Rock Type (Surpac Model):

- Fault breccia/metabasalt (sz/Kv)
- Graywacke (Ks)
- Graywacke/greenstone (Ks/Kg)
- Greenstone (Kg)
- Greenstone/metabasalt (Kg)
- Limestone (Kls)

Rock Type (Fouria, simplified):

- Landslide (ls)
- Greenstone; all types
- Limestone; all types
- Metabasalts
- Alteration

NOTES

1) Modified after Rogers, T.H. and Armstrong, C.F., CDMG Preliminary Report 17 (1973) and Fouria, J. Geology of the Pemanente Limestone and Agrregate Quarry (2004).
2) Fouria, J. Geology of the Pemanente Limestone and Agrregate Quarry (2004).
3) Modified after Rogers, T.H. and Armstrong, C.F (1973).
4) Gemcom SURPAC results of geologic model.
5) Modified after Rogers, T.H. and Armstrong, C.F (1973).

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Topography (2007, 2008, 2009 composite; Chang Consultants (2010).

Spatial Reference:
NAD 1983 StatePlane California III FIPS 0403 Feet

SOURCE: Golder Associates, 2011

Figure 4.7-1
Geology of the Project Area

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(particularly the greenstones) are deeply weathered[2] and support fairly thick, clay-rich soils. In eastern portions of the site, the sheared Franciscan rocks are overlain by sandstone, gravels, and siltstone of the much younger Santa Clara Formation (described below).

Santa Clara Formation

The Santa Clara Formation was formed by prehistoric stream deposits composed of loose to slightly consolidated conglomerate, sandstone, siltstone, and claystone. The age of the Santa Clara Formation is uncertain but is estimated to be from the late Tertiary period to the Pleistocene epoch (i.e., somewhere between 10 thousand and 1.5 million years old). The Santa Clara Formation has been uplifted during recent geologic time to its present position due to faulting and tectonics along the San Andreas Fault system. The Santa Clara Formation lies directly upon the eroded surface of the Franciscan Complex bedrock within the central and eastern portions of the EMSA. The boundary between the two rock units represents a gap of millions of years in the geologic record.

Surficial Deposits

Much of the Project Area is covered at the ground surface by fills, stockpiles of aggregate product, overburden material, colluvium, and surface soils. In places where the land surface is undisturbed, bedrock geology is typically obscured by a mantle of native soil or colluvium, although there are localized outcrops and man-made exposures of the bedrock. Surficial materials are briefly described below.

Overburden Material

The main types of materials extracted and processed at the Quarry are low-quality limestone, high-quality limestone (available mostly at lower elevations), and overburden suitable for use as aggregate. Any overburden that was not recovered or saleable has been placed in the EMSA and/or the WMSA, within the Project Area. Generally, the overburden material consists of coarse stone fragments lacking cohesion (such as greenstone, greywacke, chert, and sedimentary rocks of the Santa Clara Formation). Other materials placed in the storage areas include fine-grained soils (silts and clays) that were produced during the washing of aggregate material, and which are estimated to represent a minor fraction of the material stored in the EMSA and WMSA.

Alluvium

This includes modern unconsolidated alluvial deposits along the active stream channel of Permanente Creek. These deposits are comprised of a mixture of cobbles, gravels, sand, silt and clay. Deposits range from a few inches thick in the upper reaches of the watershed where erosion has cut the channel down into bedrock, to tens of feet thick where the channel widens and deepens as it approaches the flatter terrain of the Santa Clara Valley (Golder Associates, 2011a). The Permanente Creek watershed encompasses a large portion of the Project Area, therefore

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2 Weathering is the breaking down of Earth's rocks, soils and minerals through direct contact with the planet's atmosphere. Weathering occurs in situ, or "with no movement," and thus should not be confused with erosion, which involves the movement of rocks and minerals by agents such as water, ice, wind and gravity.

much of the alluvial sediment that occupies the creek channel was eroded from disturbed ground and waste rock slopes within the mined area.

Colluvium

Colluvium refers to soil material such as rock fragments, silt, clay and detritus that accumulates at the base of slopes by the slow and continual down-slope movement, either due to gravity or surface runoff. Colluvium exists throughout the site on natural slopes including areas underlying the existing older overburden fills in the WMSA, and in the areas of current and proposed overburden fills in the EMSA. In general, the natural slopes in the region are overlain with approximately 1 to 2-feet of soil and colluvium, which thicken to several feet or more in natural swales and transitional areas between steep hill slopes and valley floors. Where past exploratory activities encountered colluvial materials, they consisted of a mixture of sand, gravel and clay, with rock fragments up to 3-inches in diameter (Golder Associates, 2011a). In some locations, particularly near constructed access roads and areas of overburden storage, the colluvium includes soil and rock that has been loosened, reworked, and/or moved as a result of current and former mining operations in the Project Area.

Native Soils

The description of Project Area soils is based on a review of soil surveys prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS, 2011). Figure 4.2-2 (see Section 4.2, *Agricultural and Forest Resources*) shows and **Table 4.7-1** identifies the soils present in the Project Area, their areal extent, and summarizes some of their key physical and hydrological characteristics. As stated above, most of the native soils onsite have been highly disturbed by surface mining operations, cut and fill activity, or buried by overburden—approximately 54 percent of the Project Area is mapped by the soil survey as “mine/pit” (NRCS, 2011). However, the remainder of the Project Area remains free of large-scale disturbance and is underlain primarily by the Mouser-Maymen complex and similar soil units which consist of gravelly loams[3] and sandy clay loams along slope gradients ranging from 30 to 75 percent. The soils predominantly are derived from colluvium and weathered greenstone and range in depth to bedrock from 1 to 5-feet. The deepest soils generally are located along ridge tops, swales and valley floors, with the shallowest soils located along steep, planar slopes.

In addition to regional soil maps, the geotechnical report prepared by Golder Associates (2011a) describes material properties of foundation soils, which are the natural soil beneath overburden, within the Project Area. While the NRCS focuses on mapping and characterization of soils for agricultural and land management purposes at a regional-scale, the geotechnical report provides material properties for the purpose of site-specific slope stability evaluations. Foundation soils as sampled from geotechnical borings within the EMSA are characterized as “a sandy clay to clayey sand with gravel to a silty or clayey gravel with sand” (Golder Associates, 2011a).

3 Loam is soil composed of sand, silt, and clay in relatively even concentration (about 40-40-20 percent concentration respectively). The term is often qualified to indicate a relative abundance of one constituent over others (e.g., a “sandy loam” is a loam, but where sand is more abundant than silt and clay).

TABLE 4.7-1
SOIL UNITS WITHIN THE PROJECT AREA

Map Unit Symbol and Name	Percent of Project Area	Predominant Soil Texture / Parent Material	Drainage Class[a]	Hydrologic Group[b]	Surface Runoff[c]	Risk of Corrosion[d]	Shrink-Swell Behavior[e]
PkG, Pits, mine	54	Limestone/Greenstone bedrock units, and overburden stockpiles	Well Drained	--	Very High	--	--
520, Mouser-Maymen complex, 30 to 75 percent slopes	32	Gravelly Loam and Clay Loam / Slope alluvium derived from greenstone	Well Drained-Somewhat Excessively Drained	C-D	High-Very High	Low to Moderate	Low
560, Katykat-Mouser-Sanikara complex, 30 to 50 percent slopes	6	Gravelly Loam and Sandy Clay Loam / Weathered sandstone and mudstone	Well Drained	B-C-D	Medium-High-Very High	Low to Moderate	Low
569, Katykat-Sanikara complex, 8 to 30 percent slopes	5	Gravelly Loam and Gravelly Clay Loam / Colluvium and weathered sandstone	Well Drained	B-C-D	Low-Medium-High	Low to Moderate	Low
326, Airship-Minlum complex, 40 to 65 percent slopes	2	Very gravely sandy loam / Old, eroded slope alluvium	Well Drained-Somewhat Excessively Drained	A-C	Medium-High	Low to Moderate	Low
580, Maymen gravelly sandy clay loam, 30 to 50 percent slopes	1	Gravelly sandy clay loam / weathered greenstone, schist or sandstone	Somewhat Excessively Drained	D	Very High	Moderate	Low

a Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained.

b Hydrologic soil groups are used for estimating the runoff potential of soils on watersheds at the end of long-duration storms after a prior wetting and opportunity for swelling, and without the protective effect of vegetation. Soils are assigned to groups A through D in order of increasing runoff potential.

c Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

d Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. The risk of corrosion also is expressed as low, moderate, or high.

e Shrink-swell behavior is the quality of soil that determines its volume change with change in moisture content. The volume-change behavior of soils is influenced by the amount of moisture change and amount and kind of clay in the soil. Linear extensibility is used to determine the shrink-swell potential of soils. The shrinkswell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent.

NOTE: Dashes within classification columns indicate the classifications assigned to separate soil series within the map unit. Soil units covering less than 1 percent of the Project Area are not shown.

SOURCE: NRCS, 2011

4.7.1.2 Naturally Occurring Asbestos, Crystalline Silica, and Trace Metal Concentrations

Rock and soil often contain naturally-occurring constituents which can be hazardous to human health. Exposure to these substances is most often through inhalation of fugitive dust emitted during excavation and processing of minerals, and as a result of heavy equipment and vehicle operations on unpaved roads. Natural constituents in soil and rock also can be released into surface water resulting in water quality problems. This section presents existing data on levels of naturally occurring constituents in the rock and soil present in the Project Area, although potential impacts to human health and/or water quality are addressed in Section 4.9, *Hazards and Hazardous Materials*, Section 4.3, *Air Quality*, and Section 4.10, *Hydrology and Water Quality*.

Naturally Occurring Asbestos

Asbestos is a common name for a group of naturally-occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Asbestos is a known carcinogen and presents a public health hazard if it is present in the friable (easily crumbled) form that can be inhaled. Naturally-occurring asbestos (NOA) would most likely be encountered in Franciscan ultramafic rock[4] (primarily serpentinite[5]) or Franciscan mélange.[6] According to a review of site-specific data regarding the presence of asbestos, as further detailed below, NOA-bearing minerals have not been detected within quarried rocks.

The California Air Resources Board adopted the Asbestos Airborne Toxic Control Measure (ATCM) for quarrying and surface mining operations in November 2002. The ATCM applies to quarrying and surface mining operations that meet any one of the following criteria:

- Any portion of the area to be disturbed is located in a geographic area designated as an ultramafic rock unit or ultrabasic rock unit on maps published by the Department of Conservation.
- Any portion of the area to be disturbed has ultramafic rock, serpentine, or naturally occurring asbestos on the site as determined by the Air Pollution Control District or the owner or the owner/operator.
- After the start of operation, the local Air Pollution Control District or Air Quality Control District, a registered geologist, or the owner/operator discovers ultramafic rock, serpentine, or naturally occurring asbestos in the area to be disturbed.

The regional geological map generated by the Department of Conservation does not indicate that the Project site is located in a geographic area designated as an ultramafic[7] rock unit likely to

4 Ultramafic rocks are formed in high-temperature environments well below the surface of the earth.
5 Serpentine is a naturally-occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth’s surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.
6 Mélange is a mixture of rock materials of differing sizes and types typically contained within a sheared matrix.
7 An igneous rock consisting dominantly of mafic minerals, containing less than 10 percent feldspar. Includes dunite, peridotite, amphibolite, and pyroxenite.

contain asbestos (CDMG, 2000). However, the Franciscan Complex is highly variable in its lithology and the map used to locate ultramafic rocks is a coarse scale geologic map that does not allow for precise location of various rock types. In 2007, the Applicant's consultant, Geocon Consultants, Inc., performed a review of geologic information to determine whether it is likely that NOA minerals are present at the site, including review of laboratory analytical reports for materials sampled from the Quarry between 1981 and 2007. Geocon found no evidence to indicate that NOA minerals were present at the site (Geocon Consultants, Inc., 2007). The California Air Resources Board concurred with that finding and determined that the site is not subject to the requirements of either the ATCM for surface applications or the ATCM for Construction, Grading, Quarrying, or Surface Mining Operations.

Given the geologic setting of this area, the potential for the Franciscan Complex to contain NOA, and the changes in mining areas since 2007, the County of Santa Clara conducted an independent investigation for the presence of asbestos to support this EIR. The survey included the collection and laboratory analysis for asbestos of representative rock samples from the active mining area. On September 24, 2010, ESA, under contract with the County of Santa Clara, collected nine rock/gravel samples representative of the onsite geologic materials (i.e., greywacke, greenstone, limestone, and fill materials) and submitted them for laboratory analysis. The analysis of asbestos was conducted in accordance with the California Air Resources Board (CARB) Method 435 (Determination of Asbestos Content in Serpentine Aggregate, adopted June 6, 1991) using Polarized-Light Microscopy (PLM). The nine rock/gravel samples were analyzed for asbestos content by two independent labs: Asbestos TEM located in Berkeley, California and Forensic Analytical Laboratories located in Hayward, California. Multiple preparations of each sample were then examined by both laboratories by PLM and a total of 400 points were counted per the CARB 435 method. In no case did either laboratory detect asbestos in any of the nine samples, confirming previously-made conclusions by the Applicant's consultant that NOA-bearing minerals have not been detected in Project Area rocks (Asbestos TEM Laboratories, Inc., 2010; Forensics Analytical Laboratories, 2010).

Crystalline Silica

Crystalline silica is a component of soil, sand, granite and many other common minerals, which was identified as a Toxic Air Contaminant by the Office of Environmental Health Hazard Assessment in February of 2005. Crystalline silica may become respirable size particles when workers chip, cut, drill or grind materials that contain it. If respirable silica dust enters the lungs, it causes the formation of scar tissue (silicosis) which can be disabling or even fatal, reducing the lungs ability to take in oxygen and increasing the susceptibility to lung infections like tuberculosis. Silicosis is also often a precursor to lung cancer. Estimates of crystalline silica percentages in the rocks present in the Quarry are presented in **Table 4.7-2**. These estimates are based on published geological literature, not on laboratory analysis.

Potential impacts related to human exposure to crystalline silica are discussed in Section 4.3, *Air Quality*.

TABLE 4.7-2
ESTIMATED CRYSTALLINE SILICA PERCENTAGES FOR THE ROCK-TYPES IN THE QUARRY

Rock Type	Reference Sample Location	Range (percent by weight) Crystalline Silica (SiO_2)	Maximum (Percent by weight) Crystalline Silica (SiO_2)
Limestone	Average of 8 bulk samples from Permanente Quarry; locations and sample dates not available	0.08 to 17.2	17.2
Greenstone	Angel Island SP	43.8 to 52.89	52.89
Greywacke	Pacheco Peak Quadrangle, Santa Clara County	58.51 to 67.1	67.1

SOURCE: CDMG, 1964

Trace Metal Concentrations

During the asbestos investigation described above, ESA also submitted nine samples for CAM-17 metals laboratory analysis. The results are presented in **Table 4.7-3**. Potential impacts related to exposure to trace metals as toxic air contaminants are discussed in Section 4.3, *Air Quality*. The potential for release of trace metals, primarily selenium, into surface or groundwater is discussed in Section 4.10, *Hydrology and Water Quality*.

TABLE 4.7-3
ESTIMATED TOTAL METALS CONTENT WITHIN ROCK SAMPLES

Inorganic Chemicals (mg/kg)	Reporting Limit	Sample ID									
		HLM-1	GS-1	GW-1	GS-3	WR-1	GS-2	LLM-1	RF-1	LLM-2	Maximum
Antimony	0.5	2.5	0.58	0.67	1.5	ND	ND	ND	ND	0.76	2.5
Arsenic	0.5	6.5	3.1	6.7	12	1.4	0.58	1.5	6	3.6	12
Barium	5.0	1700	510	320	320	910	1100	220	890	1700	1700
Beryllium	0.5			0.64	0.79	0.65	ND	ND	0.55	ND	0.79
Cadmium	0.25	3.5	0.46	ND	ND	0.27	ND	ND	ND	0.47	3.5
Total Chromium	0.5	50	2.7	39	29	84	72	180	120	26	180
Cobalt	0.5	4.9	3	19	20	25	30	38	21	27	38
Copper	0.5	49	11	57	54	67	110	35	45	25	110
Lead	0.5	3.6	1.9	16	20	1.7	0.6	1	7.5	3.1	20
Mercury	0.05	0.52	0.078	0.065	0.052	0.28	ND	ND	0.069	0.11	0.52
Molybdenum	0.5	11	ND	1.7	1.1	0.66	ND	ND	0.71	0.66	11
Nickel	0.5	64	15	66	51	80	67	270	140	71	270
Selenium	0.5	10	ND	ND	ND	ND	ND	ND	ND	ND	10
Silver	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
Thallium	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0
Vanadium	0.5	170	24	51	50	130	190	81	79	40	190
Zinc	5.0	190	49	120	95	91	90	81	77	88	190

ND means not detected above the reporting limit/method detection limit
HLM: High-Grade Limestone
LLM: Low-Grade Limestone
GS: Greenstone
GW: Greywacke
WR: Waste Rock
RF: Rock Fill

SOURCE: McCampbell Analytical, Inc., October 04, 2010.

4.7.1.3 Regional Faulting and Seismicity

This section characterizes the region's existing faults, describes historic earthquakes, estimates the likelihood of future earthquakes, and describes probable ground shaking effects. The primary sources of information for this section were publications prepared by United States Geological Survey (USGS), the California Geological Survey (CGS), hazard mapping tools provided by the Association of Bay Area Governments (ABAG), and site-specific information gathered by Golder Associates (2011a).

Earthquake Terminology and Concepts

Earthquake Mechanisms and Fault Activity

Faults are planar features within the earth's crust that have formed to release strain caused by the dynamic movements of the earth's major tectonic plates. An earthquake on a fault is produced when these strains overcome the inherent strength of the earth's crust, and the rock ruptures. The rupture causes seismic waves to propagate through the earth's crust, producing the ground shaking effect known as an earthquake. The rupture also causes variable amounts of slip along the fault, which may or may not be visible at the earth's surface.

Geologists commonly use the age of offset rocks as evidence of fault activity. The more recently earthquakes have caused displacement along a fault, the more "active" it is considered. To evaluate the likelihood that a particular fault will produce an earthquake in the near future, geologists examine the magnitude and frequency of recorded earthquakes and evidence of past displacements along the fault. An *active* fault is defined by the State of California as a fault that has had surface displacement within Holocene time (the last 11,000 years). A *potentially active* fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years) (Hart, 2007). *Blind* faults do not show surface evidence of past earthquakes, even if they occurred in the recent past, as they do not reach the ground surface.

Earthquake Magnitude

When an earthquake occurs along a fault, its size can be determined by measuring the energy released during the event. A network of seismographs records the amplitude and frequency of the seismic waves that an earthquake generates. The Richter Magnitude (M) of an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a ten-fold increase in the amplitude of the recorded seismic waves and 32 times the amount of energy released. While Richter Magnitude was historically the primary measure of earthquake magnitude, seismologists now use Moment Magnitude as the preferred way to express the size of an earthquake. The Moment Magnitude scale (Mw) is related to the physical characteristics of a fault, including the rigidity of the rock, the size of fault rupture, and the style of movement or displacement across the fault. Although the formulae of the scales are different, they both contain a similar continuum of magnitude values, except that Mw can reliably measure larger earthquakes and do so from greater distances.

Peak Ground Acceleration

A common measure of ground motion at any particular site during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one "g" of acceleration is equivalent to the motion of a car traveling 328 feet from rest in 4.5 seconds. For comparison purposes, the maximum PGA value recorded during the Loma Prieta earthquake was in the vicinity of the epicenter, near Santa Cruz, and was 0.64g. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g., hard bedrock, soft sediments, or artificial fills).

The Modified Mercalli Intensity Scale

The Modified Mercalli Intensity Scale (**Table 4.7-4**) assigns an intensity value based on the observed effects of ground shaking produced by an earthquake. Unlike measures of earthquake magnitude and PGA, the Modified Mercalli (MM) intensity scale is qualitative in nature, which means that it is based on actual observed effects rather than measured values. Similar to PGA, MM intensity values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, the focus its energy, and the type of geologic material. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Because the MM is a measure of ground shaking effects, intensity values can be related to a range of average PGA values, also shown in Table 4.7-4.

Seismic Context

The Project Area lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity (**Figure 4.7-2**). The USGS, the California Geological Survey (CGS), and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities to summarize the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. Accounting for the wide range of possible earthquake sources, it is estimated that the Bay Area as a whole has a 63 percent chance of experiencing an earthquake of magnitude 6.7 or higher before 2036 (USGS, 2008). According to the working group, the individual faults posing the greatest threat to the Bay Area are the Hayward-Rodger's Creek Fault and the San Andreas Fault. Other principal faults capable of producing significant earthquakes in the Bay Area include the Calaveras, Concord–Green Valley, Marsh Creek–Greenville, and the San Gregorio faults (see Figure 4.7-2).

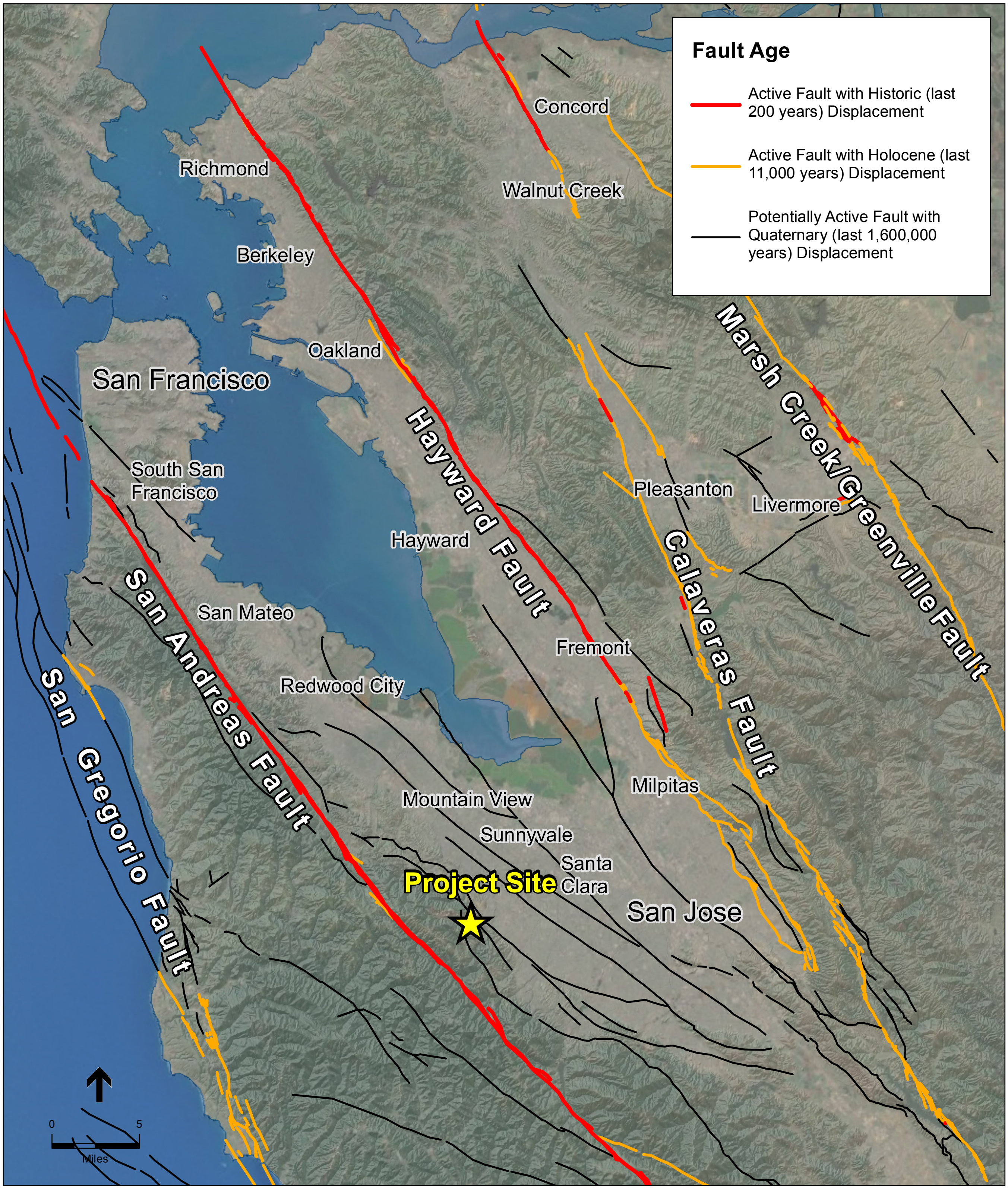
Table 4.7-5 lists active faults located within 30 miles of the Project Area, their distance and direction from the Project Area, their maximum moment magnitude earthquake, and the probability that they will generate a major earthquake.

TABLE 4.7-4
MODIFIED MERCALLI INTENSITY SCALE

Intensity Value	Intensity Description	Average Peak Ground Acceleration[a]
I	Not felt except by a very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	0.0017-0.014 g
III	Felt noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly, vibration similar to a passing truck. Duration estimated.	0.0017-0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.	0.014–0.039g
V (Light)	Felt by nearly everyone, many awakened. Some dishes and windows broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles may be noticed. Pendulum clocks may stop.	0.035 – 0.092 g
VI (Moderate)	Felt by all, many frightened and run outdoors. Some heavy furniture moved; and fallen plaster or damaged chimneys. Damage slight.	0.092 – 0.18 g
VII (Strong)	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.	0.18 – 0.34 g
VIII (Very Strong)	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.	0.34 – 0.65 g
IX (Violent)	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.65 – 1.24 g
X (Very Violent)	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI (Very Violent)	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII (Very Violent)	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] Value is expressed as a fraction of the acceleration due to gravity (g). Gravity (g) is 9.8 meters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.

SOURCE: ABAG, 2011



SOURCE: ESRI, 2011; USGS and CGS, 2006

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Figure 4.7-2
Regional Fault Map

TABLE 4.7-5
FAULTS IN THE PROJECT SITE VICINITY

Fault	Minimum Distance and Direction from Project site	Most Recent Prehistoric Deformation[a]	Fault Classification	Historic Earthquakes > M 6.5[b]	Maximum Moment Magnitude Earthquake (Mw)[c]	Future Earthquake Probability[d]
Berrocal Fault	Onsite	Quaternary (<1,600,000 years)	Potentially Active	none	--	--
Monte Vista Fault	Onsite	Latest Quaternary (<15,000 years)	Potentially Active	none	6.7	--
San Andreas Fault (Peninsula Section)	2.8 miles southwest	Historic (<150 years)	Active	M 7.1, 1989 M 8.25, 1906 M 6.5, 1865 M 7.0, 1838	7.1	21%
Hayward Fault (Southern Section)	14.5 miles northeast	Historic (<150 years)	Active	M 6.8, 1868 M 6.75, 1838	6.7	31 %
San Gregorio Fault (San Gregorio Section)	16.5 miles southwest	Latest Quaternary (<15,000 years)	Active	None	7.2	6 %
Calaveras Fault (Central Section)	17.2 miles east-northeast	Historic (<150 years)	Active	M 6.5, 1911	6.2	7 %

[a] Defines one of the four time categories in which the most recent prehistoric surface-rupturing or surface-deforming earthquake occurred based on geologically recognizable evidence of faulting, folding, or liquefaction. The categories are (1) Historic (<150 years), (2) latest Quaternary (<15 ka), (3) late Quaternary (<130 ka), (4) late and middle Quaternary (<750 ka), and (5) Quaternary (<1.6 Ma). Note that earthquakes do not always produce recognizable evidence of surface rupture.
[b] From USGS and CGS, 2006. Historic earthquakes listed may have occurred along any portion of the fault (and not necessarily the fault section closest to the Project area).
[c] The Maximum Moment Magnitude Earthquake is derived from the joint California Division of Mines and Geology (CDMG) / USGS Probabilistic Seismic Hazard Assessment for the State of California (Peterson et al., 1996) and associated updates (Cao *et al*,. 2003)
[d] Probability of one or more earthquakes of magnitude 6.7 or greater from 2007 to 2036 provided by the USGS (2008). The Working Group estimates the probability of a "background" earthquake not from one of the seven major faults studied to be 9%.

SOURCES: USGS and CGS, 2006; USGS, 2008; Peterson et al., 1996.

Local Faults

The primary active fault in the vicinity of the Project Area is the northwest-trending San Andreas Fault, located approximately 2 miles southwest of the Project Area (Figure 4.7-2). The San Andreas Fault juxtaposes the Mindego Hill assemblage[8] on the southwest against the Woodside assemblage (which includes the bedrock units underlying the Project Area), on the northeast. The San Andreas Fault is a right-lateral strike-slip[9] fault with an estimated displacement of 35 km over the last 8 million years (CGS, 2002). The San Andreas Fault includes many individual fault strands in a zone that ranges in width from several hundred to more than 1,000 feet. The

8 An assemblage is a group of rocks that are closely related on a regional and/or stratigraphic basis. Neighboring assemblages contain grouped bedrock units that differ in terms of their depositional and deformational history.
9 Rocks on either side of a strike-slip fault move parallel to the fault's trace (i.e., side-by-side). When movement along a strike-slip fault is right-lateral, displacement along the fault is such that, in plan view, the side opposite the observer appears displaced to the right.

San Andreas Fault has experienced several large earthquakes in historic time, including the Great 1906 San Francisco Earthquake (Mw 7.9) and the 1989 Loma Prieta Earthquake (Mw 6.9). The USGS estimates a 21 percent chance that the San Andreas Fault could generate a Mw 6.7 earthquake or greater before 2036 (USGS, 2008).

The Sargent-Berrocal Fault Zone (SBFZ), part of the Santa Cruz Mountains front-range thrust fault[10] system, parallels the San Andreas to the east and forms the eastern-most structural boundary to the Permanente Terrain. The SBFZ consists of two northwest-trending, sub-parallel faults: the northeastern-most Monta Vista Fault Zone and the southwestern-most Berrocal Fault Zone (Golder Associates, 2011a). These faults intersect the central and eastern portions of the Project Area and are responsible for the uplift and juxtaposition of the young Santa Clara Formation against the ancient rocks of the Franciscan Complex. These faults are not considered one of the principal active faults in the Bay Area; however, they are classified by the CGS as potentially active. The Monta Vista Fault Zone traverses the eastern edge of the EMSA in a northwesterly direction, and a strand of the Berrocal Fault Zone lies beneath the Cement Plant area to the south of the EMSA, and extends west-northwest through the southern portion of the Quarry pit (Golder Associates, 2011a; USGS and CGS, 2006). The information below—derived from the U.S. Geological Survey fault and fold database—indicates that the two faults are closely related, that the Monte Vista-Shannon Fault Zone is possibly active, and provides further information on the characteristics of each onsite fault (USGS, 2000a; USGS, 2000b).

Monte Vista-Shannon Fault Zone

The Monte Vista-Shannon Fault Zone is a potentially active fault. This fault forms a part of what some seismologists have referred to as the Southwestern Santa Clara Valley thrust belt, which is located generally along the foothills of the northeastern Santa Cruz Mountains. The Monte Vista-Shannon fault zone is commonly associated with the Berrocal fault zone (described below). The Monte Vista-Shannon Fault Zone offsets sediment of the Santa Clara Formation. In addition, it is possible that the Monte Vista-Shannon fault is “active” because there is evidence to suggest that young Holocene (last 11,000 years) gravels of Permanente Creek are also offset along the fault line. Unlike many of the faults in the Bay Area, which are strike-slip faults, the Monte Vista-Shannon Fault is primarily a reverse-slip fault, meaning rocks one side of the fault are thrust over the other, rather than slipping side-by-side past each other. Minor ground deformations documented after the 1989 Loma Prieta Earthquake in urbanized areas were coincident with the general trend and location of the Monte Vista-Shannon fault zone and air-photo lineaments. The locations of these ground movements provide evidence that the fault may experience such minor “sympathetic” movements associated with future large earthquakes that originate on the San Andreas Fault.

[10] A thrust fault differs from a strike-slip fault in that movement along the fault is primarily in the vertical direction, whereby rather than slipping side-by-side, rocks on either side are pushed into and up against one another (although a thrust fault can still exhibit horizontal displacement).

Berrocal Fault Zone

The Berrocal Fault is classified "potentially active" and also forms a part of the Southwestern Santa Clara Valley thrust belt. The Berrocal fault zone offsets sediment of the Santa Clara Formation and probably deforms late Pleistocene river and alluvial fan deposits. The fault is similar to the Monte Vista-Shannon Fault described above, except that there is no evidence indicating possible Holocene (last 11,000 years) displacements. Also similar to the Monte Vista-Shannon Fault, minor ground deformations in the urbanized areas associated with the 1989 Loma Prieta Earthquake were coincident with the general trend and location of Berrocal fault zone. As discussed further below, some of the slope failures observed in the Project Area are probably associated with zones of weakness and sheared rock located along strands of the Berrocal Fault.

4.7.1.4 Geologic Hazards

This section discusses the various hazards and/or adverse conditions that are associated with the geologic setting of the site.

Slope Failure

A slope failure is a mass of rock, soil, and debris displaced down a slope under the influence of gravity by sliding, flowing, or falling. Several factors can affect the susceptibility of a slope to failure, including: 1) steepness of the slope, 2)strength and bulk density of the soil or bedrock, 3) width, orientation and pervasiveness of bedrock fractures, faults, or bedding planes, 4) prevailing groundwater conditions, and 5) type and distribution of vegetation. Those features, among others, are important factors that determine the predisposition of a sloped surface to fail, while external processes such as exceptionally heavy rainfall, earthquakes, or human disturbances (e.g., quarrying, road cuts, and large-scale vegetation removal) may trigger a new or reactivate an existing slope failure. As further described below, the Quarry pit has experienced multiple slope failures along the western, northern, and northeastern walls. The Applicant's geotechnical consultants have conducted numerous studies of these slope failures over the past decades. The results and conclusions of these studies, including an independent peer review of geologic information conducted by Terraphase Engineering Inc. (2011) to support the technical analysis in this EIR, are summarized herein.

Measures of Slope Stability

The factors that contribute to slope movements include those that decrease the resistance to the force of gravity on the slope materials and those factors that increase the stresses on the slope. The degree to which a slope will remain stable is expressed by the "*factor of safety*," (FOS) which is calculated by dividing the forces that resist movement (the shearing strength available along a potential slide surface) by the shearing stresses that tend to produce failure along a surface. When a calculated FOS value is less than 1, conditions that make a slope susceptible to failure have exceeded those that tend to hold it in place. In order to adequately calculate the FOS, geotechnical engineers and engineering geologists can accurately characterize the topography, underlying material strengths, and planes of weakness within a slope using investigative methods such as geologic and topographical mapping, drilling and logging, collecting samples, and laboratory testing. Based on professional judgment and conservative assumptions, geotechnical engineers identify a hypothetical failure plane (which determines the size, length and mode of failure being modeled) within a slope and perform a FOS calculation to determine its degree of stability. A computer program is typically used to conduct hundreds of iterations to search for the “critical” failure surface that results in the lowest FOS. Slope stability analyses that have been conducted for various locations in the Project Area are further discussed under Impact 4.7-1.

Regional Landslide Hazard Mapping

Several large, ancient landslides (defined here to be landslides that originated thousands to tens of thousands of years ago) have been mapped by various investigators in various areas of the 3,510-acre site, and throughout the broader foothills region. Those landslides are generally described as “possible old landslides”, are considered to be early Holocene age (last 11,000 years) or possibly late-Pleistocene age (11,000 to 800,000 years ago) features, and are identified on the basis of geomorphic features such as eroded scarps and irregular topography. Boundaries of ancient landslides are generally subtle and poorly defined as there is typically little to no evidence of modern activity (Golder Associates, 2011a). Along the south flank of Permanente Creek, two large ancient landslides have been tentatively identified by various investigators based on large-scale topographic features (such as muted topography and convex slopes) that commonly indicate the presence of such a landslide (Golder Associates, 2011a).

Large-scale, regionally-mapped landslides are located outside of the Project Area. Accordingly, regional-scale mapping by the USGS has mapped the majority of the Project Area as having “few landslides” (USGS, 1997). This mapping category means that the area contains few, if any, large mapped landslides, but could locally contain scattered small landslides. Portions of the area south of Permanente Creek, other areas south of Permanente Creek, and an area north of the Quarry pit are mapped as “mostly landslides”, which consists of buffers around mapped landslides or groups of mapped landslides (USGS, 1997). That regional-scale mapping does not take into consideration landslides that have developed on the man-made slopes located within the Quarry pit.

Quarry Pit Slides

Information provided by Terraphase Engineers (2011) on the three main areas of instability within the Quarry pit is summarized below.

Main (1987) Slide. The Main Slide (1987) in the Quarry pit has a slope length of about 750 feet in the central section of the northwest wall, and extends vertically over heights between 500 to 700 feet, from approximate elevation 1,050 feet to the ridge crest (see Figure 4.7-1). The slide developed in a greenstone rock mass that was partially excavated during development of the quarry and extends into the area of the 2H:1V[11] slope that forms the upper northwest wall of the pit. The reference to “1987” reflects the year when the first very large slope movements occurred. However, slope instability and smaller slope movements were evident before 1987, and the slide remains active currently, with a calculated FOS against sliding of about 1.0. Instability has been limited to

[11] These slopes are expressed as the ratio of the horizontal distance to the vertical rise. For reference, 1H: 1V represents a slope angle of 45 degrees, or a gradient of 100 percent. The slope inclination of 2H: 1V is equivalent to a slope angle of about 27 degrees, and a slope gradient of 50 percent.

slumping and surficial movement since early 1999 when a significant amount of material was removed from the upper portions of the slide mass.

The Main Slide occurred mainly along the contact between the greenstone and underlying limestone and is believed to have been triggered when the thickness of limestone at the toe of the slide was reduced due to quarrying and was no longer strong enough buttress the mass of greenstone situated above it. As indicated previously, a strand of the Berrocal fault passes through the southwest corner of the Quarry pit. Consequently, sheared rock within the fault zone could be a contributing factor to the failure.

Scenic Easement Slide (2001). The “Scenic Easement Slide” occurred near the crest of the north slope of the Quarry pit in January of 2001. The slide is named the Scenic Easement Slide because the slope movements encroached into the scenic easement defined by the County of Santa Clara that exists along the ridge top above the Quarry pit (see footnote 5 in the Project Description for more detail). The slide contained approximately 175,000 tons of rock material weathered from greenstone. The slide extended between elevations 1,340 and 1,500 feet mean sea level. Golder Associates (2011a) estimates the landslide to be up to 400 feet wide and approximately 90 to 100 feet high. Golder Associates (2011a) interprets the Scenic Easement Slide to be a rotational slide in the upper weathered greenstone. The toe of the slide is generally coincident with the contact between the greenstone and limestone and the slide is laterally bounded by stronger limestone to the east and west. Golder’s slope stability analysis of the Scenic Easement Slide indicates a FOS of around 1.0, which is consistent with a recently failed slope.

Mid-Peninsula Slide (2001). The Mid-Peninsula landslide occurred along the top of the Quarry pit’s east wall during very heavy rainfall in the winter of 2001. The upper limits of the slide encroached upon the southeast portion of the Mid-Peninsula Regional Open Space District’s Rancho San Antonio Preserve (MPROSP). Golder Associates (2011a) characterized the Mid-Peninsula Slide as a narrow wedge-shaped slide within highly weathered greenstone bounded by faults and better-quality/ higher shear strength bedrock on either side of the slide. Golder’s geologic cross-sections and overview photograph indicate that the failure is apparently within sheared matrix rock between blocks. Golder’s slope stability analysis of the Mid-Peninsula Slide indicates a FOS of around 1.0 which is consistent with a recently failed slope. The slide is marginally stable and vulnerable to continuing deterioration of the headscarp by erosion and seismically-induced slumping.

Permanent Creek Restoration Area (PCRA)

The PCRA encompasses seven areas along the Permanente Creek corridor and the slopes above and to the north of the creek which have experienced both pre- and post-SMARA mining related disturbances. Aerial photo evidence reveals that over time, a substantial amount of mining-related overburden and/or road fills have traveled downslope, and in some places, have reached the active floodplain of Permanente Creek (Golder Associates, 2011b). These disturbances are related to past mining-related operations and activities on the Lehigh property, such as 1) improper or incidental end-dumping or side-casting of overburden material, 2) shallow slumping of overburden along the south side of the WMSA or within road fills, as well as 3) efforts to remediate erosion and overburden slumping in PCRA Subarea 1, which itself required construction of a new access road that has been subject to shallow failures in Subarea 2. PCRA Subareas 1 and 2 have been subject cleanup and abatement order issued in July 1999 by the San Francisco Bay Regional Water Quality Control Board (RWQCB), which required the Applicant to install sediment and erosion control measures such as slope armoring, rip-rap, and other best management practices. Past geotechnical investigations performed by Golder Associates (2009, 2010, 2011a) have shown that along sloped surfaces composed of overburden material, the most probable mode of failure consists of shallow translational slides or shallow soil slumps. Unlike the EMSA, WMSA, or the Quarry pit, the slopes on the north side of Permanente Creek within the PCRA have no benches to catch runaway material.

The County identified several other areas of concern regarding slope stability within the PCRA. In Subarea 5, a series of small erosion gullies and/or shallow slumps are located downgradient of the access road to sedimentation Pond 4. The County also identified an area of possible landsliding in 1995 ortho-photos of the area. According to Golder Associates (2011b), the ortho-photo reveals evidence of a relatively steep sideslope below the existing quarry haul road which is covered in sidecast overburden material which has locally covered native vegetation. The overburden material shows an arcuate “headscarp” which are characteristic of end-dumped or side-cast material at the angle-of-repose[12] with apparent flow of the material down the slope. At the break-in-slope at the toe of the hillside, the ortho-photo revealed what appears to be a lobe of overburden material, or landslide debris, that has cascaded over a former access road and onto the flood plain below the road and the debris extends to the flow line of the Creek (Golder Associates, 2011b).

At the request of the County, Golder Associates (2011a, 2011b) evaluated the slope stability conditions within PCRA Subareas 1 and 2, which occur below the primary access road for the West Materials Storage Area (WMSA), as well as the stability and proposed remediation efforts within Subareas 5. Golder’s field observation of the road cut in Subarea 1 indicates that it appeared stable overall, although some evidence of erosion due to surface water runoff was observed. The results of Golder’s analyses indicate a minimum static FOS of 3.8 for the road cut (Golder Associates, 2011a). The relatively high static FOS indicates that the overall cut slope will remain stable under static conditions (Golder Associates, 2011a). Golder did not provide FOS calculations for Subarea 2 and 5, but provided their professional opinion as to the effectiveness of proposed remediation measures and the effect of proposed sedimentation ponds, as discussed below in Impact 4.7-1.

Erosion/Accelerated Erosion

Erosion is a natural process whereby soil and highly weathered rock materials are worn away and transported to another area, most commonly by water but also by wind. Natural rates of erosion can vary depending on slope, soil type, and vegetative cover (regional erosion rates are also dependant on tectonics and changes in relative sea level). Soils containing high amounts of silt

12 When bulk granular materials are poured onto a horizontal 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.

and/or clay are typically easily eroded from moderate to steep slopes, while coarse-grained (sand and gravel) soils are generally less susceptible to erosion unless water flow velocities are high.

Soil erosion can become problematic when human disturbance creates steeper slopes and causes rapid soil loss and the development of erosional features (such as incised channels, rills and gullies) that undermine roads, buildings or utilities. Vegetation clearing and earth-moving reduces soil structure and cohesion, resulting in abnormally high rates of erosion, referred to as *accelerated erosion.* Rills, gullies, and excessive sediment transport can eventually damage building foundations and roadways, as well as clog or fill surface drainage facilities (siltation ponds, catchments and culverts). Erosion properties in the Project Area, including erosion hazard ratings and hydrologic groups are discussed in the preceding section on soils, and are presented in Table 4.7-1. Soils within the Project Area, especially where they have been compacted by haul roads and other land disturbances, are likely to generate high rates and volumes of runoff following long-duration storms (without the protection of vegetation). In addition to erosion on undisturbed soil, graded areas, coarse waste fill, and fine wastes can become eroded and contribute substantial volumes of sediment within the engineered drainages on the WMSA and EMSA. The overburden material, which is stockpiled on the site, has a low susceptibility to erosion because it is composed of coarse stone fragments that allow water to freely and rapidly infiltrate; however, the washing of limestone and aggregate produces a fine waste material that consists of unconsolidated, saturated silts and clays. Such fine waste soils are currently stored in places within the Project Area, and may be susceptible to accelerated erosion, and in places may rill or gully if unprotected and subjected to heavy winter rains.

4.7.1.5 Seismic Hazards

This section discusses the various hazards and/or adverse conditions that are associated with the seismic setting of the site.

Surface Fault Rupture

Seismically-induced surface fault rupture is defined as the rapid physical displacement of surface deposits in response to movement of the ground on one side of a fault relative to the other side, in conjunction with an earthquake. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults.(Active faults within the vicinity of the Project Area are referenced in Figure 4.7-2 and Table 4.7-5.) The Project site is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated by the California Alquist-Priolo Earthquake Fault Zoning Act (CDMG, 2001); however, the surface traces of two potentially active faults have been mapped as passing through the Project Area, and these fault zones have been zoned by the County of Santa Clara as County Fault Rupture Hazard Zones (Ord. No. NS-1203.111, §1, 3-19-02; Santa Clara County, 2002). As discussed above, minor ground deformations were observed along the approximate trend of these fault lines accompanying the Loma Prieta Earthquake in 1989, suggesting that a small amount of “sympathetic” displacements may have occurred along these faults due to the earthquake on the San Andreas Fault. Cases such as these, where movement along a fault occurs in response to an earthquake centered on a different, but proximal fault line, are commonly referred to as “co-seismic” deformation.

Ground Shaking

As discussed above, a major earthquake is likely to produce strong ground shaking effects anywhere within the region at sometime during the next 30 years. Earthquakes on active or potentially active faults, depending on their magnitude and distance from the Project Area, could produce a wide range of ground shaking intensities in the Project Area. Historically, earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the moment magnitude 6.9 Loma Prieta earthquake in October 1989. The Loma Prieta earthquake is estimated to have caused strong (MMI-VII) shaking intensities at the site with the epicenter located approximately 16 miles to the southeast (ABAG, 2003a). The areas that experienced higher ground shaking intensities were those underlain by thick sequences of alluvium or colluvium on valley floors, which tend to amplify the longer wavelengths of ground shaking.

A future worst-case scenario for a regional earthquake in the vicinity of the Project Area would be a large seismic event originating on the Peninsula segment of the San Andreas Fault. It is estimated that a characteristic earthquake[13] (M 7.2) that the Peninsula segment of the San Andreas Fault would produce would result in very strong (MMI-VIII) ground shaking intensities, depending on the nature of the underlying soil (ABAG, 2003b). Representative intensity descriptions used to illustrate the extent of damage possible under various ground shaking intensities are provided in Table 4.7-4.

The primary tool that seismologists use to describe ground shaking hazard is a probabilistic seismic hazard assessment (PSHA). The PSHA for the State of California takes into consideration the range of possible earthquake sources (including such worse-case scenarios as described above) and estimates their characteristic magnitudes to generate a probability map for ground shaking. The PSHA maps depict values of peak ground acceleration (PGA) that have a 10 percent probability of being exceeded in 50 years. Use of this probability level allows engineers to design structures to withstand ground motions that have a 90 percent chance of not occurring in the next 50-years, making buildings safer than if they were merely designed for the most probable events. The PSHA indicates that at the Project site, there is a 10 percent chance of exceeding PGA values of 0.57g over the next 50 years (a 1 in 475 chance of occurring) (Golder Associates, 2011a). As indicated in Table 4.7-4, these PGAs are typical of a very strong ground shaking.

Liquefaction

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily looses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading caused by the arrivals of seismic waves. Soils that are susceptible to liquefaction include loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Ground failure can occur when liquefaction occurs in layers of

[13] The concept of “characteristic” earthquakes means that we can anticipate, with reasonable certainty, the actual damaging earthquakes that will occur on a fault segment (Peterson et al., 1996).

sediment underlying a site. Soil liquefaction and associated ground failure can damage roads, pipelines, underground cables, and buildings with shallow foundations. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at depths less than 40 feet. Soil that liquefies can manifest a number of failures, including lateral spreading, rapid settlement and flow slides. Mapping by the USGS has determined that the majority of the Project Area has a very low potential for liquefaction (USGS, 2006). The exception is the floor of the alluvial valley along Permanente Creek in the Project Area, which is mapped as having a high liquefaction susceptibility. There is no evidence that liquefaction effects occurred at the site following the Great 1906 Earthquake or the 1989 Loma Prieta Earthquake (USGS, 1978; USGS, 1998a).

Seismically-Induced Landslides

The type and occurrence of slope failure hazards have been discussed earlier in this chapter; however, landslides can also be a secondary effect of earthquakes and a major earthquake-induced hazard. The type and distribution of landslides that following the 1989 Loma Prieta earthquake indicates that the Santa Clara Formation and Franciscan Complex rocks (the same rocks that underlie the Project Area) produced very few landslides relative other rock types in the region (USGS, 1998b). Nevertheless, portions of the Project Area are mapped by the CGS as having the potential to produce landslides during an earthquake, mostly in areas that have steep topography (CGS, 2002).

4.7.1.6 Regulatory Setting

The following section provides a brief summary of the federal, state, and local regulations, goals and policies for quarry mining, mining safety and protection of natural resources from open pit mining operations and reclamation activities.

Mine Safety and Health Administration

The Mine Safety and Health Administration (MSHA), a division of the U.S. Department of Labor, administers the provisions of the Federal Mine Safety and Health Act of 1977. MSHA develops and enforces mandatory safety and health regulations pursuant to the Code of Federal Regulations (CFR) that apply to all surface and underground mines located in the U.S. through inspections, rigorous training, and providing educational programs for employers and employees in the mining industry. The ultimate purpose is to eliminate fatal accidents, reduce the frequency and severity of nonfatal accidents, minimize health hazards, and promote improved safety and health conditions in mines of the United States. Project operations would be regulated by MSHA, and periodic inspections would be performed under MSHA regulations to ensure maximum worker safety during implementation of the RPA. Mining operations are subject to periodic safety inspections by MSHA.

Surface Mining and Reclamation Act (SMARA)

SMARA was signed into law in 1975 and went into effect in 1976, and has been amended 24 times since its effective date. The intent of the Act is to: 1) assure reclamation of mined lands, 2) encourage production and conservation of minerals, and 3) create and maintain surface mining and reclamation policy (regulations).

One of the principal requirements of SMARA is the preparation of Reclamation Plan. This plan must be prepared by a mining applicant prior to initiation of mining activities. Reclamation plans must be approved by the SMARA lead agency (usually counties or cities) and the California Department of Conservation, Office of Mine Reclamation. Reclamation plans are subject to environmental review under CEQA. The County of Santa Clara is the SMARA lead agency for the Quarry and the CEQA lead agency for this Project.

SMARA (including the State Mining and Geology Board Reclamation Regulations) is flexible with respect to addressing geotechnical slope stability for both fill slopes and cut slopes. SMARA does not specify a minimum FOS required for slope stability. However, Title 14, Chapter 8, CCR Section 3704(f) requires that: "Cut slopes, including final highwalls and quarry faces, shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conform with the surrounding topography and/or approved end use." For fill slopes, Section 3704(d) states that "fill slopes shall be 2H:IV or flatter. Slopes steeper than 2H: IV must be supported by site-specific geologic and engineering analyses to indicate that the minimum FOS is suitable for the proposed end use." More generally, Section 3704(e) states that at closure, all fill slopes, including permanent piles or dumps of mine waste and overburden, shall conform with the surrounding topography and/or approved end use. For the Quarry, the proposed end use is undeveloped open space.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2010 edition of the CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. The 2010 CBC contains California amendments based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. While the Project does not include the construction of a building or structure, it would involve the demolition, removal and/or off-site transport of existing structures, including an equipment maintenance facility, office spaces, conveyors, crushers, screens, wash plants, scales, and other miscellaneous structures.

County of Santa Clara Ordinances, Local Plans, and Policies

County of Santa Clara Geologic Ordinance

The County's policies and standards pertaining to geologic hazards and associated investigation and mitigation standards are contained in Title C, Division C12, Chapter IV of the County of Santa Clara Ordinance Code. The geologic ordinance establishes minimum requirements for the geologic evaluation of land based on proposed land uses. It further establishes procedures to enforce these requirements, including rules and regulations for the development of land which is on or adjacent to known potentially hazardous areas, or which has the potential to create or increase the risk of geologic hazard. The provisions of the ordinance are also intended to ensure that the County fulfills its duties under state law regarding geologic hazards, including the Alquist-Priolo Earthquake Fault Zoning Act (surface fault rupture) and the Seismic Hazards Mapping Act (earthquake-induced landslides and liquefaction ground failure). The County Planning Office and/or the County Geologist reviews land development applications, building permit applications and land use proposals using maps showing the official County Geologic Hazard Zones, other maps and pertinent data, including, but not limited to previous investigations of the subject property, to determine if a geologic investigation is required. In addition, the ordinance sets forth minimum standards for the investigation and remediation of hazardous geologic conditions, and requires review and approval of geologic reports by the County Geologist.

The Project Area intersects areas mapped by Santa Clara County as hazard zones for both landslides and fault rupture (Ord. No. NS-1203.111, §1, 3-19-02). No building, grading, or use permit approval would be required for the Project; however, in the event that the Applicant would pursue such a permit in the future, a slope stability evaluation may be required to be submitted to the County Geologist for review and approval based on the nature of the proposal. With respect to the RPA, the County has required the Applicant to submit geologic hazard evaluations of the slopes subject to SMARA requirements. These are further discussed in the discussion of impacts (Section 4.7.5).

County of Santa Clara Surface Mining and Reclamation Ordinance

The County of Santa Clara Surface Mining and Reclamation Ordinance was adopted in order to comply with and implement the provisions of SMARA by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of the County. The ordinance sets forth the general procedural, operational, and reclamation requirements that must be complied with, where applicable, by surface mining and production operations in the County. The Ordinance contains requirements for the content of a reclamation plan, the review procedure and mining standards. The following lists applicable standards on setbacks and final slope gradients contained in the ordinance that would apply to the Project:

- **Cut slope setbacks:** Cut slopes shall be no closer than 25 feet distant from any adjoining property line, except where adjoining property is being mined; nor 50 feet to any right-of-way of any public street, or official plan line or future width line of a public road.

- **Ridgeline setbacks:** When surface mining occurs in a canyon area which abuts an urban area or the ridgeline is visible from the valley floor, the top of the uppermost cut area shall be as shown in an approved reclamation plan, or in the absence of an approved plan, not less than 50 feet from the top of the ridge existing prior to excavation.

- **Final Slope Gradient:** The designed steepness and proposed treatment of the mined lands' final slopes shall take into consideration the physical properties of the slope material, landscaping requirements, and other factors. The maximum stable slope angle might range from 90 degrees in a sound limestone, igneous rock, or similar hardrock to less than 20 degrees in highly expansive clay. In all cases, reclamation plans shall specify slope angle flatter than the critical gradient[14] for the type of material involved.

  - Dangerous contours shall be eliminated from the land surface of the excavated area. Mine shaft openings shall be filled or secured in some other satisfactory manner to eliminate dangerous conditions.

  - Whenever final slopes approach the critical gradient for the type of material involved, regulatory agencies shall require an engineering analysis of the slope stability. Special emphasis on slope stability and design will be necessary when public safety or adjoining property may be affected.

  - The Planning Commission, at the time of approval or modification of the plan, may, based on the maximum stable slope angle of the material involved, specify the slope of the reclaimed land surface, may require grading or back-filling, and may require the elimination of unnatural steps or benches where necessary to carry out the reclamation plan.

- **Erosion and Drainage:** Grading and revegetation shall be designed to both prevent excessive erosion and to convey surface runoff to natural drainage courses or interior basins designed for water storage. Lakes, ponds, streams, or other bodies of water may be created within an excavation only when created in accordance with the reclamation plan approved by the Commission after considering the recommendations of the County Health Department, Santa Clara Valley Water District and other affected agencies. Final surfaces shall be treated to prevent erosion unless otherwise specifically permitted by the Planning Commission.

The Project would be consistent with these plans and policies.

County of Santa Clara General Plan

The County of Santa Clara General Plan puts forward several strategies and associated policies with the goal of addressing natural geologic and seismic hazards for the general public (note that General Plan policies specifically associated with mining and resource extraction are described in Chapter 4.12, *Mineral Resources*). The General Plan policies related to natural hazards focus on reducing the threat of natural hazards for the general public and therefore are focused primarily on controlling the location and type of land uses permitted in hazardous areas and ensuring proposals adequately consider the presence of geologic and seismic hazards. Specific policies are provided below:

[14] The maximum stable inclination of an unsupported slope under the most adverse conditions that it will likely experience, as determined by current engineering technology.

***C-HS 28*:** Countywide strategies for reducing the threat of natural hazards to life and property should include:

a. Inventory hazards and monitor changing conditions.
b. Minimize the resident population within high hazard areas.
c. Design, locate and regulate development to avoid or withstand hazards.
d. Reduce the magnitude of the hazard, if feasible.
e. Provide public information regarding natural hazards.

C-HS 30: Local jurisdictions' urban development and land use policies should minimize the resident population within areas subject to high natural hazards in order to reduce

a. the overall risk to life and property; and
b. the cost to the general public of providing urban services and infrastructure to urban development.

C-HS 31: Cities should not expand Urban Service Areas into undeveloped areas of significant hazards.

C-HS 32: Areas of significant natural hazards shall be designated in the County's General Plan as Resource Conservation Areas with low development densities in order to minimize public exposure to avoidable risks.

R-RC 13: Sedimentation and erosion shall be minimized through controls over development, including grading, quarrying, vegetation removal, road and bridge construction, and other uses which pose such a threat to water quality.

R-HS 19: In areas of high potential for activation of landslides, there shall be no avoidable alteration of the land or hydrology which is likely to increase the hazard potential, including:

a. saturation due to drainage or septic systems;
b. removal of vegetative cover; and
c. steepening of slopes or undercutting the base of a slope.

R-HS 21: Proposals involving potential geologic or seismic hazards shall be referred to the County Geologist for review and recommendations.

The Project would be consistent with these plans and policies.

4.7.2 Baseline

The baseline for purposes of analyzing potential impacts related to geology and soils are the conditions as they existed in June 2007.

4.7.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving:

- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
- Strong seismic ground shaking;
- Seismic-related ground failure, including liquefaction; and/or
- Landslides;

b) Result in substantial soil erosion or the loss of topsoil;

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

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

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;

f) Cause substantial compaction or over-covering of soil either on-site or off-site; or

g) Cause substantial change in topography or unstable soil conditions from excavation, grading, or fill.

4.7.4 Discussion of Criteria with No Geology, Soils, and Seismicity Impacts

The Project would not have the potential to cause an impact in the following areas:

d) The Project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code.

Expansive soils, or those soils with high expandable clay contents, can, over time, misalign some foundation structures or warp asphalt and concrete pavement. As shown in Table 4.7-1, the Project Area is underlain by soils with a low shrink-swell potential. Further, the final reclamation would result in the dismantling, removal, and offsite transport of all structures within the crusher/quarry office area and the rock plant. Thus, risks to life or property with respect to expansive soil, if present, would remain unchanged from baseline conditions for as long as existing structures remain on-site, and be eliminated following final reclamation. For this reason, the presence of expansive soil is not considered an issue for the Project and no related impact would result. This consideration is not discussed further.

e) The Project would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

The Project does not propose a new septic system or other wastewater disposal system. This issue is not discussed further.

4.7.5 Impacts and Mitigation Measures

Impact 4.7-1: Rock and soil slopes constructed as part of the proposed reclamation of the EMSA, Quarry pit, and WMSA could fail under static or seismic forces if not properly engineered and constructed. (*Less than Significant Impact with Mitigation Incorporated*)

Slope failure is a concern for its potential to undermine the success of reclamation efforts of the RPA, its potential for further impacts on scenic ridgelines and the Scenic Easement, and its potential to damage or destroy engineered drainage and erosion control features such as desiltation basins, drainage ditches, down drains, and/or silt fencing. As discussed in the setting, areas of slope instability within the Quarry pit have existed for years as a result of the fractured and sheared nature of the Franciscan Complex rock that is being excavated. As such, unstable slopes are a condition inherent in the baseline setting of the Project. As slope failures have developed, the quarry operator has studied rock strengths, discontinuities, and slope characteristics that have led to failures and adjusted its mining strategy accordingly to protect the safety of its workers and its ability to continue operating safely. The direct effects of slope failure would be limited to the Quarry property, and because the proposed end use is of undeveloped open space, the impact of slope failure is limited to its potential to compromise the long-term success of final reclamation and would not represent a potential risk to the public through off-site property damage, injury, or loss of life.

The primary result associated with implementation of all phases of the Project would be to lower the ultimate height of the WMSA while simultaneously raising the bottom of the Quarry pit. Approximately 60 million short tons of overburden obtained from a combination of continued mining in the Quarry pit and the excavation of the WMSA would be backfilled into the Quarry pit, thereby buttressing existing areas of instability, establishing positive drainage into Permanente Creek, and lowering slope heights and ultimate gradients within the WMSA. The areas of instability that would be buttressed include the Main Slide and to some extent the haul road “west area” slide. The overburden backfill would not buttress the Scenic Easement Slide or the Mid-Pen Slide because these are located close to the crest of the north and northeast walls of the Quarry. Following establishment of final contours, native vegetation and oak woodland habitats would be established consistent with the surrounding area, thereby resulting in improved stability conditions relative to baseline conditions. Because the baseline for this analysis is the conditions as they existed in June 2007, this analysis also considers the slope stability implications of material stockpiling within the EMSA, even though substantial material stockpiling already has occurred in accordance with geotechnical design specifications provided by Golder Associates (2009) (see discussion below). As the three phases of reclamation proceed, slope stability conditions within the Project Area incrementally will improve as past human alterations to the natural topography are partially corrected through lowering the height of the WMSA, raising the bottom of the Quarry pit, and ongoing revegetation efforts. Further, as reclamation proceeds, the workforce required at the Quarry either would stay the same or be reduced. Implementation of the Project, besides generally improving long-term slope stability conditions, also would result in lesser exposure of site workers to potentially unstable slopes.

Slope stability concerns for each of the areas within the Project Area are discussed below. Findings and conclusions presented below are based on site-specific geotechnical evaluations of slope stability for the Project performed by Golder Associates and independently peer reviewed for the County by Terraphase Engineering Inc. (2011). The findings regarding slope stability—and what factor of safety (FOS) constitutes an acceptable level of risk—reflect the professional judgment of registered geotechnical engineers. As the lead agency under SMARA, the County is ultimately responsible for determining the acceptable FOS both static and seismic conditions, because slope stability performance standards are contingent upon the proposed end use of reclaimed lands and the maximum level of risk the County is willing to accept (SMARA §3704(d)(f)).

East Materials Storage Area

Activities within the EMSA would be limited to reclamation Phase 1, and would achieve final contours and establish native vegetation and oak woodland habitats consistent with the surrounding area and topography, as shown in Figure 2-4. The EMSA is designed to accept total overburden placement of approximately 6.5 million tons (approximately 4.8 million cubic yards), and to provide overburden storage for the Quarry until approximately 2015. Much of the stockpiling activity has already occurred, and continued overburden stockpiling operations could result in slope failures if not conducted in accordance with accepted engineering practices. Small-scale soil slumps on inter-bench slopes typically would be confined by the lower bench, and would represent a maintenance issue rather than a significant impact on the safety of operations or the surrounding environment. However, larger-scale landslides comprising a significant portion of a fill slope (i.e., that would be large enough to consist of multiple benches and inter-bench slopes) could present direct impacts to the safety of Quarry workers, could damage Quarry equipment and structures, and could result in excessive sediment loads being delivered to Permanente Creek.

However, the design of the EMSA has been found to result in stable slopes, according to a geotechnical evaluation carried out by Golder Associates in 2009 and appended to the 2011 report. Golder Associates (2009) evaluated the stability of the final reclamation slopes within the EMSA as they would exist following reclamation Phase 1 by calculating the factor of safety (FOS). Golder Associates performed the slope stability analysis on the final reclamation slope configuration because slopes would be highest at the end of Phase 1 and the slope conditions would exist permanently after stockpiling activities cease. Golder Associates (2009) concluded that the static FOS for the EMSA would be approximately 1.7 when considering the potential for a large-scale landslide (i.e., a failure along the entire length of the slope), and 1.4 for the 2H:1V slopes in between adjacent benches. The static FOS for a large-scale landslide is greater than for inter-bench slopes because the presence of 25-foot wide benches spaced at 40-foot vertical intervals decreases the overall slope gradient to 2.5H:1V. The analysis of the reclaimed EMSA slopes performed by Golder Associates (2009) demonstrates that the proposed geometry would remain stable under static conditions. In its peer review of Golder's geotechnical investigations, Terraphase Engineering Inc. (2011) confirmed that the methods used by Golder Associates to perform the static FOS analysis is consistent with the state of practice of geotechnical engineers in northern California (refer to Section 4.7.1.4 for an explanation of FOS).

In addition, as part of its slope stability evaluation, Golder Associates (2009) considered the effect of washed fines (clays and silts generated during the washing of aggregates) on the stability of the EMSA. Washed fines would be placed in lifts within the coarse overburden material, and are estimated to comprise 6 to 9 percent of the total volume of material to be stored in the EMSA. Washed fines are a potential concern because they behave differently than coarse overburden material, may be subject to seismically-induced settlement under the weight of overlying material, and have different strength characteristics than the predominant coarse overburden material. As such, placement of washed fines must be performed carefully to avoid adverse impacts on the stability of the stockpile slopes. Golder Associates (2009) concluded that it is unlikely that the lifts of fine-grained material will influence the stability of stockpile slopes, provided washed fines are placed an adequate distance away from the final slope face and that they are dried before being covered with coarse overburden material.

Reclamation of the EMSA would include the addition of at minimum of 6 to 12 inches of growth medium for the proposed revegetation effort. The addition of this material on the surface of contoured slopes in the EMSA would have no bearing on slope stability. Potential impacts related to soil erosion are addressed under Impact 4.7-3. The implications of trace constituents, such as selenium, present within mining overburden are discussed in Section 4.10, *Hydrology and Water Quality*.

The geotechnical design recommendations provided by Golder Associates (2009) are incorporated by reference in Appendix C of the RPA, are being implemented as part of the ongoing stockpiling activities within the EMSA, have been agreed to by the Applicant, and would be implemented as part of the Project. For reference, these measures are identified below:

(a) Foundation preparation should be completed prior to fill placement of the outer 50 feet beneath the EMSA fill. Foundation preparation should consist of over-excavation of outer 50 feet of topsoil, organic materials (trees, brush, grasses), fine-grained colluvium with a Plastic Index greater than 25, or other unsuitable soils until firm bedrock, granular soils, or clay soils with a Plastic Index less than 25 are exposed. If the exposed foundation surface is inclined at 5H: IV or steeper, the over-excavation distance from the outer slope should be extended from 50 feet to 100 feet. Furthermore, the fill placed on slopes of 5H: IV or steeper should be benched into the slope with individual bench heights of at least 2 feet and up to approximately 5 feet.

(b) A qualified California Professional Geologist, Certified Engineering Geologist, or a California Registered Civil Engineer with geotechnical experience should inspect the foundation preparation to ensure all unsuitable materials are removed prior to placement of the outer 50 to 100 feet of EMSA fill.

(c) If seepage or wet zones are observed in the foundation, suitable drainage provisions should be incorporated into the foundation prior to fill placement. Suitable drainage provisions include the placement of a blanket of free-draining sand or gravel over the seepage/wet zone in conjunction with a perforated, polyvinyl (PVC) or high-density polyethylene (HDPE) drain pipe that drains positively toward and daylights at the slope face. The sand or gravel drainage material should be fully covered with a minimum 8-oz/square yard, non-woven, geotextile filter to provide separation from the EMSA materials.

(d) The fine waste materials shall be placed in lifts not to exceed 8-feet, and offset a minimum of 30 feet from the final slope face. Each lift of fine waste should be allowed to dry before being covered by overburden material. Each lift shall be overlain by a minimum 25-foot thick lift of overburden.

(e) Any modification to the EMSA fill geometry including increases to the maximum overall slope inclination, maximum inter-bench slope inclination, slope height, or footprint shall require an additional or revised slope stability analysis.

The purpose of these measures is to ensure that the ground upon which overburden is placed is adequately prepared by removing soil that could destabilize the overburden material and by ensuring that groundwater seepage does not adversely affect the stability of the proposed EMSA slopes. Because Golder Associates has demonstrated that the final slope configuration of the EMSA would be stable, and because activities on the EMSA are being carried out in accordance with the geotechnical recommendations provided by Golder, the potential impact due to slope failure within the EMSA is less than significant.

Quarry Pit Reclamation

Reclamation activities within the Quarry pit would begin around year 2021 and would involve backfilling the final depth of the pit, which is planned to be at about 440 feet amsl, with approximately 60 million tons of overburden to a new base elevation of 990 feet amsl. Approximately 12 million short tons of this would be developed through continued mining in Phase 1, with the remaining 48 million short tons obtained from the excavation of the WSMA in Phase 2. In addition to raising the final elevation of the Quarry pit bottom, overburden would be placed at higher elevations against the existing walls to flatten slope angles. Fill slopes in the Quarry pit would not exceed 2.5H:1.0V overall from Quarry floor to rim, although inter-bench[15] slope angles would be 2H:1V. Cut slopes above elevation 990 feet on the northern and northeastern side of the final reclaimed Quarry would generally be left in place, except for targeted remediation grading to lay back landslide headscarps and remove landslide debris associated with the Scenic Easement and the Mid-Peninsula Slides. Inter-bench slopes in this area of the Quarry pit locally exceed 1H:2V in the competent limestone.

Slope stability analyses conducted by the Applicant’s geotechnical consultant (Golder Associates, 2011a), and peer reviewed for the County by Terraphase Engineering Inc (2011), concluded that slopes within the Quarry pit, as they would exist upon final reclamation, including both cut slopes and fill slopes, have an acceptable FOS under static conditions. Factor of safety calculations which are performed using gravity only as a downslope force are called “static” analyses, whereas FOS calculations which include ground shaking forces caused by earthquakes are called seismic, or “pseudo-static” analyses. The imposed force is assumed to be equal to the total weight

[15] A line defined by the top-of-bench face to top-of-bench face, or crest-to-crest.

of the sliding mass multiplied by a seismic coefficient of acceleration of 0.15g. The seismic coefficient is based on a design earthquake of Mw 6.8-7.1, and a PGA of 0.57g. Golder's pseudo static analyses concluded that upon final reclamation, slopes within the Quarry pit would have a FOS above 1. Recognizing that factors of safety greater than 1.0 under a pseudo-static analysis do not necessarily indicate that the slopes will not move, Golder also assessed seismic deformations, which estimate the maximum slope movements that may be expected under the design earthquake. Golder found that seismic deformations would be generally less than one foot, which was considered to be an acceptable magnitude given the proposed end use of the quarry as undeveloped open space (Golder Associates, 2011a).

Table 4.7-6 summarizes the results of Golder's analyses by comparing existing conditions in the Quarry pit with the final reclamation slope along the three existing areas of instability within the Quarry pit, and along the final east and south walls. In all cases, the final reclamation results in an improvement in FOS values for static conditions. Under a design earthquake scenario (referred to as pseudo-static), estimated displacements along final reclamation slopes are equivalent or less than existing conditions, and minor in magnitude (i.e., less than 1 foot). Along cross section EW1 in the east wall, implementation of the Project would slightly reduce the seismic FOS; however, it would remain above the critical threshold of 1, and Golder concluded that the estimated displacements are acceptable considering the proposed end use of the quarry.

Slope stability analyses conducted by Golder Associates demonstrate that slopes within the Quarry pit would remain stable, and in nearly all cases, would result in improved stability conditions relative to baseline conditions. Therefore, the Project would cause no adverse impact related to slope failure within the Quarry pit.

West Materials Storage Area

The WMSA has reached maximum allowable fill elevations (elevations currently range from approximately 1,500 to 1,975 feet amsl), and would undergo re-grading to achieve final reclamation slopes and manage drainage from the Project Area. The overburden materials stockpiled in the WMSA would be excavated and placed in the Quarry pit. With implementation of the Project, final WMSA elevation and contours would be returned by grading generally to pre-mining contours.

The reclaimed slopes of the WMSA would be a maximum of 2.5H:1V, with most areas being significantly flatter. Golder Associates (2011a) determined the static FOS to vary slightly depending on the primary slopes evaluated; however, the minimum static FOS of 1.57 as determined for the south-facing slope, which Golder considered as representing the most delicate slope condition, exceeds the critical gradient, and thus is considered acceptable. The median seismically-induced displacement associated with the design earthquake is less than 12 inches, which also is considered acceptable (Golder Associates, 2011a). For these reasons, and because implementation of the Project would reduce slope heights and gradients relative to baseline conditions, the potential impact of the Project related to slope failure within the WMSA is less than significant.

TABLE 4.7-6
SUMMARY OF SLOPE STABILITY EVALUATIONS IN THE QUARRY PIT

Section[a]	Condition	Description	Calculated Factor of Safety and Estimated Displacement under a Design Earthquake
Main Slide (1987)			
Azimuth 120	Existing	Static	0.93
		Seismic: Pseudo-Static	NE
		Seismic: Displacement under design earthquake	NE
	Final RPA Slope	Static	1.44
		Seismic: Pseudo-Static	1.01
		Seismic: Displacement under design earthquake	7 inches (median)
Stability Section	Existing	Static	1.07
		Seismic: Pseudo-Static	NE
		Seismic: Displacement under design earthquake	NE
	Final RPA Slope	Static	1.53
		Seismic: Pseudo-Static	1.05
		Seismic: Displacement under design earthquake	6 Inches (median)
Scenic Easement Slide			
SE1	Existing	Static	1.05
		Seismic: Pseudo-Static	0.8
		Seismic: Displacement under design earthquake	2.5 to 10 feet
	Final RPA Slope	Static:	2.27
		Seismic: Pseudo-Static	1.57
		Seismic: Displacement under design earthquake	NE
Mid-Peninsula Slide			
MP1	Existing	Static	1.03
		Seismic: Pseudo-Static	0.84
		Seismic: Displacement under design earthquake	4 feet
	Final RPA Slope	Static:	1.36
		Seismic: Pseudo-Static	1.03
		Seismic: Displacement under design earthquake	6 inches (median)
MP2	Existing	Static:	1.24
		Seismic: Pseudo-Static	0.98
		Seismic: Displacement under design earthquake	9 inches (median)
	Final RPA Slope	Static:	1.32
		Seismic: Pseudo-Static	1.02
		Seismic: Displacement under design earthquake	6 inches (median)
East Wall			
EW1	Ultimate Slope Excavation Prior to reclamation	Static	1.36
		Seismic: Pseudo-Static	1.04
		Seismic: Displacement under design earthquake	6 inches (median)
	Final RPA Slope	Static:	1.48
		Seismic: Pseudo-Static	1.02
		Seismic: Displacement under design earthquake	6 inches (median)
EW2	Ultimate Slope Excavation Prior to reclamation	Static:	1.28
		Seismic: Pseudo-Static	0.97
		Seismic: Displacement under design earthquake	12 inches (median)
	Final RPA Slope	Static	1.41
		Seismic: Pseudo-Static	1.07
		Seismic: Displacement under design earthquake	5 inches (median)

TABLE 4.7-6 (Continued)
SUMMARY OF SLOPE STABILITY EVALUATIONS IN THE QUARRY PIT

Section*	Condition	Description	Calculated Factor of Safety and Estimated Displacement under a Design Earthquake
South Wall			
9A	Ultimate Slope Excavation Prior to reclamation	Static: Final Excavated South Wall, circular failure	1.7
		Final Excavated South Wall, failure along thrust fault	2.3
		Seismic: Displacement under design earthquake	NE
	Final RPA Slope (within backfill)	Static	1.46
		Seismic: Pseudo-Static	1.05
		Seismic: Displacement under design earthquake	6 inches (median)

[a] Cross sections used to calculate FOS values were chosen by Golder Associates based on the location of current areas of instability, and locations considered to be most representative of current and proposed conditions. The acronyms uniquely identify each of the cross sections, which are further detailed in Golder's geotechnical evaluations.

NE: Not Evaluated

SOURCE: Golder Associates, 2011a

Crusher/Quarry Office Area

The relocation of quarry equipment and buildings, including the primary and secondary crushing stations, two portable trailers used for office purposes, and maintenance areas would have no bearing on slope stability within the Project Area. Therefore this element of the Project would have no impact with respect to slope stability.

Surge Pile

Reclamation activities at the surge pile would involve removal of stockpiled materials and restoration of the area to approximate the natural (pre-surface mining) topography. Because this element of the Project would remove an overburden stockpile and generally restore preexisting topography, no impact would result related to slope stability.

Rock Plant

Reclamation activities at the rock plant would involve the dismantling, demolition, and transport off-site of all structures (including conveyors, crushers, screens, wash plants, scales, and miscellaneous structures) with the exception of the lower garage and scale house. These activities have no bearing on slope stability within the Project Area. Therefore, this element of the Project would have no impact with respect to slope stability.

South of Permanente Creek Restoration Area

The south of Permanente Creek restoration area previously was disturbed by exploratory drilling activities and would be reclaimed in accordance with the reclamation standards described in Section 2.8. This activity would not require the alteration of topography. Consequently, no impact would result related to slope stability issues.

Permanente Creek Restoration Area

The Permanente Creek Restoration Area (PCRA) contains mining disturbance that occurred both before and after SMARA's effective date of January 1, 1976. Subareas 1 and 2 of the PCRA have been subject to erosion control measures installed by the Applicant pursuant to a cleanup and abatement order issued in July 1999 by the San Francisco Bay Regional Water Quality Control Board (RWQCB). In response to the order, the Applicant installed sediment and erosion controls, including slope armoring, rip-rap, and other best management practices. Activities proposed under the RPA within the PCRA are aimed at further restoring and stabilizing various Subareas of the PCRA through revegetation (using a hydroseed slurry that would include a bonded fiber matrix, and if necessary, the use of winched sheepsfoot to hold seed mix in place), slope BMPs (e.g. use of fiber rolls, erosion blankets, slit fences and hand silt removal), repairs and installation of catch/sedimentation basins, the regrading (insloping) of access roads, and the removal of slide debris.

Upon final reclamation, conditions with respect to slope stability within the PCRA would be similar or improved as a result of the restoration efforts. The revegetation of the side slopes would generally aid in increasing the cohesion of near-surface materials through root growth and may therefore provide additional stability. The primary method of revegetation within the PCRA would be hydro seeding, which would promote the growth of grasses, herbs and shrubs. However, the most effective vegetation in providing a substantial increase in soil cohesion would be woody shrubs and trees, which have greater root penetration but would take a greater amount of time to establish naturally. Due to access difficulties, the steepness of the slopes within the PCRA, and the possibility that manual planting activities may themselves result in further downslope movements of overburden, plantings of trees and shrubs are not proposed for the PCRA treatment areas. While the ultimate effectiveness of reclamation efforts within the PCRA in improving slope stability is uncertain; relative to the baseline setting, final reclamation would result in similar or improved conditions with respect to slope stability. Therefore the impact with respect to slope stability following final reclamation would be less than significant.

Interim activities associated with PCRA improvements, however, have the potential to incidentally result in further slumping or shallow sliding of overburden materials. The design and reclamation methods proposed within the PCRA have minimized or avoided slope disturbances through the choice of revegetation methods and BMPs that largely do not require use of heavy machinery or voluminous grading. However, activities such as regrading of access roads (Subarea 1), removal of slide debris using an excavator (Subarea 5), and installation of sedimentation basins (Subareas 1, 2 and 6) have the potential to cause the further downslope roll-back or shallow slumping of overburden material. Such slope movements would likely be relatively minor in magnitude; however, due to their potential to reach Permanente Creek and cause further degradation of water quality, such activities could potentially result in a temporary, albeit significant impact.

The effectiveness of proposed methods in the RPA (e.g., silt fencing) to prevent roll back of material and to capture shallow slides is uncertain. Therefore, Mitigation Measure 4.7-1 directs the applicant to employ grading methods that avoid, where possible, shallow slumping of overburden material, and to install, where necessary, barriers to catch any downslope movements of overburden. These measures would effectively reduce the potential impact of slope movements on Permanente Creek to a less-than-significant level.

> **Mitigation Measure 4.7-1: Avoidance and containment of shallow slumps and/or fall-back of overburden material.** In all areas requiring the use of excavators for grading within the PCRA (e.g., access road in-sloping, installation/repair of sedimentation basins, and removal of slide debris), the Applicant and/or its contractor shall begin excavations from the top of slope and proceed downward. The Applicant and/or its contractor shall not undercut sloped materials unless no other option is feasible (e.g., excessively sloped or otherwise inaccessible terrain). In all areas of the PCRA where excavations would occur in sloped materials, the Applicant and/or its contractor shall install barriers immediately downslope of the activity. Downslope barriers shall be designed and installed in a manner that would be adequate to prevent overburden and/or native materials from falling, sloughing or sliding further downslope, or into Permanente Creek. Such measures may consist of temporary interlocking soldier piles, wooden shoring systems, wire mesh or other containment measures(s), and the Applicant and/or its contractor shall not be permitted to conduct excavation or grading activities downgradient of the barrier, or prior to its installation. The ultimate location, design and installation method of such measures shall be prepared and certified, or reviewed and approved by a California State registered civil engineer.

Impact after Mitigation: The implementation of this mitigation measures would avoid or contain shallow slumps and fall-back of overburden material. As a result, Impact 4.7-1 would be mitigated to a less-than-significant level.

Summary

The analysis of each individual area addressed in the Project Area generally shows an improvement in slope stability conditions across the Project Area. The EMSA, which is the only Project element that increases slope heights and gradients relative to baseline conditions, has been designed adequately to avoid unstable slope conditions. Within the Quarry pit, marginally stable and unstable baseline conditions would be improved substantially with implementation of the Project.Within the PCRA, intermin reclamation activities have the potential to cause sloughing or sliding of overburden further downslope; however, Mitigation Measure 4.7-1 would reduce the potential to a less-than-significant level. As a whole, implementation of the Project would have a less-than-significant impact with mitigation.

Impact 4.7-2: In the event of a major earthquake in the region, seismic ground shaking could result in injury to site workers, damage to Quarry equipment and structures, or trigger slope failures. In addition, a large earthquake on the San Andreas Fault could result in minor ground deformation along traces of the Berrocal or Monte Vista Fault Zones. (*Less than Significant Impact*)

As discussed in the Setting, the Project site has a 10 percent chance of exceeding PGA values of 0.57g over the next 50 years. This would correspond to very strong (VIII) Modified Mercalli Intensities. At these intensities, the earthquake would be felt in the Project Area and could cause damage to, or toppling of unsecured Quarry equipment. Due to the substantial quantity of coarse waste material and washed fines on the site, minor ground displacements and secondary ground shaking effects could occur. In addition, there is a possibility that a large earthquake on the San Andreas Fault could trigger co-seismic deformation along the Berrocal and Monte Vista-Shannon Faults which cross, or nearly cross, portions of the Project Area. Because no structures for human occupancy are proposed in the Project Area, and because the Project would not involve an increase in the baseline number of onsite workers, the Project would have a less-than-significant impact with respect to exposure of people and structures to substantial risks of loss, injury or death from an earthquake. However, because an earthquake could result in ground deformations within overburden materials, and could possibly induce landslides, the impact could be considered significant because it would present potential risks to the safety of Quarry personnel, damage to Quarry equipment and structures, and lead to excessive sediment loads within Permanente Creek. Both co-seismic ground deformation and seismically induced slope failure are discussed below.

Fault Rupture

No active faults pass through the Project Area; thus, adverse impacts from fault rupture are unlikely. However, as discussed above, the two potentially active faults that pass through the Project Area are mapped by the County of Santa Clara as fault rupture hazard zones. These faults are not considered likely sources of earthquakes large enough to produce appreciable ground rupture; however, minor co-seismic ground deformation coincident with the approximate traces of both faults was documented accompanying the Loma Prieta Earthquake. This provides anecdotal evidence that future earthquakes on the more active San Andreas Fault may cause small amounts of offset or deformation along the Berrocal or Monte Vista-Shannon Faults. If ground deformation occurred along one of the faults within the Quarry property, the movement would be minor, and would not likely be evident on the surface; at worst this would cause localized sloughing or raveling of material, which would likely be contained by the system of benches in the Project Area (Terraphase Engineering Inc, 2011). The potential for fault rupture within the Project Area is minor (in terms of both probability and magnitude) and would not present risk of injury or harm to the public or offsite property. For these reasons, the impact from fault rupture to the Project is less than significant.

Seismically-Induced Slope Failures

The potential impact from seismically-induced slope failure is similar or the same as that discussed in Impact 4.7-1, only this section discusses the effect of a large regional earthquake on the stability of the final reclamation slopes. In order to assess the effects of an earthquake on final reclamation slopes, Golder Associates (2009, 2011) performed pseudo-static analyses, which assumes that an earthquake imparts a force to the soil mass in the direction of the potential failure. The seismic FOS computed for the EMSA ranged from 1.12 to 1.16 for a large-scale landslide (multi-bench failure), and 1.01 to 1.02 for the 2H: 1V slopes in-between benches (Golder Associates, 2009). The seismic FOS computed for subarea 1 of the PCRA was 3. The seismic FOS values computed for the Quarry pit are shown in Table 4.7-6. For all seismic FOS calculations, the imposed force is assumed to be equal to the total weight of the sliding mass multiplied by a seismic coefficient of acceleration of 0.15g. The seismic coefficient is based on a design earthquake of Mw 6.8-7.1, and a PGA of 0.57g. The analysis computed the seismic FOS for the proposed fill slopes along the cross sections that were considered the most critical in terms of slope length and volume of rock. While the seismic FOS for the final reclamation slopes are greater than 1 in all cases, in some cases, the FOS values were less than the recommended threshold value of 1.15 using only pseudo-static analysis. Because the pseudo-static analysis yielded certain FOS values as being below the threshold of 1.15, additional analyses were then performed to estimate possible slope deformation that could result from the design earthquake, yielding permanent ground displacements of less than 7 inches or less compared to as much as 10 feet under existing conditions. These displacements are small, and would be confined by the bench system along the fill slopes. While the Project may expose new fill slopes to earthquake induced movements, the geotechnical evaluation has shown that such movements would be minor. For these reasons, and for similar reasons described in Impact 4.7-1, the RPA would ensure that potential impacts due to earthquake-induced slope failures are less than significant.

Impact 4.7.3: Earthmoving and other ground disturbance associated with the phased reclamation of the site could temporarily promote accelerated erosion and soil loss. (*Less than Significant Impact*)

The impact of the Project on erosion and soil loss with respect to hydrologic conditions and water quality is discussed in Section 4.10, *Hydrology and Water Quality*. This impact focuses on the potential for accelerated erosion (such as sheet wash, rilling, rutting, and in more extreme cases, gullying, sloughing, or sliding of incised gully sidewalls) to undermine haul roads, or cause damage to other structures. Accelerated erosion typically occurs on bare, unprotected slopes during the wet season, particularly in response to prolonged, intense storms. As discussed in the setting, the susceptibility of a surface to erosion depends largely on the soil condition present. Coarse overburden material is unlikely to undergo significant erosion because of its ability to freely and rapidly drain excess water. However, stockpiles of washed fines, fill slopes along haul roads, or unprotected soil cover could potentially be subject to accelerated erosion. Following successful reclamation of the Project Area, erosion and soil loss would be approximately similar to natural pre-mining conditions.

However, the interim phases of reclamation could leave certain surfaces temporarily subject to accelerated erosion. As discussed in Section 2.7.9.5 of the Project Description, temporary erosion control measures would be installed within the Project Area as described in the drainage report, the SWPPP, and the revegetation plan. The drainage report concludes the project would be designed consistent with the State Water Resources Control Board (SWRCB) and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) guidelines regarding design and water quality flow rates, and would meet SMARA’s reclamation standards for erosion and sediment control (14 Cal. Code Regs §3706). A monitoring program would be instituted to observe and classify the condition of surface soils in the Project Area and remedial measures, such as reseeding, re-grading, and installation of silt fences, would be implemented based on the severity and extent of erosional features observed (See Table 2.6 and Table 2.7 in the Project

Description). Further, drainage ditches, swales and desiltation basins would serve to capture excess sediment, will be maintained and cleared as needed, and will be sufficient to convey the 10- and 20-year storms, and safely release 100-year flows.

Standard procedures and implementation of the measures described above would prevent or remediate accelerated and damaging erosion within the Project Area. With respect to excessive sediment load being carried by stormwater flows, numerous controls, as described in Section 4.10, *Hydrology and Water Quality,* would be designed and implemented in a manner that reduces the potential impact to less than significant. As such, the impact with respect to erosion and soil loss would be less than significant.

4.7.6 Alternatives

4.7.6.1 Alternative 1: Complete Backfill Alternative

Impacts to geology and soils under Alternative 1 would be similar to those described under the analysis of the proposed Project, except that overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities. The analysis of impacts and significance conclusions presented for all areas of the Project other than the EMSA and the Quarry pit would remain the same. Significance conclusions for geology and soils within the EMSA and the Quarry pit would be similar, although the impacts related to slope stability would be reduced in intensity because the Quarry pit's lowest areas would be further raised, thereby providing additional support to quarry walls. Under the proposed Project, design slopes along the EMSA were found to have adequate slope stability; however, Alternative 1 would remove these slopes altogether, thereby eliminating any potential for the mining-related fill slopes to fail or otherwise become unstable. The relocation of overburden stored in the EMSA to the Quarry pit would also further reduce potential impacts related to erosion and soil loss because the total area underlain by mining-related overburden would be reduced under Alternative 1. Compared to the proposed Project, Alternative 1 would reduce the potential for and intensity of impacts related to geology and soils, but not to a level that would be substantial enough to change the overall CEQA significance determinations.

4.7.6.2 Alternative 2: Central Materials Storage Area Alternative

Impacts to geology and soils under Alternative 2 would be similar to those described under the analysis of the Project, except that reclamation of the eastern and central portions of the EMSA (as it exists as of reclamation plan amendment approval) would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored west of the EMSA in the CMSA. Under Alternative 2, the eastern edge of the CMSA overlaps with the flat pad at the west end of the EMSA. Under the proposed Project, the impact of the EMSA alone due to the potential for failure of fill slopes was determined to be less than significant because the proposed slope geometry was determined to be stable. The use of the CMSA under Alternative 2 would result in an additional height of overburden material being placed on top of the western end of the EMSA while avoiding overburden placement in the eastern and central portions of the EMSA. For slope stability, there would be some beneficial effects related to avoidance of overburden placement and an earlier commencement of reclamation activities within the eastern and central portions of the EMSA; however, the location of the CMSA higher up on the ridge could further increase the potential for fill failures due to the combined length and height of the resulting slope.

For these reasons, the applicant's geotechnical consultant conducted a combined EMSA/CMSA study which provided a geotechnical evaluation and design recommendations to address the potential combined impacts related to slope instability (Golder Associates, 2010). The study updated the slope stability evaluations performed on the EMSA alone to include the additional placement of overburden within the combined EMSA/CMSA area. The assessment concluded that the static factor of safety (FOS) for global stability (crest of slope to toe of slope) would exceed 1.6; and the static FOS for interbench slopes would be 1.4. Considering the effects of a design earthquake, seismically-induced displacements were estimated to average 6-inches or less in the overburden rock fill (Golder Associates, 2010). Compared to the proposed Project, Alternative 2 results in similar or slightly greater impacts with respect to geology and soils, since the changed location of the overburden storage is higher in elevation and estimated static FOS values were slightly lesser and seismically-induced displacements slightly increased relative to the proposed Project. Compared to the proposed Project, Alternative 2 would slightly increase the potential for and intensity of impacts related to geology and soils, but not to a level that would be substantial enough to change the overall CEQA significance determinations.

4.7.6.3 No Project Alternative

From a geology and soils perspective, the No Project Alternative would result in a greater potential for significant impacts relative to the proposed Project. While reclamation activities would ultimately be required and completed, and as required under SMARA, slope stability impacts would eventually be remediated, the No Project Alternative would delay both the start and the completion of reclamation activities by approximately 12 and 7 years, respectively. Baseline conditions associated with geology and soils are unacceptable from both an erosion and slope stability perspective, as evidenced by the marginal factors or safety present in the Quarry pit, and the Orders to Comply/ NOVs issued by the County in 2006 and 2008. As such, because such conditions are likely exist for a greater period of time under the No Project Alternative, impacts related to geology and soils would be greater than those under the proposed Project.

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4.8 Greenhouse Gas Emissions

This section presents an overview of information related to greenhouse gas (GHG) emissions, including a description of global climate change, regional GHG trends, the associated regulatory context, and Project impact assessment. Development of this section was based on a review of existing documentation of GHG emissions in the region, regulations from the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD), Project-specific information, and the analysis in the Ashworth Leininger Group (ALG) *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011).

4.8.1 Setting

4.8.1.1 Environmental Setting

Gases that trap heat in the atmosphere are called GHGs. The major concern with GHGs is that increases in their concentrations are causing global climate change, a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long-term global temperature increases. There are several gases that act as GHGs; their common attribute is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, which warms the air. The process is similar to the effect greenhouses have in raising the air temperature inside the greenhouse, hence the name GHGs. Both natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere regulates the Earth's temperature; however, emissions from human activities such as fossil fuel-based electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere. It generally is believed that this accumulation of GHGs is contributing to global climate change.

The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because these different GHGs have different warming potential (the amount of heat trapped by a certain mass of a GHG), and CO_2 is the most commonly referenced gas for climate change, GHG emissions often are quantified and reported as CO_2 equivalents (CO_2e). For example, SF_6 commonly is used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF_6, while comprising a small fraction of the total GHGs emitted annually worldwide, is a very potent GHG with 23,900 times the global warming potential of CO_2. Therefore, an emission of 1 metric ton of SF_6 could be reported as an emission of 23,900 metric tons (MT) of CO_2e. Large emission sources are reported in million metric tons[1] of CO_2e.

1 A metric ton is 1,000 kilograms; it is equal to approximately 1.1 U.S. tons and approximately 2,204.6 pounds.

Some of the potential effects of global warming in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2008). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

Also, there are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

The California Air Resources Board (CARB) estimated that in 2008, California produced 478 million gross MT of CO_2e emissions. CARB found that transportation was the source of 37 percent of the state's GHG emissions; followed by electricity generation at 24 percent, and industrial sources at 19 percent (CARB, 2010).

In the San Francisco Bay Area, GHG emissions from the transportation sector and industrial/ commercial sector represent the largest sources of the Bay Area's GHG emissions, each accounting for 36.4 percent of the Bay Area's 95.8 million tons of CO_2e in 2007. Electricity/co-generation sources account for about 15.9 percent of the Bay Area's GHG emissions, followed by residential fuel usage at about 7.1 percent. Off-road equipment and agricultural/farming sources currently account for approximately 3 percent and 1.2 percent of the total Bay Area GHG emissions, respectively (BAAQMD, 2010a).

4.8.1.2 Regulatory Setting

Federal Regulations

The federal Clean Air Act (CAA) requires the USEPA to define national standards to protect U.S. public health and welfare. The federal CAA does not specifically regulate GHG emissions; however, GHGs are pollutants that can be regulated under the federal CAA. There are currently no federal regulations that set ambient air quality standards for GHGs.

On September 22, 2009, U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required U.S. EPA to develop "… mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy….” The Reporting Rule will apply to most entities that emit 25,000 MT of CO_2e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for U.S. EPA to verify annual GHG emissions reports. The EPA Reporting Rule is not applicable to the Permanente Quarry but is applicable to the Cement Plant, which is not part of this Project.

State Regulations

Executive Order S-3-05

In 2005, in recognition of California’s vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 – California Global Warming Solutions Act

California Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, requires CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. AB 32 required CARB to adopt regulations by January 1, 2008 that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and CARB is authorized to enforce compliance with the program. Under AB 32, CARB also was required to adopt, by January 1, 2008, a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. CARB established this limit in December 2007 at 427 million MT of CO_2e. This is approximately 30 percent below forecasted “business-as-usual” emissions of 596 million MT of CO_2e in 2020, and about 10 percent below average annual GHG emissions during the period of 2002 through 2004 (CARB, 2008).

By January 1, 2011, CARB was required to adopt rules and regulations (to be implemented by January 1, 2012), to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 permits the use of market-based compliance mechanisms to achieve those reductions. AB 32 also requires CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts.

In June 2007, CARB directed staff to pursue 37 early strategies for reducing GHG emissions under AB 32. The broad spectrum of strategies that were developed, including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate GHG reductions, and green ports, reflects that the serious threat of climate change requires action as soon as possible.

In addition to approving the 37 GHG reduction strategies, CARB directed staff to further evaluate early action recommendations made at its June 2007 meeting, and to report back to CARB within 6 months. The general sentiment of CARB suggested a desire to try to pursue greater GHG emissions reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted by stakeholders and several internally generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in September 2007 (CARB, 2007). CARB adopted nine Early Action Measures for implementation, including Ship Electrification at Ports, Reduction of High Global-Warming-Potential Gases in Consumer Products, Heavy-Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic Efficiency), Reduction of Perfluorocarbons from Semiconductor Manufacturing, Improved Landfill Gas Capture, Reduction of Hydroflourocarbon-134a from Do-It-Yourself Motor Vehicle Servicing, Sulfur Hexaflouride Reductions from the Non-Electric Sector, a Tire Inflation Program, and a Low Carbon Fuel Standard.

Climate Change Scoping Plan

In December 2008, CARB approved the AB 32 Scoping Plan outlining the state's strategy to achieve the 2020 GHG emissions limit (CARB, 2008). This Scoping Plan, developed by CARB in coordination with the Climate Action Team (CAT), proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The measures in the Scoping Plan will continue to be developed over the next year and are scheduled to be in place by 2012. The Scoping Plan expands the list of the nine Early Action Measures into a list of 39 Recommended Actions contained in Appendices C and E of the Scoping Plan. These measures are presented in **Table 4.8-1**.

In addition, the Scoping Plan identifies challenges to meeting future electrical demand, including building transmission lines for renewable energy sources and modernizing electricity infrastructure.

CEQA Guidelines Revisions

In 2007, the California State Legislature passed Senate Bill (SB) 97, which required amendment of the CEQA Guidelines to incorporate analysis of and mitigation for GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009, and they took effect March 18, 2010.

The amendments added §15064.4 to the CEQA Guidelines. This section specifically addresses the potential significance of GHG emissions and calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions; §15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The Guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it

TABLE 4.8-1
RECOMMENDED ACTIONS OF CLIMATE CHANGE SCOPING PLAN

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Transportation		
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards	31.7
T-2	Low Carbon Fuel Standard (Discrete Early Action)	15
T-3[1]	Regional Transportation-Related Greenhouse Gas Targets	5
T-4	Vehicle Efficiency Measures	4.5
T-5	Ship Electrification at Ports (Discrete Early Action)	0.2
T-6	Goods Movement Efficiency Measures. • Ship Electrification at Ports • System-Wide Efficiency Improvements	3.5
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)	0.93
T-8	Medium- and Heavy-Duty Vehicle Hybridization	0.5
T-9	High Speed Rail	1
Electricity and Natural Gas		
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs	15.2
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)	6.7
E-3	Renewables Portfolio Standard (33% by 2020)	21.3
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) • Target of 3000 MW Total Installation by 2020	2.1
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs	4.3
CR-2	Solar Water Heating (AB 1470 goal)	0.1
Green Buildings		
GB-1	Green Buildings	26
Water		
W-1	Water Use Efficiency	1.4†
W-2	Water Recycling	0.3†
W-3	Water System Energy Efficiency	2.0†
W-4	Reuse Urban Runoff	0.2†
W-5	Increase Renewable Energy Production	0.9†
W-6	Public Goods Charge (Water)	TBD†
Industry		
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	TBD
I-2	Oil and Gas Extraction GHG Emission Reduction	0.2
I-3	GHG Leak Reduction from Oil and Gas Transmission	0.9
I-4	Refinery Flare Recovery Process Improvements	0.3
I-5	Removal of Methane Exemption from Existing Refinery Regulations	0.01

**TABLE 4.8-1 (Continued)
RECOMMENDED ACTIONS OF CLIMATE CHANGE SCOPING PLAN**

Measure No.	Measure Description	GHG Reductions (Annual Million Metric Tons CO_2e)
Recycling and Waste Management		
RW-1	Landfill Methane Control (Discrete Early Action)	1
RW-2	Additional Reductions in Landfill Methane • Increase the Efficiency of Landfill Methane Capture	TBD†
RW-3	High Recycling/Zero Waste • Commercial Recycling • Increase Production and Markets for Compost • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing	9†
Forests		
F-1	Sustainable Forest Target	5
High Global Warming Potential (GWP) Gases		
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)	0.26
H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)	0.3
H-3	Reduction of Perfuorocarbons in Semiconductor Manufacturing (Discrete Early Action)	0.15
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)	0.25
H-5	High GWP Reductions from Mobile Sources • Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems • Air Conditioner Refrigerant Leak Test During Vehicle Smog Check • Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers • Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems	3.3
H-6	High GWP Reductions from Stationary Sources • High GWP Stationary Equipment Refrigerant Management Program: - Refrigerant Tracking/Reporting/Repair Deposit Program - Specifications for Commercial and Industrial Refrigeration Systems • Foam Recovery and Destruction Program • SF Leak Reduction and Recycling in Electrical Applications • Alternative Suppressants in Fire Protection Systems • Residential Refrigeration Early Retirement Program	10.9
H-7	Mitigation Fee on High GWP Gases	5
Agriculture		
A-1	Methane Capture at Large Dairies	1.0†

[1] This is not the SB 375 regional target. CARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the regional targets advisory committee and a consultation process with MPO's and other stakeholders per SB 375.
† GHG emission reduction estimates are not included in calculating the total reductions needed to meet the 2020 target.

CARB (2009)

complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (§15064(h)(3)). Importantly, however, the CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Carbon Credits: Mandatory and Voluntary

The AB 32 Scoping Plan identifies cap-and-trade as a key strategy for helping California reduce its GHG emissions (CARB, 2008). A cap-and-trade program sets the total amount of greenhouse gas emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. On October 20, 2011, CARB adopted the final cap-and-trade regulation and Resolution 11-32. Under the program, in August and November 2012, the first auction of GHG emissions allowances will be held and on January 1, 2013 the compliance obligation for Covered Entities begins (the proposed Project is not a Covered Entity). The Cap-and-trade program also allows for non-Covered Entities, including Voluntarily Associated Entities, to register with the program and purchase and hold GHG emission allowances.

Several registries of carbon offset credits have emerged in the United States in recent years. In the absence of mandatory GHG reduction requirements, these registries record and transfer ownership of offset credits for the voluntary market. The voluntary market has developed to serve those individuals, businesses, and institutions wishing to offset their own emissions, even in the absence of a regulatory requirement, or who are preparing for anticipated regulatory requirements. Registries facilitate and give legitimacy to carbon offset credit tracking and trading. One of the leading registries, the Climate Action Reserve (CAR), is expected to serve as a source of regulatory offsets under the future California cap-and-trade program; the CAR and its project protocols have been recognized as voluntary early actions under AB 32. CAR is respected as a national project registry that sets standards, accredits verifiers, and registers and tracks projects using sophisticated software to serialize and transfer emission reduction credits.

The Climate Registry

The Climate Registry (TCR) is a non-profit collaboration among North American states, provinces, territories, and Native sovereign nations that sets consistent and transparent standards to calculate, verify, and publicly report GHG emissions into a single registry. TCR does not register or trade carbon offset credits, but rather focuses on both voluntary and mandatory reporting programs and provides comprehensive, accurate data to reduce GHG emissions. TCR encourages voluntary early actions to increase energy efficiency and decrease GHG emissions. TCR accounting infrastructure supports a wide variety of programs that reduce GHG emissions including voluntary, regulatory and market-based programs.

Members of TCR agree to calculate, verify and publicly report their GHG emissions annually, which includes the following steps:

- Identify all sources of GHG emissions;
- Calculate emissions according to TCR protocols;

- Verify emissions with an ANSI-accredited and TCR-recognized verification body;
- Report verified, entity-wide emissions data to the public through TCR.

Annual third-party verification of reported GHG emissions data is intended to ensure that reporting members' GHG inventories are accurate, complete, and transparent.

Local Regulations

Bay Area Air Quality Management District

Bay Area 2010 Clean Air Plan. Bay Area plans are prepared with the cooperation of the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan - the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010b). The *Bay Area 2010 Clean Air Plan* serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2010 – 2012 timeframe.

The Project would be consistent with the *Bay Area 2010 Clean Air Plan*.

CEQA Air Quality Guidelines. In June 2010, BAAQMD issued its *CEQA Air Quality Guidelines* replacing former guidelines adopted in December 1999, and adopted new thresholds of significance to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. Updated in May 2011, these guidelines include recommendations for analytical methodologies to determine air quality impacts and identify mitigation measures that can be used to avoid or reduce air quality impacts, including for GHGs (BAAQMD, 2011). Separate thresholds are established for operational emissions from stationary sources and non-stationary sources. No threshold has been established for construction-related emissions. The threshold for stationary sources is 10,000 MT of CO_2e/year. For non-stationary sources, three separate thresholds have been established:

- Compliance with Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or
- 1,100 MT of CO_2e/yr; or
- 4.6 MT CO_2e/service population/yr (service population is the sum of residents + employees expected for a development project).

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. The District has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2011). In accordance with those BAAQMD guidelines and methods, and because the vast majority of GHG emissions from the Project come from non-stationary sources, the 1,100 MT/year threshold is the applicable threshold for this EIR analysis.

County of Santa Clara

The County of Santa Clara released its *County of Santa Clara Climate Action Plan for Operations and Facilities* in September 2009 (County of Santa Clara, 2009). This plan presents a number of solutions and policies that focus on County operations, facilities, and employee actions that will reduce GHG emissions associated with energy and water consumption, solid waste, and fuel consumption. The plan focuses primarily on steps needed to reach the 10 percent reduction (13,346 MT) goal by 2015. Since this plan applies to County operations and facilities only, it does not pertain to the Project.

4.8.2 Baseline

The overall baseline for this EIR reflects the physical environmental conditions in the vicinity of the Project as they existed on June 29, 2007, when the County published a NOP in connection with the Applicant's first proposed amendment of the 1985 Reclamation Plan. Pertinent to the GHG analysis, the June 2007 baseline date is prior to the time when the EMSA actively was developed for placement of overburden from the quarry.

With regard to GHG emissions, the proposed Project involves an existing quarry operation. Such operations are characterized by fluctuating production and associated GHG emissions in response to continually changing market demands. An emission inventory that considers only conditions existing in June 2007 (or any other specific point in time) may substantially over- or under-represent typical baseline conditions. Accordingly, baseline GHG emissions for this assessment are based on an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands. The following operations and activities are included in the baseline GHG emissions estimates:

- Quarry operations
- Waste rock material (overburden) storage
- Associated mobile sources and portable equipment

GHG emissions associated with operation of the adjacent cement manufacturing facility are not included in the analysis since the cement plant is a separately-permitted industrial use, and because the Project would not affect the cement plant's operations, GHG emission, use permit, operating permits or regulatory status.

4.8.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG.

In accordance with the BAAQMD *CEQA Air Quality Guidelines*, this Project would be considered to have a significant impact if the Project would emit GHGs greater than 1,100 MT per year CO_2e from sources other than permitted stationary sources (the Project does not propose any new or expanded stationary sources that emit GHGs). The BAAQMD *CEQA Guidelines* also state that a project or plan that is consistent with an adopted GHG Reduction Strategy would be considered to have a less than significant impact. As noted above, the County of Santa Clara has adopted a Climate Action Plan for reducing GHG emissions from County operations and facilities. This plan does not, however, pertain to private activities, and so does not cover the existing surface mining operations at the Permanente Quarry or apply to the Project.

4.8.4 Discussion of Criteria with No Greenhouse Gas Emissions Impacts

The Project could cause an impact related to each of the GHG significance criteria. These impacts are analyzed in Section 4.8.5 below.

4.8.5 Impacts and Mitigation Measures

The assessment for GHG emissions is based on the ALG report *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011; included in this EIR as **Appendix D**). The ALG report identified and quantified the emission sources of criteria air pollutants, toxic air contaminants (TACs)[2], and GHGs from existing operations and from the proposed Project. Emission calculations in the ALG report are based on specific equipment and material throughput data provided by the Applicant, as well as emission factors from the following sources:

- CARB's OFFROAD2007 model for off-road vehicles and equipment;
- CARB's EMFAC2007 model for on-road vehicles;
- General Reporting Protocol (The Climate Registry, 2008); and

2 Criteria air pollutants and TACs are addressed in Section 4.3, *Air Quality*.

- Australian Greenhouse Office Factors and Methods Workbook (Australian Greenhouse Office, 2006).

The assumptions, emission factors, calculations, and other data in the ALG report were independently reviewed by the EIR authors and were determined to be acceptable for incorporation in this analysis.

This analysis is based on the net change in GHG emissions from the Project compared to baseline. As described above in Section 4.3.2, *Baseline*, baseline air emissions for this GHG assessment are determined from an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production as well as relatively low production at the Permanente Quarry in response to changing market demands. Project GHG emissions are calculated the proposed reclamation activities and the Quarry operations that would be ongoing concurrently with the Project. The net change in GHG emissions is then compared to the CEQA significance threshold adopted by the BAAQMD.

Impact 4.8-1: The Project could result in an increase in greenhouse gas emissions and contribute to climate change. ***(Less than Significant Impact with Mitigation Incorporated)***

As described in Chapter 2, *Project Description*, the Project includes areas that have been disturbed by prior mining operations, areas that will be disturbed by mining operations within the next 20 years, open space areas that serve to physically separate operations at the Quarry from other uses in the surrounding environs (and additional areas that would be for this purpose), and areas that have been partially disturbed by prior exploratory and/or mining activities. The primary areas to be reclaimed include the existing Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area (WMSA) and the East Materials Storage Area (EMSA), the crusher/Quarry office area, surge pile, rock plant, an area south of Permanente Creek that has been subject to mining operation-related exploratory activities, and seven areas along Permanente Creek known as the Permanente Creek Reclamation Areas (PCRA). General emission sources of GHGs in the baseline include:

- Direct GHG Sources (on-road and off-road combustion equipment and vehicles; blasting activities);

- Indirect GHG Sources (indirect, off-site sources associated with use of electricity for quarry dewatering and quarry office operations).

During Phase 1 of the Project, the Quarry-related operations listed above would continue to occur in addition to the GHG emission sources and activities specific to the Project.

The following GHG emission reduction measure has been committed to by the Applicant as part of the Project, and is included in the calculation of Project GHG emissions:

- Use an Overland Conveyor System, powered by electric motors, to move 75 percent of the waste rock from the WMSA to backfill the Quarry pit.

Project GHG emissions were calculated for Phases 1 and 2 of the Project based on the maximum level of annual activity expected to occur during each phase. (This analysis does not quantify emissions associated with Phase 3 of the Project because off-road vehicle usage and related activities would be substantially lower in Phase 3 than in Phase 1 or 2). The net change in GHG emissions was then calculated by comparing the highest emissions during each Project phase with the average GHG emissions calculated for the baseline period. This analysis determined that GHG emissions would be highest during Phase 1 of the Project, during which emissions associated with ongoing mining operations would also occur.

As described above, pursuant to the BAAQMD *CEQA Air Quality Guidelines*, this Project would be considered to have a significant impact if the Project would emit GHGs greater than 1,100 MT per year CO_2e from sources other than permitted stationary sources (the Project does not propose any new or expanded stationary sources that emit GHGs). Project emissions are compared to these annual thresholds in **Table 4.8-2**.

TABLE 4.8-2
MAXIMUM ANNUAL GHG EMISSIONS
(metric tons CO_2E/year)[a]

Scenario	CO_2	CH_4	N_2O	Total CO_2e
Baseline Emissions	15,707	<1	<1	15,842
Project Emissions	20,587	1	<1	20,762
Annual Incremental Increase	4,880	<1	<1	4,920
BAAQMD Threshold	--	--	--	1,100
Significant Impact (Yes or No)?	--	--	--	**Yes**

[a] Emissions are based on the *Air Quality Technical Analysis – Revised Reclamation Plan Amendment* (ALG, 2011). Specific assumptions and emission factors incorporated into the calculations are included in Appendix D.

SOURCE: ALG, 2011.

As shown in **Table 4.8-2**, GHG emissions associated with the Project would result in a maximum annual generation of 20,762 MT of CO_2e, for a net increase of 4,920 MT per year over the baseline.[3] Thus, net GHG emissions that would result from the Project would exceed the 1,100 MT per year threshold established by BAAQMD and would be significant without mitigation.

> **Mitigation Measure 4.8-1a: Develop Annual GHG Inventory.** The Applicant shall become a reporting member of The Climate Registry. Beginning with the first year of the Project and continuing for the duration of the Project, the Applicant shall conduct an annual inventory of GHG emissions and shall report those emissions to The Climate Registry. The

[3] It is noted here that there is a net increase in GHG emissions for the Project compared to baseline, whereas there is a net decrease in emissions of most criteria pollutants and toxic air contaminants (TACs) (see Section 4.3, *Air Quality*). The reason for this apparent disparity is that the emission reduction strategy for criteria pollutants and TACs (i.e., replacement of older off-road equipment with newer, cleaner burning engines) does not result in a collateral reduction of GHGs. Rather, GHG emissions are essentially proportional to fuel usage, so the increase in off-road equipment usage with the Project results in a net increase in GHG emissions.

annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry.

Mitigation Measure 4.8-1b: Greenhouse Gas Emissions Reduction Plan. The Applicant shall prepare, submit for County and BAAQMD approval, make available to the public, and implement a Greenhouse Gas Emissions Reduction Plan (GHG Plan) containing quantifiable strategies to ensure that the Project-related incremental increase of GHG emissions does not exceed 1,100 MT CO_2e per year. The GHG Plan shall include, but not be limited to, the following measures:

1. Replacement of on-road and off-road vehicles and construction equipment with lower GHG-emitting engines, such as electric or hybrid.

2. Use of the Overland Conveyor System, powered by electric motors, to move more than 75 percent of the waste rock from the WMSA to reclaim the Quarry pit.

If the Applicant is unable to reduce the Project-related incremental increase of GHG emissions to below 1,100 MT CO_2e per year using the above measures, the Applicant shall offset all remaining Project incremental emissions above that threshold. Any offset of Project emissions shall be demonstrated to be real, permanent, verifiable, enforceable, and additional. To the maximum extent feasible, as determined by the County in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference):

1. Onsite offset of Project emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the Applicant develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset Project emissions. The number of offset credits produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated.

2. Funding of local projects, subject to review and approval by the BAAQMD, that would result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or County of Santa Clara develops a GHG mitigation fund, the Applicant may instead pay into this fund to offset Project incremental GHG emissions in excess of the significance threshold.

3. Purchase of carbon credits to offset Project incremental emissions to below the significance threshold. Carbon offset credits must be verified and registered with The Climate Registry, the Climate Action Reserve, or other source that is approved by the California Air Resources Board as being consistent with the policies and guidelines of the California Global Warming Solution Act of 2006 (AB 32), or available through a County- or BAAQMD-approved local GHG mitigation bank or fund.

Significance after Mitigation: Use of electric or hybrid on-road vehicles and small horsepower construction equipment and establishing onsite renewable energy generation, carbon sequestration projects, and offsite mitigation are among the feasible GHG mitigation strategies identified in the California Air Pollution Control Officers Association (CAPCOA) report *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010).The CAPCOA report also provides methodologies for quantifying the GHG reduction for each of these methods. While the BAAQMD does not have a policy regarding the use of carbon credits as GHG mitigation under CEQA, such use of carbon credits in CEQA has been established by other California air districts (e.g., the Santa Barbara County Air Pollution Control District (SBCAPCD) [SBCAPCD, 2011]). The amount of GHG reductions or offsets can vary widely for any one of these measures, depending upon the specific needs of the application, However, collectively the measures provide ample opportunity to reduce the Project's incremental GHG emission increase to below the significance threshold through a combination of avoidance, onsite or offsite mitigation, and/or purchase of carbon credits. The Climate Action Reserve alone has more than 16 million metric tons of GHG credits registered and available for purchase as of August 2011. Therefore, after mitigation the impact would be less than significant.

Impact 4.8-2: The Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. ***(Less than Significant Impact)***

Consistency with Local Plans, Policies, or Regulations

With regard to any potential conflict with applicable County of Santa Clara plans, policies, or regulations adopted to reduce GHGs, the County released its *County of Santa Clara Climate Action Plan for Operations and Facilities*, which presents a number of solutions and policies that focus on County operations, facilities and employee actions that will reduce GHG emissions associated with energy and water consumption, solid waste and fuel consumption (County of Santa Clara, 2009). Since this plan applies to County operations and facilities only, it does not pertain to the Project. Therefore, the Project would not conflict with any local plans, policies, or regulations pertaining to GHGs.

Consistency with CARB's AB32 Scoping Plan

Transportation

CARB's Scoping Plan identifies nine transportation-related actions. Actions T-5, T-6, and T-9 are not applicable to this Project. Action T-1 concerns improvements to light-duty vehicle technology for the purposes of reducing GHG emissions. This action focuses on legislating improved controls for vehicle manufacturers and would not generally be considered applicable to the Project. However, it is reasonably anticipated that vehicles utilized by employees would be subject to the new Pavley regulation, as applicable, and would be consistent with and not conflict with this action.

Action T-2 concerns implementation of a Low Carbon Fuel Standard (LCFS). To reduce the carbon intensity of transportation fuels, CARB is developing a LCFS, which would reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020 as called for by Governor Schwarzenegger in Executive Order S-01-07. The LCFS will incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce GHG emissions. It is reasonably anticipated that off-road equipment utilized at the Project would use fuel produced pursuant to the new LCFS, when it has been implemented, and would therefore be consistent with and not conflict with this action.

Action T-3 addresses regional transportation targets for reducing passenger vehicle miles traveled, with the intent to reduce GHG emissions. The Project would generate minimal trips and therefore would not conflict with Action T-3.

Action T-4 is concerned with vehicle efficiency measures. The California Department of Resources Recycling and Recovery (CalRecycle) with various partners continues to conduct a public awareness campaign to promote sustainable tire practices. CARB is pursuing a regulation to ensure that tires are properly inflated when vehicles are serviced. In addition, CEC in consultation with CalRecycle is developing an efficient tire program focusing first on data gathering and outreach, then on potential adoption of minimum fuel-efficient tire standards, and lastly on the development of consumer information requirements for replacing tires. CARB is also pursuing ways to reduce engine load via lower friction oil and reducing the need for air conditioner use. CARB is actively engaged in the regulatory development process for the tire inflation component of this measure. Implementation of such a standard in not within the purview of an industrial mining project, specifically overburden storage and reclamation activities associated with the Project, that does not operate fleet trucks. Therefore, the Project would not conflict with this measure.

Action T-7 requires existing trucks/trailers to be retrofitted with the best available technology and/or CARB-approved technology. Implementation of such a standard in not within the purview of an industrial mining project, specifically overburden storage and reclamation activities associated with the Project, that does not operate fleet trucks. Therefore, the Project would not conflict with Action T-7.

Action T-8 focuses on hybridization of medium- and heavy-duty vehicles. The implementation approach to Action T-8 is to adopt a regulation and/or incentive program that reduces GHG emissions by encouraging hybrid technology as applied to vocational applications that have significant urban, stop-and-go driving, idling, and power take-off operations in their duty cycle. Implementation of such a standard in not within the purview of an industrial mining project, specifically overburden storage and reclamation activities associated with the Project, that does not operate fleet trucks. Therefore, the Project would not conflict with this measure.

Electricity and Natural Gas

Action E-1, together with Action GB-1 (Green Building), aims to reduce electricity demand by increased efficiency of Utility Energy Programs and adoption of more stringent building and appliance standards. Because no additional structures are proposed by the Project, Action E-1 is not applicable to the Project.

Action E-2 encourages an increase in the use of combined heat and power (CHP) use, or co-generation, facilities. Because the Project would not require additional energy facilities, Action E-2 is not applicable to the Project.

Action E-3 concerns Renewable Portfolio Standards for utilities and does not apply to development projects. Therefore, the Project would not conflict with the measure.

Action E-4 strives to promote solar generated electricity. Because no additional structures are proposed by the Project, Action E-1 is not applicable to the Project.

Forestry

Action F-1 concerns the sustainability of forests. The 2020 Scoping Plan target for California's forest sector is to maintain the current estimated 5 million MT CO_2e of carbon sequestration through sustainable management practices, potentially including reducing the risk of catastrophic wildfire, and the avoidance or mitigation of land-use changes that reduce carbon storage. Since reclamation would result in reforestation, the Project would not conflict with this action.

Industrial Use

While most of the Recommended Actions related to industrial use are aimed at oil and gas extraction, refining and transmission (which are not applicable to this Project), Action I-1 targets large emitters of GHGs (in excess of 0.5 million MT per year of CO_2e) for auditing. Because the Project would not exceed the audit threshold, as set forth in the previous impact analysis, the Project is consistent with and would not obstruct the recommended actions.

Consistency with the Bay Area 2010 Clean Air Plan

The 2010 Clean Air Plan performance objectives, consistent with the state's climate protection goals, are to reduce emissions of GHGs to 1990 levels by 2020 and 40 percent below 1990 levels by 2035 (BAAQMD, 2010b). Because, as discussed above, the Project would be consistent with the CARB AB32 Scoping Plan actions or measures to reduce GHG emissions, and the Project's GHG emissions would essentially cease by 2035, the Project is therefore also consistent with the 2010 Clean Air Plan performance objectives.

In summary, the Project would not conflict with Scoping Plan actions or measures to reduce GHG emissions, and would be consistent with the GHG performance objectives in the Bay Area 2010 Clean Air Plan. Thus, this impact would be less than significant.

4.8.6 Alternatives

4.8.6.1 Alternative 1: Complete Backfill Alternative

The reclamation activities associated with Alternative 1 would be more extensive than the activities under the Project. Under this alternative, overburden materials stored in the EMSA would be reclaimed and backfilled into the Quarry pit upon the conclusion of mineral extraction. Compared with the Project, that activity would require considerable additional hours of operation for off-road equipment to excavate, transport, dump, and grade the EMSA materials. This additional equipment activity would result in greater emissions of GHGs compared with the Project, and would require more extensive mitigation. Therefore, potential impacts to GHGs under this alternative would be greater than for the Project.

4.8.6.2 Alternative 2: Central Materials Storage Area Alternative

The reclamation activities associated with Alternative 2 would be similar to the activities under the Project, except that under this alternative, overburden materials in the Quarry pit would be moved to new, more-distant locations within the Quarry instead of to the EMSA. That activity would generate additional off-road haul truck travel distance compared with the Project, which in turn would result in greater emissions of GHGs. Therefore, potential impacts to GHGs under this alternative would be greater than for the Project.

4.8.6.3 No Project Alternative

The No Project Alternative would extend the time period in which surface mining activities occur within the Project Area and delay final reclamation conditions by approximately 7 years. GHG emissions under the No Project Alternative would be less on an annual basis compared with the Project, but would occur over a longer time and in total would likely be comparable to the Project. However, since the significance of GHG emissions is assessed based on the annual emission rate, the No Project Alternative would result in a lesser impact for GHGs compared with the Project.

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4.9 Hazards and Hazardous Materials

This section identifies and evaluates issues related to hazards and hazardous materials in the context of the Project and alternatives. It describes the existing environmental setting, including hazardous materials currently managed in the Project Area, and applicable regulations. It presents the criteria applied to evaluate the significance of the changes that would be caused if the Project or an alternative were approved. Areas within and near the Project Area potentially affected by hazardous materials in soil or groundwater, naturally-occurring asbestos, and wildfire hazards are identified, and the potential for creation of hazards related to fire and air traffic is evaluated.

Successful reclamation under SMARA results in mined lands that have been returned to a usable condition that is readily adaptable for alternate land uses and creates no danger to public health or safety (Pub. Res. Code §2733). Reclamation of mined lands in conformance with the reclamation performance standards set forth in Title 14 of the California Code of Regulations §3700 et seq. is intended, in part, to achieve this result. Performance standards relate, among other things, to slope stability, drainage facilities, and the removal of structures. A description of how the Project would conform to the performance standards is provided in Section 2.8 in the Project Description. Public health and safety considerations are addressed in this Section 4.9 as they relate to hazards and hazardous materials, in Section 4.3 as they relate to air quality, and in Section 4.10 as they relate to water quality.

4.9.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.9.1 provides setting information specific to hazards and hazardous materials.

4.9.1.1 Definition of Hazardous Materials

The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it specifically is listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). The term "hazardous material" is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (Health and Safety Code §25501(o)).

In some cases, past industrial or commercial activities on a site could have resulted in spills or leaks of hazardous materials to the ground, resulting in soil and/or groundwater contamination. Hazardous materials also may be present in building materials and released during building demolition activities. If improperly handled, hazardous materials and wastes can cause public health hazards when released to the soil, groundwater, or air. The four basic exposure pathways through which an individual can be exposed to a chemical agent include: inhalation, ingestion, absorption through the skin, and injection. Exposure could occur as a result of an accidental release during transportation, storage, or handling of hazardous materials. Disturbance of subsurface soil during construction activities or the stockpiling, handling, or transportation of soils also could lead to the exposure of workers or the public if those soils are contaminated by hazardous materials from previous spills or leaks.

4.9.1.2 Regional and Local Setting

This section discusses historical uses of the Project Area and nearby vicinity, current hazardous materials use at the Quarry, identified hazardous materials sites, wildfire hazards, and airports in the vicinity of the Project Area.

Historical Setting

As discussed in more detail in Section 4.5, *Cultural Resources*, the Cement Plant located adjacent to the Project Area began operations in 1939. It initially included two kilns, storage buildings, and a 2-mile conveyor to move materials from the Quarry pit to the Cement Plant for processing. In 1941, a 30-acre magnesium plant was constructed adjacent to the Cement Plant for processing of brucite into magnesium for use in incendiary bombs. This facility was changed to an aluminum plant in 1947 for manufacture of aluminum foil and aluminum extruded products until its closure in 1990. Few hazardous materials records exist from this era. Known information from regulatory agency records regarding releases from these facilities and other nearby sites is discussed below.

Existing Hazardous Materials Use

Information regarding the current storage, handling, and disposal of hazardous materials and wastes associated with the Quarry and Rock Plant operations is summarized in the inventory statements presented in the Hazardous Materials Business Plans (HMBPs) for these facilities (Lehigh, 2011a, 2011b). Gasoline, diesel, and lubricants for trucks and equipment are stored at the fuel dispensing facility located near the quarry office and maintenance building. This facility consists of one 12,000 gallon aboveground storage tank (AST) containing diesel fuel, and two mobile yard service trucks. The service trucks each contain storage tanks for diesel fuel, lubricating oil, antifreeze, waste oil and grease. Tanks range in size from 40 gallons to 1,500 gallons. Several ASTs are also present at the Rock Plant for flocculant, coagulant (NALCO, 2011) and lubricating oil. Several cylinders of compressed gases are stored at each location. As required by law, the HMBPs describe secondary containment, monitoring, emergency procedures, and employee training at the facility.

Regulatory Agency Records of Hazardous Materials Sites in Project Vicinity

Regulatory agency records of hazardous materials sites in the vicinity of the Project Area were reviewed to identify sites where known releases have occurred that could affect soil or groundwater conditions in the Project Area. The information presented is based on database searches of the State Water Resources Control Board (SWRCB) Geotracker (SWRCB, 2011a) and the California

Department of Toxic Substances Control (DTSC) Envirostor (DTSC, 2011) databases. These databases identify the following types of facilities with known hazardous materials use or releases: federal Superfund sites; state response sites; voluntary cleanup sites; corrective action sites; leaking underground storage tank (LUST) sites; other cleanup sites; land disposal sites; military cleanup sites; permitted underground storage tank (UST) facilities; DTSC cleanup sites; and DTSC-permitted hazardous waste permits.

The Project Area was not identified on any of the regulatory agency lists searched.

The regulatory agency database search identified five entries for the neighboring Cement Plant facility under various business names, including Kaiser Cement, Kaiser Aluminum and Chemical Corp., and Hanson Permanente Cement. Two entries are for registered USTs at the facility. Two entries are closed LUST cases, and one case is an open inactive case regarding a 1987 release of stoddard solvent/mineral spirits to soil for which no additional information was available. The following discussion of the LUST cases is based on summary information and a case closure letter available on the GeoTracker website.

Between 1986 and 1993, 20 USTs were removed from the following locations at the Cement Plant: garage area, lower service station area, emergency generator area, oil house area, and upper service station area. Based on indications of fuel releases at the lower service station and emergency generator areas, soil and groundwater investigations were performed in May 1999 and March 2000. Sampling results indicated the presence of high levels of residual petroleum hydrocarbons (up to 6,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as diesel (TPH-diesel) in soil and up to 2,900 milligrams per liter (mg/L) TPH-diesel in groundwater) remained in place at the lower service station area. Soil and groundwater samples collected from two downgradient borings showed diminished concentrations of TPH-diesel (up to 94 mg/kg in soil and 0.11 mg/L in groundwater). The Regional Water Quality Control Board (RWQCB) closed this case on January 2001, noting that residual soil and groundwater contamination exists in the former tank area but does not appear to pose a significant risk to human health, safety, or the environment and that natural attenuation processes would reduce the contamination over time (RWQCB, 2001). Another LUST case was reportedly discovered in 1993 and closed in December 1995 (SWRCB, 2011b).

Potential Presence of Naturally Occurring Asbestos, Silica, and Trace Metals

Rock and soil often contain naturally-occurring constituents that can be hazardous to human health. Exposure to these substances most often occurs through inhalation of fugitive dust emitted during the excavation and processing of minerals. Existing data on levels of naturally occurring constituents in the rock and soil present with the Project Area are discussed below.

Asbestos

Asbestos is a common name for a group of naturally-occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Asbestos is a known carcinogen and presents a public health hazard if it is present in the friable (easily crumbled) form. Naturally-occurring asbestos most likely would be encountered in Franciscan ultramafic rock[1] (primarily serpentinite[2]) or Franciscan mélange.[3] The potential for occurrence of asbestos in minerals handled in the Project Area is discussed in Section 4.7, *Geology, Soils, and Seismicity*. As noted in that section, asbestos has not been identified in numerous samples of the various minerals found in the Project Area. Potential impacts related to exposure to asbestos are discussed in Section 4.3, *Air Quality*.

Crystalline Silica

Crystalline silica is a component of soil, sand, granite, and many other common minerals. Crystalline silica was identified as a Toxic Air Contaminant by the Office of Environmental Health Hazard Assessment in February of 2005. Based on published geological literature, estimates of crystalline silica percentages in the rocks present in the Project Area are presented in Section 4.7, *Geology, Soils and Seismicity*, Table 4.7-2. Potential impacts related to human exposure to crystalline silica are discussed in Section 4.3, *Air Quality*.

Trace Metal Concentrations

The results of sampling and analysis of rock/gravel samples representative of the onsite geologic materials (i.e., greywacke, greenstone, limestone, and fill materials) for the presence of trace metals are presented in Section 4.7, *Geology, Soils and Seismicity*, Table 4.7-3. Potential impacts related to exposure to trace metals as toxic air contaminants are discussed in Section 4.3, *Air Quality*. The potential for release of trace metals, primarily selenium, into surface or groundwater is discussed in Section 4.10, *Hydrology and Water Quality*.

Representative samples of the primary rock types found in the Quarry pit were collected and analyzed for metals as part of the 2010 screening for Asbestos Containing Materials (ACMs) (McCampbell, 2010). As part of this analysis, these detected concentrations were compared with the Environmental Screening Levels (ESLs) established by the RWQCB and were found not to exceed the ESLs set forth for protection of construction workers.

Vectors

Vectors are organisms, such as rodents and insects, which can spread disease by carrying and transferring disease-causing organisms (also called “pathogens”) such as bacteria, viruses, and parasites. Certain vectors, such as mosquitoes, breed in standing water. Large areas of standing water such as ponds, sluggishly moving streams, and drainage ditches provide ideal habitat for breeding mosquitoes.

Of the sedimentation basins identified in Table 2-12 in Section 2.7.11.5 of the Project Description, 21 are located within the Project Area. According to Mr. Victor Romano, Operations Supervisor at

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1 Ultramafic rocks are formed in high-temperature environments well below the surface of the Earth.
2 Serpentine is a naturally-occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the Earth’s surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.
3 Mélange is a mixture of rock materials of differing sizes and types typically contained within a sheared matrix.

the County Vector Control District (SCCVCD), there are no reported mosquito issues related to the operation of storm water ponds and basins in the Project Area (Romano, 2011).

Wildfire Hazards

The California Department of Forestry and Fire Protection (CalFIRE) has identified moderate, high, and very high fire hazard areas (CalFIRE, 2007) and fire-threatened communities at the wildland-urban interface (County of Santa Clara, 2009). The Project Area is in a high fire hazard severity zone, and so is subject to certain fire safety requirements, which are intended to limit the rate at which a fire could spread and to reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life, or property.

Airports

The closest airports to the Project Area are Moffett Field and San Jose International Airport, located approximately 6 miles and 9 miles away, respectively. No private airstrips occur in the vicinity of the Project Area.

4.9.1.3 Regulatory Setting

Hazardous materials and hazardous wastes are subject to numerous federal, state, and local laws and regulations intended to protect public health and safety and the environment. The U.S. Environmental Protection Agency (U.S. EPA), Cal-EPA, DTSC, RWQCB, and the Bay Area Air Quality Management District (BAAQMD) are the major federal, state, and regional agencies that enforce these regulations. The main focus of the federal and California Occupational Safety and Health Administration (OSHA) is to prevent work-related injuries and illnesses, including from exposures to hazardous materials; CalFIRE implements fire safety regulations. In accordance with Chapter 6.11 of the California Health and Safety Code (§25404, et seq.), local regulatory agencies enforce many federal and state regulatory programs through the Certified Unified Program Agency (CUPA) program, including:

- Hazardous materials business plans (Health and Safety Code §25501 et seq.);
- State Uniform Fire Code requirements (Uniform Fire Code §80.103, as adopted by the state fire marshal pursuant to Health and Safety Code §13143.9);
- Underground storage tanks (Health and Safety Code §25280 et seq.);
- Aboveground storage tanks (Health and Safety Code §25270.5(c)); and
- Hazardous waste generator requirements (Health and Safety Code§25100 et seq.).

The County Department of Environmental Health (SCCDEH), Hazardous Materials Division, is the CUPA agency for oversight of hazardous materials storage and cleanup of underground fuel leaks in the County.

Use and Storage of Hazardous Materials and Fuels

State and federal laws require detailed planning and management to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to reduce risks to human health and the environment. Businesses that handle specified quantities of chemicals are required to submit a hazardous materials business plan in accordance with community right-to-know laws. This plan allows local agencies to plan appropriately for a chemical release, fire, or other incidents. A HMBP is in place for the Quarry pit (Facility ID # FA0255153) (Lehigh, 2011a), the Rock Plant (Facility ID #FA0255158) (Lehigh, 2011b), and for the Garage (Facility ID # FA0255158) (Lehigh, 2011c).

The HMBP for the Quarry pit, for example, provides information about business activities and the owner and operator; a hazardous materials inventory; a description of emergency procedures, including an evacuation plan, emergency contacts, emergency reporting procedures and related protocol, post-incident reporting requirements, an earthquake vulnerability assessment, hazard mitigation/prevention/abatement information, and a list of emergency equipment; as well as employee training and record-keeping information. A facility map and aboveground separation, containment, and monitoring plan also are provided. The hazardous materials business plans for the Rock Plant and Garage provide similar types of information.

Hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills.

Aboveground Storage of Petroleum Products

The Aboveground Petroleum Storage Act of 1990 and Assembly Bill 1130 (2008) require the owner or operator of a tank facility with an aggregate storage capacity greater than 1,320 gallons to file a storage statement with the local CUPA and prepare a spill prevention, control, and countermeasure (SPCC) plan. The plan must identify appropriate spill containment or equipment for diverting spills from sensitive areas, as well as discuss facility-specific requirements for the storage system, inspections, recordkeeping, security, and personnel training. Because the Quarry operates ASTs with a total storage capacity greater than 1,320 gallons, an SPCC plan is required.

Underground Storage Tanks

State laws governing USTs specify requirements for permitting, monitoring, closure, and cleanup of these facilities. Regulations set forth construction and monitoring standards for existing tanks, release reporting requirements, and closure requirements. In the Project Area, SCCDEH has regulatory authority for permitting, inspection, and removal of USTs. Any entity proposing to remove a UST must submit a closure plan to the County prior to tank removal. Upon approval of the UST closure plan, the County would issue a permit, oversee removal of the UST, require additional subsurface sampling if necessary, and issue a site closure letter when the appropriate removal and/or remediation has been completed. There are no USTs associated with the Project;

however, these regulations are relevant due to the number of USTs that have been removed from the neighboring property in the past.

Soil and Groundwater Contamination

Within the County, remediation of contaminated sites generally is performed under the oversight of the SCCDEH, or in some instances, the RWQCB and/or the DTSC. At sites where contamination is suspected or known to have occurred, the site owner is required to perform a site investigation and perform site remediation, if necessary. Site remediation or development also may be subject to regulation by other agencies. For example, if a project required dewatering near a hazardous waste site, the project sponsor might be required to obtain a permit from the municipal sewer agency before discharging the water to the sewer system, or a National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB before discharging to the storm water collection system.

Pesticide and Herbicide Use

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), amended in 1996, authorizes the U.S. EPA to register or license pesticides (including herbicides) for use in the United States. Pesticides must be registered both with the USEPA and the state before distribution. Pesticides used in the Project Area must comply with applicable federal requirements. Under the FIFRA, the California Department of Pesticide Regulation (CDPR) is vested with primary responsibility to enforce pesticide laws and regulations in California. Pesticide rules are found in different sections of California codes and regulations, including: the Food and Agriculture Code, Business and Professions Code, Health and Safety Code, and the Labor Code. In general, the CDPR regulates pesticide sales and use statewide, while local use is enforced through the County Agricultural Commissioners. Many agricultural pesticides require a permit from the County Agricultural Commissioner before they may be purchased or used. The Agricultural Commissioner also enforces regulations to protect both ground and surface water from pesticide contamination. In the County, the Integrated Pest Management Division monitors pesticide applications to ensure they are performed in a safe and effective manner and that worker safety requirements are followed; inspects application equipment, pesticide storage sites, employee training documents and business pesticide use records; and investigates complaints and pesticide-related illnesses.

Worker Safety Requirements

The federal Occupational Safety and Health Administration (OSHA) and the California Occupational Safety and Health Administration (Cal-OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. Federal regulations pertaining to worker safety are contained in Title 29 of the Code of Federal Regulations (CFR), as authorized in the Occupational Safety and Health Act of 1970. They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. In California, Cal-OSHA assumes primary responsibility for developing and enforcing workplace safety regulations; Cal-OSHA standards generally are more stringent than federal regulations.

State regulations concerning the use of hazardous materials in the workplace are included in Title 8 of the California Code of Regulations, which contain requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal-OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

At sites known or suspected to have soil or groundwater contamination, construction workers must receive training in hazardous materials operations and a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Wildland Fire

The California Public Resources Code includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors[4] on construction equipment that use an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire-prone areas. These regulations include the following:

- Earthmoving and portable equipment with internal combustion engines would be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Public Resources Code § 4442);
- Appropriate fire suppression equipment would be maintained during the highest fire danger period – from April 1 to December 1 (Public Resources Code §4428);
- On days when a burning permit is required, flammable materials would be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor would maintain the appropriate fire suppression equipment (Public Resources Code §4427); and
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines would not be used within 25 feet of any flammable materials (Public Resources Code §4431).

Emergency Response

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Responding to hazardous materials incidents is one part of this plan. The plan is administered by the State Office of Emergency Services (OES), which coordinates the responses of other agencies. The County Office of

4 A spark arrestor is a device that prohibits exhaust gases from an internal combustion engine from passing through the impeller blades where they could cause a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

Emergency Services coordinates response to hazardous materials emergencies within and within the vicinity of the Project Area. Emergency Response Team members respond and work with local fire and police agencies, emergency medical providers, California Highway Patrol (CHP), California Department of Fish and Game, and California Department of Transportation (Caltrans).

Hazardous Materials Transportation

The U.S. Department of Transportation regulates hazardous materials transportation on all interstate roads. Within California, the state agencies with primary responsibility for enforcing federal and state regulations and for responding to transportation emergencies are the CHP and Caltrans. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications. Although special requirements apply to transporting hazardous materials, requirements for transporting hazardous waste are more stringent, and hazardous waste haulers must be licensed to transport hazardous waste on public roads.

Hazardous Structural and Building Components

Asbestos

Like federal laws, state laws and regulations also pertain to building materials containing asbestos. Inhalation of airborne fibers is the primary mode of asbestos entry into the body, and friable (easily crumbled) materials the greatest health threat. These existing laws and regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local governmental agencies prior to beginning renovation or demolition that could disturb asbestos.

Before renovating or demolishing buildings containing asbestos, contractors licensed to conduct asbestos abatement work must be retained. Asbestos abatement contractors must follow state regulations where there is asbestos-related work involving 100 square feet or more of asbestos containing material (8 Cal. Code Regs. §1529, §341.6 et seq.). BAAQMD and the State Occupational Safety and Health Administration (OSHA) must be notified 10 days prior to initiating construction and demolition activities. Asbestos encountered during demolition of an existing building must be transported and disposed of at an appropriate facility. The contractor and hauler of the material are required to file a Hazardous Waste Manifest which details the hauling of the material from the site and the disposal of it. Health and Safety Code §19827.5 precludes local agency issuance of a demolition or alteration permit until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos.

Polychlorinated Biphenyls (PCBs)

In 1979, the U.S. EPA banned the use of PCBs in most new electrical equipment and began a program to phase out certain existing PCB-containing equipment. The use and management of PCBs in electrical equipment is regulated pursuant to the Toxic Substances Control Act (15 USC

§2601 *et seq*.). This act and its implementing regulations generally require labeling and periodic inspection of certain types of PCB equipment and set forth detailed safeguards to be followed for disposal of such items.

Lead and Lead-Based Paint

Waste soil containing lead is classified as hazardous if the lead exceeds a total concentration of 1,000 parts per million (ppm) and a soluble concentration of 5 ppm (22 Cal. Code Regs. §66261.24). Hazardous soil would be subject to the regulations for hazardous waste transport and disposal described above.

Regulations to manage and control exposure to lead-based paint are described in Title 29 of the Code of Federal Regulations §1926.62 and in Title 8 of the California Code of Regulations §1532.1. These regulations cover the demolition, removal, cleanup, transportation, storage and disposal of lead-containing material. The regulations outline the permissible exposure limit, protective measures, monitoring and compliance to ensure the safety of construction workers exposed to lead-based material.

Vector Control

The County Vector Control District is a County public health program that controls and monitors disease-carrying insects such as mosquitoes and ticks, and other harmful pests such as yellow jackets and rats. Primary services include:

- Detection of the presence/prevalence of vector borne disease through planned tests, surveys and samples;
- Inspection and treatment of known mosquito and rodent sources;
- Response to customer initiated service requests for identification, advisory, and/or control measures for mosquitoes, rodents, wildlife, and miscellaneous invertebrates (ticks, yellow jackets, cockroaches, bees, fleas, flies, etc.); and
- Promotion of public awareness through outreach and educational services.

4.9.2 Baseline

The baseline for purposes of analyzing potential impacts related to hazards and hazardous materials are the conditions as they occurred in June 2007. The HMBP in effect between 2005, when it was adopted, and March 4, 2008, includes the baseline year (Hanson Permanente Cement Company, 2005). According to the hazardous materials and hazardous waste inventory statements included in the HMBP, the facility stored up to 16 55-gallon drums of lubricating oil at any time. Waste oils were collected in two service trucks with individual capacities of 1,100 gallons and 300 gallons. Annually, an estimated 6,300 gallons of waste oil were shipped off-site to recycling/disposal facilities. In addition, approximately 5,200 gallons of grease were collected in 55-gallon drums and shipped off-site for disposal each year.

The County Airport Land Use Commission (ALUC) had adopted a Comprehensive Land Use Plan (CLUP) that covered the four public use airports in the County: Palo Alto, San Jose International Airport, Reid-Hillview Airport, and South County. In recent years, it has adopted airport-specific CLUPs to replace the countywide CLUP for these four airports. The closest air field to the Project Area, at approximately 6 miles distant from the site, was in 2007 and remains Moffett Federal Airfield. No CLUP had yet been adopted for Moffett Federal Airfield as of June 2007; indeed, an administrative draft CLUP was released in 2011 and has not yet been approved. The County Emergency Operations Plan also was in place in June 2007, as indicated by the County Board of Supervisors' approval of an update to that plan on March 18, 2008 (County of Santa Clara, 2008).

4.9.3 Significance Criteria

Consistent with the County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment;

e) Be located within an area covered by an airport land use plan referral area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, or in the vicinity of a private airstrip, and would result in a safety hazard for people residing or working in the project area;

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan;

g) 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;

h) Provide breeding grounds for vectors;

i) Result in a safety hazard due to proposed site plan (i.e., parking layout, access, closed community, etc.);

j) Involve construction of a building, road or septic system on a slope of 30% or greater; or

k) Involve construction of a roadway greater than 20% slope for a distance of 300 feet or more.

4.9.4 Discussion of Criteria with No Impact Related to Hazards and Hazardous Materials

As outlined below, the Project would have no impact related to criteria c), d), e), f), g), i), j), or k). The potential for the Project to cause impacts related to the remaining hazards and hazardous materials criteria is addressed in Section 4.9.5.

c) The Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25-mile of an existing or proposed school.

Impacts related to potential hazardous emissions are analyzed in Section 4.3, *Air Quality*.

The Quarry pit and Rock Plant HMBPs indicate that hazardous materials and wastes have been and continue to be present in the Project Area (Lehigh, 2011a, 2011b, and 2011c; Hanson Permanente Cement Company, 2005). However, no schools are located within 0.25-mile of the Project Area. The nearest school to the Project Area is approximately 0.95-mile to the northeast – the Monarch Christian School, located at 2420 N. Foothill Boulevard in Los Altos. Other area schools are farther away. For example, the Waldorf School of the Peninsula is located approximately 1.4 miles northeast of the Project Area and Monte Vista High School is located approximately 1.7 miles to the east. No schools are proposed to be constructed within 0.25-mile of the Project Area. Because no schools exist or are proposed within 0.25-mile of the Project Area, implementation of the Project would cause no impact related to criterion c).

d) The Project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, could create a significant hazard to the public or the environment.

The Project Area is not listed on any regulatory agency lists of hazardous materials sites. Therefore, the Project would not be implemented on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. Accordingly, the Project would cause no impact related to criterion d).

e) The Project is not located within an area covered by an airport land use plan or, where such a plan has not been adopted, within an area covered by a public airport land use plan or within the vicinity of private airstrip, and so would not result in a safety hazard for people residing or working in the project area.

The Project Area is not located in an area covered by an airport land use plan, a public airport land use plan, or within the vicinity of private airstrip. Because the Project Area is not within an area covered by an airport land use plan or a public airport land use plan and is not within the vicinity of private airstrip, no airport-related safety hazard for people residing or working in the Project Area would result. Further, based on the intended future open space use of the Project Area, it is not expected that anyone would reside or work within the Project Area once reclamation is complete. Therefore, the Project would cause no impact related to criterion e).

f) The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The Project would not impair implementation of or physically interfere with the County Emergency Operations Plan (County of Santa Clara, 2008), which was adopted by the County Board of Supervisors on March 18, 2008. The proposed reclamation activities would not result in the complete or partial closure of public roadways, interfere with any identified evacuation route, restrict access for emergency response vehicles, or restrict access to critical facilities such as hospitals or fire stations. The Project Area is located entirely on private property that is not designated in the County's Emergency Operations Plan for use in emergency response or evacuation. Consequently, the Project would cause no impact related to criterion f).

g) The Project would not 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.

CalFIRE defines "wildland fire" broadly to encompass "any fire occurring on undeveloped land" (CalFIRE, 2011). The wildland–urban interface commonly is described as the area where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels (CalFIRE, 2011). Most of the reclamation-related activities proposed as part of the Project would be substantially similar to existing operations, including materials movement by haul truck and conveyor, compaction, grading, revegetation, and related monitoring (revegetation test plots have been managed and monitored in the Project Area for decades). The same equipment types used to conduct the existing mining operations would continue to be used to implement the Project. Although the use of fuels and construction equipment for reclamation-related activities could produce a spark or flame near areas of high wildland fire risk, this is the same risk that exists under baseline conditions.

Existing regulations governing the use of construction equipment in fire-prone areas would continue to apply. These regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire-prone areas. As reclamation proceeds to completion, the storage of fuel and use of construction equipment that could produce a spark or flame would be reduced and eventually cease, lowering the potential for fire hazards in the Project Area. Phase 3 of reclamation also would involve the dismantling and removal of existing buildings and structures. Tasks relating to this work are different than the tasks that occur under baseline conditions. However, the same protections that apply to reduce equipment-related fire hazards associated with sparks and flame also would reduce equipment-related risks associated with dismantling and removal activities. Because there would be no change in the exposure of people or structures to risks involving wildland fires relative to baseline conditions, the Project would cause no impact related to criterion g).

i) The Project would not result in a safety hazard due to proposed site plan (i.e., parking layout, access, closed community, etc.).

Implementation of the Project would consist of backfilling, grading, slope stability work, revegetation, and other reclamation activities to make mined lands suitable for open space use. No new parking area is proposed, no new access points are proposed, and no residential uses are present in the Project Area. The Project does not include a "site plan" as such. Safety hazards related to the placement and stability of backfill material are addressed in Section 4.7, *Geology, Soils, and Seismicity*. Because the Project would not result in a safety hazard due to proposed site plan, no impact would result in connection with criterion i).

j, k) The Project would not involve construction of a building, road or septic system on a slope of 30% or greater or a roadway greater than 20% slope for a distance of 300 feet or more.

The Project would not involve construction of any buildings, roads, or septic systems. Therefore, the Project would not cause impacts related to the construction of such infrastructure on steep slopes. Consequently, no impact would result related to criteria j) or k).

4.9.5 Impacts and Mitigation Measures

a) Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact 4.9-1: The Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *(Less than Significant Impact)*

Project construction activities associated with the placement of overburden and contouring of the site would remain the same as current operations and would not involve the additional use, transport or disposal of hazardous materials. As discussed in the Setting, the fuel dispensing facility near the Quarry office has a 12,000-gallon diesel fuel AST and two service trucks with ASTs for the storage of diesel fuel, lubricating oil, antifreeze and waste oil, as well as small quantities of paints and cleaners. Several ASTs also are located at the Rock Plant. Use of the fuel dispensing facility would continue under the Project. When reclamation activities conclude, fuel tanks and other hazardous materials containers would be transported by licensed haulers to an approved disposal or recycling facility in accordance with laws and regulations. For example, prior to closure of any AST used to hold hazardous material, the Applicant would be required to obtain a tank closure permit from SCCDEH and follow its tank closure guidelines. Guidelines outline appropriate tank cleaning methods and methods to make tanks previously containing flammable materials safe for removal. Tank removal must be witnessed by a representative of SCCDEH HMCD, who may determine that soil sampling is required. In addition, a closure application for aboveground hazardous materials storage facilities may also be required. Adherence to state and local regulations would reduce the potential for releases due to transportation and disposal of hazardous materials, and would require soil investigation and remediation if indications of hazardous materials releases were observed.

Structures and facilities to be removed from the crusher/Quarry office support area and rock plant[5] are identified in Sections 2.6.4 and 2.6.6, respectively, of the Project Description and include items that do not contain asbestos (such as conveyor system components, tanks, electrical panels, screens and the like) and buildings that might contain asbestos (including portable office buildings and storage trailers). Potential impacts to historical and cultural resources are analyzed in Section 4.5, *Cultural Resources*. Before demolition and removal of any of the structures that could contain asbestos could occur, the Applicant would have to obtain a County-approved demolition permit. The County's demolition permit application requires compliance with BAAQMD's Regulation 11, Rule 2, Section 303, which governs the demolition and removal of asbestos-containing materials (County of Santa Clara, 2011; BAAQMD, 1998). This rule requires the party seeking a demolition permit to have a Division of Occupational Safety and Health-certified professional "thoroughly survey the affected structure or portion thereof for the presence of asbestos-containing material, including Category I and Category II nonfriable asbestos-containing material." The survey would include "sampling and the results of laboratory analysis of the asbestos content of all suspected asbestos-containing materials." If the structure (or any part of it) contains regulated asbestos-containing material, then it would be treated as asbestos-containing waste material pursuant to BAAQMD's regulations. Compliance with the County's demolition permit requirements, including BAAQMD's survey requirement, would prevent a significant adverse environmental effect related to worker or public exposure to asbestos-containing material, including Category I and Category II nonfriable asbestos-containing material because regulations and requirements are established at a level to protect against related risks.

Revegetation activities associated with site restoration would require weed control to reduce the occurrence of non-native plants that may invade the revegetated areas. Weed control methods may include chemical and mechanical removal techniques depending on the species and number of individuals encountered (WRA, 2011). Any use of herbicides to control invasive species while native plantings become established would be subject to the oversight of the Santa Clara County Division of Agriculture, which regulates the use, storage, and disposal of all pesticides (including herbicides). Regulations outline training requirements for individuals performing pesticide application and require the submittal of monthly pesticide use reports. These regulations are designed to ensure the protection of workers, the public, and the environment from pesticide use.

Because the Applicant and its contractors would be required to comply with all hazardous materials laws and regulations for the transport, use, and disposal of hazardous materials, the impacts associated with the potential to create a significant hazard to the public or the environment would be less than significant.

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5 As described in Section 2.6.6 of this EIR, some of the facilities located in the rock plant would not be demolished or removed from the Project Area.

b) Would the Project 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?

Impact 4.9-2: The Project could 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. *(Less than Significant Impact)*

Under the Project, reclamation activities with a hazardous materials component would be similar to existing operations. Project activities would include the use of earth-moving equipment, such as excavators, trucks, graders, loaders, and water trucks. Fueling of vehicles and equipment would occur at the aboveground fuel dispensing facility located near the quarry offices. Accidents or mechanical failure involving heavy equipment or leaks and spills from storage tanks could result in the accidental release of small quantities of fuel, lubricants, hydraulic fluid, or other hazardous substances. This type of spill could be readily cleaned up according to regulations and would not create a significant hazard to the public or the environment.

In March 2010, URS Corporation submitted a Storm Water Pollution Prevention Plan (SWPPP) on behalf of the Applicant that covers existing operations on the site (URS, 2010). The SWPPP includes provisions to prevent the discharge of pollutants caused by equipment operation, fueling, and maintenance as well as a description of containment controls and site-specific erosion and sediment control criteria. The SWPPP would be revised following Project approval to include the final suite of protective measures that would be implemented in the PCRA and the rest of the Project Area. Final measures are likely to include the following: good housekeeping practices such as clearly labeling hazardous materials containers and storing in an uncluttered area so leaks and spills can be quickly detected and addressed; placing drip pans under leaking equipment; checking construction equipment for leaks regularly; maintaining spill containment and cleanup equipment onsite and training of construction personnel in proper material handling, storage, cleanup, and disposal procedures. The SWPPP requires maintenance of records to document compliance. See Section 4.10, *Hydrology and Water Quality*, further discussion of the SWPPP and protection of surface water resources. Because the applicant and its contractors would be required to comply with the SWPPP and BMPs, the impacts associated with the potential for an upset or accident to create a significant hazard to the public or the environment would be less than significant.

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h) Would the Project provide breeding grounds for vectors?

Impact 4.9-3: Sedimentation basins planned for erosion control at the Project site could provide breeding grounds for vectors. *(Less than Significant Impact)*

To control drainage from the site and prevent sedimentation of receiving water bodies, the Applicant would install new temporary sedimentation basins for storm water runoff in the Quarry pit and along the south-facing slope of the WMSA. If not properly managed, these sedimentation basins could provide a source of standing water that could provide breeding grounds for mosquitoes, which can be vectors for disease transmission.

As proposed, the siltation basins would be designed to drain completely after storm events and, therefore, would not contain standing water for sufficient periods of time to provide breeding grounds that would promote mosquito population growth. Similarly, sedimentation basins would not contain vegetation that could be an attractant to mosquitoes. These proposed sedimentation basins would operate until site vegetation is established and then would be reclaimed as described in the Project Description.

There are approximately 21 existing sedimentation basins operating in the Project Area, some of which retain water. To increase the flow and effectiveness of these basins, SWPPP BMPs include periodic inspections and clean out of the catch basins and culverts. The SWPPP Appendix B provides long-term stormwater facility maintenance procedures for upland sedimentation basins. Routine inspection and cleanout of the basins also would remove any vegetation, as needed, and standing water from the basins. According to Mr. Victor Romano, SCCVCD Operations Supervisor, no mosquito issues associated with the existing sedimentation basins have been reported or observed (Romano, 2011). Because the new basins proposed under the Project would be operated and maintained in accordance with the facility's SWPPP, operation of these basins is not anticipated to cause a significant impact related to the breeding of mosquitoes. A less than significant impact would result.

4.9.6 Alternatives

4.9.6.1 Alternative 1: Complete Backfill Alternative

The hazards and hazardous materials impacts of Alternative 1 would be the same as for the Project. Alternative 1 would involve similar types of Project reclamation activities and use of the same types and quantities of hazardous materials for operation of equipment and vehicles. The same robust regulatory framework would continue to apply. Under Alternative 1, the routine transport, storage and disposal of hazardous materials and the potential for accidents to result in a release would be identical. Similarly, the operation of sedimentation basins would have the same less-than-significant effect on the breeding of mosquitoes.

4.9.6.2 Alternative 2: Central Materials Storage Area Alternative

The hazards and hazardous materials impacts of Alternative 2 would be the same as for the Project. Alternative 2 would involve similar types of Project reclamation activities and use of the same types and quantities of hazardous materials for operation of equipment and vehicles. The same robust regulatory framework would continue to apply. Under Alternative 2, the routine transport, storage and disposal of hazardous materials and the potential for accidents to result in a release would be identical. Similarly, the operation of sedimentation basins would have the same less-than-significant effect on the breeding of mosquitoes.

4.9.6.3 No Project Alternative

The hazards and hazardous materials impacts of the No Project Alternative would be the same as for the Project. The No Project Alternative would involve similar types of Project reclamation activities and use of the same types and quantities of hazardous materials for operation of equipment and vehicles. The same robust regulatory framework would continue to apply. Under the No Project, the routine transport, storage and disposal of hazardous materials and the potential for accidents to result in a release would be identical. Similarly, the operation of sedimentation basins would have the same less-than-significant effect on the breeding of mosquitoes.

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4.10 Hydrology and Water Quality

This section discusses the existing environmental and regulatory setting of the Project, identifies potential impacts related to implementation of the Project, and proposes mitigation measures for those impacts determined to be significant. Setting information in this section was compiled from the Reclamation Plan Amendment (RPA) (EnviroMINE, 2011), technical reports prepared in support of the RPA and peer reviews of those reports, resource agency websites and databases, and Geographic Information System (GIS) data.

4.10.1 Setting

4.10.1.1 Regional Climate and Precipitation

The Quarry is located in the southern San Francisco Bay (Bay) area, in the foothills of unincorporated western Santa Clara County, just west of the City of Cupertino. The climate of the southern Bay area is Mediterranean, characterized by mild, wet winters and warm, dry summers. Temperatures in the County tend to be fairly mild, and rarely drop far below freezing in the valley flat (SCBWMI, 2003). Mean annual precipitation at the Quarry is approximately 25 inches (County of Santa Clara, 2007). Rainfall distribution in the Project Area is strongly controlled by topography, as annual rainfall is greatest on high ridges to the west and decreases eastward toward the Santa Clara Valley. Almost all precipitation falls as rain between October and April.

4.10.1.2 Surface Water Hydrology and Drainage

Permanente Creek Watershed

The Quarry lies within the Permanente Creek watershed (**Figure 4.10-1**). Permanente Creek discharges into southern San Francisco Bay (South Bay). The entire Permanente Creek watershed comprises approximately 17 square miles of land, and the main channel is about 13 miles in length, rising on the southeast side of Black Mountain (elevation 2,800 feet) and flowing east then north to the South Bay (SCBWMI, 2003; RWQCB, 2007a).[1] Other than the Quarry and some rural residential development, the upper watershed is relatively undeveloped.[2] In the lower watershed, Permanente Creek flows through the cities of Los Altos and Mountain View and discharges into the South Bay through the Mountain View Slough. Most of the lower watershed within the Santa Clara Valley is heavily urbanized and the channels have been extensively modified. In the lower watershed, peak flows of up to 1,500 cubic feet per second (cfs) are diverted to Stevens Creek (to the east) by way of the Permanente Creek Diversion, which was constructed in 1959 (SCBWMI, 2003). The diversion structure was designed to allow low flows to continue downstream in Permanente Creek while routing a substantial portion of the larger flood flows into Stevens Creek.

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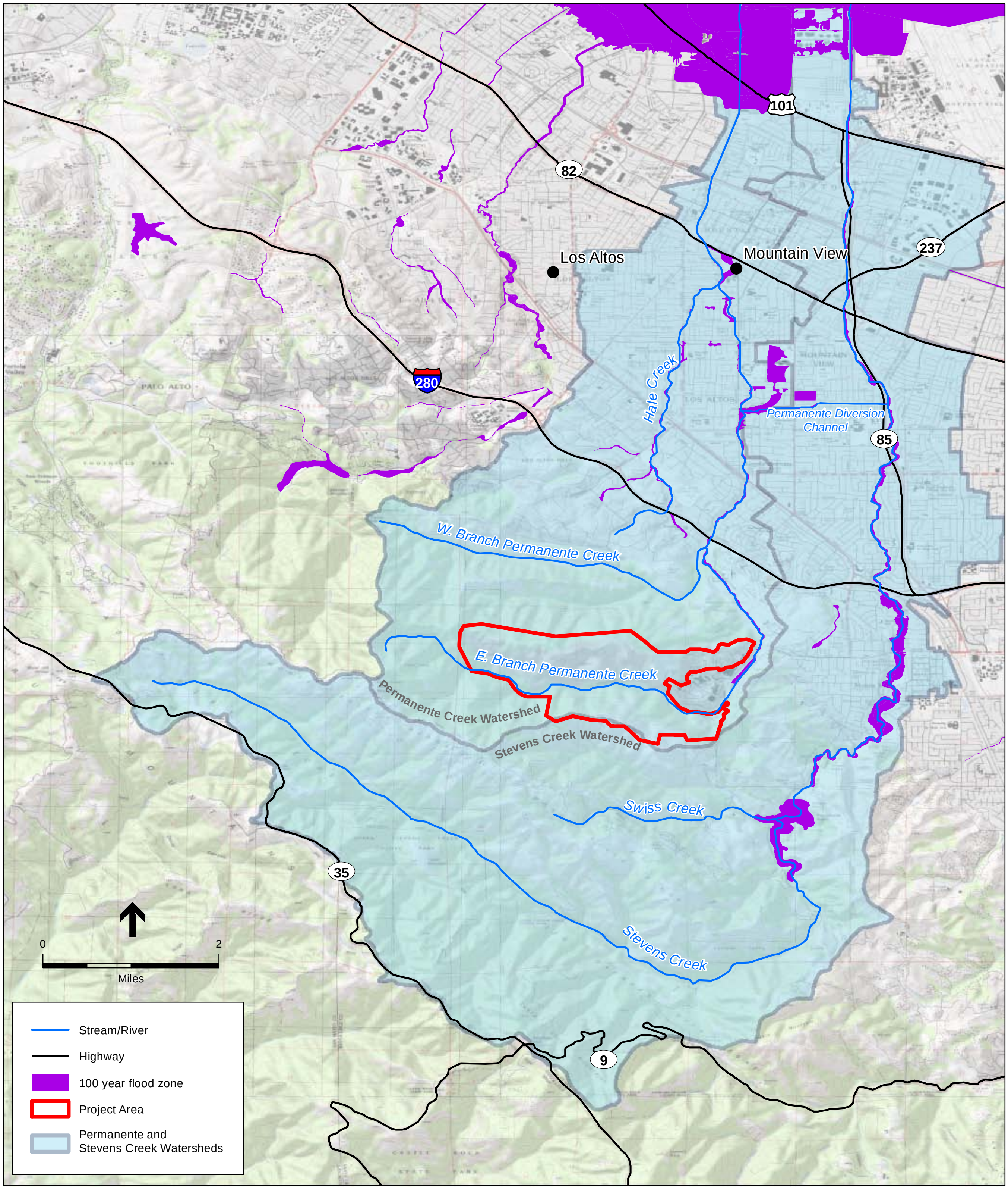
1 Unless otherwise noted, all reported elevations in this chapter refer to feet above mean sea level (amsl).

2 The *lower* watershed, or lower Permanente Creek, refers to the watershed area and stream reaches downstream of Interstate 280; the *upper* watershed, or upper Permanente Creek, refers to the watershed area and stream reaches upstream of Interstate 280.



SOURCE: FEMA, 2007;
Creek and Watershed Map of the Santa Clara basin, 2005

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Figure 4.10-1
Regional Hydrologic Setting

The Quarry is located in the upper watershed in the southern headwater area of the Permanente Creek watershed, which encompasses approximately 3.9 square miles of steep, upland terrain on the east side of the Santa Cruz Mountains.[3] Elevations in the southern headwater area range from 400 to 2,800 feet, and the average is 1,400 feet (Nolan and Hill, 1989). Most of the southern headwater area that is undisturbed by activities related to the Quarry is undeveloped and dominated by chaparral and upland broadleaved forest and, to a lesser extent, grassland areas.

Driven by the Mediterranean climate, flow in Permanente Creek generally rises in late fall or early winter and then recedes throughout a long base flow period during the spring and summer. In most years Permanente Creek remains perennial, but during particularly dry years (e.g., Water Year 1987)[4] the creek will cease to flow in the summer or early fall (Nolan and Hill, 1989). Like most small watersheds draining parts of the Coast Ranges, annual flow volumes and peak discharges are highly variable, both within a given year as well as from one year to the next. The steep topography of the upper watershed results in short duration, high intensity runoff during storm events.

Quarry Area

The land associated with the Quarry accounts for much of the watershed area composing the Permanente Creek southern headwater area, 6 percent of which is impervious surfaces (Nolan and Hill, 1989). While much of the site drains directly or indirectly to Permanente Creek, a portion of the Quarry area drains directly into the Quarry pit. Water that is pumped out of the pit is discharged into the creek. Although most of the runoff from the WMSA flows to the Quarry pit, some stormwater runs off the WMSA and is ultimately conveyed to the creek further downstream of the site where Wild Cat Creek approaches I-280.

Permanente Creek has been considerably modified along particular reaches on the site. The creek alignment has been altered and straightened in some areas, and portions of the creek bordering the Quarry are contained within a culvert or open concrete-lined channel. Additionally, there are at least two instream detention ponds within the reach of Permanente Creek adjacent to the Project Area.[5] At the upstream and downstream ends of the site, Permanente Creek is typically perennial, yet over the middle section of the site (e.g., directly south of the Quarry pit) Permanente Creek tends to flow only intermittently (Golder Associates, 2011). Downstream of the intermittent reach, dewatering of the Quarry pit provides or supplements the flow in Permanente Creek, which helps to keep the flow regime largely perennial downstream of the dewatering discharge point.

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[3] The *southern headwater area* generally refers to the Permanente Creek watershed upstream of the confluence with West Fork (or Branch) Permanente Creek.

[4] A Water Year begins on October 1 of the previous year and ends on September 30 of the designated Water Year. For example, Water Year 1987 comprises October 1, 1986 through September 30, 1987.

[5] The term *instream*, in this case, is used to refer to ponds/structures that are built within the low-flow channel (i.e., not within the bank full channel margins, or within the broader floodplain area)

Surface Water Quality

In general, water quality within streams depends on the mineral composition of the soils and associated parent material (e.g., bedrock) in the watershed, the hydrologic and hydraulic characteristics of the streams, the types of contaminant sources present in the watershed, and the extent and nature of human development and disturbance.

The San Francisco Bay Regional Water Quality Control Board (RWQCB) is responsible for the protection of water quality and the development of water quality standards for the area of Santa Clara County that includes the Project Site. Through a process governed by the Federal Clean Water Act (CWA), the RWQCB (2007b) has formally identified water quality issues for water bodies within and near the Project area (e.g., Permanente Creek and Stevens Creek). Section 303(d) of the CWA requires that states develop a list of water bodies that do not meet water quality standards, establish priority rankings for waters on the list, and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality.[6] In 2007, the RWQCB compiled the 303(d) list for the San Francisco Bay Area (RWQCB, 2007b) based on recommendations from staff and information solicited from the public and other interested parties. Further, on February 11, 2009, the RWQCB adopted a resolution (RWQCB, 2009) approving staff recommendations for proposed additions, deletions and changes to the 303(d) list of impaired water bodies for the Bay area; this included proposals for listing Permanente Creek as impaired for selenium and water toxicity. The list of existing and proposed impaired water bodies relevant to the Project area is presented in **Table 4.10-1** (further information regarding federal, state, and local water quality policies and regulations, including water quality objectives, beneficial uses, and water quality standards, is presented below in Section 4.10.1.4, *Regulatory Setting*).

Through regionally-based monitoring programs, both the RWQCB and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) have, to varying degrees over the last 8 years, monitored and assessed water quality conditions within the Permanente Creek watershed. Existing water quality issues have been documented within the Permanente Creek watershed, particularly in the lower reaches of the creek that traverse the more heavily urbanized areas. For example, the RWQCB (2007a) has noted that temperature and dissolved oxygen conditions throughout the watershed would make it difficult for Permanente Creek to support salmonid populations without further improvements. Nutrient and contaminant data indicate considerable inputs of metals, pesticides, and PAHs in the lower watershed. Further, toxicity tests indicate the presence of constituents at toxic levels both at the upstream and downstream ends of the most urbanized areas of the Permanente Creek watershed. (RWQCB, 2007a). The monitoring data (RWQCB, 2007a; SCVURPPP, 2007) generally suggest that the urban areas are of most concern for stream degradation and for transport of metals, PAHs, and legacy pesticides to the Bay. However, in the vicinity of the Quarry, monitoring data and previous investigations suggest that the existing concentrations of total dissolved solids (TDS), sulfate, some metals, including selenium and mercury, and suspended sediments are relatively high.

6 A TMDL defines how much of a specific pollutant a given water body can tolerate without exceeding water quality standards, and serves as the means to attain and maintain water quality standards such that the water body could support designated and potential beneficial uses identified in the San Francisco Bay Basin Water Quality Control Plan (RWQCB, 2007b).

TABLE 4.10-1
EXISTING AND PROPOSED SECTION 303(D) LIST OF IMPAIRED WATER BODIES

Water Body	Pollutant	Proposed or Approved TMDL Completion Date[b]	Potential Sources
Permanente Creek	Diazinon	2006 (approved)[c]	Urban Runoff/Storm Sewers
	Toxicity[a]	2021	Unknown
	Selenium[a]	2021	Unknown
Stevens Creek	Diazinon	2006 (approved)[c]	Urban Runoff/Storm Sewers
	Toxicity	2019	Unknown
SF Bay, South	Chlordane, DDT, Dieldrin	2008	Nonpoint Source
	Dioxin Compounds, Furan Compounds	2019	Atmospheric Deposition
	Exotic Species	2019	Ballast Water
	Mercury	2006	Atmospheric Deposition, Industrial and Municipal Point Sources, Natural Sources, Nonpoint Sources, Resource Extraction
	Polychlorinated biphenyls (PCBs)	2006	Unknown Nonpoint Source
	PCBs (dioxin-like)	2019	Unknown Nonpoint Source
	Selenium	2019	Agriculture, Domestic Use of Groundwater

NOTES:

[a] The RWQCB has adopted a resolution (no. R2-2009-0008) (RWQCB, 2009) approving recommended changes to the existing 303(d) list, including the recommendation to list Permanente Creek as impaired by diazinon and toxicity. Staff will now transmit the changes to the 303(d) list to the State Water Resources Control Board, which will approve statewide revisions to the list. The 2008 303(d) list will take effect when the U.S. Environmental Protection Agency considers and approves a final list.

[b] The date of planned TMDL completion is provided in the 303(d) lists from the State Water Resources Control Board. Although the planned date of completion has been passed for many of the TMDL projects, approved TMDLs have not been completed as of September 2010.

[c] A Basin Plan amendment incorporating a TMDL and water quality attainment strategy for diazinon and pesticide-related toxicity in the Bay Area's urban creeks has been incorporated into the Basin Plan. The amendment was adopted by the RWQCB on November 16, 2005, and approved by the State Water Resources Control Board on November 15, 2006. It has been approved by the State Water Board, the Office of Administrative Law, and the U.S. Environmental Protection Agency. The final plan, incorporating all amendments, was published January 18, 2007. (RWQCB, 2007c)

SOURCE: RWQCB, 2007b; RWQCB, 2009

The effect of these conditions on aquatic life in Permanente Creek has been studied (WRA, 2011). The creek was found to support several amphibian, fish, and benthic invertebrate species in both upstream and downstream locations, including a resident population of rainbow trout in upstream areas where year-round flows exist. Waste screen bio-analyses were conducted on water collected from a location below the Quarry pit discharge point in February and April 2009 using fathead minnows (*Pimephales Promelas*), with a 100 percent survival rate over a 96-hour period (WRA, 2011). As such, laboratory analysis shows that existing water quality in Permanente Creek is not acutely toxic to some fish species. However, studies have not been performed to determine whether selenium concentrations in fish located in portions of Permanente Creek downstream from the Quarry differ from than those in fish located upstream from the Quarry.

General Minerals and Metals

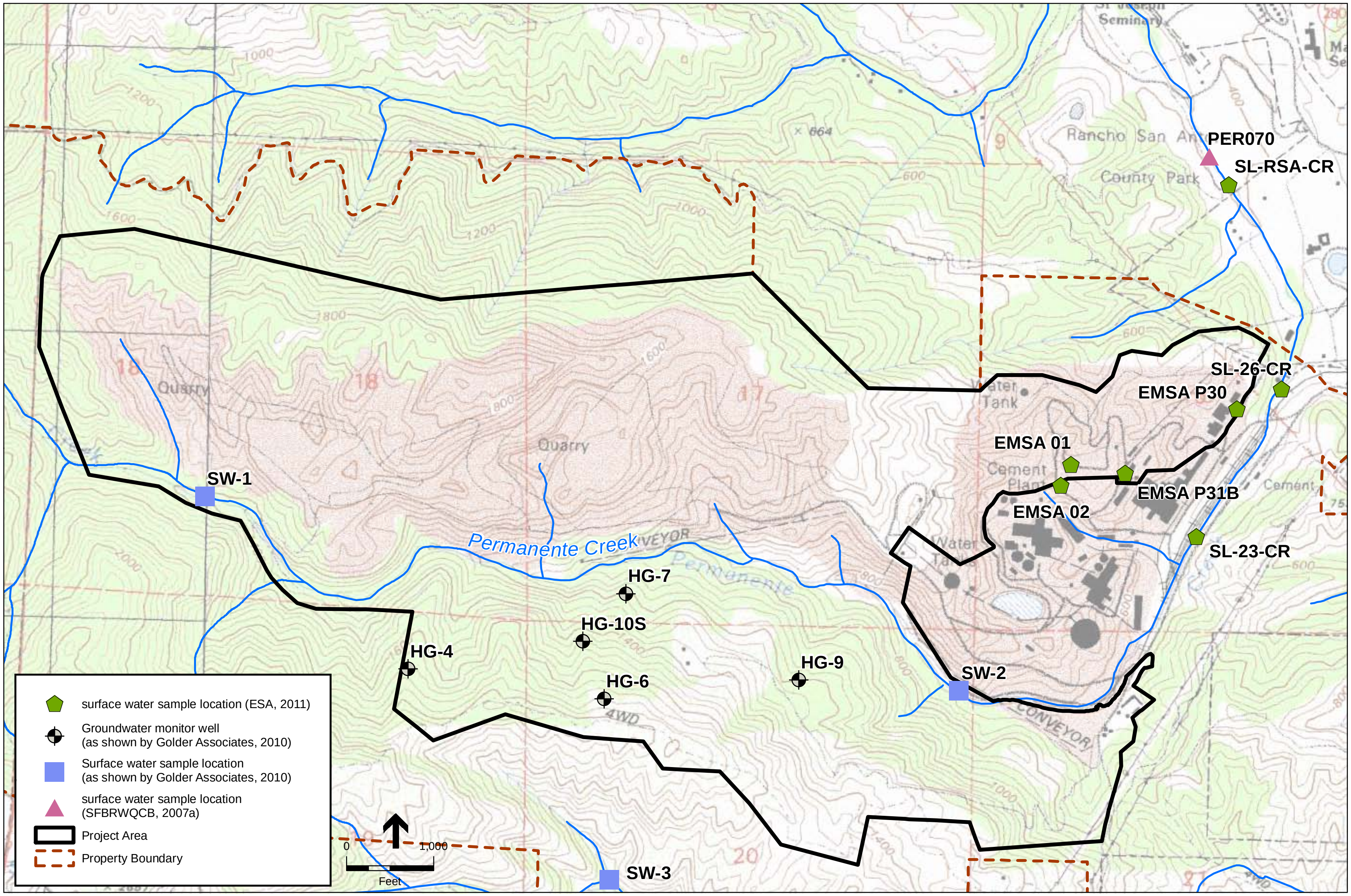
Compared to nearby areas, the Permanente Creek watershed likely has more naturally occurring mineralized rock outcrops and these could be contributing to the relatively high concentrations of some constituents in background water (SES, 2011). Based on surface water samples from locations on Permanente Creek adjacent to and just downstream of the Quarry site (see **Figure 4.10-2**), surface water quality parameters generally meet relevant objectives within the *San Francisco Bay Basin (Region 2) Water Quality Control Plan* (Basin Plan) (RWQCB, 2007c), with the exception of TDS, sulfate, nickel, mercury, and selenium (**Table 4.10-2**).[7] Further, water quality monitoring conducted by the RWQCB (2007a) and the SCVURPPP (2007) has also shown that selenium concentrations in Permanente Creek, in the reaches adjacent to and near the Quarry, are generally greater than the water quality objective presented in the Basin Plan. The RWQCB (2007a) reported that, at their upstream Permanente Creek monitoring site (PER070; see Figure 4.10-2), which is just downstream of the Quarry, the selenium concentration in water was greater than the Basin Plan water quality objective for aquatic life during all three seasons sampled (i.e., dry, wet, and spring). In general, measured dissolved selenium concentrations in Permanente Creek have ranged from 1.7 to 81 micrograms per liter (μg/l) in the vicinity of the Quarry (Table 4.10-2); the (4-day average) Basin Plan objective for selenium is 5 μg/l (RWQCB, 2007c).

Various water quality parameters have been measured within runoff from the EMSA, the Quarry pit, and the WMSA. The WMSA contains the same type of overburden and waste rock that is and would be placed within the EMSA as well as within wall-washing samples (Table 4.10-2).[8] Sampling of surface runoff from the EMSA area, which included flowing, concentrated runoff (e.g., within a ditch/gully and from detention pond inlet pipes) as well as still water from detention ponds, found levels of selenium and mercury that were almost always in excess of the Basin Plan objectives. The vast majority of the selenium detected in each sample was in the dissolved form, rather than being associated with suspended sediment and measured only as the total recoverable selenium. Similar to the general surface water characteristics, a sample of runoff from the WMSA met the relevant water quality objectives within the Basin Plan, with the exception of TDS, sulfate, molybdenum, and selenium. Also, wall-washing samples from the Quarry pit further indicate that selenium is likely readily dissolved and transported from the exposed limestone rock surfaces by surface runoff.

Waterborne selenium concentrations in the Project Area can be compared with background conditions (described above) and also with standards for surface water as established by the RWQCB in the current Basin Plan (RWQCB, 2007c) or with other promulgated values such as

7 The objective for nickel is based on hardness, and the objective value assumes a hardness of 100 mg/l calcium carbonate ($CaCO_3$) (RWQCB, 2007c). For example, higher hardness values would result in higher concentration values for the water quality objective according to the equations presented by the RWQCB (2007c). The referenced surface water samples (i.e., at SW-1 and SW-2) also reported relatively high hardness values (i.e., between 600 and 800 mg/l, on average). Therefore, the reported nickel concentrations, though high in some instances, would likely not exceed the Basin Plan water quality objectives.

8 Wall-washing refers to tests that were performed on exposed rock faces within the Main Pit. The tests involved washing an approximately one square meter area of rock face with a known volume of water. The resultant water was analyzed for dissolved and total metal concentrations and general minerals. The amount of wash water used in the tests was approximately equivalent to a 0.25-inch rain event (SES, 2011).



SOURCE: Golder Associates, 2010; SFBRWQCB, 2007a; Sowers et al., 2005; ESA, 2011

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Figure 4.10-2
Project Area Monitoring and Sampling Locations

Maximum Contaminant Levels (MCLs) from the U.S. Environmental Protection Agency (USEPA) (collectively, Benchmarks) to characterize existing conditions. Selenium concentrations at SW-1 (7.18 µg/l; upstream Permanente Creek) were more than an order of magnitude higher than background as reflected by SW-3 (0.366 µg/l) in the adjacent Monte Bello Creek watershed. The effect of the ongoing Quarry pit dewatering discharges (which enter the creek between SW-1 and SW-2) on existing Permanente Creek water quality is indicated by the samples collected at SW-2 (the downstream location in Permanente Creek), where dissolved selenium concentrations ranged from 13 to 81 µg/l.[9] A Quarry pit water sample in January 2010 had a dissolved selenium concentration of 82 µg/l (Golder, 2011), indicating that dewatering is a significant factor with respect to selenium concentrations in the creek. Mercury, which occurs naturally in the various rock types and in groundwater, meets the Benchmarks at both SW-1 and SW-2 apart from one isolated exception at 0.07 µg/l, which is not significantly above the 0.025 µg/l 4-day average goal and is below the 2.4 µg/l 1-hour goal (CH2MHill, 2011). Elevated concentrations of mercury were found at several locations within the property (up to 8.9 µg/l in an atypical sample with a large amount of suspended sediment in it from a roadway).

Selenium is released from limestone materials through biogeochemical processes when the rock surface is exposed to water and oxygen. Selenium is chemically similar to sulfur; dissolved selenium typically occurs in an oxidized form (oxygen-rich forms of selenate or selenite, which are analogous to sulfate and sulfite). If the oxidized forms are in a chemically reducing (i.e., with little or no oxygen, referred to as anoxic or anaerobic) environment, they will be transformed to the reduced forms (selenide or elemental selenium). Elemental selenium is a solid, and selenide forms insoluble compounds with iron, calcium, and other common mineral cations (SES, 2011). Selenide can also form volatile compounds that de-gas to the atmosphere.

Leaching of Constituents from Quarry Rock

An important characteristic of the Project Area with respect to water quality is the leachability of various constituents, particularly selenium, from rocks at the site. Studies were conducted to characterize the principal rock types in the site vicinity, their chemical characteristics, and the leachability of constituents from them (SES, 2011). The predominant rock type that is extracted and processed onsite is limestone, which grades from a dark bituminous limestone to a gray to white, high-chert-content limestone. The Quarry primarily produces limestone for cement production and for construction aggregate uses. "Limestone" in this section refers to cement-grade limestone, and "aggregate" means other limestone grades and greenstone suitable for use in construction aggregate products. The term "overburden" refers to rock materials that are not suitable for use as limestone or aggregate. They include rocks such as greenstones, metabasalts, and greywacke in addition to minor amounts of low-grade limestone not suitable for use as aggregate.

To characterize rock materials present in the Quarry and overburden material such as that in the EMSA and WMSA, several different types of tests were conducted (SES, 2011). The tests included determining the total metals and selenium content of the rocks and the leachability of

[9] Permanente Creek is at least partially dewatered upstream of sample location SW-2. Water that is captured by the pit is pumped back into the creek via a pond adjacent to the creek.

TABLE 4.10-2
MONITORED POLLUTANT CONCENTRATIONS IN PROJECT AREA

	TDS (mg/l)		sulfate (SO_4) (mg/l)		Metals (dissolved fraction unless otherwise indicated): iron (µg/l)		manganese (µg/l)		mercury (µg/l)		molybdenum (µg/l)		nickel (µg/l)		selenium (µg/l)	
	range	average	range	average	range	average	range	average	range	average	range	average	range	average	range	average
Surface Water																
Permanente Creek																
SW-1[b]	350 - 1,800	1,110	450 - 1,110	578	**(<7.2) - 9.7	6.6	0.3 - 1.9	0.9	0.0008 – 0.055	0.015	1.8 - 5.7	3.8	2.2 - 4.7	3.1	1.7 - 11.0	7.2
SW-2[b]	1,000 - 1,100	1,067	550 - 600	570	(<9.3) - 18.0	8.0	2.1 - 3.9	2.8	0.0013 – 0.07	0.0187	83 - 750	440.8	27 - 110	62.8	13 - 81	62
SL-23-CR[i]	--	--	--	--	--	--	--	--	--	0.056[j]	--	120[j]	--	29[j]	--	24
SL-26-CR[i]	--	--	--	--	--	--	--	--	--	0.052[j]	--	110[j]	--	27[j]	--	22
SL-RSA-CR[i]	--	--	--	--	--	--	--	--	--	(<0.025)[j]	--	120[j]	--	24[j]	--	23
PER070[a]	720 - 850	765	326 - 379	347	--	--	--	--	--	--	--	--	1.6 - 30.9	13.5	5.1 - 18.8	9.9
ZOMB-1[l]	310	--	--	--	--	--	--	--	0.00026	--	ND<5	--	ND<5	--	ND<10	--
SL-4A3-PD[m]	930	--	--	--	--	--	--	--	0.00678	--	340	--	110	--	48	--
PERMUS[n]	720	--	--	--	--	--	--	--	0.00731	--	140	--	33	--	19	--
Monte Bello Creek																
SW-3[b]	340 - 360	353	18 - 28	22.8	ND (<9.3)	ND(<7.2)	0.11 –1.4	0.6375	<0.0002—0.00089	0.0006	0.91 - 24	9.63	0.87 – 1.4	1.14	ND (<0.38) - 0.71	0.366
Upland Runoff																
EMSA 01 (road)[i,k]	--	--	--	--	--	--	--	--	--	8.9[j]	--	31[j]	--	3400[j]	--	33
EMSA 02 (ditch/gully)[i]	--	--	--	--	--	--	--	--	--	0.062[j]	--	96[j]	--	14[j]	--	38
EMSA P31B-IN (pond inlet)[i]	--	--	--	--	--	--	--	--	0.091 -- 0.11	0.105[j]	12 --160	86[j]	49 --180	115[j]	8.3 -- 36	22
EMSA P31B (pond)[i]	--	--	--	--	--	--	--	--	0.037 -- 0.099	0.068[j]	19 -- 74	47[j]	19 --110	65[j]	12 --18-	15
EMSA P30-IN (pond inlet)[i]	--	--	--	--	--	--	--	--	<0.025 -- 0.36	0.031[j]	6.3 -- 70	38.1[j]	18 -- 150	84[j]	7.1 -- 22	15
EMSA P30 (pond)[i]	--	--	--	--	--	--	--	--	-0.073 -- 0.039	0.056[j]	20 -- 47	34[j]	20 -- 49	35[j]	13 –19	16
WMSA[g]	--	900	--	550	--	(<9.3)	--	14	--	--	--	120	--	3.4	--	29
Groundwater																
HG-4[b]	880 - 1,500	1,220	380 - 770	605	(<7.2) – 33	16.4	19 – 120	85	0.011 – 0.023	0.015	31 – 45	38	1.3 – 24	9	0.27 – 3.9	1.4
HG-6[b]	460 – 490	470	8.6 – 16	13	(<7.2) – 46	26	33 – 58	45	0.001 – 0.006	0.002	1.3 – 3.6	2.5	0.47 – 2.1	1	(<0.4)	(<0.4)
HG-7[b]	530 - 580	547.5	29 - 31	30.3	290 - 330	310	320 - 330	325	0.014 – 0.068	0.032	0.54 – 0.81	0.68	1.7 – 3.1	2.28	--	(<0.38)
HG-9[b]	450 - 490	470	26 - 48	35.8	--	(<9.3)	0.19 - 17	6.6	0.001 – 0.024	0.008	0.93 – 3.7	2.5	1.6 – 2.9	2.33	(<0.38) – 0.9	0.5
HG-10S[b]	340 - 400	370	29 - 30	29.5	(<9.3)	(<9.3)	0.16 - 85	42.6	0.063	0.063	5 - 16	10.5	1.7 - 10	5.9	(<0.38) – 2.8	1.5
Wall Washing																
*Limestone (MHG)[f]	--	65	--	61	--	11	--	2.6	--	--	--	6.7	--	0.91	--	14
*Limestone (MLHG)[f]	--	91	--	15	--	160	--	1.2	--	--	--	14	--	4.9	--	0.7
Greywacke[f]	--	61	--	4.9	--	720	--	8.6	--	--	--	2.6	--	1.7	--	(<0.38)
Chert[f]	--	67	--	2.6	--	1,400	--	7.9	--	--	--	1.4	--	5.9	--	(<0.38)
Greenstone[f]	--	100	--	3.3	--	970	--	11	--	--	--	0.37	--	3.5	--	(<0.38)
Basin Plan Objective	**--**	**500**[c]	**--**	**250**[c]	**--**	**300**[c]	**--**	**50**[c]	**--**	**0.025**[d]	**--**	**50**[e]	**--**	**52**[d,h]	**--**	**5.0**[d]

a As reported in RWQCB (2007a); samples collected in Jun 02, Apr 02, and Jan 03.
b As reported in Golder Associates (2011) and SES (2011); samples collected in Feb 09, Apr 09, Sep/Oct 09, and Jan 10 (HG-10S only sampled in Sep/Oct 09 and Jan 10).
c Water quality objective for municipal supply, secondary Maximum Contaminant Level (MCL) (RWQCB, 2007c).
d Water quality objective for freshwater water quality, 4-day average (RWQCB, 2007c).
e Water quality objective for agricultural supply (RWQCB, 2007c).
f As reported in SES, (2011); sampled on November 24, 2009.
g As reported in SES, (2011); sampled on January 13, 2010.
h The objective for nickel is based on hardness. The objective value assumes a hardness of 100 mg/l calcium carbonate ($CaCO_3$).
i As reported in ESA (2011); samples collected on February 16, 2011 and March 24, 2011.
j Value represents the TOTAL metal concentration for the sample.
k Sample represents shallow, concentrated sheet flow from a Quarry road; the sample is not representative of non-road areas within the EMSA and, for this location, there are additional probable sources of metals and other inorganic constituents besides the waste rock (e.g., fluids/residues from heavy machinery and trucks).
l Violet creek Tributary, south of WMSA. Sampling conducted by Lehigh, April 7, 2010 (Lehigh, 2010)
m Pond 4 retention pond, adjacent to Quarry pit. Sampling conducted by Lehigh, April 7, 2010 (Lehigh, 2010)
n County Access Road Bridge. Sampling conducted by Lehigh, April 7, 2010 (Lehigh, 2010)

mg/l = milligrams per liter
µg/l = micrograms per liter
ND= not detected

* MHG = Medium to High grade limestone; MLHG = High and Medium/low grade limestone
** Values in ( ) are non-detect with indicated detection limits.

SOURCE: ESA, 2011; SES, 2011; Golder Associates, 2011; RWQCB, 2007c

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general minerals and other constituents from these materials. Leachability was determined using the Modified California Assessment Manual Waste Extraction Test (CAM WET) and wall washing tests. Quarry water runoff from the west wall of the Quarry pit also was analyzed for those constituents. Results of these tests are presented in **Tables 4.10-3** and **4.10-4**.

Total concentrations of selenium and various metals in rock from boring samples collected in the Quarry pit and the area of a formerly proposed South Quarry[10] varied by rock type (see Table 4.10-3). Selenium concentrations in composite boring samples of greywacke (10 milligrams per kilogram (mg/kg)), limestone (8.5 mg/kg), fault breccia (15 mg/kg), greenstone (15 mg/kg), and metabasalt (13 mg/kg) were notably higher than in chert (2.4 mg/kg) from the previously proposed South Quarry location. Individual samples of limestone from the Quarry pit indicate that limestone is heterogeneous with respect to selenium content; selenium concentration ranged from not detected (<0.76 mg/kg) to 6.6 mg/kg. This is thought to be due to different grades of limestone. The composite sample data are considered better indicators of average bulk conditions because of those variations among the types of limestone and because the composite samples are more representative of the overall bulk rock composition.

De-ionized water was used in conducting the CAM WET tests on the composite samples from the formerly proposed South Quarry (see Table 4.10-4). Results of these tests indicated that the limestone contains relatively low concentrations of leachable selenium (6 µg/l from the rock containing 8.5 mg/kg) in comparison to other rock types. However, selenium leachability from the overburden materials (such as greywacke, fault breccia, greenstone, metabasalt and chert) was very limited; all concentrations in water were less than 0.6 µg/l from those rocks, even though selenium concentrations in the rocks were typically higher than in limestone. This phenomenon will be further confirmed by sampling and testing during the backfilling and reclamation period as described in Mitigation measure 4.10-1.

Wall washing tests performed on exposed faces within the Quarry pit by Golder (2011) involved washing an approximately one-meter-square area of rock face with an amount of water that was about equivalent to a 0.25-inch rainstorm event. The resultant wash water was analyzed for dissolved and total selenium concentrations to provide an indication of the amount of total recoverable and dissolved constituents that could be leached out during a rainstorm for the various rock types (Table 4.10-2). The total receivable concentrations include the selenium contained in solid particles washed off the walls as well as in the wash water and are therefore higher than the dissolved values, which reflect only the amount of selenium in the wash water.

Similar to the CAM WET results (Table 4.10-4), the dissolved constituent concentrations from the wall wash tests for greywacke, chert, and greenstone (<0.38 µg/l) were very low (Table 4.10-2) compared to the bulk rock concentrations. However, dissolved selenium concentrations in wash water from limestone (0.7, 14, and 49 µg/l in individual samples; SES, 2011) varied greatly and

10 The South Quarry location was sampled because it was being considered as an expansion of the Quarry facilities in a prior reclamation plan amendment proposal, since the limestone formation being mined in the Quarry pit extends into this area. However, the South Quarry is not part of the RPA.

were generally much higher than from other rocks. Similarly, total selenium concentrations in the wash water from limestone (60 to 230 μg/l) were far higher than from the other rock types (all <11 μg/l), probably because there was a substantial amount of suspended sediments in the wash water.

Suspended Sediment

The upper Permanente Creek watershed previously has been documented as having a generally high sediment yield and notable accumulations of fine sediment (Nolan and Hill, 1989; SCVURPPP, 2007). The naturally high sediment yield is attributable, in part, to the underlying geology (i.e., the Franciscan Complex) and steep topography. The Franciscan Complex is generally recognized as producing relatively high sediment yields within Coast Range watersheds. However, activities associated with the Quarry (e.g., overburden stockpiles) previously have been identified as contributing to and increasing the ambient sediment load within the Permanente Creek watershed (Nolan and Hill, 1989; RWQCB, 1999). Nolan and Hill (1989) concluded that the sediment yield (i.e., tons per square mile) in the southern headwater area of Permanente Creek was approximately 3.5 times higher than that which would be expected under natural conditions. This difference was attributed to an increase in the availability of sediment, as opposed to increases or changes in runoff. Within and near the Project Area, Nolan and Hill (1989) noted that landforms susceptible to erosion include several types of active and inactive landslides, gullies, rills, unstable stream banks, bare ground and slopes, spoils and storage piles, and roads. Data presented by Nolan and Hill (1989) suggest that the increase in sediment availability could be attributed, in part, to land disturbances (e.g., bare ground, spoils piles) that were in close proximity to or interfaced with stream channels and related to activities at the Quarry. The RWQCB has previously cited the Quarry, on a number of occasions, for violating water quality standards. The most recent cleanup and abatement order was issued to the Quarry in 1999 (RWQCB, 1999), and a notice of violation was issued to the Quarry as recently as March of 2010; these orders and violations relate primarily to the discharge of sediment-laden stormwater to Permanente Creek. Among other regulatory mechanisms (described below), water quality related to the operation of the Quarry (including the Project site) continues to be regulated by the RWQCB under Cleanup and Abatement Order No. 99-018 (RWQCB, 1999). The Cleanup and Abatement Order relates primarily to the discharge of sediment-laden storm water to Permanente Creek. The principal sources of existing erosion and sediment loading to surface drainages (including Permanente Creek) are Quarry access roads, material piles, and areas which, due to the natural slope and topography, drain directly to Permanente Creek with little attenuation (or storage) of runoff. During storm events, overflow of existing retention ponds is also a notable mechanism of erosion and sediment entrainment (URS, 2010). The Quarry has implemented interim measures as required by the RWQCB to help control erosion and subsequent sediment delivery to Permanente Creek.

Flooding

In the Permanente Creek watershed, floods typically occur during the wet season from November through April. Normally, in the upper watershed, floods are flashy in nature as the time of concentration for tributaries is usually short and stream flows thus respond rapidly to rainfall. The

TABLE 4.10-3
MINED MATERIAL AND OVERBURDEN CONSTITUENT CONCENTRATIONS

		C-1	C-2	C-3	C-4	C-5	GT1-2-08-213		B1-1	B1-2	B1-3	B1-4	B2-1		B2-2
		SQ Boring Composite	SQ Boring Composite	SQ Boring Composite	SQ Boring Composite	SQ Boring Composite	SQ Boring Composite	Average of Detections for SQ	NQ Single Sample	NQ Single Sample	NQ Single Sample	NQ Single Sample		Average of Detections for NQ	EMSA OB Composite
		Graywacke	Limestone	Flt. Breccia	Greenstone	Metabasalt	Chert		Limestone	Limestone	Metavolcan	Graywacke	NQ Composite		
Constituent	**Units**	(7/1/09)	(7/1/09)	(7/1/09)	(7/1/09)	(7/1/09)	(7/1/09)	mg/kg	(1/22/10)	(1/22/10)	(1/22/10)	(1/22/10)	(2/10/10)	mg/kg	(2/10/10)
Antimony	mg/kg	ND (<1.7)	6.5	4.2	ND (<1.7)	ND (<1.7)	5.3	3.09	ND (<1.7)	ND (<1.7)	ND (<1.7)	ND (<1.7)	ND (<1.7)	ND (<1.7)	ND (<1.7)
Arsenic	mg/kg	5.1	8.4	2.4	ND (<0.71)	4.8	5.7	4.46	ND (<0.71)	2.7	ND (<0.71)	7.5	2.7	2.7	2.6
Asbestos	mg/kg	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Barium	mg/kg	60	800	180	46	110	560	292.7	940	290	590	49	ND (<0.13)	373.8	750
Beryllium	mg/kg	0.17	0.3	ND (<0.026)	ND (<0.026)	0.032	0.11	0.106	ND (<0.026)	ND (<0.026)	ND (<0.026)	ND (<0.026)	ND (<0.026)	ND (<0.026)	ND (<0.026)
Cadmium	mg/kg	0.071	0.068	ND (<0.033)	ND (<0.033)	ND (<0.033)	0.15	0.056	ND (<0.033)	6.5	ND (<0.033)	ND (<0.033)	ND (<0.033)	1.3	ND (<0.033)
Chromium IV	mg/kg	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Chromium Compounds	mg/kg	95	29	260	400	110	6.6	150.1	ND (<0.045)	30	200	35	130	79.0	110
Cobalt	mg/kg	20	21	34	93	26	8.4	33.7	ND (<0.18)	ND (<0.18)	37	10	27	14.8	23
Copper	mg/kg	50	56	56	45	62	27	49.3	ND (<0.13)	48	47	37	44	35	44
Fluoride Salts	mg/kg	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Lead	mg/kg	9.7	6.8	8.3	ND (<0.59)	11	2	6.3	ND (<0.59)	ND (<0.59)	ND (<0.59)	ND (<0.59)	ND (<0.59)	ND (<0.59)	ND (<0.59)
Mercury	mg/kg	0.033	0.15	0.053	ND (<0.014)	ND (<0.014)	ND (<0.014)	0.043	ND (<0.014)	0.77	0.16	ND (<0.014)	0.12	0.21	0.11
Molybdenum	mg/kg	0.22	2.3	ND (<0.18)	ND (<0.18)	1	0.74	0.74	ND (<0.18)	20	ND (<0.18)	ND (<0.18)	ND (<0.18)	4	ND (<0.18)
Nickel	mg/kg	120	120	250	1,200	100	220	335	ND (<0.12)	59	230	71	180	108	150
Selenium	mg/kg	10	8.5	15	15	13	2.4	10.7	ND (<0.76)	6.6	ND (<0.76)	ND (<0.76)	ND (<0.76)	1.6	ND (<0.76)
Silver	mg/kg	ND (<0.086)	0.63	0.13	ND (<0.086)	0.16	ND (<0.086)	0.17	ND (<0.086)	ND (<0.086)	ND (<0.086)	0.86	ND (<0.086)	0.21	ND (<0.086)
Thallium	mg/kg	ND (<0.94)	ND (<0.94)	0.97	ND (<0.94)	ND (<0.94)	ND (<0.94)	0.55	ND (<0.94)	1.2	ND (<0.94)	ND (<0.94)	ND (<0.94)	0.6	ND (<0.94)
Vanadium	mg/kg	64	15	75	53	70	5.9	47.2	ND (<0.062)	560	80	27	67	146.8	56
Zinc	mg/kg	250	67	75	64	71	150	112.8	14	180	73	51	72	78	75

NOTES:
ND = Not detected at the specified detection limit.
When an ND was included in the calculation of an average value, it was assumed to be one half the detection limit.
If all samples were ND, then the lowest detection limit was retained.
SQ = South Quarry

SOURCE: SES, 2011

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TABLE 4.10-4
OVERBURDEN LEACHABILITY BY MODIFIED CAM WET

Constituent (Dissolved)	Units	C-1 SQ Boring Composite Graywacke (7/1/09)	C-2 SQ Boring Composite Limestone (7/1/09)	C-3 SQ Boring Composite Flt. Breccia (7/1/09)	C-4 SQ Boring Composite Greenstone (7/1/09)	C-5 SQ Boring Composite Metabasalt (7/1/09)	GT1-2-08-213 SQ Boring Composite Chert (7/1/09)	Average of Detections for SQ (μg/l)
Antimony	μg/l	7.2	1.5	5.8	0.98	8.5	3.2	4.53
Arsenic	μg/l	3	1.3	6.2	2.7	7.3	1.2	3.6
Asbestos	μg/l	–	–	–	–	–	–	–
Barium	μg/l	59	220	120	37	120	170	121
Beryllium	μg/l	ND (<0.18)	ND (<0.18)	ND (<0.18)	ND (<0.18)	ND (<0.18)	ND (<0.18)	ND (<0.18)
Cadmium	μg/l	ND (<0.13)	ND (<0.13)	ND (<0.13)	ND (<0.13)	ND (<0.13)	ND (<0.13)	ND (<0.13)
Chromium (total)	μg/l	ND (<0.55)	ND (<0.55)	ND (<0.55)	1.9	ND (<0.55)	ND (<0.55)	0.55
Cobalt	μg/l	0.29	0.15	0.13	0.34	0.1	0.25	0.21
Copper	μg/l	1.3	ND (<0.68)	ND (<0.68)	ND (<0.68)	ND (<0.68)	1.2	0.64
Fluoride Salts	μg/l	–	–	–	–	–	–	–
Lead	μg/l	1.2	0.11	ND (<0.054)	ND (<0.054)	0.09	0.12	0.262
Mercury	μg/l	ND (<0.016)	0.21	ND (<0.016)	ND (<0.016)	ND (<0.016)	ND (<0.016)	0.042
Molybdenum	μg/l	11	27	7.3	2.3	28	12	14.6
Nickel	μg/l	1.7	1.7	2	8.1	0.89	3.2	2.93
Selenium	μg/l	ND (<0.38)	6	ND (<0.38)	ND (<0.38)	0.58	ND (<0.38)	1.22
Silver	μg/l	ND (<0.065)	ND (<0.065)	ND (<0.065)	ND (<0.065)	ND (<0.065)	ND (<0.065)	ND (<0.065)
Thallium	μg/l	ND (<0.11)	ND (<0.11)	ND (<0.11)	ND (<0.11)	ND (<0.11)	ND (<0.11)	ND (<0.11)
Vanadium	μg/l	1.5	ND (<1.2)	12	18	4.9	ND (<1.2)	6.27
Zinc	μg/l	22	8.1	11	11	10	37	16.5
Manganese	μg/l	5.2	2.5	7.5	3	3.1	1.2	3.8
Calcium	mg/l	18	16	13	17	11	14	14.8
Magnesium	mg/l	4.3	4.2	6.8	8.3	5.4	14	7.2
Sodium	mg/l	8.8	4.0	7.9	5.9	6.6	2.7	6.0
Potassium	mg/l	3.7	2.8	3.9	0.96	4.1	2.0	2.9
Total Alkalinity	mg/l	37	42	56	76	46	49	51
Chloride	mg/l	1.6	1.1	1.3	2.0	1.3	1.4	1.45
Sulfate	mg/l	22	12	16	3	8.8	29	15.1
pH	number	8.11	8.16	8.24	8.29	8.36	8.27	8.2
EC	μmhos/cm	160	130	160	160	130	190	155

NOTES:
ND = Not detected at the specified detection limit.
When an ND was included in the calculation of an average value, it was assumed to be one half the detection limit.
If all samples were ND, then the lowest detection limit was retained.
SQ = South Quarry

SOURCE: SES, 2011

Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during a 100-year flood event (i.e., a flood event that has a 1 percent chance of occurring in a given year). According to FEMA (2007), the 100-year flood hazard zone for Permanente Creek extends upstream to a point within the Quarry site approximately adjacent to the aluminum plant (Figure 4.10-1). Within and near the Quarry site, the 100-year flood hazard zone for Permanente Creek is relatively narrow, extending only a few hundred feet across (i.e., 200 to 300 feet). Just downstream of Permanente Road, the magnitude of the 100-year flood peak in Permanente Creek is approximated to be 1,480 cfs (FEMA, 2009).

4.10.1.3 Groundwater Hydrology

Within the Project Area, groundwater flows through two general formations (or mediums): bedrock, and a small portion of the Santa Clara valley aquifer that intersects the Quarry site. The Project area is underlain by bedrock of the Franciscan Complex, which is a chaotic mix of highly deformed, ancient marine sediments and crustal rocks. The occurrence of groundwater throughout the Franciscan Complex is almost exclusively within secondary openings such as joints, fractures, shear zones and faults within the bedrock (Golder Associates, 2011). In general, the bedrock has a relatively low permeability, yet the specific value (or rate) varies locally across the different bedrock units (i.e., within the limestone, greenstone, etc.). Over the eastern portion of the EMSA, the Santa Clara Formation, a more permeable deposit of unconsolidated to slightly consolidated conglomerate, sandstone, siltstone, and claystone, lies above the bedrock of the Franciscan Complex. This portion of the EMSA (i.e., the part comprising part of the Santa Clara Formation) overlies the western margin of the Santa Clara Subbasin, which is part of the larger Santa Clara Valley Groundwater Basin (DWR, 2004). The Santa Clara Formation is exposed only on the west and east sides of the Santa Clara valley.

Regionally, the direction of groundwater flow is interpreted to be from west to east, flowing from the topographic high at Black Mountain toward the Santa Clara Valley (Golder Associates, 2011). Locally, groundwater discharges to Permanente Creek, Monte Bello Creek (to the south, a tributary to Swiss Creek and then Stevens Creek), and an unnamed creek in the eastern half of the Quarry (a tributary to Permanente Creek) (Golder Associates, 2011). Groundwater also discharges to the Quarry pit. Adjacent to the Project Area, the typically perennial reaches of Permanente Creek (i.e., upstream and downstream of the Quarry Pit) are maintained primarily by groundwater discharging directly to the stream channel during the dry season, as well as by dewatering discharges from the Quarry pit.

A number of geotechnical borings were excavated across the EMSA, generally to a depth of 45 feet below ground surface (bgs). Groundwater was not encountered in any of the boreholes (Golder Associates, 2009). The portion of the EMSA closest to Permanente Creek (i.e., the eastern edge) is approximately 100 feet above the channel bed. Subsequent investigations further upstream on Permanente Creek (near the Main Pit) have shown fall (October 2009) groundwater elevations near the creek to be 50 to 90 feet above the bed elevation of the creek (Golder Associates, 2011).

Groundwater Quality

For the Santa Clara Sub-basin, the groundwater in the major producing aquifers within the basin is generally of a bicarbonate type, with sodium and calcium the principal cations (DWR, 1975, *as cited by* DWR, 2004). Although hard (i.e., having high hardness or carbonate values), it is of good to excellent mineral composition and suitable for most uses. Drinking water standards are met at public supply wells without the use of treatment methods (SCVWD, 2001, *as cited by* DWR, 2004).

The different bedrock units underlying the Project Area (i.e., the limestone, greenstone, and greywacke) are known to produce measureable concentrations of trace metals, particularly if the metals occur within sulfide deposits, which tend to weather rapidly when in contact with oxygenated water. Groundwater quality information was collected in the area to the south of the Quarry pit and on the south side of Permanente Creek. This information is reflective of the quality and chemical characteristics of the groundwater that comes into contact with the various, principal bedrock units underlying the entire Project Area. Based upon groundwater samples taken at five monitoring wells (HG-4, HG-6, HG-7, HG-9, and HG-10; see Figure 4.10-2), groundwater quality generally meets the relevant objectives within the Basin Plan, with the exception of TDS, sulfate, iron, manganese, and molybdenum (Table 4.10-2). Average mercury concentrations in the groundwater from all wells that were sampled more than once also meet the objectives for 1-hour maximum (2.4 μg/l) for protection of aquatic organisms and drinking water (2 μg/l); the single sample from well HG-10 (0.063 μg/l) exceeded the objective for protection of aquatic organisms (0.025 μg/l). However, these constituents are likely naturally elevated in groundwater due to the mineralized nature of the bedrock (SES, 2010).

4.10.1.4 Regulatory Setting

The following section provides a brief summary of the federal, state, and local water quality- and hydrology-related regulations, goals and policies relevant to the Project.

Federal Regulations

Federal Emergency Management Agency

Under Executive Order 11988, FEMA is responsible for the management and mapping of areas subject to flooding during a 100-year flood event (i.e., an event with a one percent chance of occurring in a given year). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain. The proposed Project area does not fall within the 100-year floodplain delineated by FEMA (2007).

Federal and State Water Quality Policies

The statutes that govern Project activities and operations that may affect water quality are the CWA (33 U.S.C. §1251) and the Porter-Cologne Water Quality Control Act (Porter-Cologne) (Water Code §13000 et seq.). These acts provide the basis for water quality regulation in the Project Area.

The California legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality to the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs). The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies, and plans for the implementation of state and federal regulations. The nine RWQCBs throughout California adopt and implement water quality control plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The RWQCB adopts and implements a Water Quality Control Plan that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (Water Code §§13240-13247).

The National Toxics Rule and the California Toxics Rule

Federal water quality criteria for priority toxic pollutants have been established for non-ocean surface waters (including enclosed bays and estuaries) of California by the USEPA (state water quality objectives for priority pollutants have also been established by some RWQCBs in their respective water quality control plans [Basin Plans]; Basin Plans are discussed in further detail below). Federal priority toxic pollutant criteria have been promulgated for California by the USEPA in the 1992 (amended in 1995) National Toxics Rule (NTR; 40 CFR 131.36) and in the 2000 California Toxics Rule (CTR; 40 CFR 131.38). For California, the criteria in the CTR supplement the criteria in the NTR (i.e., the CTR does not change or supersede any criteria previously promulgated for California in the NTR) (SWRCB, 2000). The USEPA disseminated the CTR in order to fill a gap in California water quality standards created in 1994 with a court ruling that overturned the State's water quality control plans. Except as specified in the CTR, the federal criteria apply to all waters assigned any aquatic life or human health beneficial uses as designated in the Basin Plans. The CTR establishes ambient aquatic life criteria for 23 priority toxics, ambient human health criteria for 57 priority toxics, and a compliance schedule provision which authorizes the State to issue schedules of compliance for new or revised National Pollutant Discharge Elimination System (NPDES) permit limits based on the federal criteria when certain conditions are met (USEPA, 2010). California must use these criteria, together with existing water quality standards when controlling pollution in inland surface waters, enclosed bays, and estuaries.

Beneficial Use and Water Quality Objectives (CWA §303)

The RWQCB is responsible for the protection of the beneficial uses of waters within the San Francisco Bay region, including the Project Area. The RWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and has adopted the Basin Plan (RWQCB, 2007c) to implement plans, policies, and provisions for water quality management.

In accordance with state policy for water quality control, the RWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction (RWQCB, 2007c). The beneficial uses of any specifically identified water body generally apply to all its tributaries (RWQCB, 2007c). Beneficial uses identified for water bodies within and near the Project Area are summarized in **Table 4.10-5**. Existing and potential beneficial uses in both the Permanente Creek and Stevens Creek watersheds include cold water and wildlife habitat, fish spawning, and contact and non-contact water recreation. The Stevens Creek watershed also includes warm water habitat, fish migration, and freshwater replenishment as designated beneficial uses. The beneficial uses of groundwater in the Project Area include drinking water, industrial process and service water supply, and agricultural use.

TABLE 4.10-5
DESIGNATED BENEFICIAL USES OF WATER BODIES IN THE PROJECT AREA

Water Body	Designated Beneficial Uses
Surface Waters	
Permanente Creek	COLD, SPWN, WILD, REC-1, REC-2
Stevens Creek	COLD, MIGR, SPWN, WARM, WILD, REC-1, REC-2
Groundwater Basins	
Santa Clara Valley, Santa Clara Subbasin	MUN, PROC, IND, AGR

NOTES:
Beneficial Uses Key:
MUN (Municipal and Domestic Water Supply); PROC (Industrial Process Water Supply); IND (Industrial Service Water Supply); AGR (Agricultural Water Supply); COLD (Cold Freshwater Habitat); MIGR (Fish Migration); SPWN (Fish Spawning); WARM (Warm Freshwater Habitat); WILD (Wildlife Habitat); REC-1 (Body Contact Recreation); REC-2 (Noncontact Recreation).

SOURCE: RWQCB, 2007c

The Basin Plan also includes water quality objectives that are intended to be protective of the identified beneficial uses (RWQCB, 2007c); the beneficial use designation and the accompanying water quality objectives collectively define the water quality standards for a given water body or region. Under CWA §303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. As described above (see Table 4.10-1), existing and proposed impairments for Permanente Creek include diazinon, toxicity, and selenium. Existing impairments for Stevens Creek included diazinon and toxicity. Throughout the Bay Area, diazinon pollution of surface water is currently being addressed by a TMDL (RWQCB, 2005). For toxicity, the Basin Plan (RWQCB, 2007c) states that all waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species (RWQCB, 2007c). For selenium, the Basin Plan water quality objective is 5 µg/l (4-day average) (RWQCB, 2007c), which is the criteria promulgated in the NTR. A TMDL has not yet been established by the RWQCB for selenium.

Water Quality Certification (CWA §401)

Section 401 of the CWA requires that an Applicant for any federal permit (e.g., a CWA §404 permit) obtain certification from the state that the permitted action (e.g., discharge of fill) will comply with the other provisions of the CWA and with state water quality standards. For example, before the U.S. Army Corps of Engineers (USACE) can issue a §404 permit, it must certify, under §401, that the permitted action meets state water quality standards. For the Project Area, the RWQCB must provide the water quality certification required under CWA §401. Water quality certification under CWA §401, and the associated requirements and terms, is necessary in order to minimize or eliminate the potential water quality impacts associated with the action(s) requiring a federal permit. The Applicant would contact the relevant federal agency(s) in order to determine whether a federal permit would be required. If a federal permit is required, then the Applicant would be required to obtain water quality certification from the RWQCB. CWA §401 and §404 also are discussed in Section 4.4, *Biological Resources*.

National Pollutant Discharge Elimination System Program (CWA §402)

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a NPDES permit. In 1987, amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. In November of 1990, the USEPA published final regulations that also establish NPDES permit application requirements for discharges of stormwater from construction projects that encompass 5 acres of more of soil disturbance. Regulations (the Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES program to address stormwater discharges from construction sites that disturb land equal to or greater than 1 acre and less than 5 acres (small construction activity).

Santa Clara Valley Urban Runoff Pollution Prevention Program

The SCVURPPP is an association of 13 cities and towns in Santa Clara valley, the County, and the Santa Clara Valley Water District (SCVWD) which shares a common NPDES permit to discharge stormwater to South San Francisco Bay (SCVURPPP, 2010). In addition to the County, member agencies (co-permittees) include Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga, Sunnyvale, and the SCVWD. The program is organized, coordinated, and implemented in accordance with a Memorandum of Agreement (MOA) signed by each co-permittee (SCVURPPP, 2010). The SCVURPPP has conducted monitoring in local creeks within its program area since 2002 in order to comply with requirements specified in its NPDES permit, which was issued in 2001 by the RWQCB.

General Industrial Permit (SWRCB Order No. 97-03-DWQ)

For stormwater discharges associated with industrial activities, the SWRCB has adopted the Industrial Storm Water General Permit, SWRCB Order 97-03-DWQ (General Industrial Permit). This permit regulates discharges associated with 10 broad categories of industrial activities, including hard rock and aggregate mining. Existing operations at the Quarry, as well as those activities proposed as part of the Project, are and would be regulated under the General Industrial Permit (or an equivalent or more specific individual NPDES permit, as determined by the RWQCB). Discharges of stormwater associated with industrial activities are authorized by the

General Industrial Permit, which is issued under both State (i.e., Waste Discharge Requirements, or WDRs) and federal (i.e., NPDES) water quality regulations. The General Industrial Permit serves to cover the operational life of an industrial activity, and it requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) in order to reduce or eliminate stormwater pollutants associated with industrial activity. The General Industrial Permit also requires the development of a stormwater pollution prevention plan (SWPPP) and a monitoring program. Within the SWPPP, sources of pollutants are to be identified and the means to manage these sources to reduce stormwater pollution are to be described (e.g., best management practices [BMPs]). The General Industrial Permit also requires that an annual report be submitted by July 1 of each year. However, the RWQCB issued a letter February 18, 2011, regarding the NOV issued March 2011 and determining that the facility cannot operate under their current Industrial Storm Water Permit.

The most recent SWPPP for the Quarry, which includes a Storm Water Monitoring Program (SWMP), was submitted to the RWQCB in March of 2010 (URS, 2010). Controlling erosion and subsequent delivery of sediment to Permanente Creek is the primary focus of the SWPPP (URS, 2010). Currently, stormwater runoff is sampled at multiple locations throughout the Quarry and the results are submitted to the RWQCB on an annual basis; the sampling locations include drainage basins and channels within the Quarry (e.g., sediment basins/ponds) as well as locations within the Permanente Creek channel, including at points downstream of the EMSA.

Hazardous Materials and Spill Prevention Control and Countermeasure Plan

The Aboveground Petroleum Storage Act of 1990 requires facilities storing petroleum products in a single tank greater than 1,320 gallons, or facilities storing petroleum in aboveground tanks or containers with a cumulative storage capacity of greater than 1,320 gallons, to file a storage statement with the SWRCB and prepare a spill prevention, control, and countermeasure plan. The plan must identify appropriate spill containment measures or equipment for diverting spills from sensitive areas, as well as discuss facility-specific requirements for the storage system, inspections, recordkeeping, security, and personnel training. Other hazardous materials which are used or stored at the Quarry include motor oil (new and used), diesel fuel, and lubrication oil. All of these materials, with the exception of the Quarry diesel fuel tank, which is stored in a double walled tank in secondary containment, and the warehouse standby generator diesel fuel tank, are stored with a cover and therefore have a low-to-very low likelihood of stormwater contact (URS, 2010).

Surface Mining and Reclamation Act of 1975

Under the State of California's Surface Mining and Reclamation Act of 1975 (SMARA), all operators of surface mines in California must prepare and submit for approval by the lead agency a reclamation plan, along with financial assurances that sufficient funds will be available to accomplish reclamation (Pub. Res. Code §2770). This plan must be prepared by a mining Applicant prior to initiation of mining activities. SMARA is administered by lead agencies (most often counties or cities) and the California Department of Conservation. The County is the SMARA Lead Agency for this Project. SMARA contains a number of provisions addressing geotechnical and slope stability issues (see Section 4.7, *Geology, Soils, and Seismicity*, for further detail) as well as drainage diversion structures, waterways (14 California Code of Regulations (CCR) §3706) and stream protection including surface and groundwater (14 CCR §3710). SMARA also dictates that erosion control methods shall be designed for the 20-year storm, and shall control erosion and sedimentation. This is applicable to operations in the EMSA as well as after reclamation is complete in the EMSA (Chang Consultants, 2009a). The SMARA regulations also require reclamation plans to include performance standards for drainage and erosion to protect water quality, including streams, surface and groundwater. These performance standards must ensure compliance with the CWA and Porter-Cologne and other legal requirements (14 CCR §§3706, 3710).

SWRCB Mining Waste Management

The SWRCB has promulgated Mining Waste Management Regulations (27 CCR §22470 et seq.) that apply to all owners or operators of a waste management unit for the treatment, storage, or disposal of mining waste (Mining Unit); mining waste includes overburden and waste rock.[11] As such, Mining Units include waste piles (27 CCR §22470 (a)) and the EMSA would be considered a Mining Unit as defined in the Mining Waste Management Regulation (27 CCR §22470 et seq.). These regulations are administered by the RWQCB through the issuance of WDRs unless these requirements are waived by the RWQCB. Due to the presence of non-hazardous, soluble pollutants (e.g., selenium) (see Table 4.10-2), the overburden materials in the Project Area, which contain limestone material, would likely be categorized as Group B mining wastes as defined within these regulations.[12] Accordingly, the Applicant would be required to implement certain siting and construction standards, including peak stream flow protection, precipitation and drainage controls, and a leachate collection and removal system (LCRS). A LCRS has specific requirements that are outlined within the Mining Waste Management Regulations (27 CCR §20340 (b) through (e)).

Porter-Cologne Water Quality Control Act

Porter-Cologne (Water Code §13000 et seq.) is the basic water quality control law for California. California's water quality laws are administered by the SWRCB and locally by the nine RWQCBs, within a framework of statewide coordination and policy. The SWRCB establishes statewide policy for water quality control and provides oversight of the RWQCBs' operations. Porter-Cologne and the CWA overlap in many respects, as the entities established by Porter-Cologne are in many cases enforcing and implementing federal laws and policies. The RWQCBs implement both the Federal Clean Water Act and the State's Porter-Cologne Water Quality Act through permitting processes and the enforcement of water quality laws. In addition to other

11 Mining waste is waste from the mining and processing of ores and mineral commodities. Mining waste includes: (1) overburden; (2) natural geologic materials which have been removed or relocated but have not been processed (waste rock); and (3) the solid residues, sludges, and liquids from the processing of ores and mineral commodities (27 CCR §22480 (a)).

12 Group B mining wastes include: mining wastes that consist of or contain non-hazardous soluble pollutants of concentrations which exceed water quality objectives for, or could cause, degradation of waters of the state (27 CCR §22480 (b)). The Applicant expects the cap materials for the overburden areas to be categorized as Group C mining wastes.

regulatory responsibilities, the RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the State could cause pollution or nuisance, including impacts to public health and the environment. The responsibilities of RWQCB includes jurisdiction over discharges from mining operations.

Specific to the Permanente Quarry, the RWQCB, San Francisco Region, maintains jurisdiction over the quality of discharges from that facility. In June 2011, the RWQCB issued a Water Code §13267 Order to Lehigh that presented a comprehensive plan to address discharges from the Permanente facility so as to ensure compliance with the Porter-Cologne Water Quality Control Act, the Federal Clean Water Ac,t and applicable water quality standards. Deadlines in this Order were slightly amended via July 2011 correspondence. In accordance with this plan, process-related discharges from the Quarry were authorized in October and November 2011 by the RWQCB pursuant to the General NPDES Permit for Aggregate Mining, Sand Washing, and Sand Offloading operations, Order No. R2-2008-0011 ("Sand & Gravel Permit"). A Report of Waste Discharge was subsequently submitted to the RWQCB by Lehigh on November 30, 2011, for purposes of obtaining an individual NPDES Permit for the facility that will specifically regulate pollutants of concern, namely, selenium. The Regional Water Board is in the process of preparing and issuing that NPDES permit, and a comprehensive monitoring plan was submitted to the RWQCB by Lehigh on October 20, 2011 to support its issuance. Via this process, the discharge will be in compliance with the Porter-Cologne Water Quality Control Act, the Federal Clean Water Act, and applicable water quality standards.

Under current RWQCB requirements, the Applicant must:

- Continue to maintain and pursue all appropriate permits and authorizations through the RWQCB, including the issuance of a NPDES Permit that will reduce or remove selenium to levels consistent with all applicable Basin Plan or other water quality standards.
- Comply with requirements set forth by the RWQCB in the Water Code §13267 Order, the Sand & Gravel Permit authorizations, and in the upcoming issued individual NPDES Permit.
- Follow any directions or proposed measures imposed by the RWQCB that will improve its performance sufficiently to meet the performance criteria if annual surface water monitoring indicates that discharges from the Quarry exceed applicable effluent or receiving water limitations specified in the upcoming individual NPDES Permit.
- Maintain procedures to ensure prompt identification and repair of damage to BMPs or structural control facilities, especially after large storm events.
- Conduct routine inspection and maintenance of BMPs, structural control facilities, and outfalls. If inspections reveal that BMPs, structural control facilities, and/or outfalls are damaged, corrective actions must be implemented immediately.

Waste Discharge Requirements

Actions that involve, or are expected to involve, discharge of waste are subject to water quality certification under CWA §401 (e.g., if a federal permit is being sought or granted) and/or WDRs under Porter-Cologne. Chapter 4, Article 4 of Porter-Cologne (Water Code §§13260-13274) states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a Report of Waste Discharge (ROWD) with the applicable RWQCB. For discharges directly to surface water (waters of the United States) an NPDES permit is required, which is issued under both state and federal law. For other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the State (such as isolated wetlands), WDRs are required and are issued exclusively under state law. WDRs typically require many of the same BMPs and pollution control technologies as those that are required by NPDES-derived permits. Further, the WDRs application process is generally the same as for CWA §401 water quality certification, though in this case it does not matter whether the particular project is subject to federal regulation.

As previously described, existing operations at the Quarry, as well as those activities proposed as part of the Project, are and would be regulated under the General Industrial Permit. Discharges of stormwater associated with industrial activities are authorized by the General Industrial Permit, which is issued under both State (i.e., WDRs) and federal (i.e., NPDES) water quality regulations. As such, the Project would be subject to WDRs and regulated under the existing provisions of the Industrial General Permit (or an equivalent or more specific individual NPDES permit or WDRs, as determined by the RWQCB), and any wastewater discharges as a result of the Project would be required to be consistent with the water quality objectives defined in the Basin Plan (RWQCB, 2007c).

County of Santa Clara Plans, Policies, and Ordinances

General Grading and Erosion Control Standards

The County's policies and standards pertaining to grading and erosion control are contained in Title C, Division C12, Chapter III of the County of Santa Clara Ordinance Code. The consulting geologist shall provide verification to the County Geologist that all of the recommendations presented in the geologic investigation reports have been incorporated into the plans prior to approval of final improvement plans. The required grading would be carried out in accordance with the requirements set forth by the County Land Development Engineering Office and the County Grading Ordinance. At the time of construction, all graded areas shall be reseeded in conformance with the County Grading Ordinance to ensure that the Project would minimize the potential for erosion on the site. All other land use and engineering aspects of this Project would be conditioned by the recommendations set forth by the County Land Development Engineering Office.

As defined in the County Grading Ordinance, grading associated with surface mining and reclamation activities and covered by an approved reclamation plan is exempt for grading permit requirements.

Surface Mining Ordinance and Surface Mining and Land Reclamation Standards

The County of Santa Clara Zoning Ordinance, §4.10.370, regulates uses classified as *Surface Mining.* In addition, the County Board of Supervisors approved the Surface Mining and Land Reclamation Standards (March 30, 1993) to comply with and implement the provisions of SMARA, by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of Santa Clara County. The ordinance contains requirements for the content of a reclamation plan, outlines the review procedure, and defines mining standards. The following are applicable standards concerning water quality protection and erosion contained in the ordinance that would apply to the proposed Project:

Protection of Streams and Water-Bearing Aquifers

- Commercial excavations shall be conducted in a manner so as to keep adjacent streams, percolation ponds, or water-bearing strata free from undesirable obstruction, silting, contamination, or pollution of any kind. The objective is to prevent discharges which would result in higher concentrations of silt than existed in offsite water prior to mining operations;
- The removal of vegetation and overburden in advance of surface mining shall be kept to a minimum;
- Stockpiles of overburden and minerals shall be managed to minimize water and wind erosion;
- Erosion control facilities such as detention basins, settling ponds, (de-silting and energy dissipaters) ditches, stream bank stabilization and diking, shall be constructed and maintained as necessary to control erosion:
- The County of Santa Clara Planning Commission (Planning Commission) may restrict excavation in the natural or artificially enlarged channel of any river, creek, stream or natural or artificial drainage channel when such excavation may result in the deposit of silt therein;
- Excavations which may penetrate near or into usable water-bearing strata will not reduce the transmissivity or area through which water may flow unless approved equivalent transmissivity or area has been provided elsewhere, nor subject such groundwater basin or sub-basin to pollution or contamination;
- Maximum depth of excavation shall not be below existing streambed or groundwater table except in such cases where the reclamation plan indicates that a lake or lakes will be part of the final use of the land or where such plan indicates that adequate fill to be used to refill such excavation to conform to the approved reclamation plan. Such plan to be subject to review and approval of the RWQCB and local flood control and water district agencies prior to initiation of excavation.

Erosion and Drainage

Grading and revegetation shall be designed to both prevent excessive erosion and to convey surface runoff to natural drainage courses or interior basins designed for water storage. Lakes, ponds, streams, or other bodies of water may be created within an excavation only when created in accordance with the reclamation plan approved by the County of Santa Clara Planning Commission (Planning Commission) and after considering the recommendations of the County Environmental Health Department, SCVWD, and other affected public agencies. Final surfaces shall be treated to prevent erosion unless otherwise specifically permitted by the Planning Commission.

County of Santa Clara Drainage Manual (2007)

The *Santa Clara County California Drainage Manual 2007* (County of Santa Clara, 2007) (Drainage Manual) sets forth County administrative policy for stormwater drainage design. The Office of Development Services prepared the Drainage Manual to provide a framework for the various hydraulic and hydrologic analyses necessary to plan and design stormwater drainage and flood control facilities within the County. Consistent design and evaluation criteria for stormwater drainage systems help the Office of Development Services and other agencies review stormwater drainage and flood protection designs and impact statements for projects throughout the County, both within and outside of incorporated areas (County of Santa Clara, 2007). The Drainage Manual identifies multiple design standards, methods of analyses, and engineering tools required for the planning and design of stormwater drainage systems and flood control facilities within the County. With respect to conveyance capacities, the Drainage Manual indicates that new stormwater drainage systems and channels shall be designed to convey the 10-year storm without surcharge, and a safe release shall be provided for the 100-year flow (Chang Consultants, 2009a).

County of Santa Clara General Plan (1994)

The Santa Clara County General Plan (County of Santa Clara, 1994) identifies the following policy relevant to the proposed Project and pertaining to water quality and hydrology:

> ***Policy C-RC 20*****:** Adequate safeguards for water resources and habitats should be developed and enforced to avoid or minimize water pollution of various kinds, including: a. erosion and sedimentation; b. organic matter and wastes; c. pesticides and herbicides; d. effluent from inadequately functioning septic systems; e. effluent from municipal wastewater treatment plants; f. chemicals used in industrial and commercial activities and processes; g. industrial wastewater discharges; h. hazardous wastes; and i. non-point source pollution.

4.10.2 Baseline

The baseline established for purposes of analyzing potential impacts to hydrology and water quality reflect the conditions as they existed in June 2007, the year the first NOP of an EIR to analyze impacts of a proposed amendment of the Applicant's existing, approved reclamation plan was published. The regulatory framework described above, the physical characteristics of the site drainage, and site operations have not changed significantly since 2007 but many of the surface water and groundwater samples used the analysis of this project were obtained after 2007. However, given that overall conditions have not changed significantly since 2007, the water quality data provided by the post-2007 water samples are considered representative of 2007 site conditions and thus appropriate for this analysis.

4.10.3 Significance Criteria

Consistent with the County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Violate any water quality standards or waste discharge requirements;

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

c) Substantially alter the existing drainage pattern of a 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 sedimentation on- or offsite;

d) Substantially alter the existing drainage pattern of a 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 offsite;

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or inundation by seiche, tsunami, or mudflow.

j) Be located in an area of special water quality concern (e.g., the Los Gatos or Guadalupe Watershed);

k) Be located in an area known to have high levels of nitrates in well water;

l) Result in a septic field being constructed on soil where a high water table extends close to the natural land surface;

m) Result in a septic field being located within 50 feet of a drainage swale, 100 feet of any well, water course or water body, or 200 feet of a reservoir at capacity;

n) Conflict with Water Collaborative Guidelines and Standards for Land Uses Near Streams

4.10.4 Discussion of Criteria with No Hydrology and Water Quality Impacts

As discussed below, implementation of the Project would cause no effect on criteria b), g), i), k), l), m), or n). Because the Project could cause impacts related to the remaining criteria, they are analyzed in Section 4.10.5.

b) The Project would not substantially deplete groundwater supplies, interfere substantially with groundwater recharge, or adversely affect groundwater quality.

Groundwater at the Quarry has been altered from the pre-mining condition by the excavation of the Quarry pit. Groundwater that once discharged to Permanente Creek is now at least partially captured and flows into the Quarry pit. This condition has caused changes to the pre-mining, perennial flow condition of the creek, resulting in intermittent flow in some areas adjacent to the Quarry pit. Water that is captured by the Quarry pit is now collected and pumped back into the creek. The proposed RPA involves the backfilling of the Quarry pit to an elevation of 990 amsl. Groundwater modeling has indicated that this reclaimed condition would cause groundwater to discharge to Permanente Creek and this recharge is expected to reverse the existing intermittent flow conditions. Groundwater flow and quality are discussed further in this EIR. There are no active groundwater supply wells within the RPA area. However, groundwater modeling (Golder, 2011) indicated that the proposed Quarry operation and reclamation would not have a significant effect to groundwater levels in supply wells located along Monte Bello Ridge, approximately 1.25 miles from the center of the Quarry pit. The EIR preparers reviewed the modeling results and concur with the conclusion that operation of these wells, or any other nearby wells, would not be adversely affected by the Project.

Elevated concentrations of TDS and sulfate have also been measured in local groundwater wells, in areas just upstream of the EMSA, though overall the groundwater concentrations for these constituents generally meet or are lower than those for surface water (Table 4.10-2). The hydraulic connection between surface water and groundwater concentrations (i.e., how surface water concentrations affect groundwater concentrations, and vice versa), or an accurate estimate of background (or natural) concentrations for these constituents, cannot be established with the existing data. However, given the large size of the Santa Clara Subbasin (i.e., 240 square miles), and the subsequently broad distribution of groundwater recharge areas, constituent concentrations in surface runoff from the relatively small upper Permanente Creek watershed are likely to be readily diluted and have little influence on the overall concentrations throughout the aquifer. Further, as stated above, groundwater recharge is not recognized as a beneficial use for Permanente Creek. For these reasons, it is not expected that the Project would affect groundwater quality downstream of the Quarry.

g) Place Housing or Structures within a 100-Year Flood Hazard Area.

FEMA (2007) has defined a relatively narrow 100-year flood hazard area for Permanente Creek in the vicinity of the site. The flood hazard area extends upstream to a point adjacent to the Quarry. However, the Project would not place housing or structures within this flood hazard area. There is therefore no potential for an impact of this kind and this issue is not discussed further.

i) The Project would 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; or inundation by seiche, tsunami, or mudflow.

In general, the Project site would not be subject to any significant flood risks. There are no dams located upstream of the Project site. Further, the Project site is beyond the potential influence of seiche or tsunami events. Consequently, these issues are not discussed further. In the context of the proposed Project, a minor mudflow (or mudflow-like event, debris flow, etc.) would only result from a landslide or other type of slope failure. The potential for slope instability and failure is addressed in Section 4.7, *Geology, Soils, and Seismicity*, and is therefore not discussed further in this section.

k) The Project would not be located in an area known to have high levels of nitrates in well water.

The Project does not propose construction of groundwater wells; all other issues concerning groundwater quality are considered and fully addressed herein in the context of water quality standards and Appendix G of the CEQA Guidelines. Therefore, this issue is not discussed further.

l) and m) The Project would not result in a septic field being constructed on soil where a high water table extends close to the natural land surface, or in a septic field being located within 50 feet of a drainage swale, 100 feet of any well, water course or water body, or 200 feet of a reservoir at capacity.

The Project does not propose to construct or relocate a septic field. Therefore, this issue is not discussed further.

n) The Project would not conflict with Water Collaborative Guidelines and Standards for Land Uses Near Streams.

Other than the issues addressed below in the context of Appendix G of the CEQA Guidelines, no other aspects of the Project would conflict with the Water Collaborative Guidelines and Standards for Land Uses Near Streams. Therefore, this issue is not discussed further.

4.10.5 Impacts and Mitigation Measures

Impact 4.10-1: Post-reclamation conditions in the EMSA, WMSA, and Quarry pit would increase selenium concentrations in Permanente Creek to levels exceeding baseline conditions and RWQCB Basin Plan objectives. *(Less than Significant Impact with Mitigation Incorporated)*

As described above, the existing concentrations of a few water quality parameters, as measured within Permanente Creek, local groundwater, and wall washing samples, are relatively high within the Quarry area, and generally exceed the water quality objectives presented in the Basin Plan. Based on the existing information available, it is not clear what fraction of the elevated concentrations of some parameters could be directly attributable to existing Quarry operations, as opposed to naturally high background concentrations resulting from the mobilization of these constituents from the various bedrock units (limestone, greenstone, chert, etc.). Regardless of whether these constituents are naturally elevated, or elevated due in some part to the existing Quarry operations, activities associated with the Project could exacerbate concentrations of these constituents within surface water and, in particular, within Permanente Creek. Mining activities can result in release of metals, both because previously impermeable rocks are broken up and exposed to water, and because sulfide-containing rocks are exposed to oxygen, resulting in rapid alteration and dissolution. The samples taken from EMSA and WMSA runoff, as well as the wall washing samples, serve as surrogates for estimating the potential quality of runoff water that would be generated from the Project, particularly during the interim periods before reclamation is complete and shortly after reclamation (i.e., before establishment of the planned vegetation). The following discussion and analysis is based in large part on the site-specific water quality data summarized in Table 4.10-2.

Measured surface runoff from the WMSA and EMSA contained concentrations of iron, manganese, and nickel that are likely not above background (or natural) concentrations, or that were consistently below the water quality objectives presented in the Basin Plan. Dissolved concentrations of iron and manganese in the surface water, wall washing, and WMSA runoff samples were generally much lower than the dissolved concentrations measured in the groundwater, indicating that the surface water samples were likely lower than the background (or natural) concentrations. Further, the dissolved fractions of the total recoverable amount of nickel, iron, and manganese were very low (less than one percent) in the wall washing and WMSA runoff samples. Thus, it is unlikely that these constituents could be mobilized by surface runoff and, if so, it is likely that they would be readily sequestered in areas that tend to store and accumulate hill slope or fluvial sediments. Total nickel concentrations measured in runoff from the EMSA were similar to those measured within Permanente Creek during the same runoff event, indicating that nickel can be mobilized by surface runoff and potentially delivered to receiving waters. In all but one sample (the exception being the road runoff sample within the EMSA [EMSA 01 Road], see Table 4.10-2)[13], however, the measured nickel concentrations were below the Basin Plan objective.

Concentrations of TDS, sulfate, molybdenum, and selenium in samples from surface runoff and/or Permanente Creek are generally above the water quality objectives outlined in the Basin Plan. No surface water objectives are presented in the Basin Plan for TDS, sulfate, and molybdenum that relate to aquatic life (RWQCB, 2007c). The objectives for TDS and sulfate are based on the municipal or domestic supply, but that is not a designated beneficial use of Permanente Creek. Furthermore, both TDS and sulfate concentrations were higher at SW-1 (upstream location) than at SW-2 (downstream from the pit dewatering discharge), indicating that Quarry pit discharge water does not contribute to exceedance of the benchmarks. The only applicable objective for molybdenum is associated with agricultural supply, which also is not a designated beneficial use for Permanente Creek. Neither agricultural supply, municipal supply, nor groundwater recharge are designated as surface water beneficial uses for Permanente Creek or Stevens Creek (RWQCB, 2007c).

Measured concentrations of mercury in EMSA runoff and sometimes within Permanente Creek indicate that mercury is being mobilized and transported in surface runoff at levels that sometimes exceed the (4-day average) Basin Plan objective. Yet, unlike the case for selenium, the range of mercury concentrations in surface water samples from the creek were generally similar

[13] Surface water sample obtained from shallow, concentrated sheet flow from a Quarry road; the sample is not representative of non-road areas within the EMSA and, for this location, there are additional probable sources of metals and other inorganic constituents besides the waste rock (e.g., fluids/residues from heavy machinery and trucks).

to those measured in groundwater (except for the road runoff sample EMSA 01, see Footnote 13). Further, atmospheric deposition is a notable source of mercury in the environment and cannot be discounted as a potential source at the EMSA, Quarry pit or WMSA. As such, the concentrations of mercury measured in runoff from the EMSA and within Permanente Creek cannot be reliably distinguished from background (or natural) concentrations based on the best available information.

Mercury, which occurs naturally in the various rock types and in groundwater, meets the RWQCB Basin Plan Benchmarks for surface water in Permanente Creek apart from one isolated concentration measured at 0.07 µg/l (SES, 2011) and samples SL-23-CR and SL-26-CR, which contained mercury at 0.056 µg/l and 0.52 µg/l, respectively (see Table 4.10-2). These three concentrations only slightly exceed the 0.025 µg/l 4-day average goal and are well below the 2.4 µg/l 1-hour goal. Sampling and analysis of the overburden (non-limestone) material, which would ultimately be used as part of the reclamation cover for limestone rock, has very low total mercury concentrations, ranging from not detected to 0.16 mg/kg. In the mined limestone, the values range from 0.15 to 0.77 mg/kg, which are similar to wetlands standards (0.35 to1.3 mg/kg; Link, 1995). Surface water concentrations at the downstream surface water monitoring station (SW-2) below the Quarry are generally below the Basin Plan benchmark of 0.025 µg/l (concentrations range from 0.00133 to 0.07 µg/l, see Table 4.10-2) (SES, 2011). Considering the generally low background concentrations of mercury in the overburden, limestone material, and in surface water, and additionally, given that the low source concentrations would be further reduced through reclamation source control and dilution through the future drainage systems, mercury in the sediments migrating offsite is likely to be low.

Surface-water data indicate that levels of selenium are currently elevated in Permanente Creek adjacent to and downstream of the Quarry. The concentrations of selenium were measured within Permanente Creek, in local groundwater, from shallow concentrated surface runoff from the EMSA and WMSA, and in samples obtained from wall washing tests. The detected concentrations are relatively high within the Quarry area, and generally exceed the water quality objectives presented in the Basin Plan. The elevated levels appear to be due to selenium-containing runoff from quarry operations but could also be attributable, in part, to naturally occurring selenium from the geologic formations underlying and adjacent to the creek. It is neither possible nor necessary to know precisely what fraction of the elevated selenium concentrations could be directly attributable to existing Quarry operations, and what fraction to high background concentrations mobilized from the selenium-containing bedrock units (i.e., limestone). The samples taken from EMSA and WMSA runoff, as well as the wall washing samples, serve as reasonable surrogates for estimating the potential quality of runoff water that would be generated from the proposed Project, particularly during ongoing reclamation and shortly after reclamation before establishment of the proposed vegetation.

As discussed in Section 4.10.1, *Setting*, selenium concentrations measured at SW-1 (7.18 µg/l; the upstream Permanente Creek station) were more than an order of magnitude higher than the background sample collected from Monte Bello Creek at SW-3 (0.366 µg/l). Complete water quality results are presented in Table 4.10-2. The effect of the ongoing Quarry pit dewatering discharges on existing Permanente Creek water quality is indicated by the samples collected at SW-2 (the downstream Permanente Creek station), where selenium concentrations ranged from 13 to 81 μg/l. A Quarry pit water sample in January 2010 had a dissolved selenium concentration of 82 μg/l (Golder, 2011), indicating that dewatering is a significant contributing factor with respect to selenium concentrations in Permanente Creek.

East Material Storage Area

Stormwater runoff from the EMSA currently is collected in a series of swales and conveyed to desilting basins before being released to Permanente Creek. The average selenium concentration in water samples collected from EMSA runoff ranged between 7.2 μg/l and 43 μg/l, all exceeding the Basin Plan objective of 5 μg/l. It should be noted that in some cases, these sample results were obtained from drainage channels that were lined with selenium-containing limestone material or contained check dams constructed out of limestone material. Therefore, these sample results may not represent actual concentrations of selenium in stormwater runoff flowing solely from overburden material placed in the EMSA. Nevertheless, it is a reasonable assumption that selenium-bearing limestone materials are present within the waste materials deposited in the EMSA. Of special concern is the fine-grained (clay loam texture and contains a substantially greater amount of silt and clay) discard material from the processing activities at the Rock Plant wash plant. Limestone material is washed before processing and the byproduct of that process is a fine-grained material that is deposited by truck on the EMSA. This material may contain high grade limestone and is considered a potential source of selenium if exposed to stormwater and remobilized by runoff.

EMSA Reclamation

Reclamation at the EMSA would begin upon approval of the Project and the three subphases of its reclamation would require about 9 years for completion. As discussed in Chapter 2, *Project Description*, proposed reclamation of the EMSA would achieve final contours and establish native grass and oak woodland habitats consistent with the surrounding area and topography. Final elevations would range from about 500 feet to 900 feet amsl, and overall slope angles would not exceed 2.6H:1V. These slopes would be composed of 2H:1V slopes, interrupted by 25-foot-wide benches spaced at 40-foot vertical intervals.

In accordance with the RPA, following rough grading, the surfaces of the EMSA would be covered with a foot of run-of-mine, non-limestone material consisting of greenstone, greywacke and chert obtained from the Quarry pit area. These rock types do not contain significant amounts of leachable selenium and would therefore act as a cap to separate any reactive limestone materials from surface exposure and oxidation—the process that generates selenium in the runoff. The run-of-mine, non-limestone rock would be characterized and hauled to the EMSA reclamation sites during the remainder of mining in the Quarry pit. Overlying the one foot of non-limestone material would be six inches of topsoil blended material to serve as a growth-enhancing media installed to support vegetation.

After reclamation, the runoff in the EMSA would be routed in ditches across the slope benches to perimeter ditches and then through swales and down-drains to seven desilting basins located around the EMSA. The system of cross ditches, perimeter ditches, swales and down-drains would route flows to a final basin located at the toe of the EMSA. From this basin, flows would be released to Permanente Creek.

Once limestone materials in the EMSA are covered with run-of-mine, non-limestone rock and vegetated, and the surface water drainage and management controls in place, the concentrations of selenium entering Permanente Creek from EMSA runoff would be expected to meet Basin Plan Benchmark values because the exposed limestone surfaces would be covered and runoff would occur over a non-limestone, vegetated surface. This is a reasonable prediction if the cover materials achieve the stated goal of preventing stormwater from coming into contact with reactive limestone material that could release soluble selenium. However, the performance of the non-limestone cover would be effective in reducing stormwater contact with limestone only if it is properly applied and monitored for effectiveness. Recognizing this, the potential that selenium would be released from the EMSA to Permanente Creek resulting in exceedance of Basin Plan Benchmark values is still considered to be a potentially significant impact**;** however, compliance with **Mitigation Measures 4.10-1a, 4.10-1b** and **4.10-1c**, presented below, would reduce this impact to a less-than-significant level.

West Materials Storage Area

The WMSA contains overburden material generated from the mining of the Quarry pit. While most of the material consists of greenstone (meta-volcanic), greywacke, chert and low-grade limestone, drill logs have indicated that there are buried lenses of high-grade limestone material that have the potential to release selenium if exposed and left to react with stormwater runoff. The RPA proposes to harvest this material during reclamation of the WMSA under Phase 2 of the Project. Under baseline conditions, over half of the stormwater runoff from the WMSA flows to the Quarry pit through a series of roadside drainages, which utilize check dams to control flow. The remaining stormwater runoff either infiltrates into the overburden material or runs off the WMSA to be collected in drainage channels. Some smaller areas drain north of the site from the West Material Storage Area; flows from these areas do not enter Permanente Creek directly, but they are ultimately conveyed to the creek further downstream of the site where Wild Cat creek approaches Interstate 280. A roadside berm constructed on the outside edge of the access road and the inward slope of the road prevents stormwater from the WMSA from directly reaching Permanente Creek. However, there are areas along Permanente Creek (discussed in Impact 4.10-3) where pre- and post-SMARA mining related activities adjacent to the WMSA have resulted in debris flows and the discharge of boulders that allow stormwater to contact limestone and be discharged to the Permanente Creek. Water sample data are limited for the WMSA but a sample collected in July 2010 from a channel draining the WMSA had a selenium concentration of 29 µg/l. This sample was collected from a drainage channel that may have been underlain by selenium-containing limestone materials or the water had flowed through check dams constructed using the reactive limestone material. In other words, the sample may not be representative of the selenium concentration in stormwater flowing from only from overburden materials within the WMSA.

WMSA Reclamation

Ultimately, reclamation would remove the overburden material from the WMSA and the material would be placed in the Quarry pit as backfill. In most locations, the WMSA area would be graded down to reflect pre-mining contours that would expose the native bedrock (mostly greenstone). As discussed above, greenstone is not considered a source of selenium release to surface water. However, there are areas, such as smaller drainages, underlying the WMSA that have limestone material outcropping at the surface and these materials would be exposed following removal of the WMSA overburden. In areas where limestone is exposed at the surface, the RPA requires coverage with non-limestone-bearing overburden material (approximately one foot as is required at the EMSA) overlain by vegetation growth media. Removing the potential selenium source (high-grade limestone) by backfilling the Quarry pit and reclaiming the native exposures of limestone by coverage with non-limestone material would reduce the potential for elevated selenium concentrations in the stormwater runoff from the WMSA. However, as with the reclamation of the EMSA, the performance of the vegetative layers and non-limestone cover would be effective in reducing stormwater contact with limestone only if it is properly applied and monitored for effectiveness. Recognizing this, the potential that selenium would be released in stormwater from the former location of the WMSA to Permanente Creek is considered significant**;** however, **Mitigation Measures 4.10-1a** and **4.10-1b**, presented below, would reduce this impact to less than significant.

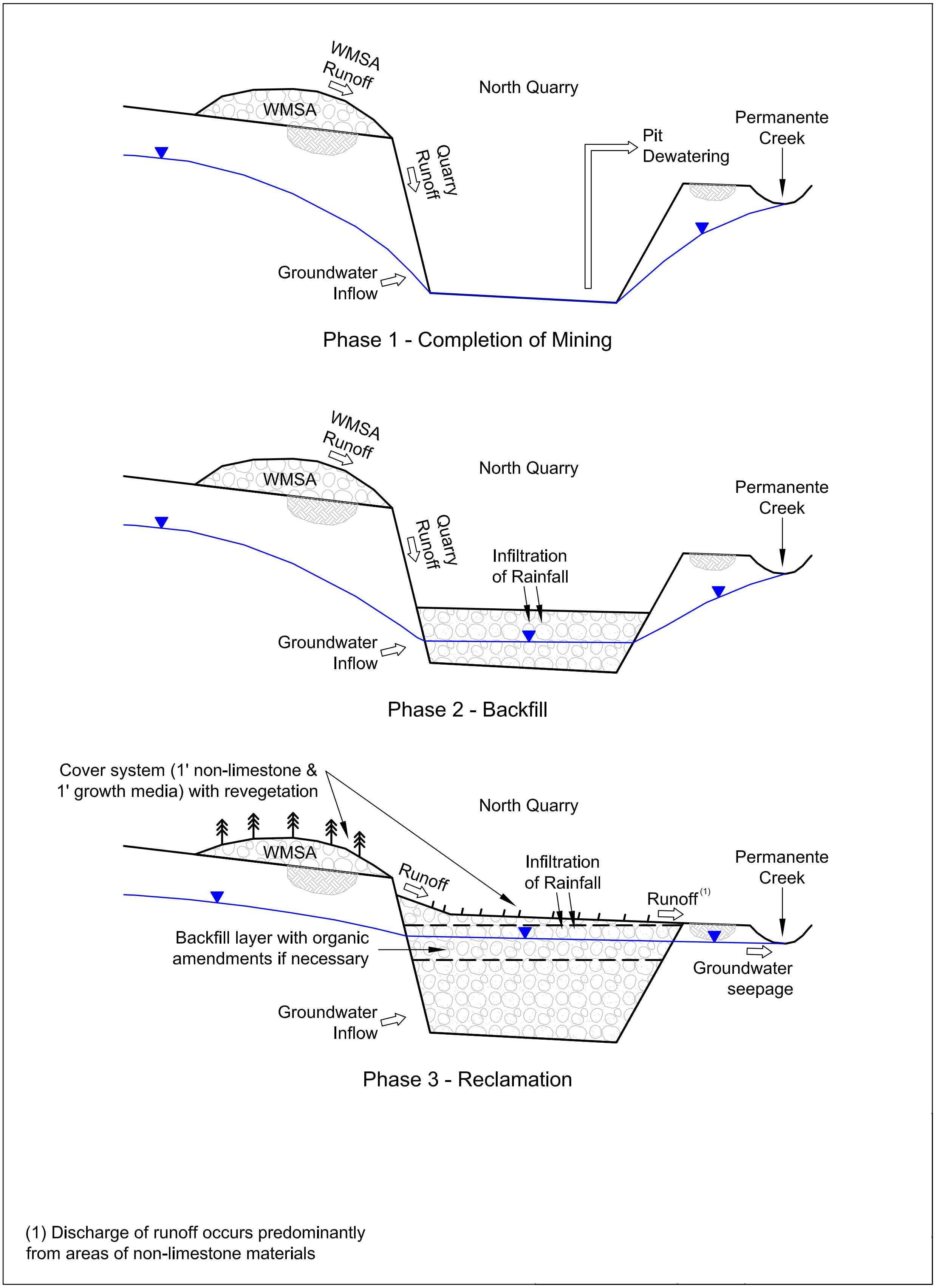
Quarry Pit

The effect of the Quarry dewatering on existing Permanente Creek water quality is indicated by the samples collected at station SW-2 and in comparison to background sampling results. A Quarry pit water sample in January 2010 had a dissolved selenium concentration of 82 μg/l (Golder, 2011), indicating that dewatering is a significant factor with respect to selenium concentrations in the creek. At SW-2, dissolved selenium concentrations ranged from 13 to 81 μg/l.

Quarry Pit Reclamation

During a period of about five years after mining operations are completed in the Quarry pit, material from the WMSA would be placed as backfill into the pit to an elevation of approximately 990 amsl. Surface water runoff and infiltrating groundwater would fill the backfilled areas. The backfill plan has been designed to ensure that the surface of the backfill will remain at or above the maximum elevation of the groundwater, thereby avoiding surface impoundments (SES, 2011). The completed surface of the Quarry pit would be sloped to facilitate drainage to Permanente Creek (**Figure 4.10-3**). Steeper slopes exposing limestone on the north side of the Quarry pit would not be covered because cover material could not be maintained on the steep slopes. These areas were considered in water quality predictive modeling as areas that could potentially contribute selenium to runoff from the Quarry pit area.

During the remaining years of mining, surface water and groundwater entering the Quarry pit would be pumped out as it has been under baseline conditions. When mining ceases, water entering the Quarry pit from surface runoff or groundwater would not be pumped, but would be left in the pit to gradually fill the voids within the backfilled material. During the interim years of



SOURCE: SES, 2011

Figure 4.10-3
Conceptual Model Water Balance
North Quarry Phases

backfilling, some accumulated water may have to be pumped out to maintain dry working surfaces for backfill. For purposes of the water balance and quality evaluations completed for the analysis, it was assumed that quarry dewatering ceases after about six months of backfilling (SES, 2011).

Quarry Pit Water Quality

The water quality evaluation completed by SES for the Quarry pit used data collected from the site by Golder Associates and these data were used to assess water quality during existing and future mining and restoration phases as proposed in the RPA. Future water-quality conditions were estimated for the Quarry pit with a mass-balance water-quality spreadsheet model for each phase of the RPA spanning a 50-year period starting with Phase 1. SES (2011) performed water balance calculations for the Quarry pit for the periods of reclamation and post-reclamation conditions, typically for periods over 20 years. This time frame includes the period before Quarry pit backfilling begins and over 10 years after. Separate water balance and water quality models were established using Excel-based spreadsheets for both groundwater in the Quarry pit and for runoff from the backfilled Quarry surface. The conceptual model used for the Quarry pit backfill and runoff projections is shown in Figure 4.10-3.

The predictive water quality model assumes that the release of constituents from rock would be similar to that observed during the leachability testing described above, and there are no geochemical interactions of waterborne constituents with the adjacent rock materials (SES, 2011). For selenium, these are considered reasonable assumptions for projecting future conditions. The projections for the Quarry pit account for conditions resulting from excavation and the availability of selenium in rock surfaces. The key water mass balance components and the water quality described for each component are provided in **Table 4.10-6**. With respect to subsurface flow discharging from the pit after reclamation, the only Basin Plan Benchmarks that were exceeded in the projections are TDS and selenium. The TDS Basin Plan Benchmark is based on municipal use, which is not an existing beneficial use of Permanente Creek. Modeling projected that TDS in surface water after reclamation would be below Basin Plan Benchmark values (SES, 2011). Therefore, this analysis focuses on selenium concentrations in the surface and groundwater.

Sensitivity Analysis

Projections from predictive models can have varying outputs depending on the input data. For this reason, SES performed a sensitivity analysis with the water quality model to determine the influence of the various water quality input parameters and climatic changes. The sensitivity analyses were performed on selenium, which is considered the key constituent of concern. The sensitivity analysis included the following:

- Increasing input concentrations from each source of surface water and groundwater inflow individually by 15%, 25%, 50%, 75%, and 100%
- Using the maximum groundwater concentration as the final long-term groundwater inflow concentration (rather than the average used in the base case)
- Reducing the monthly rainfall by 30% for a period of 8 years to simulate the influence of an extended drought.

TABLE 4.10-6
QUARRY PIT WATER QUALITY PARAMETERS

Water Balance Component	Rock Type	Water Quality									Rationale
		Antimony (µg/l)	Arsenic (µg/l)	Cadmium (µg/l)	Copper (µg/l)	Manganese (µg/l)	Nickel (µg/l)	Selenium (µg/l)	TDS (µg/l)	SO_4 (µg/l)	
Wall Runoff	Various	0.86	1.3	0.06	1.2	14	3.4	29	900	550	Dissolved wall runoff quality as characterized by WMSA runoff sampled in January 2010
Quarry Walls	Greenstone and greywacke	4.53	3.6	0.06	0.64	3.8	2.9	1.2	108	15	CAM WET test[c] (average for all tests)
Quarry Walls	Limestone	8.2	4.5	0.53	1.5	21	160	82	790	550	Quarry Pit Water
Infiltration through quarry backfill	Greenstone and greywacke	4.53	3.6	0.06	.64	3.8	2.9	1.2	108	15	CAM WET test (average for all tests)
Groundwater Inflow	Various, mainly limestone during Phase 1 before backfilling	8.2	4.5	0.53	1.5	21	160	82	790	550	Quarry Pit Water
	Gradual improvement during backfilling	Linear interpolation									N/A
	At the end of the backfill to the 990 level during Phase 3	0.23	2.34	0.06	1.66	21[a]	4.1	0.7	616	143	Average groundwater quality

a Manganese value based on Quarry pit water.
b Dissolved fraction is used because, under backfilling conditions, wall runoff will be filtered as it migrates through the backfill into the groundwater contained in the Quarry backfill.
c South Quarry results reflect data for the same geology and rock formations in the Quarry pit. The data were collected during mine exploration in areas south of Permanente Creek.

Source: SES, 2011

The sensitivity analysis indicated that runoff from the limestone walls would have the most profound influence on the water quality projections but the difference between the original input values and sensitivity assumptions were insignificant. Increasing the limestone quarry wall selenium concentration by 100 percent changed the range of output concentrations from 9 to 12 µg/l to 10 to 14 µg/l compared to the initial range of 10 to 15 µg/l (Table 4.10-7). Similarly, use of the maximum ground water concentration as the long term groundwater inflow concentration does not change the results (SES, 2011).

The sensitivity analysis indicates that lower monthly rainfall amounts increase the amount of time required for the pit to fill to its equilibrium level and increases the amount of time required to reach the long term concentration. Reducing the rainfall by 30 percent over 8 years lengthens the time required for the pit to fill with groundwater by one year but does not impact the final concentration of selenium.

Selenium has the greatest range of variation among the different sources of inflow, as shown in Table 4.10-6, and therefore, the sensitivity analyses for selenium are worst case among the parameters analyzed. The preparers of the EIR technically peer reviewed the sensitivity analysis and concurred with its methodology and conclusions.

Projected Selenium Concentrations

Groundwater and Groundwater Discharge from the Quarry Pit. Infiltrating surface water and groundwater would fill the backfilled Quarry pit and eventually reach a level where it discharges into Permanente Creek. However, the groundwater level is not expected to reach a level of discharge for an estimated 14 years after backfilling begins; during that time, groundwater and infiltrated surface water would remain contained in the backfill. Within that 14-year period, it is reasonable to expect that groundwater chemistry would equilibrate and resemble existing groundwater water quality because of the long residence time of the water under submerged conditions in the pit.

When groundwater begins to flow out of the Quarry pit backfill and into Permanente Creek, the water quality modeling projects that selenium concentrations would range between 10 and 15 µg/l. That range exceeds the Basin Plan Benchmark of 5 µg/l as a 4-day average, but is below the 1-hour maximum of 20 µg/l and the MCL (50 µg/l) (**Table 4.10-7**). However, the overall level of selenium discharged in surface water runoff to Permanente Creek may be lower during certain times of the year due to blending with creek water.

Based on the projected selenium concentrations determined by the predictive water quality model, the Applicant proposes to further reduce potential selenium levels in the Quarry pit water with in situ (in place) conditioning of the backfill with organic material. Decomposition of the organic matter enhances the necessary chemical reducing conditions needed to minimize the mobility of selenium in groundwater. As discussed in Section 4.10.1, *Setting*, dissolved selenium at the Quarry is in the oxidized form of selenate. If these oxidized forms are introduced to a sufficiently oxygen-reduced (also referred to as anaerobic) environment they will be transformed to selenide or elemental selenium. Elemental selenium is a solid, and selenide forms insoluble compounds

TABLE 4.10.7
WATER QUALITY PROJECTIONS FOR SUBSURFACE FLOW OUT OF THE QUARRY PIT

Constituent	Quarry Pit Water (after reclamation)	Basin Plan Benchmarks (Table 1)	Drinking Water Benchmarks (for comparison)
Antimony	2 – 3	–	6
Arsenic	2.0 – 3.0	150 (4d), 340 (1h)	10
Cadmium	0.15 – 0.20	1.1 (4d), 3.9 (1h)	5
Copper	1.5 – 1.6	9 (4d), 13 (1h)	1,300
Manganese[a]	15 – 20	–	50
Nickel	30 – 40	52 (4d), 470 (1h)	100
Selenium	10 – 15[b]	5 (4d), 20 (1h)	50
TDS	600 – 650	450	500
Sulfate	120 – 140	–	250

[a] Concentration projections for manganese are higher than what will be observed because manganese will not behave conservatively as assumed in the projection models.
[b] Prescribed mitigation measures are anticipated to decrease this conservative projection by a factor of 3 (i.e., to a range of 3 to 5 µg/l).

Source: SES, 2011

with iron, calcium, and other common minerals. Selenide can also form harmless volatile compounds that de-gas to the atmosphere (SES, 2011). Case histories at other mines in the United States and Canada indicate that backfilling a mine pit and saturating the material causes chemically reducing (i.e., anoxic or anaerobic) conditions that result in very low mobility of selenium (e.g., BLM, USFS, and IDEQ, 2007; Park, 2008; SAPSM, 2020; ITRC, 2011; Kirk, 2011).

Case studies have shown that chemical-reducing or anaerobic conditions can be promoted in the Quarry pit backfill by amending the upper 25 to 50 feet with organic matter. The organic matter would be combined with the backfill material during placement in the Quarry pit. Mulched green waste would likely be the preferred material due to its availability from local composting centers. The Applicant estimates that approximately 63,000 tons (about 170,000 cubic yards) of green waste would be required. The organic matter would be placed in the Quarry pit with the backfill material and heavy equipment would mix the mulch into the fill material. The addition of the organic material would take about three years.

Post-Reclamation Surface Water Runoff from the Quarry Pit. Once the Quarry pit is backfilled, surface water from much of the WMSA and Quarry pit area would infiltrate the backfill or run off surrounding surfaces and into Permanente Creek. During Phase 2, the concurrent reclamation of the WMSA would gradually incorporate reclamation stormwater best management practices (BMPs), which could reduce runoff into the Quarry pit area.

Projections of future water quality in the runoff from the reclaimed Quarry pit area are that waterborne selenium concentrations will be in the range of 2 to 4 µg/l, which is below the chronic Basin Plan Benchmark level for a 4-day average concentration. (**Table 4.10-8**). After reclamation, the quality of the Quarry pit water is expected to meet or come close to meeting the applicable

TABLE 4.10-8
PROJECTIONS OF FUTURE WATER QUALITY IN RUNOFF FROM RECLAIMED QUARRY AREA (µg/l)

Constituent	Runoff (after reclamation)	Basin Plan Benchmarks	Drinking Water Benchmarks (for comparison)
Antimony	4 – 5	–	6
Arsenic	3 – 4	150 (4d), 340 (1h)	10
Cadmium	0.05 – 0.10	1.1 (4d), 3.9 (1h)	5
Copper	0.60 – 0.80	9 (4d), 13 (1h)	1,300
Manganese[a]	4 – 5	–	50
Nickel	2 – 3	52 (4d), 470 (1h)	100
Selenium	2 – 4	5 (4d), 20 (1h)	50
TDS	140 – 180	450	500
Sulfate	30 – 60	–	250

[a] Concentration projections for manganese are higher than what will be observed because manganese will not behave conservatively as assumed in the projection models.

Source: SES, 2011

Basin Plan Benchmarks for selenium, and runoff water quality is expected to meet applicable Benchmarks. The Drinking Water Benchmarks, although not applicable to Permanente Creek surface water, are included in the table to demonstrate that the water quality will not pose a risk to human health if it were to be used for consumption (SES, 2011).

It is reasonable to assume that, if properly implemented, the use of organic material as a supplement to produce an anaerobic condition in the backfill would reduce selenium concentrations in water that would discharge from the Quarry pit after reclamation. However, in recognition of the uncertainties with predictive models, especially those that project water quality concentrations 20 years in the future, and the potential for selenium concentrations in water discharged from the site to exceed Basin Plan Benchmark values during or following reclamation, this impact is considered significant. **Mitigation Measure 4.1-1b** prescribed below would further reduce the long-term uncertainty of the predictive modeling by providing ongoing water quality monitoring and verification to ensure selenium concentrations remain below Basin Plan Benchmark values.

Mitigation Measures Identified in this Report

This report identifies additional water management, monitoring, and verification mitigation measures beyond those proposed in the RPA to ensure that post-reclamation selenium concentrations remain below Basin Plan Benchmark levels. It is anticipated that water monitoring described would be conducted as part of any additional monitoring required by the RWQCB.

The following mitigation strategy is intended reduce selenium concentrations in the surface runoff from the EMSA, the Quarry pit, and the WMSA. These measures involve 1) verification that non-limestone materials are used as the final reclamation cover, and 2) water monitoring to ensure stormwater and non-stormwater discharges do not contain selenium concentrations exceeding Basin Plan Benchmark values.

Mitigation Measure 4.10-1a: Professional Geologist Verification of Non-Limestone-Containing Material Use. A California-certified Professional Geologist shall be onsite during reclamation to verify that non-limestone run-of-mine rock is used as cover on the EMSA and WMSA. In addition, the Geologist shall observe and document activities associated with placing the final overburden on the Quarry pit (i.e., ensuring that organic material is mixed to specifications). Using visual and field testing methods, with occasional bulk sampling and laboratory analysis, the geologist shall observe and document the type of rock placed over the limestone-containing material during reclamation activities. The geologist shall inspect and document whether limestone is present at the source area (Quarry pit and WMSA), whether limestone rock is transported from the source area to segregation stockpiles, and whether limestone is present within the lifts of the proposed 1-foot layer of run-of-mine cover rock (in the EMSA, WMSA, and Quarry pit). Inspection involves observing the excavation, hauling, stockpiling, and placement of the non-limestone cover material, performing a visual assessment of the rock, and conducting random spot sampling and field testing of suspect rock fragments. If observation, field testing, or laboratory analysis indicates that significant amounts of limestone are intermixed with the supposed non-limestone cover material, the geologist shall document its presence, temporarily halt fill operations, and notify the County Planning Office and field superintendent. Once notified, the Applicant shall remove the limestone-containing materials and then perform verification field sampling in addition to laboratory verification.

Mitigation Measure 4.10-1b: Verification and Water Quality Monitoring. The Applicant shall implement the following water monitoring and verification program within 90 days of Project approval and continue the program throughout the backfilling and reclamation phases and for 3 years following completion of reclamation. As part of this program, the Applicant shall:

- Collect quarterly Quarry pit water samples and analyze for general water chemistry and dissolved and total metals, including selenium.
- Perform quarterly electrical conductivity and pH measurements of the Quarry water.
- Measure and record daily volumes of any water that is pumped from the pit area.
- Conduct annual seep surveys in March or April of each year within the Quarry pit. Any seeps identified shall be sampled for general water chemistry and minerals and dissolved metals, and the seep flow rate shall be estimated.
- Perform routine testing of each of the various rock types that comprise the overburden to further characterize bulk and leachable concentrations of key metal constituents (selenium in particular). Such testing shall be performed until the average concentrations and the variability within a rock type is no longer changing significantly as new data are gathered.
- Sample and test runoff from the EMSA and WMSA throughout and following reclamation to confirm the concepts and closure plans (i.e., that cover with non-limestone material and revegetation results in runoff water quality that meets Basin Plan Benchmarks and all other applicable water quality standards). Stormwater runoff monitoring and sampling shall be conducted following the placement and final

grading of the 1-foot run-of-mine non-limestone cover material to ensure that surface water discharging from this cover does not contain selenium at concentrations exceeding Basin Plan Benchmark values. Three rounds of representative surface water samples shall be collected and analyzed to verify rock cover performance prior to the placement of the vegetative growth layer.

- The data obtained through this mitigation measure shall be used to reevaluate the water balance components such as runoff and groundwater inflow and the water quality associated with these within the last five years of active mining. Based on the results of any refined water balance and water quality projections, the Applicant shall also review and refine the water management procedures.

- Reclamation of the Quarry Pit, EMSA, and WMSA areas shall not be considered complete until 5 years of water quality testing as described above demonstrate, to the satisfaction of the Director of Planning and Development, that selenium in surface water runoff and any point source discharges has been reduced below all applicable water quality standards, including Basin Plan Benchmarks.

Significance after Mitigation: As discussed in detail in the Regulatory Framework section, above, under the current requirements from the RWQCB, the Applicant must continue to maintain and pursue all appropriate permits and authorizations through the RWQCB including the NPDES Permit to reduce selenium. In addition, the Applicant must comply with requirements set forth by the RWQCB in the §13267 Order, the Sand & Gravel Permit authorizations, and in the upcoming issued individual NPDES Permit. The Applicant must sample as directed by the Sand & Gravel Permit authorizations and in the upcoming issued individual NPDES Permit. Finally, the Applicant must maintain procedures to ensure prompt identification and repair of damage to BMPs or structural control facilities, especially after large storm events.

In addition to these established regulatory requirements to protect surface water quality, implementation of Mitigation Measures 4.10-1a and 1b would: 1) ensure that the non-limestone material placed as cover over the EMSA and WMSA consists of documented non-limestone material, 2) verify the effectiveness of the stormwater quality controls throughout and after reclamation to ensure that proposed cover systems are adequately shielding limestone materials from surface exposure and preventing the discharge of selenium in concentrations exceeding applicable water quality standards, and 3) provide data to refine and re-evaluate water quality projections before reclamation is complete. The required regulatory measures and the prescribed mitigation measures would reduce the uncertainty in the water quality projections and provide a metric to manage stormwater quality and reduce potential discharges of selenium to Permanente Creek. These mitigation measures would reduce the impact to less than significant.

Impact 4.10-2: Interim reclamation activities within the Project Area would contribute concentrations of selenium, Total Dissolved Solids (TDS), and sediment in Permanente Creek. *(Significant and Unavoidable Impact)*

After approval of the RPA, reclamation would begin at the EMSA and would continue for an estimated 20 years until the final reclamation is complete at the WMSA and Quarry pit.

Reclamation activities would be most pronounced in the EMSA, WMSA, and Quarry pit but would also occur to a lesser degree at the Crusher/Quarry Office Area, Surge Pile, and Rock Plant. In addition, reclamation activities at the Permanente Creek Reclamation Area (PCRA) would be implemented during Phase 1 and Phase 2 of reclamation. During the estimated 20 years of reclamation activities, the RPA area has the potential to deliver selenium-bearing stormwater and sediment to Permanente Creek. Reclamation phasing and proposed activity in each of the RPA areas are discussed below.

EMSA

The primary reclamation activity at the EMSA would consist of grading and recontouring. Placing the final cover with non-limestone run-of-mine materials would require stockpiling and hauling. During the interim period while reclamation is under way, limestone-bearing rock, fine grained, wash material deposited from the rock plant, and other fine to coarse-grained material within the EMSA would be disturbed and exposed to stormwater and wind erosion.

Quarry Pit

Reclamation by backfilling would commence in Phase 2. The Quarry pit would continue to act as a catch basin for the surface water flowing off the WMSA and surrounding areas. Considering that reclamation of the Quarry pit primarily involves backfilling a closed basin, the potential for selenium-bearing stormwater and sediment to be released to the Permanente Creek is less than the other areas. However, selenium-bearing water would likely be released when the pit requires occasional dewatering during backfilling operations.

WMSA

The WMSA would continue to receive waste material from the Quarry pit and elsewhere on the Quarry property until reclamation of the WMSA begins in Phase 2. During the interim period before reclamation begins at the WMSA, which could be at least 10 years, the WMSA would essentially remain as it is under baseline conditions. Under these conditions, stormwater runoff is collected in drainages that are conveyed to the Quarry pit. In certain areas, especially on the north end of the WMSA, stormwater runs off the WMSA and is ultimately conveyed to the creek further downstream of the site where Wild Cat Creek approaches I-280. After reclamation commences at the WMSA, material would be used to backfill the Quarry pit.

Crusher/Quarry Office Area

Stormwater and sediment from the Crusher/Quarry Office area would continue to occur as it has under baseline conditions until Phase 3 when the area undergoes reclamation. During reclamation, finish grading would disturb soil, resulting in temporary stockpiles requiring Best Management Practices (BMPs) to mange runoff and control erosion. Stormwater runoff and erosion control measures would be required until a growth medium erosion control measures are installed and reseeding and planting activities are complete.

Surge Pile

Reclamation of this area would occur in Phase 3 and would require the excavation and removal of the Surge Pile. Excavation and final grading in this area could result in exposed disturbed areas that have the potential to discharge sediment offsite to Permanente Creek. Temporary BMPs, as presented in the RPA, would be installed during activities to control including silt fences, and hydroseeding.

Rock Plant

Reclamation of the Rock Plant in Phase 3 would require finish grading, application of growth medium, installation of erosion control measures, and reseeding and planting activities. Limited ground disturbance is anticipated in this area and temporary BMPs would be implemented as necessary.

Impact Discussion

The RPA would span a period of about 20 years and during that time, many areas within the RPA would undergo active ground disturbance by excavation, grading, stockpiling, hauling and conveyor operation. Areas not undergoing active reclamation work would be temporarily idle (i.e. stockpiles, temporary working slopes, unused conveyors). Through the duration of reclamation, both active and inactive areas have the potential to produce runoff, be subject to erosion, and discharge sediment to Permanente Creek and, as in the case of the WMSA, to Wild Cat Creek from the tributary at the north end of the WMSA. Depending on the location, some of the stormwater runoff generated from these areas could contain selenium. While the RPA indicates that temporary sediment control BMPs would be implemented as needed in accordance with the drainage plan and current SWPPP, the need for more rigorous control would be necessary. Therefore, because interim reclamation conditions could introduce sediment, waterborne selenium, and TDS into the drainage channels, desiltation basins, and potentially, Permanente Creek, this impact is considered significant.

Mitigation of this impact requires aggressive use of interim BMPs to protect areas that are disturbed, temporarily inactive, and partially reclaimed from stormwater runoff and erosion. The performance of these measures would be evaluated by regular surface water quality monitoring. If surface water monitoring indicates that there is selenium, elevated TDS, or excessive sediment in the runoff, the source of these pollutants would be evaluated and appropriate BMPs could be implemented. During reclamation, stormwater from the Quarry pit area and a portion of the stormwater runoff from the WMSA would flow into the Quarry pit, be collected and eventually discharged to Permanente Creek. Stormwater containing selenium in the EMSA could also discharge to Permanente Creek. Therefore, the following mitigation measures are proposed.

> **Mitigation Measure 4.10-2a: Interim Stormwater Control and Sediment Management.** The Applicant shall implement the following stormwater and sediment management controls in addition to general BMPs required by the SWPPP in active and inactive reclamation areas throughout the duration of the Project. The Applicant shall:

- Segregate limestone materials from the non-limestone materials (breccia, graywacke, chert, and greenstone) by way of operational phasing to ensure that non-limestone materials are placed beneath and are covered by non-limestone materials. A California Professional Geologist shall oversee stockpiling, segregation, and placement of non-limestone materials.

- Stabilize inactive areas, such as temporary stockpiles or dormant excavations that drain directly or indirectly to Permanente Creek using an appropriate combination of BMPs to cover the exposed rock material, intercept runoff, reduce its flow velocity, release runoff as sheet flow, and provide a sediment control mechanism (such as silt fencing, fiber rolls, or hydroseeded vegetation). Standard soil stabilization BMPs include geotextiles, mats, erosion control blankets, vegetation, silt fence surrounding the stockpile perimeter, and fiber rolls at the base and on side slopes.

- Temporarily stabilize active, disturbed reclamation areas undergoing fill placement before and during rain events expected to produce site runoff. Stabilization methods include combined BMPs that protect materials from rain, manage runoff, and reduce erosion. Reclamation activities involving grading, hauling, and placement of backfill materials cannot take place during periods of rain.

- In areas such as the WMSA where fill slopes are steep and composed of loose material, controls shall be in place to prevent material from sloughing off into the PCRA and Permanente Creek Area. These controls shall include debris/silt fencing placed on outer edge of grading and excavation operations back-sloping excavations to prevent grade slope towards the creek, operations buffer areas that require the use of smaller grading equipment, temporary berms along the outer extent of operations closest to the creek, operator training regarding the prevention of triggering debris slides.

- Cover active haul roads with non-limestone materials where exposed limestone surfaces are present. Roads that undergo dust control by watering must have fiber rolls or equivalent runoff protection installed along the road side to reduce runoff and avoid drainage to Permanente Creek.

- Divert all runoff generated from disturbed active and inactive reclamation areas to temporary basins, the Quarry pit, or temporary vegetated infiltration basins and kept away from drainage pathways entering Permanent Creek. To the extent possible, drainage of the non-limestone materials shall be diverted directly to sediment control facilities and natural surface drainages.

- Install up-gradient berms where limestone fines or stockpiles are placed, to protect against stormwater run-on, and install ditches and down-gradient berms to promote infiltration rather than run-off.

- Replace the limestone rock and materials that are currently used in the existing BMP ditches and cover or otherwise separate runoff from limestone rock in the existing sediment pond embankments.

- Cover large limestone surfaces that would remain exposed during the rainy season with interim covers composed of non-limestone rock types.

- Inspected and maintain BMPs after each qualifying storm event (minimum of one-quarter inch of rainfall as measured by onsite device) to ensure their integrity.

- Reconstruct or reline all existing stormwater conveyances and check dam structures that are constructed or lined with limestone rock using non-limestone material (greenstone, breccias, greywacke, metabasalt), available at the Quarry.
- Regularly inspect all stormwater and erosion controls, especially before and following significant run-off-producing rain events.
- Provide adequate erosion control training to all equipment operators, site superintendants, and managers to ensure that stormwater and erosion controls are maintained and remain effective.
- Ensure that all stormwater, erosion, and sediment control BMPs are approved by the California Stormwater Quality Association (CASQA) and are installed, inspected, maintained, and repaired under the direction of a certified erosion control specialist.

Mitigation Measure 4.10-2b: EMSA Interim Stormwater Monitoring Plan. The Applicant shall develop a stormwater sampling plan that would supplement preexisting surface water monitoring required by General Industrial Storm Water and Sand and Gravel NPDES Permit and be designed specifically to monitor surface water during reclamation activities in active and inactive excavation and backfill areas. The purpose of this plan is to evaluate performance of temporary BMPs and completed reclamation phases at the EMSA and to identify areas that are sources of selenium, sediment, or high TDS. At a minimum, the plan shall require the Applicant to inspect BMPs and collect water samples for analysis of TDS and metals, including selenium, within 24 hours after a storm event and sample non-stormwater discharges when they occur. If elevated selenium, sediment, or TDS is identified through sample analysis, the Applicant shall identify the source and apply any new or modified CASQA-approved standard BMPs available. BMPs that show sign of failure or inadequate performance shall be repaired or replaced with a more suitable alternative. Following implementation, the Applicant shall re-test surface water to determine the effectiveness of such modifications, and determine whether additional BMPs are necessary.

Significance after Mitigation: Implementation of Mitigation Measure 4.10-2a would establish additional BMPs to ensure that over the 20-year duration of the Project, a rigorous stormwater and sediment control implementation plan is developed to reduce the potential for stormwater runoff to deliver sediment and selenium to Permanente Creek. Mitigation Measure 4.10-2b develops a specific stormwater monitoring plan that would monitor the effectiveness of the interim BMPs and completed phases of reclamation and requires the Applicant to repair sources of selenium runoff, excessive sediment, and TDS. Although implementation of this mitigation is expected to reduce selenium-containing runoff, sediment, and TDS to acceptable levels, there is insufficient evidence at this time regarding the efficacy of these measures. Therefore, additional mitigation was evaluated to determine whether any available water treatment technologies could address this issue.

There are commercially available treatment technologies that have been demonstrated to remove selenium and that can effectively and consistently reduce selenium levels to below 5 µg/l (4-day basin Plan Benchmark). These technologies include ferrihydrite adsorption (iron co-precipitation), ferrous hydroxide, ion exchange, or fluidized cell reactors. However, these systems can be very costly. A cost estimate for a water treatment system sized to handle the flows from the WMSA, Quarry pit, and EMSA was developed. The system was estimated to have a total installed cost of approximately $86 million, and to cost approximately $2.8 million per year to operate and maintain (Sandy, 2011).[14] Due to the high estimated costs, this potential mitigation was determined to be infeasible. As a result of these factors, the County has determined the impact to water quality in Permanente Creek from selenium runoff would be significant and unavoidable during the interim period until final reclamation is completed.

Impact 4.10-3: The Permanente Creek Reclamation Area (PCRA) reclamation activities would contribute concentrations of selenium, Total Dissolved Solids (TDS), and sediment in Permanente Creek. *(Less than Significant Impact)*

Sediment yield downstream from Permanente Creek has been estimated to be chronically about 3.5 times higher than it would be under natural basin conditions (Nolan and Hill, 1989), potentially contributing to flooding and other adverse effects downstream, and potentially compromising downstream beneficial uses as established in the Basin Plan. Currently, pre- and post-SMARA slopes within the PCRA are eroding into Permanente Creek. In addition, the pre- and post-SMARA slopes and mining disturbances with the seven areas of PCRA areas may be delivering selenium and high TDS to Permanente Creek.

The remedies and treatments in the RPA include improving slope conditions, stabilizing slopes, reconditioning and installing drainage basins, and installing BMPs to control sedimentation and run off. The actions proposed for the PCRA would stabilize slopes adjacent to the creek, remove active sources of selenium (i.e., removal of limestone boulders) and TDS, revegetate eroded soil areas, remove in-stream improvements, and regrade and restore the creek within several reaches. The proposed instream restoration work that would be required would be conducted during periods low stream flow to avoid adverse impact to water quality. The instream work, such as removing boulders, would be temporary and would not permanently alter the flow of the creek. Best Management Practices, such as silt fencing, temporary coffer dams, ground covers for erosion protection, and immediate replacement of scarified areas would be used to reduce disturbance of creek sediments thus reducing the possibility for water quality degradation. Because these actions would be an overall improvement to the hydrologic regime along Permanente Creek and would result in less erosion and greater long term slope stability, this impact is considered less than significant.

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[14] This treatment system assumes treatment of the selenium primarily in the form of selenate as well as treatment to meet conventional pH, D.O., BOD, and TSS discharge limitations. These are Class 5 cost estimates (+100%, -50%) as defined by the Association of the Advancement of Cost Estimating International, and include a 25 percent contingency. The cost estimates also assume that stormwater detention facilities would be constructed to divert and equalize the runoff into a storage impoundment, thereby resulting in an equalized flow of 8 cfs or 3,590 gpm and limiting the size of the treatment system.

Impact 4.10-4: The Project would alter the existing drainage pattern of the site, which could result increased stormwater runoff rates and on- or offsite flooding. *(Significant and Unavoidable Impact)*

The County of Santa Clara requires that new storm drain systems and channels be designed to convey the design 10-year flow without surcharge and that a safe release be provided for the design 100-year flow. SMARA requires that erosion control methods be designed for the 20-year storm. The County Drainage Manual provides parameters for the 25-year event but not for the 20-year event. The 25-year event was analyzed in the Applicant's Drainage Report (Chang Consultants, 2011) to satisfy the requirement for the 10-year and 20-year events. The results of the hydrologic analyses in the Drainage Report are consistent with the Santa Clara County Drainage Manual, the SCVURPPP C.3 Stormwater Handbook (SCVURPPP, 2004), and SMARA.

Permanente Creek is known to have flooding problems downstream of the Quarry. Adjacent to Permanente Road along the existing Aluminum Plant, Permanente Creek is mapped as a Zone AE Special Flood Hazard Area (SFHA) with base flood elevations (BFEs) defined in a detailed flood insurance study. This area is shown on Figure 4.10-1. The effective Flood Insurance Study for Santa Clara County dated May 18, 2009 identifies the drainage area "downstream of Permanente Road" (the upstream end of the FIRM study) as 3.40 square miles and the 100-year flow at this location as 1,480 cubic feet per second (cfs).

Chang Consultants, in a letter dated December 16, 2011 discussed further review of the FEMA flood values and handling of the Quarry area in the FEMA Flood Study. Additional analyses presented with this report support the position that the increased flows to Permanente Creek resulting from the Project would not increase 100-year flows above the FEMA flows, and that the FEMA Study did not include the storage effects of the Quarry pit. The Santa Clara Valley Water District (SCVWD) is currently working on flood control improvements for Permanente Creek downstream of the Project. The 100-year design flow being used by SCVWD for Permanente Creek includes detention in the Quarry pit as the existing condition (SCVWD, 2011).

Under existing conditions, the Quarry pit captures drainage from 361.5 acres, which includes the Quarry pit and about 60 percent of the WMSA. Pit water is pumped to Permanente Creek at an approved maximum discharge of 4.5 cfs per the NPDES permit. This condition is proposed to continue during Phase 1 of the RPA, and then discontinue during Phase 2, when the Quarry pit is backfilled, and during Phase 3, when final reclamation is completed. The Quarry pit will continue to capture drainage until it is backfilled, and thus the effect to downstream flooding during Phase 2 is similar to the baseline condition. After the Quarry is backfilled, the Quarry floor is proposed to drain to Permanente Creek. A desiltation basin is proposed to be installed to detain runoff from the Quarry floor prior to conveying it to the creek. The proposed desiltation basin would be sized to meet County and SMARA standards but it is not proposed to function as a detention basin and mitigate stormflow increases to Permanente Creek. The 100-year discharge to the Quarry floor was calculated in the Drainage Report at 235 cfs for the proposed reclaimed condition in Phase 3. Without detention, this peak flow would discharge to Permanente Creek and constitute a 230.5 cfs increase from the approved maximum discharge of 4.5 cfs under existing conditions This magnitude of increased run-off from the site would result in potential downstream flooding, hydromodification effects along Permanente Creek, and potential adverse flow effects at the Permanente Diversion structure. Considering the potential impacts on downstream, offsite drainage, under the current RPA, this impact is considered significant.

The severity of this impact would be reduced and the impact could be avoided by implementing the following mitigation measure, if it is deemed feasible.

> **Mitigation Measure 4.10-4: Construction of Onsite Detention Facility.** The Applicant shall design and construct detention facilities that would 1) manage increased runoff caused by the reclaimed Quarry pit, 2) reduce excessive discharges to Permanente Creek, and 3) develop the capacity to detain and release the 100-year flow using onsite detention ponds while optimizing groundwater infiltration. The final drainage design shall ensure that offsite, downstream flows would not cause an increased flooding potential or lead to hydromodification effects. In addition to the detention facilities for the Quarry pit, the Applicant shall ensure that the desiltation ponds proposed in other smaller project areas such as the EMSA, are engineered to function as detention basins and manage 100-year peak flow to the extent practical. The Applicant shall also consider a broader watershed approach and consult with SCVWD on ways to detain peak flows offsite in relation areas of existing flooding and to the current SCVWD flood control improvement project.

Significance after Mitigation: Implementation of Mitigation Measure 4.10-4 would provide the necessary facilities to reduce offsite stormwater discharge to Permanente Creek during the 100-year storm event. However, as of the time that this EIR was published, it is unknown if a basin or other detention measure of sufficient size could be feasibly constructed onsite to reduce this impact to less than significant levels. If this is not determined to be feasible, the impact would remain significant and unavoidable.

Impact 4.10-5: Groundwater discharge from the Quarry pit after backfilling and reclamation is complete would adversely alter surface water flows to Permanente Creek. ***(Less than Significant Impact)***

The Quarry pit currently captures groundwater that would potentially discharge to Permanente Creek. After entering the Quarry pit, the water is pumped back to the creek via a detention basin up to a maximum capacity of 1,150 gallons per minute (gpm) or 2.56 cubic feet per second (cfs); 4.5 cfs is the maximum discharge allowed and the pumping capacity. This flow occurs throughout the year and increases dry-season baseflow in Permanente Creek downstream. Upstream of the discharge, the stream currently dries up adjacent to the Quarry pit during the dry season. Further upstream, beyond the influence of the Quarry pit, it reportedly flows year-round.

Permanente Creek is at an elevation of 1,000 to 1,100 feet above mean sea level (amsl) adjacent to the Quarry pit. Analysis by the Applicant’s engineer, Golder Associates, predicts that additional groundwater capture would occur as the Quarry pit is deepened from its current elevation of 750 to 440 feet amsl, during Phase 1 of the revised RPA. Deepening the Quarry to 440 feet amsl would increase the groundwater inflow into the Quarry pit by a predicted 60 gallons per minute (gpm).

The operation and reclamation of the Quarry pit is not predicted to have a measurable effect on groundwater discharge to Monte Bello Creek and to the upper reaches of Permanente Creek. However, it is estimated that a decrease in groundwater discharge to the middle reach of Permanente Creek (i.e., adjacent to the Quarry) of 0.1 cfs (40 gpm) would occur as Quarry pit excavation approaches the 440 foot amsl elevation. When this occurs, the creek reach adjacent to the quarry areas would continue to dry back; this dry back would potentially expand longitudinally and for a longer time during the dry season (Balance Hydrologic, 2011). Once the Quarry pit is reclaimed and fully backfilled, then the middle reach of Permanente Creek would receive about 0.5 cfs (206 gpm) more groundwater discharge than under current conditions. Golder's analysis predicts that groundwater capture would decrease and ultimately cease as the Quarry pit is backfilled during Phase 2 and 3 of the revised RPA. As the quarry areas are reclaimed and as pit-water discharge to Permanente Creek diminishes, the dry-season baseflow to the creek from Quarry pit dewatering would logically recede naturally to considerably lower levels than currently maintained. Considering that groundwater would be discharged to Permanente Creek from the reclaimed Quarry pit, it is a reasonable assumption that perennial or near-perennial flow would resume in the reach adjacent to the Quarry that currently runs dry. Given that Permanente Creek flows are not predicted to increase more than 1 cfs (remaining under the 4.5 cfs allowable limit), and considering that perennial or near-perennial stream flow may resume after the Quarry pit reclamation is complete, this impact is considered less than significant.

Impact 4.10-6: The Project would alter the existing drainage pattern of the site, which could result in increased stormwater ponding, accumulation of selenium, and flooding. *(Less than Significant Impact with Mitigation Incorporated)*

The water level in the Quarry pit after mining and backfilling is projected to reach a maximum elevation equal to the surface of the backfill at 990 ft amsl. This elevation represents the low-point surface water overflow to Permanente Creek. Once the groundwater reaches equilibrium, the estimated total average annual inflow of groundwater, surface water, and precipitation into the backfilled and reclaimed Quarry pit is 169 gpm (Golder, 2011). This quantity of water is expected to discharge to Permanente Creek as groundwater depending on how effectively water flows through the materials separating the Quarry backfill from the creek. However, during periods of intense rainfall or high rainfall years, the groundwater level beneath the surface of the reclaimed Quarry pit may rise above the 990-foot amsl level resulting in reduced infiltration or flooding and excess stormwater runoff. Considering that some of the runoff originated from exposed limestone slopes on the north side of the Quarry, there is a potential for the localized accumulation of selenium containing runoff. Ponded runoff containing selenium could cause high selenium levels to accumulate in the vegetative cover layers or be discharged as surface runoff to Permanente Creek. This is considered a significant impact. Implementation of water management strategies could reduce this impact to less than significant.

> **Mitigation Measure 4.10-6: Stormwater Control to Avoid Ponded Water and Selenium Accumulation.** The Applicant shall incorporate drainage features into the final drainage design for the Quarry pit area to eliminate the potential for surface ponding on the

floor of the Quarry pit once it has reached its final elevation (990 amsl). The drainage design for the finished Quarry pit fill shall include engineered elements (e.g. conveyance channels, infiltration galleries) that facilitate groundwater recharge and percolation from limestone areas to groundwater in the Quarry backfill with the objective of accommodating high groundwater elevation without creating surface water bodies that may contain elevated levels of selenium. These measures shall be incorporated into the design of the proposed additional basin proposed for the floor of the Quarry pit once the floor is raised to its final elevation.

Significance after Mitigation: Implementation of Mitigation Measure 4.10-6 would ensure that the final designs of the final Quarry pit reclamation provides surface water controls to reduce the potential for surface ponding during large storm events thereby reducing the potential for areas of selenium accumulation in soils and vegetation. With implementation of this mitigation measure, this impact would be less than significant.

4.10.6 Alternatives

4.10.6.1 Alternative 1: Complete Backfill Alternative

Impacts to hydrology would be similar to those described under the Project analysis except that under Alternative 1, the EMSA would remain intact and not undergo reclamation until 2023, thereby extending the amount of time that limestone remains exposed and selenium is discharged to the surface water. However, by removing the EMSA altogether by 2027, there is no potential that the EMSA would leach selenium to the environment over the long term. Impacts related to interim sedimentation and potential runoff are similar to the Project but may be slightly worse because, rather than reclaiming the EMSA in place, the material would have to transported to the Quarry pit for backfilling. Excavation, hauling, and conveyors increase the potential for sedimentation, erosion, and the release of selenium, sediment and metals to surface water. Impacts associated with the WMSA would be similar to the impacts considered under the Project except that under Alternative 1, the WMSA would remain unreclaimed for a longer period of time thereby increasing the risk for selenium to be discharged to Permanente Creek. Alternative 1 would have similar impacts with regards to post-reclamation drainage. Without adequate detention, the increase in surface flows from the RPA would increase downstream flows exceeding the design of the current SCVWD flood control project located downstream and mitigation would be needed. Under Alternative 1 and similar to the Project, this impact would be significant and unavoidable unless it was determined that the Applicant could construct an appropriately sized detention basin to detain 100-year flood flows. Given that the Quarry pit would be filled under this alternative, groundwater impacts would be similar to those identified by the Project. Alternative 1 would cover exposed limestone slopes within the pit thereby reducing selenium concentrations in surface water ultimately discharging to Permanente Creek.

Alternative 1 would have similar impacts as the Project and would likely utilize similar mitigation measures to control runoff, reduce selenium concentrations, manage drainage and reduce groundwater impacts. While Alternative 1 could reduce the potential for long term selenium leaching to surface water due to coverage of exposed slopes, the drainage issues due to the larger area and higher slopes in addition to the longer interim periods that the WMSA and EMSA remain in an unreclaimed state could result in more severe impacts to water quality.

4.10.6.2 Alternative 2: Central Materials Storage Area Alternative

Impacts from Alternative 2 would be similar to those described under the Project. Alternative 2 would result in the reclamation of the EMSA sooner than under the proposed Project, thereby reducing the potential for selenium discharges to Permanente Creek from the EMSA. However, overburden placement on the CMSA would commence when the EMSA is no longer used and would continue through the cessation of mining. Grading and overburden placement activities associated with the CMSA could result in similar potential water quality impacts as would be realized with the Project. The CMSA would be reclaimed similar to the EMSA (i.e., 1-foot of run-of-mine non-limestone material with an overlying growth medium) and would be monitored for selenium, TDS and other potentially waterborne pollutants. Given the similar reclamation approach, Alternative 2 would not cause more severe impacts nor would it reduce impacts from the proposed Project.

4.10.6.3 No Project Alternative

The No Project Alternative would extend the period of time that reclamation would begin on the EMSA and WMSA, thereby increasing the potential for selenium to leach out of the stockpiled materials and enter the Permanente Creek in stormwater runoff. Discontinued use of the EMSA would lessen the water quality impacts associated with selenium because no new selenium-containing material would be added; however, water quality impacts associated with selenium leaching from existing overburden material at that location could continue without immediate reclamation. Drainage impacts (i.e. increased offsite drainage and flooding) related to Quarry infilling would be similar to those under the Project although offsite, downstream effects due to increased runoff from the site would occur several years later. Therefore, because conditions would likely exist for a greater period of time under the No Project Alternative, impacts related to drainage and water quality would, overall, be greater than those under the proposed Project.

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WRA Environmental Consultants, *Revegetation Plan Permanente Quarry, Cupertino, Santa Clara County California*, December 2011.

4.11 Land Use and Planning

This section describes the land use and planning context for the Project Area, including the associated regulatory framework. The impact analysis presents the criteria used to evaluate the significance of potential impacts on identified land use and planning considerations as a consequence of implementing the Project and alternatives and the results of the impact assessment based on the applied significance criteria.

4.11.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.11.1 provides setting information specific to land use and planning. The study area relevant to land use and planning is the Project Area, which is located in an unincorporated area of the County. Consequently, the County's land use and planning requirements and standards apply.

A portion of the Project Area also falls within the unincorporated Urban Service Area boundary of the City of Cupertino. However, because no land use permit or other approval would be required from the City Cupertino to implement the Project, the city's General Plan and Municipal Code are not described in detail in this section. Trucks delivering reclamation materials to the Project Area would traverse roadways within the municipal boundary of Cupertino and noise resulting from Project activities would be audible from residential areas in Cupertino. Accordingly, the city's ordinances are described and Project impacts relative to them are evaluated with respect to those issues (see Section 4.13, *Noise*, and Section 4.17, *Traffic and Transportation*).

4.11.1.1 Regional and Local Setting

The Project Area is located in an unincorporated area of the County west of the City of Cupertino, in the eastern foothills of the Santa Cruz Mountains. The site is bordered by large open space areas to the north, south, and west, and is in close proximity to urban areas to the east. To the south, the nearest non-Applicant-operated land use is the Stevens Creek Quarry, another mining operation. Further south and to the west of Stevens Creek Quarry are several rural residential uses and small agricultural operations, including vineyards and a winery. To the north are open space and recreational uses associated with Rancho San Antonio County Park, and to the east are the Gates of Heaven Cemetery and residential subdivisions. The closest residence is approximately 1,800 feet east of the EMSA; additional residences are located in the vicinity of the site in the cities of Cupertino, Los Altos, Palo Alto, and Saratoga, in the Town of Los Altos Hills, and in the unincorporated community of Loyola. In addition to the area where active surface mining operations occur, the Project Area includes existing, undisturbed buffer areas where no mining-related work occurs, as well as reclaimed areas.

Parks and Open Space

The Project Area is bordered to the north, west, and south by the Rancho San Antonio, Monte Bello, Saratoga Gap, Picchetti Ranch, and Fremont Older open space preserves, each of which is owned and managed by the Midpeninsula Regional Open Space District (MROSD) (MROSD, 2008). A portion of the Rancho San Antonio preserve is owned by the County Parks and Recreation Department and managed by MROSD through a lease agreement (County of Santa Clara, 2011a). Additionally, the County owns and manages Stevens Creek County Park, a 1,077-acre park adjacent to Monte Bello and Saratoga Gap open space preserves (County of Santa Clara, 2011b).

Surface Mining Operations

The County General Plan identifies eight quarrying sites in unincorporated areas of the County, including the Permanente Quarry (County of Santa Clara, 1994). The Stevens Creek Quarry is located adjacent to the Project Area to the southeast.

4.11.1.2 Regulatory Setting

State of California

Surface Mining and Reclamation Act (SMARA)

SMARA and its implementing regulations require surface mining operations to have an approved reclamation plan. SMARA states, “in judging the adequacy of a particular reclamation plan in meeting the requirements described herein and within the Act, the lead agency shall consider the physical and land-use characteristics of the mined lands and their surrounding area” (14 Cal. Code Regs. §3502).

County of Santa Clara

General Plan

The Project Area is located within lands designated in the County General Plan as Hillsides and Other Public Open Lands, as well as some unincorporated lands under County land use jurisdiction, but within the Urban Service Area boundary of the City of Cupertino (County of Santa Clara, 1994, 2008). The following land use policies contained in the General Plan are applicable to the Project:

> **Hillsides**
>
> ***Policy R-LU 16*:** Hillsides: Mountainous lands and foothills unsuitable and/or unplanned for annexation and urban development. Lands so designated shall be preserved largely in natural resource related and open space uses in order to:
>
> a. support and enhance rural character;
> b. protect and promote wise management of natural resources;
> c. avoid risks associated with the natural hazards characteristic of those areas; and
> d. protect the quality of reservoir watersheds critical to the region’s water supply.
>
> ***Policy R-LU 17*:** These lands also contain such important resources as grazing lands, mineral deposits, forests, wildlife habitat, rare or locally unique plant and animal communities, historic and archeological sites, and recreational and scenic areas of regional importance, which serve to define the setting for the urbanized portions of the County. Given the importance of these lands to the County’s overall quality of life, allowable uses shall be

consistent with the conservation and wise use of these resources and levels of development shall be limited to avoid increased demand for public services and facilities.

Policy R-LU 18**:** All allowable uses must be consistent with the basic intent of the 'Hillside' designation. The range of allowable uses shall be limited to:

a. agriculture and grazing;
b. mineral extraction;
c. parks and low-density recreational uses and facilities;
d. land in its natural state;
e. wildlife refuges;
f. very low density residential development; and
g. commercial, industrial, or institutional uses, which by their nature
   1) require remote, rural settings; or
   2) which support the recreational or productive use, study or appreciation of the natural environment.

Policy R-LU 29**:** The nature and duration of an open space or conservation easement shall be commensurate with:

a. the nature of the land use;
b. the duration to which that use has been entitled through County permitting procedures; and
c. the extent of alterations made to the natural landscape.

Policy R-LU 30**:** Land uses which do not receive a permanent entitlement should not be required to dedicate open space or conservation easements of permanent nature, unless required as a mitigation for alterations made to the natural landscape.

Other Public Open Lands

Policy R-LU 54**:** While some areas so designated may be open to public access, others are not available for access or use by the general public, except on a permit basis.

Urban Unincorporated Areas

Policy U-LM 6**:** County land use and development regulations within a city Urban Service Area shall be generally compatible with the applicable city's general plan designations and accompanying policies.

Policy U-LM 8**:** County zoning, land development, and building regulations should be designed and administered to:

a. preserve and enhance the quality of existing urban unincorporated areas; and
b. maintain community identity, through heritage resource preservation, conservation of historic structures and places, and other similar measures.

The General Plan identifies a number of Special Area Policies, of which only one is applicable to the Project Area. The West Valley Hillsides Joint Planning Review, a collaborative effort of the cities of Cupertino, Monte Sereno, Saratoga, Los Gatos and the County, has developed joint land use principles and objectives to minimize the visual impacts of hillside development and to provide mechanisms for resolution of future hillside land use issues. The primary purpose of this Special Area Policy within the County General Plan is to limit the expansion of urban development into hillside areas. However, the following policies are applicable to the Project:

West Valley Hillsides Preservation Area

Policy R-LU 197**:** The natural beauty of the West Valley hillsides area should be maintained for its contribution to the overall quality of life of current and future generations.

Policy R-LU 201**:** The West Valley cities and the County should work cooperatively to maintain the natural appearance of the West Valley hillsides and should establish procedures for resolving interjurisdictional land use issues that may arise in this area.

Policy R-LU 203**:** The County will maintain current General Plan land use designations and prohibit uses of an urban density, intensity or nature outside the long term growth boundaries and in lands within the long term growth boundaries that are outside the urban service area.

Additionally, the General Plan addresses land use and reclamation issues for mineral resource sites such as the Project Area, specifically identifying "the need to minimize adverse environmental impacts of extraction operations and transport, as well as the need to adequately plan for and execute reclamation plans for sites no longer used for extraction" (County of Santa Clara, 1994). The General Plan identifies reclamation of extraction sites after discontinuing mining activities as major aspect of environmental impact mitigation, restoring the site for appropriate subsequent uses and reducing the potential for long-term environmental damage.

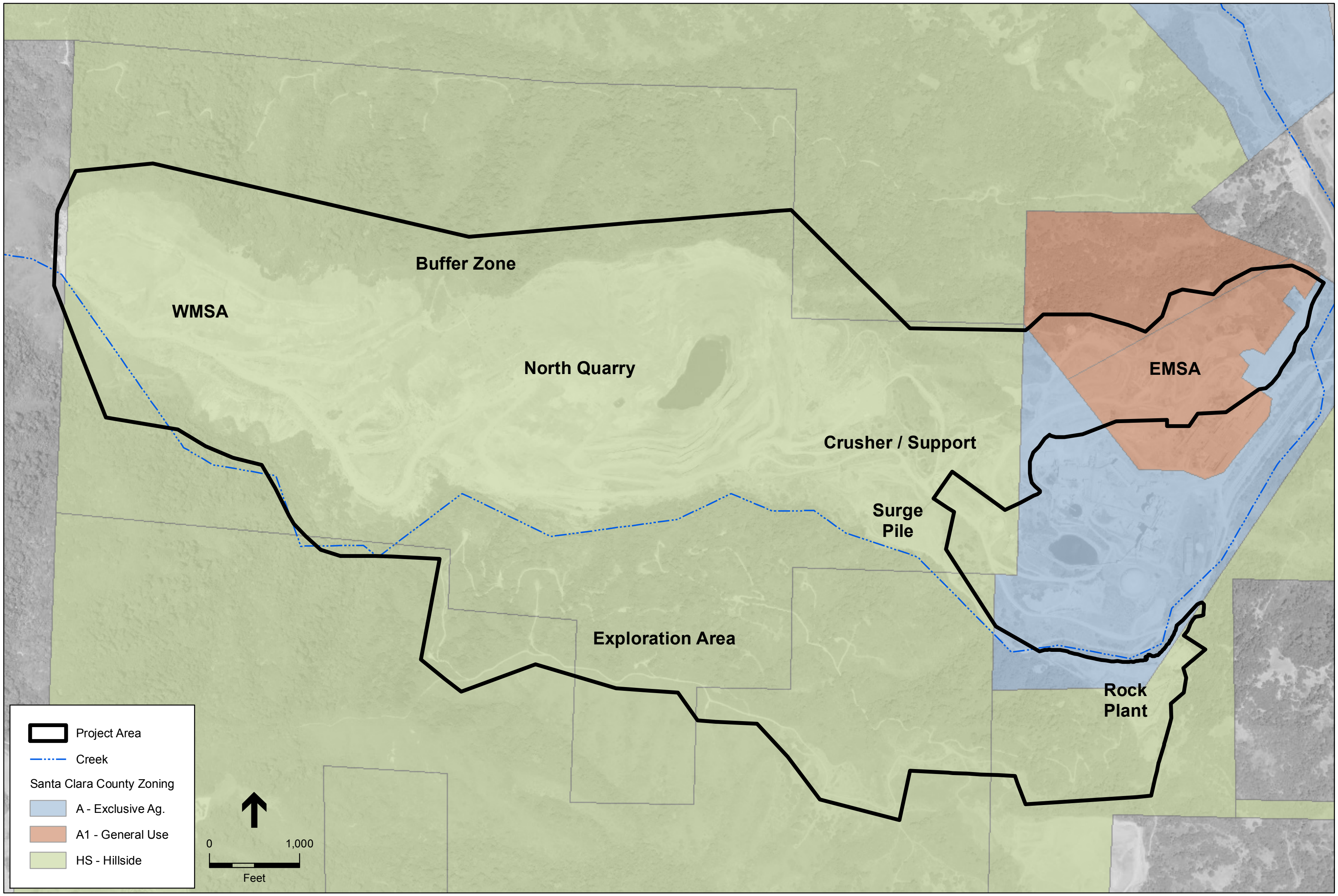
Zoning Code

The County zoning designations for the parcels within the Project Area are listed in **Table 4.11-1** and shown in **Figure 4.11-1**. Several parcel numbers are listed under multiple zoning designations because they fall partially within each designation.

TABLE 4.11-1
COUNTY OF SANTA CLARA ZONING DESIGNATIONS AT THE PROJECT AREA

Zoning Designation	Definition	Assessor's Parcel Numbers
A-d_1	Exclusive Agriculture, Santa Clara Valley Viewshed	351-10-005, 351-10-033, 351-10-038
A1-d_1	General Use, Santa Clara Valley Viewshed	351-10-037
A1-20s-d_1	General Use, Minimum Lot Size 20,000 sf, Santa Clara Valley Viewshed	351-10-037
HS-d_1	Hillsides, Santa Clara Valley Viewshed	351-09-022, 351-10-033, 351-11-005, 351-11-006, 351-11-007, 351-09-013, 351-09-025, 351-09-023
HS-d1-sr	Hillsides, Santa Clara Valley Viewshed, Scenic Roads	351-11-001, 351-11-081
HS	Hillsides	351-09-020
City of Palo Alto		351-09-003

SOURCE: County of Santa Clara, 2011a.



SOURCE: Lehigh, 2011; Santa Clara County, 2010

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 4.11-1
Santa Clara County Zoning Designations

Base Districts

Exclusive Agriculture (A). *T*he intent of this zoning district is “to reserve those lands most suitable for agricultural production for agricultural and appropriate related uses” and it applies to both agricultural and open space preserve designation in the general plan. The zoning code notes that “uses permitted as a matter of right have been found to comply with the criteria” for permitted uses in this district (County Code §§2.20.010, 2.20.050).

General Use (A1). The purpose of this district is to allow general residential and agricultural uses, and allows some other uses and developments through use permits (County Code §2.50.010).

Hillsides (HS). The purpose of this district is “to preserve mountainous lands unplanned or unsuited for urban development primarily in open space and to promote those uses which support and enhance a rural character, which protect and promote wise use of natural resources, and which avoid the risks imposed by natural hazards found in these areas.” This district is meant to apply to the Hillside designation in the general plan. The zoning code notes that this district may be a setting for mineral resource extraction (County Code §§2.20.010, 2.20.070).

Surface mining requires a use permit within each of these zones unless quarrying was established as a legal nonconforming use on the property before a use permit was first required. The County has determined that mining operations within the Project Area are a legal nonconforming use (i.e., a vested right) under this definition (County of Santa Clara, 2011b).

Combining Districts

Combining districts are applied to a collection of parcels of various base district zoning to create an overlay zone that achieves a more specific purpose based on the area’s needs.

Santa Clara Valley Viewshed (d_1). This district is intended to preserve the scenic qualities of the hillside lands visible from the Santa Clara Valley floor (County Code § 3.20.040). Scenic attributes of the Project Area are discussed in Section 4.1, *Aesthetics, Visual Resources, and Light and Glare*.

Slope-Density Combining District (20s). This district restricts the maximum density of development by requiring a minimum lot size of 20 acres, which is based on what can be accommodated using the average slope of the lot (County Code § 3.10.040). This combining district is not relevant to the Project because the Project does not propose the subdivision of lots.

Scenic Roads Combining District (sr). This district is intended to protect the visual character of scenic roads in the County through special development and sign regulations and applies to all designated scenic roads in unincorporated areas of the County. The Project’s effects on scenic roads are discussed in Section 4.1, *Aesthetics, Visual Resources, and Light and Glare.*

Surface Mining and Reclamation Ordinance

The County's Surface Mining and Reclamation Ordinance (County Code §4.10.370) was adopted in order to comply with and implement the provisions of SMARA by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of the County. The ordinance sets forth the general procedural, operational, and reclamation requirements that must be complied with, where applicable, by surface mining and production operations in the County. The Ordinance contains requirements for the content of a reclamation plan, the review procedure, and mining standards.

The County's Surface Mining Ordinance is supplemented by the County's Surface Mining and Land Reclamation Standards, which were approved by the County Board of Supervisors in 1993 and revised on August 29, 2000 (County of Santa Clara, 2000). Among other things, this document provides additional direction related to Standards for Land Reclamation. Consistent with the standards, reclamation may occur in stages to prepare the land for future open space use.

City of Cupertino

General Plan

The City of Cupertino General Plan recognizes that unincorporated areas of the County are under County jurisdiction, and therefore the City does not have regulatory authority in these areas. However, because a portion of the Project Area is on unincorporated County land within the City's Urban Service Area boundary, the City's General Plan incorporates County land use policies to establish consistency between the City's and County's Hillside area goals:

> ***Policy 2-54:*** **Santa Clara County General Plan.** Hillside policies found in the Santa Clara County General Plan adopted in 1994 are included in the Cupertino General Plan by reference and are applicable to the unincorporated hillside area. These policies are incorporated because they are consistent with hillside protection goals. If changes are proposed in the County plan that are inconsistent with the City's hillside protection goals, then the City should protest those changes as well as not incorporate them into the City's General Plan.

The general plan also notes that most of the County's hillside area policies are compatible with those of the City of Cupertino, "except for those relating to expansion of mineral resource areas, which conflict with the City's hillside protection and compatible land use policies" (City of Cupertino, 2005).

4.11.2 Baseline

The environmental and regulatory setting described above constitutes the baseline for determining the significance of potential impacts related to land use and housing. The general plan and zoning information presented in Section 4.11.1 has not changed since, and so represents, land use and planning conditions as they existed in June 2007, when the first reclamation plan amendment application was filed with the County.

4.11.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Physically divide an established community;

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;

c) Conflict with one or more of the following special policies:

   i) San Martin and/or South County;

   ii) Los Gatos Specific Plan or Lexington Watershed;

   iii) Guadalupe Watershed;

   iv) Stanford;

   v) City of Morgan Hill Urban Growth Boundary Area;

   vi) West Valley Hillsides Preservation Area; or

   vii) Water Collaborative (Guidelines and Standards for Land Use Near Streams); or

d) Be incompatible with adjacent land uses.

4.11.4 Discussion of Criteria with No Land Use and Planning Impacts

As explained below, the Project would have no impact related to criteria a), b), or c).

a) The Project would not physically divide an established community.

The closest residential areas are in the cities of Cupertino, Los Altos, Palo Alto, and Saratoga. No established community exists within the Project Area that could be physically divided by the Project, nor does the Project propose any structures, facilities, or land use changes that would create a physical or accessibility barrier within any community. The Project would have no impact related to criterion a).

b) The Project would not 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.

Even though a portion of the Project Area is within the City of Cupertino's sphere of influence, only the County has land use jurisdiction over the Project. The County's General Plan, County Code (including its SMARA Ordinance), and policies (including its Surface Mining and Land Reclamation Standards), which have been adopted to avoid or mitigate environmental effects, require a lead agency-approved reclamation plan for all surface mining activities. The Project proposes to accomplish exactly this purpose. Implementation of the Project would reclaim those portions of the Project Area that have been subjected to surface mining operations and exploratory activities to conform the affected lands to the surrounding topography in contour and vegetation, to achieve long-term slope stability, to protect water quality, and to make the affected lands suitable for future open space use. The Applicant's intention to continue surface mining operations in the Quarry pit concurrently with proposed reclamation activities would be in conformance with the allowable uses for the "Hillsides" designation listed in General Plan Policy R-LU 18, with the public access policies of the "Other Open Public Lands" designation, and with each of the applicable base zoning districts because the use of the Project Area for mineral resource extraction has been found to be a legal nonconforming use. Implementation of the Project also would be in conformance with County General Plan Policy U-LM 6 and Cupertino General Plan Policy 2-54 because it would not expand mineral resource extraction areas beyond Project Area boundaries. The Project's conformance with policies that are primarily related to aesthetic or cultural values is evaluated in Sections 4.1, *Aesthetics, Visual Quality, and Light and Glare*, and 4.5, *Cultural and Paleontological Resources*, respectively.

After final reclamation is complete, the use of the reclaimed site as open space would be consistent with the County's General Plan, zoning, and land use and planning policies for the Project Area. Because the Project would not conflict with any applicable land use plan, policy, or regulation adopted by the County for the purpose of avoiding or mitigating an environmental effect, the Project would cause no impact related to criterion b).

c) The Project would not conflict with special policies, including the San Martin, South County, Los Gatos Specific Plan, Lexington Watershed, Guadalupe Watershed, Stanford, City of Morgan Hill Urban Growth Boundary Area, West Valley Hillsides Preservation Area, and Water Collaborative (Guidelines and Standards for Land Use Near Streams) specific policies.

Of the special policies listed in criterion c), the Project would be located only within the West Valley Hillsides Preservation Area, and so no other special policies are applicable. The Project would reclaim the existing disturbance within the Project Area to conform to the surrounding topography in contour and vegetation and make the reclaimed lands suitable for future open space uses. During the continued mining operations and active reclamation activities, the Project would be in conformance with Policy R-LU 203 for the West Valley Hillsides Preservation Area because it would not require alterations to the General Plan land use designations, nor would it introduce new uses of an urban density, intensity, or nature to the Project Area. The Project's conformance with Policies R-LU 197 and 201, which relate primarily to aesthetic values, is evaluated in Section 4.1, *Aesthetics, Visual Quality, and Light and Glare*.

After Project completion, the suitability of the reclaimed site as open space would be consistent with the applicable special policies designed to preserve the natural beauty and appearance of the West Valley hillsides and limit the growth of urban uses and/or services into the hillside areas. Because the Project would not conflict with any applicable special policy, the Project would cause no impact related to criterion c).

4.11.5 Impacts and Mitigation Measures

d) Would the Project be incompatible with adjacent land uses?

Impact 4.11-1: The Project would be incompatible with adjacent land uses. (*Less than Significant Impact*)

During the reclamation process, the Project could have adverse effects on adjacent recreational, open space, and residential land uses due to visual impacts, air pollutant emissions, noise, and traffic. The specific effects of each of these impact types are evaluated, and mitigation measures are recommended to reduce Project impacts where appropriate, in Sections 4.1, *Aesthetics, Visual Quality, and Light and Glare*; 4.3, *Air Quality*; 4.13, *Noise*; and 4.17, *Transportation/Traffic*, respectively. After reclamation is complete, the compatibility of the Project Area with adjacent land uses would be improved, and no conflict would result.

4.11.6 Alternatives

4.11.6.1 Alternative 1: Complete Backfill Alternative

Alternative 1 would alter the final contours of the Project Area, but would not alter the types of uses present in the Project Area during or after reclamation. Therefore, this alternative would result in impacts on land use and planning similar to those of the Project. Because Alternative 1 would be implemented within the same Project Area as the Project, it also would have no impact related to the division of an established community. Existing land uses in the Project Area before final reclamation conditions would be achieved would consist of continued surface mining operations and reclamation activities, both of which would be in conformance with the allowable uses for the land use and zoning designations, public access policies, and mineral resource extraction policies that apply to lands within the Project Area. Similar to the Project, after final reclamation is complete, the use of the reclaimed site as open space would be consistent with the County's General Plan, zoning, and land use and planning policies for the Project Area. Alternative 1 would cause no impact related to conflicting with existing land use policies. Additionally, this alternative would not conflict with the West Valley Hillsides Preservation Area special policy, and no other special policies would apply; therefore, Alternative 1 would cause no impact related to conflicting with special policies.

Alternative 1's conformance with policies that are primarily related to aesthetic or cultural values is evaluated in Sections 4.1, *Aesthetics, Visual Quality, and Light and Glare*, and 4.5, *Cultural and Paleontological Resources*, respectively.

4.11.6.2 Alternative 2: Central Materials Storage Area Alternative

Alternative 2 would alter the final contours of the Project Area, but would not alter the types of uses present in the Project Area during or after reclamation. Reclamation of the CMSA would be in conformance with the existing land use and zoning designations applicable to the Project Area. Therefore, this alternative would result in impacts on land use and planning similar to those of the

Project. Because Alternative 2 would be implemented within the same Project Area as the Project, it also would have no impact related to the division dividing an established community. Until final reclamation conditions would be achieved, land uses in the Project Area would consist of continued surface mining operations and reclamation activities, both of which would be in conformance with the allowable uses for the land use and zoning designations, public access policies, and mineral resource extraction policies that apply to lands within the Project Area. Similar to the Project, after final reclamation is complete, the use of the reclaimed site as open space would be consistent with the County's General Plan, zoning, and land use and planning policies for the Project Area. Alternative 2 would cause no impact related to conflicting with existing land use policies. Additionally, this alternative would not conflict with the West Valley Hillsides Preservation Area special policy, and no other special policies would apply. Therefore, Alternative 2 would cause no impact related to conflicting with special policies.

Alternative 2's conformance with policies that are primarily related to aesthetic or cultural values is evaluated in Sections 4.1, *Aesthetics, Visual Quality, and Light and Glare*, and 4.5, *Cultural and Paleontological Resources*, respectively.

4.11.6.3 No Project Alternative

The No Project Alternative would extend the time period in which surface mining activities occur within the Project Area and delay final reclamation conditions by approximately 7 years, but would not alter the types of uses within the Project Area during or after reclamation. Similar to the Project, the No Project Alternative would cause no impact related to the division of an established community or to any conflict with applicable land use plans or policies, or with special policies.

The No Project Alternative's conformance with policies that are primarily related to aesthetic or cultural values is evaluated in Sections 4.1, *Aesthetics, Visual Quality, and Light and Glare*, and 4.5, *Cultural and Paleontological Resources*, respectively.

References – Land Use and Planning

City of Cupertino. 2005. City of Cupertino General Plan, Section 2 Land Use/Community Design.

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Midpeninsula Regional Open Space District (MROSD). 2008. District Map.

4.12 Mineral Resources

4.12.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.12.1 provides setting information specific to mineral resources.

4.12.1.1 Existing Mineral Resources

The primary mineral resource commodity extracted from the Quarry is limestone, which is used in the manufacturing of cement and other specialty cement products. The Applicant's operations provides more than 70 percent of the cement used in the County - and more than 50 percent of the cement used in the Bay Area (Lehigh, 2011). The geological source of the limestone is the Calera Limestone, which is present within the Permanente Terrane of the Franciscan Complex (see Section 4.7, *Geology, Soils and Seismicity*, for more information on the site's geology). Because the limestone unit is present along with other rocks, including greenstone, greywacke, chert and overburden[1], the Quarry generates large volumes of unmarketable rock material that is stored in the WMSA and the EMSA. However, some of the low-grade limestone, greenstone, and overburden deposits are of suitable quality for use as asphaltic concrete, road base, and Portland Cement concrete aggregate. Materials recovered for the purpose of aggregate base or fill material (rather than the manufacturing of cement) constitute approximately 25 percent of the total recovered by Lehigh (CDMG, 1996).

The Calera limestone formation underlying the Project Area has been mapped by the California State Mining and Geology Board (SMGB) as being within Mineral Resource Zone 2 (MRZ-2), which signifies "areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists" (CDMG, 1996). The classification of MRZs is based on guidelines adopted by the SMGB, as mandated by the Surface Mining and Reclamation Act of 1975 (SMARA). Due to the Quarry's importance in providing the region with a local supply of cement-grade limestone and aggregate resources, the limestone deposit within the site has been designated by the SMGB, after consultation with the County and other interested parties, as a mineral resource deposit of regional significance (County of Santa Clara, 1994; CDMG, 1996). This area also extends to the north flank of the ridge that generally parallels the south side of Permanente Creek, where geologic mapping of the site has indicated the existence of similar limestone deposits (Golder Associates, 2011).

Most of the area within the Project Area that is outside MRZ-2 is mapped as MRZ-4, which designates areas where geologic information does not rule out either the presence or absence of mineral resources. MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of public knowledge regarding mineral occurrence. Small areas near the eastern and southeastern boundary of the Project Area are

[1] This use of the term "overburden" is in the geological context, meaning soil and rock material that is not considered consolidated bedrock, i.e., sedimentary rock of the Santa Clara Formation, colluvium, and surface soils. Elsewhere in this EIR, "overburden" refers to any soil or rock material that is not suitable for use as limestone or aggregate.

mapped as MRZ-3, which generally is defined as areas that contain mineral deposits, but for which their significance cannot be evaluated based on data available to the CDMG (CDMG, 1996). Areas classified as MRZ-3 within the site generally correspond to areas underlain by the Santa Clara Formation, which contains sand, gravel, and conglomerate that may have value as a source of aggregate, but where insufficient data exists regarding the areal extent and quality of the resource, the thickness of the overlying soils, and the economic feasibility of its extraction.

4.12.1.2 Regulatory Setting

State of California

Surface Mining and Reclamation Act (SMARA)

SMARA was signed into law in 1975, went into effect in 1976, and has been amended 24 times since its effective date. The intent of SMARA is to: 1) assure reclamation of mined lands, 2) encourage production and conservation of minerals, and 3) create and maintain surface mining and reclamation policy (regulations). One of the principal requirements of SMARA is the preparation of a reclamation plan. This plan must be prepared by a mining applicant prior to initiation of mining activities. Reclamation plans must be approved by the SMARA lead agency (usually counties or cities) and the California Department of Conservation, Office of Mine Reclamation. The County serves as the SMARA lead agency for the Permanente Quarry.

SMARA mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the SMGB, after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Construction aggregate was selected by the SMGB to be the initial commodity targeted for classification because of its importance to society, its unique economic characteristics, and the imminent threat that continuing urbanization poses to that resource. The mineral land classification applicable to the site is the Mineral Land Classification of Portland Cement Concrete-Grade Aggregate Materials in the South San Francisco Bay Production-Consumption Region, which initially occurred in 1987 and was updated in 1996 (CDMG, 1987; CDMG, 1996). While cement-grade limestone is the primary mineral resource extracted at the Quarry, it has been designated as a mineral resource deposit of regional importance due to the quality and current production needs for Portland Cement Concrete-Grade Aggregate.

County of Santa Clara

General Plan

One of the primary goals contained within the County's General Plan is to manage and protect natural environmental resources, including mineral resource commodities. The General Plan discourages urban encroachment and urban development within areas designated as containing high priority mineral resources, and directs existing or planned mineral resources extraction operations to conduct activities in an environmentally responsible manner, including the reclamation and rehabilitation of depleted mineral extraction sites. Specific policies contained in the Resource Conservation Element of the General Plan are listed below (County of Santa Clara, 1994):

> ***R-RC 67*****:** Local supplies of mineral resources should be recognized for their importance to the local, regional, and state economy. Countywide strategies for preserving and managing mineral resources include:
>
> a) ensuring continued availability of mineral resources to meet long term demand;
> b) mitigating environmental impacts of extraction and transportation; and
> c) reclaiming sites for appropriate subsequent land uses.
>
> ***R-RC 68*****:** Current and future demand for mineral resources in the County, particularly construction aggregates, should be ensured by the following means:
>
> a) inventorying existing sites, identifying and properly designating potential new sites for protection measures;
> b) preserving deposits and access routes;
> c) increased use of recycled material; and
> d) proper development of new quarry sites.
>
> ***R-RC 69*****:** Existing sites and access routes for regionally significant resources should be protected from incompatible land uses and development that would preclude or unnecessarily limit resource availability.
>
> ***R-RC 70*****:** When making land use decisions involving mineral resource areas of state or regional significance, decisions about alternative land uses should be carefully balanced against the importance of the mineral deposits to their market region as a whole.

Implementation of the Project would be consistent with the policies identified above because it would reclaim the Project Area for an appropriate subsequent land use (open space) and otherwise would not hinder or preclude actions in furtherance of the policies.

Surface Mining and Reclamation Ordinance

The County's Surface Mining and Reclamation Ordinance (County Code §4.10.370) was adopted in order to comply with and implement the provisions of SMARA by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of the County. The ordinance sets forth the general procedural, operational, and reclamation requirements that must be complied with, where applicable, by surface mining and production operations in the County. The Ordinance contains requirements for the content of a reclamation plan, the review procedure, and mining standards.

The County's Surface Mining Ordinance is supplemented by the County's Surface Mining and Land Reclamation Standards, which were approved by the County Board of Supervisors in 1993 and revised on August 29, 2000 (County of Santa Clara, 2000). Among other things, this document provides additional direction related to Standards for Land Reclamation. Consistent with the standards, reclamation may occur in stages to prepare the land for future open space use.

4.12.2 Baseline

The baseline for assessment of mineral resource impacts is June 2007, during which mineral resource extraction operations were ongoing in the Quarry pit and unmarketable waste rock was being placed in the WMSA. The type and significance of mineral resources present at the Permanente Quarry are as described above in Section 4.12.1.2.

4.12.3 Significance Criteria

Consistent with County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state; or

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

4.12.4 Discussion of Criteria with No Impact to Mineral Resources

The Project could cause adverse impacts with respect to each criterion. Accordingly, both are analyzed below.

4.12.5 Impacts and Mitigation Measures

a) Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state; or

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact 4.12-1: The planned backfill of the Quarry pit would hinder further extraction of cement-grade limestone and aggregate resources from the Quarry pit, thereby resulting in the loss of availability of a mineral resource of state, regional, and local significance. *(Less than Significant Impact)*

Under the Project, the Quarry pit would be backfilled with approximately 60 million tons of overburden material that were generated by mining and that have been stored in the WMSA. The bottom elevation of the Quarry pit would be raised from approximately 440 feet to 990 feet above mean sea level, resulting in a maximum fill thickness of over 500 feet. Overburden also would be placed against the west wall of the Quarry pit, resulting in a gentler slope and positive drainage towards Permanente Creek. Reclamation of the Quarry pit effectively would hinder any further access to any remaining limestone deposits within the pit because the pit would be capped by hundreds of feet and 60 million tons of overburden. Access to and extraction of the limestone in the Quarry pit at a future date would be challenging from both an economic and geotechnical standpoint, due to the large quantity of overburden that would have to be removed.

However, while backfill and reclamation of the Quarry pit would hinder future extraction of the remaining limestone deposit beneath the existing pit; the Project as a whole would not reduce the overall availability of mineral resources in the Project Area for several reasons:

- ***Continued mining in the Quarry pit is becoming infeasible from a geotechnical standpoint.*** One of the goals of the Project is to address areas of slope instability on the west and north walls of the Quarry pit, which have developed as a result of steep cut slopes within weak or unfavorably oriented bedrock units. The Applicant is proposing to reclaim the Quarry pit because continued resource extraction and deepening of the pit in the long-term is likely to exacerbate these problems unless the quarry rim is widened enough to reduce overall slope angles along the quarry walls. However, the Quarry pit is bounded on the north by land under different ownership (Mid Peninsula Regional Open Space District) and on the south by the Permanent Creek corridor, each of which constrains the Applicant's ability to expand beyond the existing boundaries of the quarry rim. Due to the inability to excavate deeper without steepening the pit beyond critical slope stability thresholds and causing safety hazards, continued limestone extraction in the Quarry pit is considered infeasible in the long-term.

- ***The Project would not preclude future mineral resource extraction opportunities on the site.*** Because the Cement Plant is not within the Project Area and would not be dismantled as part of the Project, the Applicant would retain its capacity to process limestone onsite for the purpose of cement production. Further, the site contains other areas underlain by limestone deposits that could be extracted with appropriate agency approvals. Implementation of the Project does not prevent the Applicant from extracting mineral resources from the remaining areas zoned as MRZ-2 by the SMGB, which extend further south of the Quarry pit, across Permanente Creek; or from other areas zoned MRZ-3 or MRZ-4, which also would remain available for future mineral exploration and mining.

Under the SMGB's guidelines for the classification and designation of mineral lands, the status of mineral lands previously designated to be of statewide or regional significance may be terminated, either partially or wholly, by the SMGB on a finding that the designation status is no longer necessary or appropriate (CDMG, 1996). The Quarry pit has been the source of mineral extraction at the site for more than 100 years, and the reserves of limestone that feasibly can be extracted are approaching their limits. For these reasons, it is likely that the Quarry pit no longer meets the criteria for designation of lands containing significant mineral deposits and would be eligible for the termination of its designated status. Because the Applicant would retain the property, which contains other areas designated as significant mineral resources, and would retain its ability to process them; the impact of the Project on mineral resources of regional and local significance is less than significant.

4.12.6 Alternatives

4.12.6.1 Alternative 1: Complete Backfill Alternative

Under Alternative 1, overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities. From the perspective of mineral resource availability, Alternative 1 would result in somewhat less impacts than the Project because relocation of the overburden materials stored in the EMSA into the North Quarry would ease access to native geologic materials underlying the EMSA, portions of which are mapped by the SMGB as MRZ-3 due to the potential presence of saleable aggregate from the Santa Clara Formation. Under Alternative 1, this area potentially would be available for future mineral resource exploration and extraction with the appropriate state and county approvals. As discussed in the analysis of Project impacts, continued mineral resource extraction within the Quarry pit is approaching the limits of feasibility. Therefore, placing a greater amount of overburden fill in this area, as opposed to other untapped areas of native geology, would ease future access to other areas of the site that might contain saleable mineral resources. For the same reasons discussed in the analysis of Project impacts, Alternative 1 would have the same impact with respect to the limestone deposit that has been designated as a mineral resource of regional significance by the County and the SMGB. Overall significance conclusions under CEQA would remain unchanged.

4.12.6.2 Alternative 2: Central Materials Storage Area Alternative

Under Alternative 2, reclamation of the eastern and central portions of the EMSA (as it exists as of reclamation plan amendment approval) would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored west of the EMSA in the Central Materials Storage Area (CMSA). Compared to the Project, this alternative would have the same impacts with respect to the future availability of mineral resources for the same reasons described under the analysis of the Project.

4.12.6.3 No Project Alternative

Under the No Project Alternative, the Applicant would continue to mine the mineral resource present in the Quarry pit over a greater period of time. The delayed timing of reclamation would not affect the future presence or availability of mineral resources within the site and, therefore, the No Project Alternative would have the same impact as the Project.

References – Mineral Resources

California Division of Mines and Geology (CDMG). 1987. *Mineral Land Classification: Aggregate Materials in the South San Francisco-Monterey Bay Area; Part II: Classification of Aggregate Resource Area in the South San Francisco Bay Production-Consumption Region*, Special Report 146.

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County of Santa Clara. 2000. *Surface Mining and Land Reclamation Standards*, rev. Aug. 29, 2000.

Golder Associates. 2011. *Geotechnical Evaluations and Design Recommendations (Revision 1), Permanente Quarry Reclamation Plan Update, Santa Clara County, California*, prepared for Lehigh Southwest Cement Company, Cupertino, CA, November.

Lehigh Southwest Cement (Lehigh), Lehigh Southwest Cement Website, Frequently Asked Questions Page. http://www.lehighpermanente.com/#/faq-page-1-of-2/4537602413 (accessed September 26, 2011).

4.13 Noise

This section discusses the effects of Project implementation on the noise environments in the vicinity of the Project Area. The following addresses the noise exposure associated with each of the three proposed phases of reclamation. Reclamation of the EMSA, Quarry pit, WMSA, Crusher/Quarry Office Area, Surge Pile, Rock Plant, Exploration Area, and PCRA would occur according to the phasing set forth in Project Description Table 2-2.

4.13.1 Fundamentals of Acoustics and Vibration

4.13.1.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

4.13.1.2 Frequency

The number of sound pressure peaks travelling past a given point in a single second is referred to as the frequency, expressed in cycles per second or Hertz (Hz). A given sound may consist of energy at a single frequency (pure tone) or in many frequencies over a broad frequency range (or band). Human hearing is generally affected by sound frequencies between 20 Hz and 20,000 Hz (20 kHz).

4.13.1.3 Amplitude

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. Sound pressure amplitude is measured in micro-Pascals (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 µPa to 100,000,000 µPa. Because of this huge range of values, sound is rarely expressed in terms of pressure. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of human hearing (near total silence) is approximately 0 dB, which corresponds to 20 µPa.

4.13.1.4 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic means. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two sources each are producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dB higher than one of the sources under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB – rather they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level of approximately 5 dB louder than one source, and 10 sources of equal loudness together produce a sound level of approximately 10 dB louder than the single source.

4.13.1.5 A-Weighted Decibels

Figure 4.13-1 illustrates sound levels associated with common sound sources. The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable, and can be approximated by frequency filtering using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. All noise levels reported in this section are in terms of A-weighting.

4.13.1.6 Human Response to Changes in Noise Levels

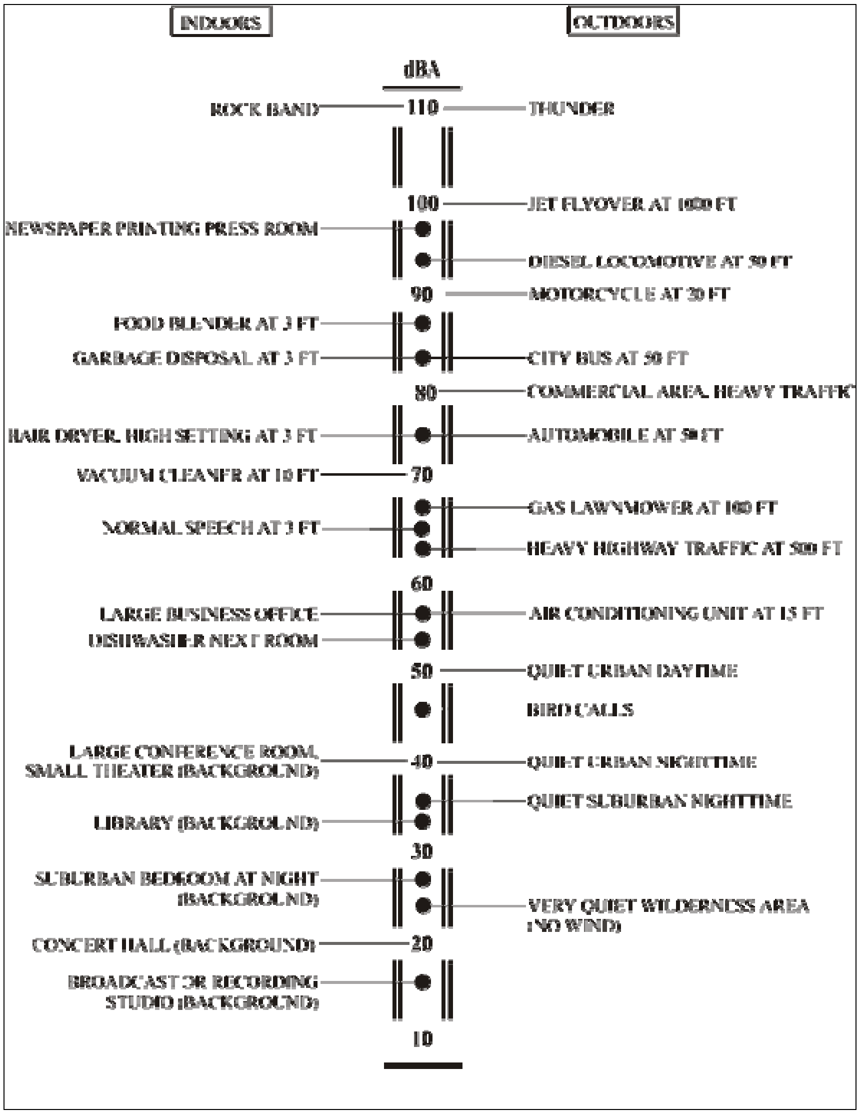
As discussed above, doubling sound energy results in a 3 dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured.

Under controlled conditions in a laboratory setting, the trained, healthy human ear is able to discern 1 dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency range (1,000 Hz–8,000 Hz). In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase generally is perceived as a distinctly noticeable increase, and a 10 dB increase generally is perceived as a doubling of loudness. Therefore, a doubling of sound energy that would result in a 3 dB increase in sound pressure level generally would be perceived as barely detectable. Please refer to **Table 4.13-1**.

TABLE 4.13-1
APPROXIMATE RELATIONSHIP BETWEEN INCREASES IN ENVIRONMENTAL NOISE LEVEL AND HUMAN PERCEPTION

Noise level increase, dB	Human perception (typical)
up to about 3	not perceptible
about 3	barely perceptible
about 6	distinctly noticeable
about 10	twice as loud
about 20	four times as loud

SOURCE: Edward L. Pack Associates, Inc., 2011



SOURCE: Caltrans, 2009

Figure 4.13-1
Decibel Scale and Common Noise Sources

4.13.1.7 Noise Descriptors

Noise in our daily environments fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in environmental noise analysis, and may be applicable to this study:

- **Equivalent Sound Level (L_{eq}):** The L_{eq} represents an average of the sound energy occurring over a specified time period. In effect, the L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour, A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period.

- **Percentile-Exceeded Sound Level (L_n):** The L_n represents the sound level exceeded "n" percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).

- **Maximum Sound Level (L_{max}):** The L_{max} is the highest instantaneous sound level measured during a specified period.

- **Day-Night Average Level (L_{dn}):** The L_{dn} is the energy-average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours (10 p.m.-7 a.m.). The L_{dn} is often noted as the DNL.

- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy-average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours (10 p.m.-7 a.m.), and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours (7 p.m.-10 p.m.). The CNEL is usually within 1 dB of the L_{dn}, and for all intents and purposes, the two are interchangeable. As it is easier to compute and is referenced under the County General Plan, the L_{dn} is used as the long-term noise measure in this study.

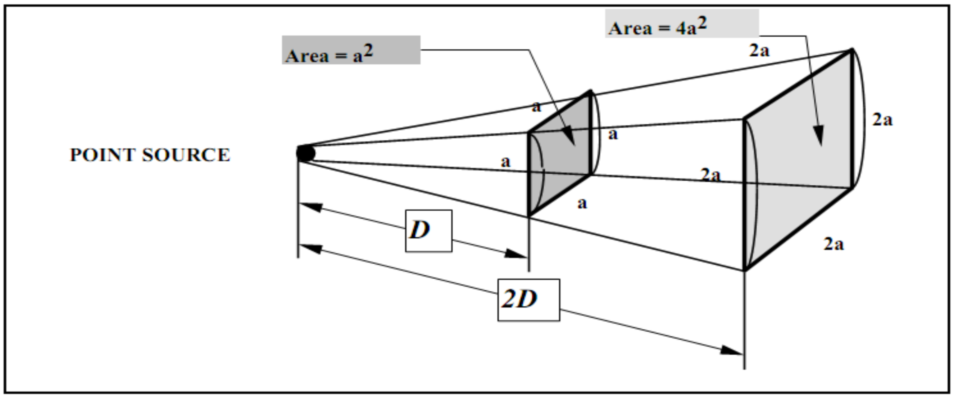
4.13.1.8 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on factors, including geometric spreading, ground absorption, and atmospheric effects. These factors are described in detail, below.

Geometric Spreading

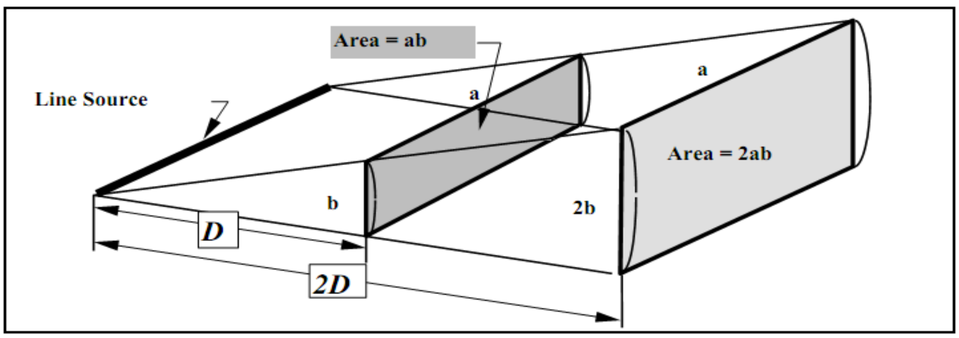
Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern; therefore, this type of propagation is called *spherical spreading*. The sound level generally attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source as its energy is continuously spread out over a spherical surface (see **Figure 4.13-2**).

Roadways and highways, and to some extent moving trains, consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources (see **Figure 4.13-3**). Noise from a line source propagates over a cylindrical surface, often referred to as *cylindrical spreading*. Sound levels generally attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.



SOURCE: Caltrans, 2009

Figure 4.13-2
Point Source Spreading with Distance



SOURCE: Caltrans, 2009

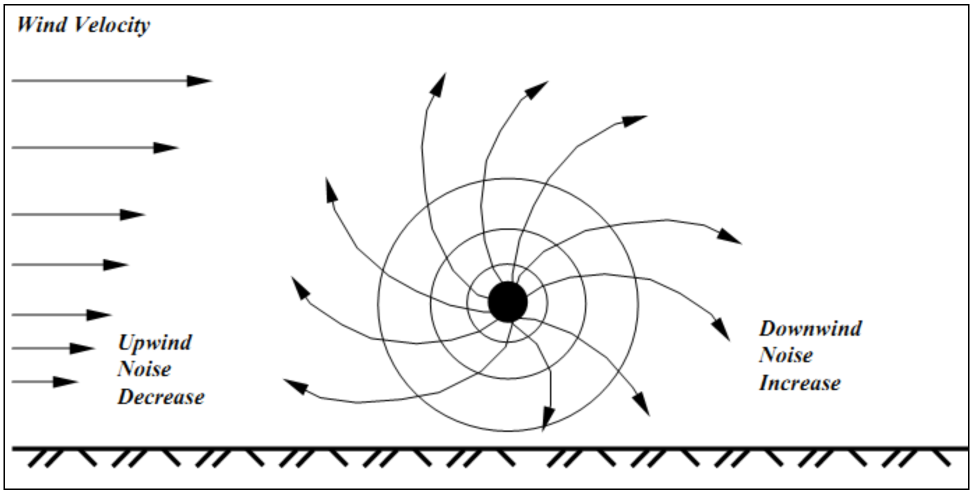
Figure 4.13-3
Line Source Spreading with Distance

Ground Absorption

The propagation path of noise from many typical sources such as roadways to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a paved parking lot or body of water), no excess ground attenuation generally is expected. For acoustically absorptive or soft sites (i.e., sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is typically expected. When added to cylindrical spreading from traffic noise sources, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. When added to spherical spreading (point sources), it results in overall drop-off rates of approximately 7.5 dB. These approximations generally are applicable only for receivers within 300 feet of the noise source(s), and should not be applied to sound path lengths of more than 300 feet.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas receivers upwind from the source can have lowered noise levels. This is illustrated in **Figure 4.13-4**.



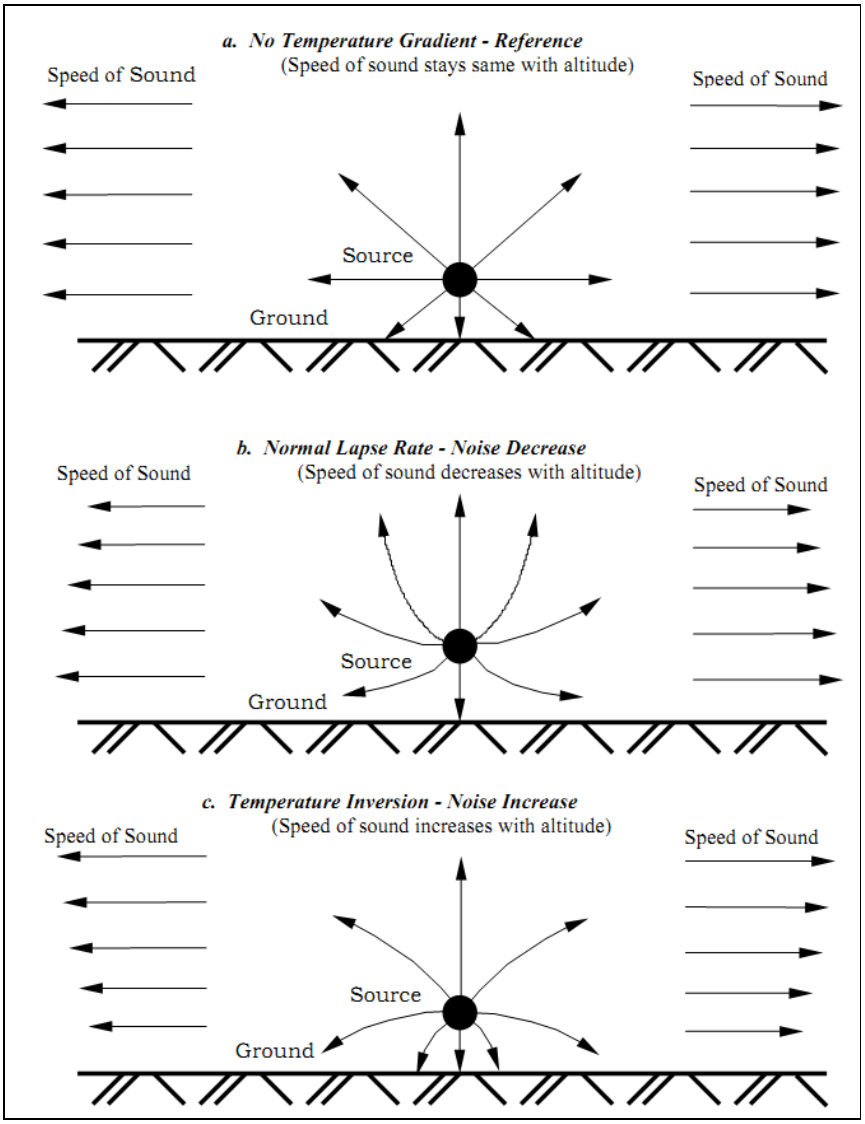
SOURCE: Caltrans, 2009

Figure 4.13-4
Wind Effects on Noise Levels

In addition to the enhancing effect produced by wind, sound levels can increase at large distances from the source (e.g., more than 500 feet) due to atmospheric temperature inversions (i.e., increasing temperature with elevation) or can decrease with distance from the source at a higher rate than the typical spreading loss with distance rate (see above) due to a temperature lapse condition (i.e., decreasing temperature with elevation).

Temperature inversions are a common part of the meteorological environment in California. During a temperature inversion the air temperature at the ground is cooler than that several hundred feet above the ground. These temperature inversions typically are caused when a warm, sunny day is followed by a cold, clear night. The sun warms the earth's surface during the day and generally the air temperature near the ground is higher than the air temperature at higher elevations; however, when the sun sets, the earth cools quickly by infrared radiation into space and so does the air mass at lower elevations, with the result that the air temperature at high elevations soon becomes warmer than that near the ground. The speed of sound is higher in warmer air, and this inverted temperature profile causes the sound waves in the warmer air to overtake those travelling in cooler air, thus the sound "bends" back toward the ground (see **Figure 4.13-5**).

Other factors such as air temperature, humidity, and turbulence also affect sound propagation. For instance, air temperature and humidity have a substantial effect on the rate of molecular absorption as sound travels large distances. A sound consisting primarily of middle frequencies such as speech or animal vocalization attenuates approximately 5 additional decibels for every 1,000 feet of travel with an air temperature of 70 degrees Fahrenheit and a humidity of 30 to 40 percent. This atmospheric effect is in addition to the other effects discussed above.



SOURCE: Caltrans, 2009

Figure 4.13-5
Effects of Temperature Gradients on Noise

4.13.1.9 Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

4.13.2 Setting

4.13.2.1 Study Area and Ambient Noise Environments

The Quarry is situated near the base of the San Andreas Mountain Range west of the City of Cupertino and south of the City of Los Altos in Santa Clara County. The base elevation of the site is between approximately 600-700 feet above sea level. The City of Los Altos is north of the site and separated from the Quarry by a substantial mountain ridge. The ridge rises to approximately 1,300 feet above sea level and noses down to the Quarry base elevation as it nears Stevens Creek Boulevard. The Stevens Creek Quarry is adjacent to the south of the Project Area. **Table 4.13-2** summarizes the measured ambient noise exposures in the vicinity of the Project Area expressed as L_{dn}. These measurements, with the exception of those taken at Site 4, were completed over a period of two days in 2009 by Edward L. Pack Associates, Inc., and represent the existing noise exposure at the outskirts of the eastern border of the Project Area. See **Figure 4.13-6** for the noise measurement locations relative to the Project Area and the closest noise-sensitive receptors.

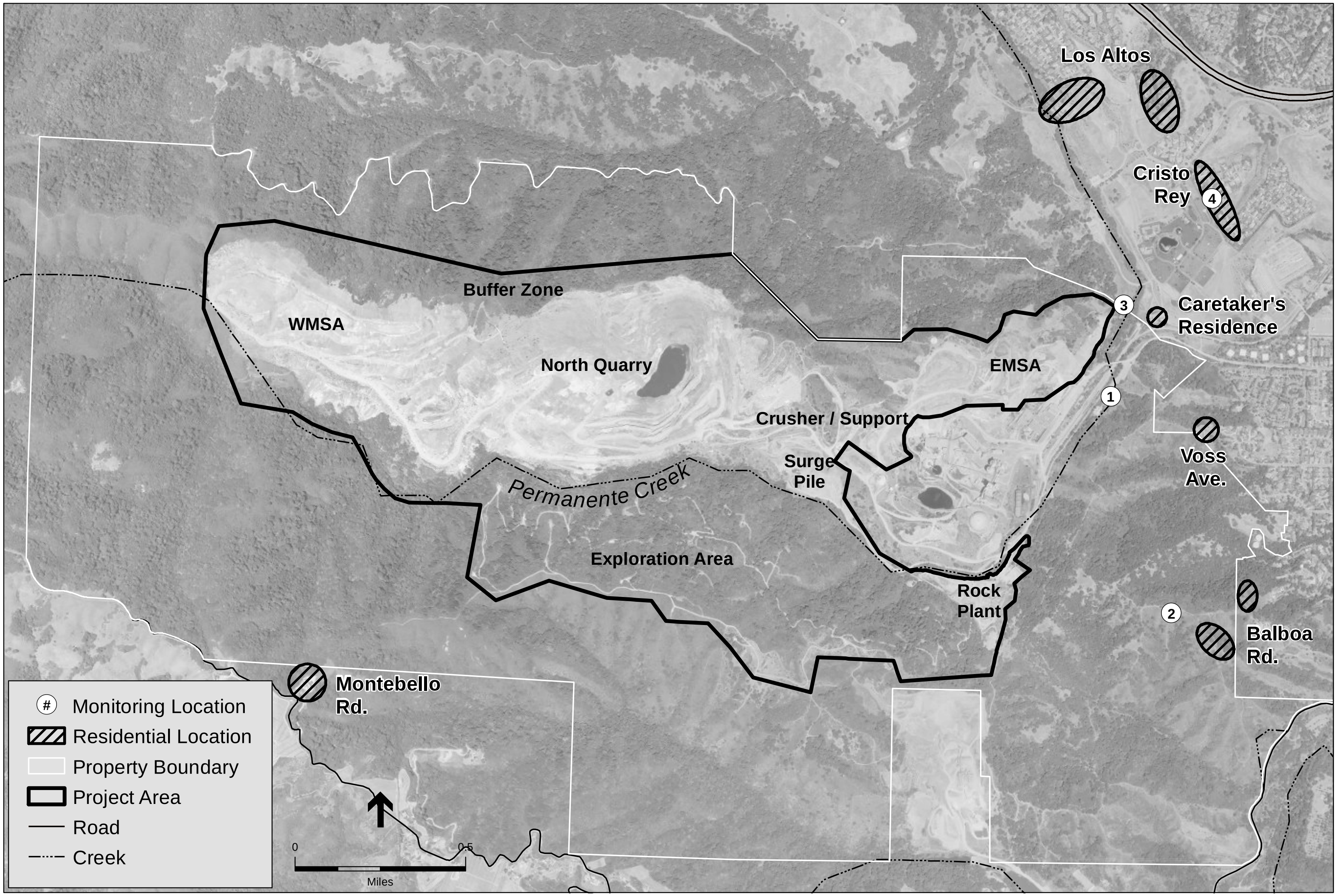
TABLE 4.13-2
SUMMARY OF AMBIENT NOISE LEVEL MEASUREMENTS IN THE PROJECT VICINITY

Location	Noise Level, dB L_{dn}
1 –east of Project Area	54-55
2 – southeast of Project Area	54
3 – northeast of Project Area	56-57
4 – Cristo Rey residential development	49

NOTE: Measurements at Location 4 were completed in 1995 as part of the Cristo Rey residential development application.

SOURCE: Edward L. Pack Associates, Inc., 2011

The ambient noise level measurements summarized in Table 4.13-2 for Locations 1 through 3 were conducted to extrapolate the noise levels and noise exposures generated by the overall operations in the Project Area and nearest residential areas for evaluation relative to the County's noise standards. The noise measurements at the Cristo Rey residential location (Location 4) were made in 1995 as part of that project's development application. Based on the measured ambient noise levels presented in Table 4.13-2, existing noise levels were calculated for the other nearby residential neighborhoods. For the calculated noise levels at the nearest residential areas to the Project Area, see **Table 4.13-3**. Generally, extrapolated noise exposures at residential areas closest to the Project Area that could be the most affected by noise from the Project are in the range of 45-55 dB L_{dn}. These levels are typical for suburban neighborhoods. Homes directly adjacent to the major roadways in these areas experience higher noise levels.



SOURCE: SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment . 211742

Figure 4.13-6
Sensitive Noise Receptors

TABLE 4.13-3
SUMMARY OF EXTRAPOLATED AMBIENT NOISE LEVELS AT NEAREST RESIDENTIAL AREAS

Residential Location	Noise Level, dB L_{dn}
Caretaker's Residence	55
Cristo Rey Neighborhood	49[1]
Voss Avenue Neighborhood	50
Montebello Road Neighborhood	47
Balboa Road Neighborhood	52

[1] The noise level at the Cristo Rey Neighborhood is a measured value, not extrapolated.

SOURCE: Edward L. Pack Associates, Inc., 2011

Ambient noise exposure in residential areas around the Project site generally is dominated by typical suburban noise sources such as traffic, aircraft over-flights, community activities, and natural sounds. Noise from existing operations at the site generally is inaudible at residences in the vicinity with the exception of a low-level "hum" from the Cement Plant kilns that is slightly noticeable at night when other background noise exposure is at its lowest. Noise from the kilns is only audible at residences that are not near any major roadways.

4.13.2.2 Noise-Sensitive Land Uses

Noise-sensitive land uses are defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, libraries, and certain types of recreational uses. Noise-sensitive, residential receivers are found throughout the study area (see Figure 4.13-6) and are discussed below.

The Gates of Heaven Cemetery and a County park are the closest uses to the Project Area to the northeast. Single-family residential homes are adjacent to the Gates of Heaven Cemetery. Single-family and multi-family residences are located to the east, but diverge from the site from the northeast to the southeast as they follow the base of the hillside. Scattered, rural homes along Montebello Ridge are to the south and southeast of the Project Area. These properties are approximately 3,700 feet or more removed from the WMSA. A series of mountain ridges is interposed between the majority of residences in the City of Cupertino and Project Area, shielding most of the Project Area from view. All but a few of the area residences are well below the tops of the ridges and do not have a view of the Project Area. The ridges provide substantial acoustical shielding for these residential areas. A similar topographic circumstance occurs for residents of Los Altos, whereby a high ridge runs approximately southeast to northwest along the northerly boundary of the Project Area. The closest Los Altos residences are located approximately 4,000 feet north of the northern Project Area boundary.

There are a few homes on Montebello Road to the south-southwest of the Project Area. The home nearest the Project Area is located at the terminus of the public portion of Montebello Road and is approximately 3,700 feet from the Project Area boundary near the WMSA. This home has a partial view of the Quarry pit area; however, interposed mountain ridges interrupt the majority of the sight lines into the Project Area, and provide acoustical shielding.

The EMSA is located at the northeasterly portion of the Project Area, near the site entrance from Permanente Road. The closest residence to the EMSA is a caretaker's residence located approximately 700 feet east of the EMSA, on the north side of Permanente Road. The next closest residences are approximately 2,000 feet to the east, south of Permanente Road.

4.13.2.3 Regulatory Setting

State

The State of California requires each local government entity to include a noise element as part of its general plan. To support appropriate land use planning at the local level, Title 4 of the California Administrative Code presents guidelines that identify the noise levels that are compatible with various types of land uses. The state land use compatibility guidelines are shown in **Figure 4.13-7**.

Local

As described in Chapter 2, *Project Description*, portions of the Project would be located near or would affect noise-sensitive receivers within the County and the City of Cupertino. The following summarizes the noise exposure limits applicable to the Project. These limits are found in local General Plans and codes.

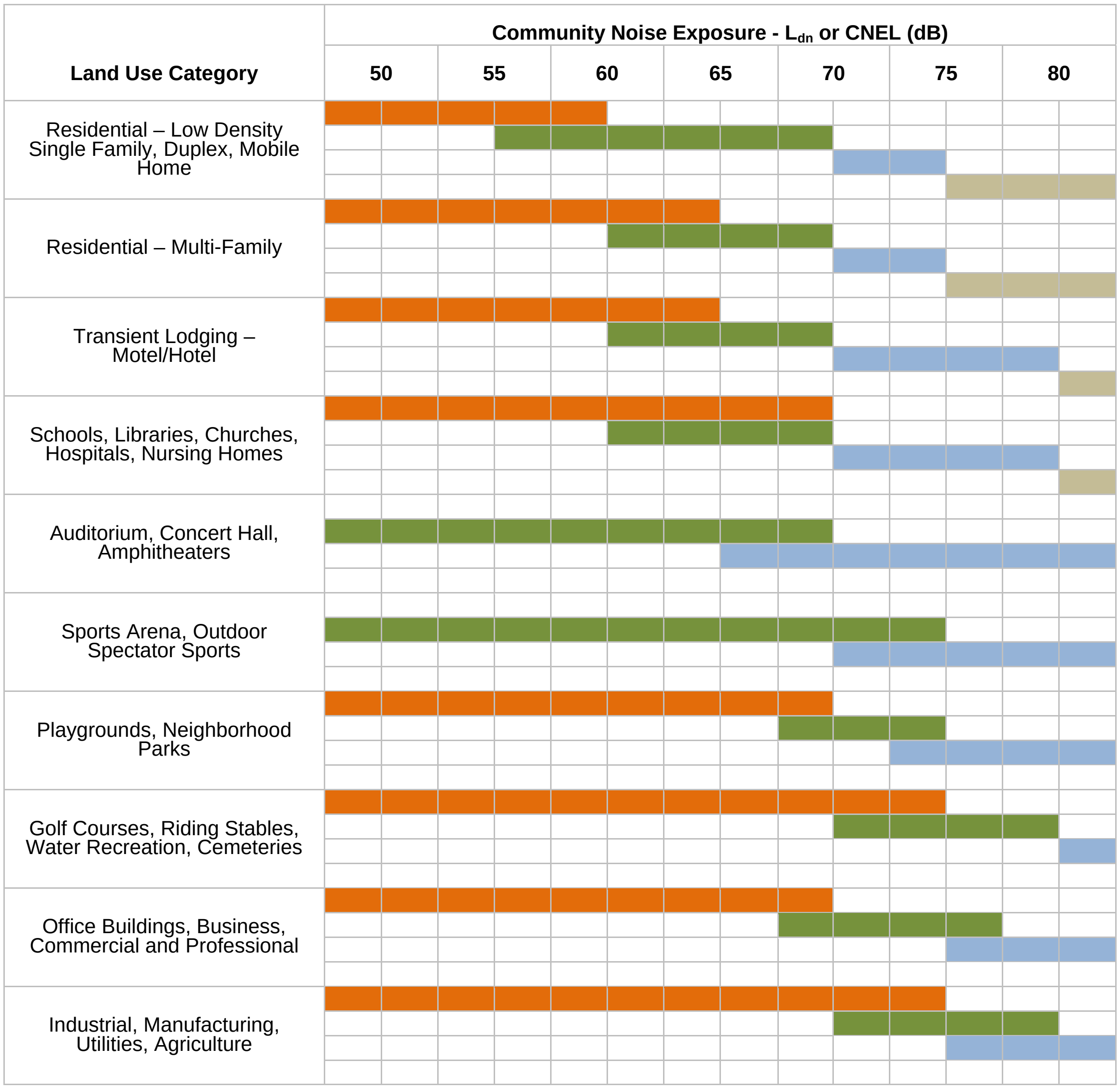
County of Santa Clara General Plan Health and Safety Chapter

The Public Health and Safety chapter of the County General Plan establishes a land use compatibility standard of 55 dB L_{dn}. This noise level limit is considered "satisfactory" for residential and other noise-sensitive uses, and is generally measured at outdoor activity areas. An interior noise exposure limit of 45 dB L_{dn} is recommended for residential receivers (assuming doors and windows closed).

County of Santa Clara Ordinance Code

County Municipal Code §B11-152 establishes noise exposure criteria for non-transportation noise sources (i.e., stationary sources) at noise-sensitive uses. These standards are generally established for conflict resolution in established parts of the County and are appropriate for the determination of Project noise impacts. The criteria are summarized in **Table 4.13-4**.

Each of the noise exposure limits listed in Table 4.13-4 is lowered by 5 dB when addressing impulsive or tonal sources, or sources consisting primarily of speech or music. Also, if the ambient noise exposure exceeds the applicable L_{50}-L_2 criteria, then the criteria is increased in 5 dB increments to encompass the ambient noise exposure. If the L_{max} exceeds the listed criteria, then the measured noise exposure is used as the applicable noise exposure limit.



	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
	Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable	New construction or development generally should not be undertaken.

SOURCE: State of California, Governor's Office of Planning and Research, 2003. *General Plan Guidelines*

Figure 4.13-7
Land Use Compatibility for Community Noise Environment

TABLE 4.13-4
APPLICALBE NOISE EXPOSURE LIMITS
COUNTY OF SANTA CLARA MUNICIPAL CODE SECTION B11-152

Noise Descriptor	Noise Level, dB (Assumes +5 dB Land Use Boundary Adjustment)[1]	
	Daytime (7 a.m.-10 p.m.)	Nighttime (10 p.m.-7 a.m.)
L_{50}	60	50
L_{25}	65	55
L_{8}	70	60
L_{2}	75	65
L_{max}	80	70

[1] Pursuant to County of Santa Clara Municipal Code §B11-152(a)(4), the allowable noise exposure standard has been adjusted to increase the levels by 5 dB in each category to account in the differences in land use (i.e., industrial verses residential).

SOURCE: County of Santa Clara Municipal Code, 2011

City of Cupertino General Plan Health and Safety Element

The City of Cupertino has adopted a Health and Safety Element as part of the General Plan and has adopted a noise ordinance. Policy 6-50 of the City of Cupertino General Plan states that the Land Use Compatibility Chart of the City's Health and Safety Element and the City's Municipal Code shall be used in making land use decisions with respect to noise. The Land Use Compatibility Chart identifies an exterior noise environment of up to 60 dB L_{dn} as being normally acceptable for residential uses. Therefore, if noise levels generated by the Project would cause the L_{dn} at the nearest residence to exceed 60 dBA, the impact would be considered significant.

City of Cupertino Ordinance Code

Chapter 10.48 of the City of Cupertino Municipal Code provides noise limits and definitions within the City limits, including separate limits for "Daytime" (7 a.m. to 8 p.m. on weekdays, and 9 a.m. to 6 p.m. on weekends) and "Nighttime," (8 p.m. to 7 a.m. on weekdays, and 6 p.m. to 9 a.m. on weekends). The Nighttime limit would be the most restrictive standard for the City of Cupertino. **Table 4.13-5** shows acceptable noise levels for the City. These limits would be enforceable at any time by the City of Cupertino.

In addition, Chapter 10.48.053 of the City Municipal Code defines standards for Grading, Construction, and Demolition as follows:

A. Grading, construction and demolition activities shall be allowed to exceed the noise limits of §10.48.040 during daytime hours; provided, that the equipment utilized has high-quality noise muffler and abatement devices installed and in good condition, and the activity meets one of the following two criteria:

   1. No individual device produces a noise level more than eighty-seven dBA at a distance of twenty-five feet (7.5 meters); or

   2. The noise level on any nearby property does not exceed eighty dBA.

TABLE 4.13-5
APPLICABLE CUPERTINO CITY NOISE ORDINANCE RESIDENTIAL LIMITS

Allowable Duration	Maximum Noise Level at Complaint Site or Receiving Property (dBA)	
	Daytime	Nighttime
Maximum continuous noise level[1]	65 dBA	55 dBA
$L_{12.5}$ (2-hour period)	70 dBA	not applicable
$L_{8.3}$ (2-hour period)	75 dBA	not applicable
$L_{4.2}$ (2-hour period)	80 dBA	not applicable
$L_{0.8}$ (2-hour period)	84 dBA	not applicable
L_{max} (2-hour period)	85 dBA	not applicable

1 Continuous noise sources from a nonresidential land use must not exceed 65 dBA during daytime or 55 dBA at nighttime at a neighboring sensitive receptor. For the purposes of this analysis, it is assumed that the "maximum continuous noise level" is represented by the L_{eq} noise descriptor.

Notwithstanding §10.48.053A, it is a violation of this chapter to engage in any grading, street construction, demolition or underground utility work within seven hundred fifty feet of a residential area on Saturdays, Sundays and holidays, and during the nighttime period, except as provided in §10.48.030 of the Cupertino Municipal Code (Emergency Exception).

4.13.3 Baseline

The overall baseline for this EIR reflects the physical environmental conditions in the vicinity of the Project Area as they existed in June 2007, when the County published a NOP in connection with the Applicant's first proposed amendment of the 1985 Reclamation Plan. Ambient noise measurements first were made at or near the Project Area boundaries in the vicinity of the nearby residences in November 2009. Activities at the site at the time of the 2009 noise measurements were not materially different than those that were occurring in 2007. Consequently, the 2009 noise data are considered representative of the 2007 baseline conditions and constitute the best available data.

4.13.4 Significance Criteria

Consistent with the County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) Expose persons to or generate noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;

b) Expose persons to or generate excessive ground-borne vibration or ground-borne noise levels;

c) Produce a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

d) Produce a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project.

4.13.4.1 Noise

Noise exposure from the Project would be considered significant if it would exceed the applicable County or City General Plan land use compatibility standards, Noise Ordinance noise exposure limits set forth above, or otherwise cause a substantial increase over ambient noise. Due to the relatively continuous nature of Project noise sources, it is expected that the County's L_{50} noise exposure limits (i.e., 60 dB L_{50} daytime and 50 dB L_{50} nighttime) and the City's maximum continuous L_{eq} noise exposure limits (i.e., 65 dB daytime and 55 dB nighttime) would be the most restrictive with respect to the Project. Therefore, only these noise exposure limits are addressed in the following analysis. Additionally, a substantial increase over ambient noise levels would occur if Project-related noise exposure would increase the ambient noise exposure by more than 3 decibels if the existing noise environment is at or over the County land use compatibility standard of 55 dB L_{dn}. If the existing noise environment is below the standard, then an increase of up to 5 dB is considered acceptable provided that the total noise exposure does not exceed the standard of 55 dB L_{dn}. These criteria are applied at the closest noise-sensitive receptors to the Project.

4.13.4.2 Vibration

A numerical threshold to identify the point at which a vibration impact occurs has not been identified by County standards or codes. Therefore, a peak particle velocity (PPV) threshold identified by the California Department of Transportation (Caltrans) is used in this analysis to determine the significance of vibration impacts related to adverse human reaction and risk of architectural damage to normal buildings.[1] The PPV threshold is 0.20 in/sec (Caltrans, 2004). This PPV level has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

4.13.5 Discussion of Criteria with No Impacts

As analyzed in this section, the Project would cause no impact related to significance criterion b). By contrast, the Project could cause an impact related to each of the other significance criteria; that analysis is provided in Section 4.13.6.

b) The Project would not result in exposure of persons to or generation of excessive ground borne vibration or groundborne noise levels.

The Project would employ conventional earth moving activities and the equipment/techniques to be used would not cause excessive groundborne vibration. For example, the use of heavy equipment, such as a large bulldozer, would generate vibration levels of up to 0.089 PPV at a distance of 25 feet. At this short distance, equipment PPV levels would be less than the significance threshold of 0.20 in/sec. No blasting would occur as part of the Project. On-site Project equipment would operate at a distance of at least 700 feet from the closest sensitive receptor location; therefore, vibration levels at the closest sensitive receptor locations would not be perceivable. No related impact would result.

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1 Architectural damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile (Caltrans, 2004).

Ground borne noise is the rumbling sound of structure surfaces caused by high vibration levels. Because implementation of the Project would not result in exposure of persons to or generation of excessive groundborne vibration, it also would not expose them to or generate excessive groundborne noise levels. Consequently, the Project would cause no impact related to groundborne noise.

4.13.6 Impacts and Mitigation Measures

4.13.6.1 Analysis Methodology

To determine the levels of noise generated by each reclamation phase and evaluate Project noise relative to County standards and applicable criteria, noise level data for each of the items of equipment specified to be used for each phase were acquired from past studies of heavy equipment operations and quarry analyses. The list of heavy equipment and the daily durations of their use for Phases 1 and 2 were obtained from the Project Air Quality Technical Analysis (Ashworth Leininger Group (ALG), 2011). Because the level of equipment activity in Phase 3 would be much lower than in Phases 1 and 2 of the Project, the ALG report did not provide a similar level of equipment usage for Phase 3. Therefore, to ensure that potential noise impacts during Phase 3 were adequately analyzed for the EIR, the list of equipment planned for Phase 3 was obtained from the 2011 Permanente Quarry Financial Assurance Estimate (EnviroMine, 2011). The daily durations of use of the equipment for Phase 3 were not included in the Financial Assurance Estimate. Therefore, due to the less intense nature of the Phase 3 activities, it is expected that Phase 3 operations utilizing heavy equipment would occur for a period of 8 hours per day during the day shift only.

Operation scenarios were developed for each piece of heavy equipment that would be associated with the Project. Multiple pieces of the same equipment type (e.g., 10 CAT 777 trucks) were distributed evenly over the given Project area to best represent overall typical operation noise exposure. Each piece of equipment was positioned to best represent worst-case noise exposure at the affected receptor locations. It is assumed that re-contouring associated with reclamation of the EMSA slopes would be completed by building the slope down from upper unshielded[2] elevations so that much of the earth/material moving equipment would be operating at upper, acoustically unshielded elevations for extended time periods rather than all equipment being located at the foot of the slopes (shielded) pushing aggregate material up. This represents a worst-case noise scenario.

Based on existing quarry operations, it is expected that work shifts would be from 6:00 a.m. to 2:30 p.m. (day shift) and 2:30 p.m. to 11 p.m. (swing shift). Equipment that would be scheduled for more than one shift was divided between the day shift and the swing shift with at least 1 hour of nighttime operation. Both shifts would have one nighttime hour within the work period (i.e., 6:00 to 7:00 a.m. and 10 p.m. to 11 p.m.).

[2] For this analysis, “unshielded” activities are those that occur in areas with direct line-of-sight to a sensitive receptor and “shielded” activities are those that occur in areas with intervening vegetation or topography between the activity and a sensitive receptor.

The analyses for reclamation Phases 1, 2, and 3 include the extrapolation of reference equipment noise level data to the specific source-to-receptor distances (assuming standard spherical divergence, -6 dB per doubling of distance) and use of the expected operational data to estimate noise exposure in terms of L_{dn}. These calculations were completed for scenarios with no topographic shielding (i.e., worst-case noise exposure) and with average topographic shielding. The analyses do not include the re-vegetation/re-seeding of the reclamation areas as these operations are relatively benign acoustically and do not entail the continued use of heavy equipment. The analyses represent the noise environments created during the operations that include heavy equipment from commencement through final grading of the respective areas.

During continuous excavation and earth moving operations associated with rock quarries, there is generally a quantifiable relationship between the hourly L_{eq} and the statistical L_n noise descriptors used in the County's Noise Ordinance (L_2-L_{50}). Specifically, for this assessment, typical heavy equipment operations in mountainous quarry settings generally produce L_{50} noise exposure approximately equal to the L_{eq} minus 1 dB. As mentioned above, Project-generated noise exposure in terms of the L_{dn} was calculated based on the hourly L_{eq} and the estimated hours of equipment operations.

The three Project phases would occur sequentially with no overlap. Phase 1 would begin with Project approval and would end in approximately 2020; Phase 2 would end in approximately 2025; and Phase 3 would end in approximately 2030. Due to the phasing of reclamation activities and the general locations for Project work relative to the closest noise-sensitive uses, a given receptor would not be expected to be adversely affected by work completed for multiple reclamation phases.

Impact 4.13-1: Operations associated with reclamation during Phase 1 would exceed County noise standards and increase ambient noise levels at noise-sensitive uses in the vicinity. (*Less than Significant Impact with Mitigation Incorporated*)

A summary of the heavy equipment operations for reclamation Phase 1 of the Project is presented in **Table 4.13-6**. Included in the table are the L_{eq} values, normalized to a distance of 100 feet from the equipment. The equipment noise levels were acquired from several sources as referenced in the table and below. The raw noise level data for the various items of equipment were acquired at various distances. Standard spherical divergence calculations were performed to normalize the data to a distance of 100 feet. Also included in the table are the daily use hours for each piece of equipment and the expected "typical" shielding offset applied for intervening Project-area topography. Discussions of the estimated reclamation Phase 1 noise levels that would occur at the closest residences follow the table.

Caretaker's Residence

A noise exposure assessment was completed for the caretaker's residence located north of the EMSA (see Figure 4.13-6 for the location of the caretaker's residence). Unshielded operations associated with reclamation in the EMSA area would be expected to produce a noise exposure of approximately 61 dB L_{eq}, 60 dB L_{50}, and 61 dB L_{dn}. This noise exposure would exceed the County's nighttime limit of 50 dB L_{50} and the land use compatibility standard of 55 dB L_{dn}. Operations below

TABLE 4.13-6
SUMMARY OF RECLAMATION PHASE 1 EQUIPMENT, OPERATION USE HOURS, AND REFERENCE NOISE LEVELS USED IN PROJECT NOISE ASSESSMENT

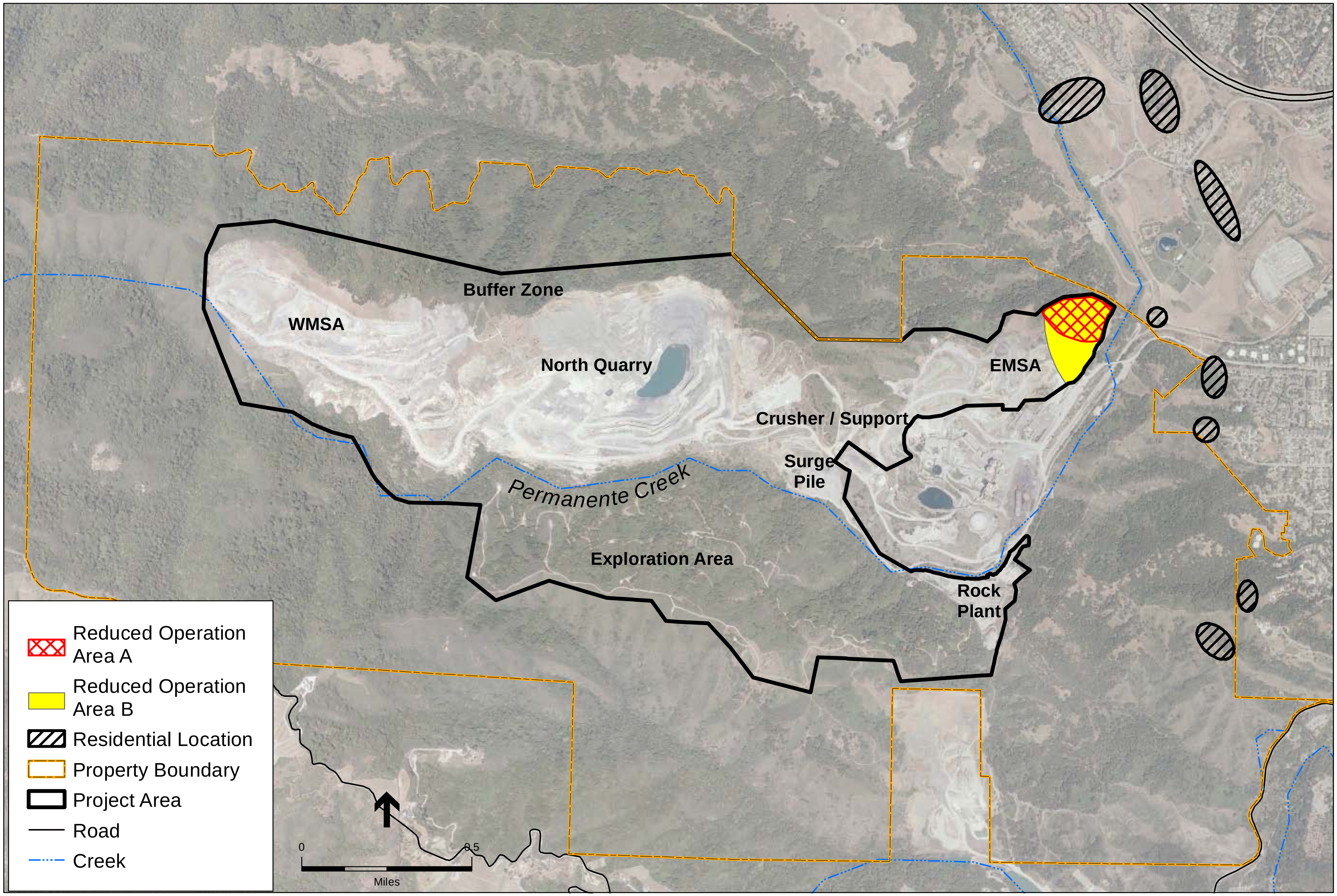
Equipment No., Make, and Model Type	Daily Use Hours	Reference Noise Level at 100 Feet (dB L_{eq})
Three CAT D10 Bulldozers	11	75
One CAT 345 Excavator	8	64
2 CAT 16 Motor Graders	7	71
1 CAT 785 Mining Truck	12	74
8 CAT 777 Off-Road Haul Trucks	13	72
3 CAT 740 Articulated Trucks	7	68
1 CAT 824 Bulldozers	4	68
3 CAT 992 Front-End Loaders	9	72
1 CAT 988 Front-End Loader	4	70
2 CAT 773 Water Trucks	8	70
1 Holland Dozer Trap Conveyor	16	68

SOURCES: Edward L. Pack Associates, Inc., 2011;Ashworth Leininger Group, 2011; EnviroMine Inc., Permanente Financial Assurance Estimate, 2011

560 feet of elevation would be shielded by intervening topography, resulting in noise exposure of approximately 54 dB L_{eq}, 53 dB L_{50} and 53 dB L_{dn}. The L_{50} noise exposure would still be expected to exceed the County's nighttime noise exposure limit, resulting in a significant impact.

For comparison to ambient conditions, the Project-generated noise exposures were added to the existing ambient noise exposure at the residence and the difference was calculated. An increase of 3 dB or less relative to the ambient noise level is considered a less-than-significant impact. Operations at elevations greater than 560 feet (see the highlighted noise impact "Area A" identified in **Figure 4.13-8**) would result in a total combined noise level of 62 dB L_{dn} and would be expected to result in increases in the noise exposures at the caretaker's residence of more than 3 dB, and would be considered a significant impact related to increase in noise exposure.

In addition to non-sensitive receptors, Project activities associated with Phase 1 would likely be audible at the PG&E Trail in the Rancho San Antonio Preserve/Park, which is located approximately 0.25 mile (1,320 feet) from the nearest boundary of the EMSA. Most of the PG&E trail is topographically shielded from the quarry with the exception of one segment of several hundred feet where the EMSA storage area is visible to the south. Based on estimated Project noise levels at the caretaker's residence, which is 700 feet from the EMSA, Project noise levels at the PG&E Trail would be up to approximately 55 dB L_{eq}. The County General Plan has a noise standard of 55 dBA L_{dn} for parks and open space areas; there are no standards for parks and open space areas under the County Noise Ordinance. Based on a noise exposure of 55 dBA L_{eq} and the short duration in which trail users would be exposed to quarry noise, this noise level would not be expected to cause a significant noise impact to recreational users of the PG&E Trail.



SOURCE: SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment . 211742

Figure 4.13-8
Reduced Operation Areas

Cristo Rey Residential Development

A noise exposure assessment was completed for the closest residential receptors in the Cristo Rey residential development (in the City of Cupertino) east of the EMSA (see Figure 4.13-6 for the location of the Cristo Rey residential area). Unshielded operations associated with reclamation activities in the EMSA area would be expected to produce a noise exposure of approximately 55 dB L_{eq}, 54 dB L_{50}, and 55 dB L_{dn}. This noise exposure may be expected for operations at elevations above 615 feet, and would not exceed the applicable City of Cupertino noise exposure limits. Project-related noise exposure would be approximately 51 dB L_{eq}, 50 dB L_{50}, and 50 dB L_{dn} for operations at elevations below 615 feet. This noise exposure also would satisfy the applicable City of Cupertino criteria. Therefore, noise exposure associated with operations would result in a less-than-significant impact relative to local standards.

For comparison to ambient conditions, the Project-generated noise exposures were added to the existing ambient noise exposure at the residences and the difference was calculated. Operations at elevations greater than 615 feet would result in a total combined noise level of 56 dB L_{dn} and would be expected to result in noise exposure increases of more than 5 dB relative to the 49 dB L_{dn} ambient noise level measurement at Site 4 (see the ambient noise level measurement results in Table 4.13-2, above), and would be considered a significant impact associated with increase in noise exposure.

End of Voss Avenue (East of Quarry)

A noise exposure assessment was completed for the closest residential receptors to the east of the quarry on Voss Avenue in the City of Cupertino (see Figure 4.13-6 for the location of the Voss Avenue residential area). Noise exposure from unshielded operations was calculated to be approximately 34 dB L_{eq}, 33 dB L_{50}, and 34 dB L_{dn}. This noise exposure would be well below the applicable City of Cupertino noise exposure limits, and would not be expected to contribute significantly to noise exposure increases above the ambient. Therefore, this noise exposure impact is considered less than significant.

Impact Summary

Table 4.13-7 summarizes the Project-related noise exposure that would occur at the caretaker's residence compared to the applicable County noise exposure criteria and the Project-related noise exposure that would occur at the Cristo Rey development and the Voss Avenue residences relative to the City of Cupertino noise exposure criteria. In addition, **Table 4.13-8** summarizes the increases in ambient noise levels that would occur at the subject residences.[3] It should be noted that the Project noise levels summarized in Tables 4.13-7 and 4.13-8 would cease at the end of Phase 1 in approximately 2020 (approximately nine years in duration), as there would be no further heavy equipment activity at the EMSA.

[3] The effects of the atmosphere (including wind, temperature, and inversions) on perceived noise levels at a receptor are relatively negligible over long periods of time and occur during specific times of the day and times of year. The variation in the noise levels at receptor locations both near and far from the quarry would be inconsequential in relation to the variation of noise due to the varying operations within the Project Area.

TABLE 4.13-7
SUMMARY OF RECLAMATION PHASE 1 NOISE LEVELS COMPARED TO LOCAL STANDARDS

	L_{eq}[1]	L_{50}[2]	L_{dn}[3]
Daytime Limit	65	60	55/60
Nighttime Limit	55	50	
Shielded Operations			
Caretaker's Residence	54	**53**	53
Cristo Rey Residences	51	50	50
Voss Avenue Residences	25	24	25
Un-Shielded Operations			
Caretaker's Residence	61	**60**	**61**
Cristo Rey Residences	**55**	54	55
Voss Avenue Residences	34	33	34

1 L_{eq} limits are applicable to residences in City of Cupertino.
2 L_{max} limits are applicable to residences in the County of Santa Clara.
3 L_{eq} limits are presented for County of Santa Clara/City of Cupertino.

NOTES: The caretaker's residence is in an unincorporated area of the County, while the Cristo Rey development and the Voss Avenue homes are in the City of Cupertino. Bold numbers represent an exceedance of the applicable standard.

SOURCE: Edward L. Pack Associates, Inc., 2011

TABLE 4.13-8
SUMMARY OF RECLAMATION PHASE 1 L_{DN} NOISE LEVEL INCREASES

		Project-Generated Noise		Total (Ambient + Project) Noise Exposure		Change in dB
Receptor	**Ambient**	**Shielded**	**Unshielded**	**Shielded**	**Unshielded**	
Caretaker's Residence	55	**53**	61	57	62	+2/**+7**
Cristo Rey Residences	50	50	55	53	56	+3/**+6**
Voss Avenue Residences	50	25	34	50	50	0

NOTES: Bold numbers represent a significant increase compared to ambient levels.

SOURCE: Edward L. Pack Associates, Inc., 2011

At the caretaker's residence north of the EMSA, Project-related noise exposure would be expected to exceed the nighttime L_{50} criterion of 50 dB and also would be expected to exceed the 3 dB L_{dn} increase criterion compared to ambient levels due to operations above an elevation of 560 feet. In addition, Project-related noise exposure associated with operations above 615 feet would result in an increase in the ambient noise level of more than 5 dB L_{dn} at the closest residents of the Cristo Rey development. To reduce the nighttime L_{50} and the L_{dn} increase at the closest residential receptors to reclamation Phase 1 operations, the following mitigation measures are proposed.

Mitigation Measure 4.13-1a: The Applicant shall prohibit all heavy equipment operations in the northeasterly 11.5 acres of the EMSA (as shown in Figure 4.13-8) during nighttime hours (i.e., between 10:00 p.m. to 7:00 a.m.).

Mitigation Measure 4.13-1b: The Applicant shall either: (1) limit all operations in the EMSA within 1,600 feet of the caretaker's residence (as shown in Figure 4.13-8) to no more than one 8-hour shift per day, or (2) submit evidence establishing to the County's satisfaction that there are legally-binding restrictions precluding any occupancy of the caretaker's residence during the entirety of Phase 1 of the Project.

Impact after Mitigation: The implementation of these mitigation measures would reduce Project-related noise exposures to levels that would comply with applicable local standards. In addition, as presented in **Table 4.13-9**, the mitigation measure would reduce Project-related noise levels due to activities at Reduced Operation Areas A and B (see Figure 4.13-8) so that the total noise exposure at the nearest sensitive receptors would not exceed the noise level increase significance criteria. The impact would be mitigated to a less-than-significant level.

TABLE 4.13-9
SUMMARY OF RECLAMATION PHASE 1 L_{DN} NOISE LEVEL INCREASES FOLLOWING IMPLEMENTATION OF MITIGATION MEASURES 4.13-1a AND 4.13-1b

Receptor	Ambient	Project-Generated Noise		Total (Ambient + Project) Noise Exposure		Change in dB
		Shielded	Unshielded	Shielded	Unshielded	
Caretaker's Residence	55	49	56	56	58	+1/+3
Cristo Rey Residences	50	46	51	51	53	+1/+3
Voss Avenue Residences	50	19	19	50	50	+0/+0

SOURCE: Edward L. Pack Associates, Inc., 2011

Impact 4.13-2: Operations associated with reclamation during Phase 2 would increase ambient noise levels at noise-sensitive uses in the vicinity. (*Less than Significant Impact*)

A summary of the heavy equipment that would be required for reclamation during Phase 2 is presented in **Table 4.13-10**. Included in the table are L_{eq} values normalized to a distance of 100 feet from the equipment. The equipment noise levels were acquired from several sources as referenced in the table and below. The raw noise level data for the various items of equipment were acquired at various distances. Standard spherical divergence calculations were performed to normalize the data to a distance of 100 feet. Also included in the table are the daily use hours for each piece of equipment and the expected "typical" shielding offset applied for intervening Project Area topography.

TABLE 4.13-10
SUMMARY OF PHASE 2 EQUIPMENT, OPERATION USE HOURS, AND REFERENCE NOISE LEVELS USED IN PROJECT NOISE ASSESSMENT

Equipment No., Make, and Model Type	Daily Use Hours	Reference Noise Level at 100 Feet (dB L_{eq})
3 CAT D11 Tractors	14	76
1 CAT D8T Tractor	8	66
1 CAT 345 Excavator	8	68
2 CAT 16 Graders	4	71
8 CAT 777 Off-Road Haul Trucks	6	72
3 CAT 740 Articulated Trucks	8	68
1 CAT 824 Bulldozer	7	68
3 CAT 992 Front-End Loaders	6	72
1 CAT 988 Front-End Loader	8	70
2 CAT 773 Water Trucks	5	70
4 Holland Dozer Trap Conveyors	16	68

SOURCES: Edward L. Pack Associates, Inc., 2011; Ashworth Leininger Group, 2011; EnviroMine Inc., Permanente Financial Assurance Estimate, 2011

A noise exposure assessment was completed for the closest residences on the end of Montebello Road west of the WMSA. **Table 4.13-11** summarizes the Project-related noise exposure that would occur at the Montebello Road residences compared to the applicable County noise exposure criteria. In addition, **Table 4.13-12** summarizes the increase in ambient noise levels that would occur at the Montebello Road residences. It should be noted that the Project noise levels summarized in Tables 4.13-11 and 4.13-12 would be limited to the duration of Phase 2, which would be from 2021 to 2025 (approximately five years in duration). Unshielded operations associated with reclamation in the WMSA area above 800 feet in elevation would be expected to produce a noise exposure of approximately 51 dB L_{eq}, 50 dB L_{50}, and 50 dB L_{dn}. This noise exposure would satisfy the County's nighttime limit of 50 dB L_{50} and land use compatibility standard of 55 dB L_{dn}. Operations shielded by Project-area topography would produce lower noise levels at the receptors, and also would satisfy the applicable noise exposure criteria. The associated impact would be less than significant.

Ambient noise conditions at these residences are lower than those in the Cupertino and Los Altos neighborhoods due to reduced traffic activity. Still, project-generated noise exposures that would result in a total combined noise level of 52 dB L_{dn} would not be expected to increase the existing noise environment (i.e., 47 dBA) by more than 5 dB. As noted above, the estimated period of Phase 2 reclamation activities and noise exposure to these residences would be approximately five years in duration. An increase of 5 dB or less in the noise environment is considered a less-than-significant impact. Therefore, this impact is considered less than significant.

Mitigation: None required.

TABLE 4.13-11
SUMMARY OF RECLAMATION PHASE 2 NOISE LEVELS COMPARED TO LOCAL STANDARDS

	L_{eq}	L_{50}	L_{dn}
Daytime Limit	---	60	55
Nighttime Limit	---	50	
Shielded Operations			
Montebello Road Residences	41	40	40
Un-Shielded Operations			
Montebello Road Residences	51	50	50

NOTES: There is no L_{eq} standard applicable to the County of Santa Clara. The Montebello Road residences are in an unincorporated area of the County.

SOURCE: Edward L. Pack Associates, Inc., 2011

TABLE 4.13-12
SUMMARY OF RECLAMATION PHASE 2 L_{DN} NOISE LEVEL INCREASES

Receptor	Ambient	Project-Generated Noise		Total (Ambient + Project) Noise Exposure		Change in dB
		Shielded	Unshielded	Shielded	Unshielded	
Montebello Road Residences	47	40	50	48	52	+2/+5

SOURCE: Edward L. Pack Associates, Inc., 2011

Impact 4.13-3: Operations associated with reclamation Phase 3 may be audible at noise-sensitive uses in the vicinity. (*Less than Significant Impact*)

Heavy equipment operations for reclamation Phase 3 are summarized in **Table 4.13-13**. Included in the table are the L_{eq} values normalized to a distance of 100 feet from the equipment. The equipment noise levels were acquired from several sources as referenced in the table and below. The raw noise level data for the various items of equipment were acquired at various distances. Standard spherical divergence calculations were performed to normalize the data to a distance of 100 feet. Also included in the table are the daily use hours for each piece of equipment and the expected “typical” shielding offset applied for intervening Project-area topography. Because of the limited amount of activity during Phase 3, it is expected that this equipment would operate only during the daytime shift.

A noise exposure assessment was completed for Phase 3, which would occur from 2026 to 2030, for the closest residences at the end of Balboa Road to the southeast of the Project Area closest to the Rock Plant, approximately 4,000 to 4,600 feet from the reclamation work area. **Table 4.13-14** summarizes the Project-related noise exposure that would occur at the Balboa Road residences

TABLE 4.13-13
SUMMARY OF PHASE 3 EQUIPMENT, OPERATION USE HOURS, AND REFERENCE NOISE LEVELS USED IN PROJECT NOISE ASSESSMENT

Equipment No., Make, and Model Type	Daily Use Hours	Reference Noise Level at 100 Feet (dB L_{eq})
1 CAT 330 Excavator Steel Shear	8	68
1 CAT 330 Excavator Grapple	8	68
1 CAT 330 Excavator Breaker	8	68
1 CAT 320 Excavator with Bucket	8	68
1 CAT 966 Utility Loader	8	70
1 Grove RT-635 Crane	8	69
2 CAT 777 Off-Road Haul Trucks	8	72

SOURCES: Edward L. Pack Associates, Inc., 2011;Ashworth Leininger Group, 2011; EnviroMine Inc., Permanente Financial Assurance Estimate, 2011

TABLE 4.13-14
SUMMARY OF ROCK PLANT/CONVEYOR DEMOLITION PHASE 3 NOISE LEVELS COMPARED TO LOCAL STANDARDS

	L_{eq}	L_{50}	L_{dn}
Daytime Limit	---	60	55
Nighttime Limit	---	50	
Shielded Operations			
Balboa Road Residences	36	35	36

NOTES: There is no L_{eq} standard applicable to the County. The Balboa Road residences are in an unincorporated area of the County.

SOURCE: Edward L. Pack Associates, Inc., 2011

compared to the applicable County noise exposure criteria. Project-related noise exposure was calculated to be approximately 36 dB L_{eq}, 35 dB L_{50}, and 32 dB L_{dn}, and would be expected to satisfy the applicable County noise exposure criteria and the associated impact would be less than significant.

Table 4.13-15 summarizes the increase in ambient noise levels that would occur at the Balboa Road residences. Ambient noise exposure at the Balboa Road residences is estimated to be approximately 52 dB L_{dn}. In this case, Project-related noise exposure is approximately 20 dB L_{dn} below the ambient, and although noise levels may be audible at the nearest residential locations, the levels would not add significantly to the existing noise environment. This impact is considered less than significant.

Mitigation: None required.

TABLE 4.13-15
SUMMARY OF ROCK PLANT/CONVEYOR DEMOLITION PHASE 3 L_{DN} NOISE LEVEL INCREASE

Receptor	Ambient	Project-Generated Noise	Total Noise Exposure	Change in dB
		Shielded	Shielded	
Balboa Road Residences	52	32	52	0

SOURCE: Edward L. Pack Associates, Inc., 2011

Impact 4.13-4: Operations within the Permanente Creek Reclamation Area may be audible at noise-sensitive uses in the vicinity. (*Less than Significant Impact*)

The Permanente Creek Reclamation Area (PCRA) is a 23-acre area that will be subdivided into seven sub-areas (1 through 7). The area is located to the south of the WMSA and Quarry pit and is at a lower elevation than most of the RPA area. Because of the steep topography of the PCRA, most of the reclamation work would be done by hand. One excavator with a “sheep’s foot” attachment is planned for use in the PCRA to complete slope stability and erosion control. Revegetation would be done manually. The reclamation of the PCRA would be performed over the Phase 1 and Phase 2 operations as access to parts of the PCRA would not be available until portions of the Phase 1 and Phase 2 commence or are completed.

A noise exposure assessment was completed for the closest residences on Montebello Road west of the PCRA. **Table 4.13-16** summarizes the Project-related noise exposure that would occur at the Montebello Road residences compared to the applicable County noise exposure criteria. The PCRA work would be mostly shielded from view at the most impacted Montebello Road residence with the exception of a portion of Sub-Area 2, where there is a line-of-sight between the home and the topography of the PCRA. As indicated in Table 4.13-16, the Project-related L_{50} and L_{dn} noise exposure would be less than the County noise exposure criteria. In addition, the levels would not add significantly to the existing noise environment. This impact is considered less than significant.

TABLE 4.13-16
SUMMARY OF RECLAMATION PHASE 2 NOISE LEVELS COMPARED TO LOCAL STANDARDS

	L_{eq}	L_{50}	L_{dn}
Daytime Limit	---	60	55
Nighttime Limit	---	50	
Shielded Operations			
Montebello Road Residences	18	17	17
Un-Shielded Operations			
Montebello Road Residences	32	31	31

NOTES: There is no L_{eq} standard applicable to the County. The Montebello Road residences are in an unincorporated area of the County.

SOURCE: Edward L. Pack Associates, Inc., 2011

4.13.7 Alternatives

4.13.7.1 Alternative 1: Complete Backfill Alternative

Alternative 1 would result in the use of additional heavy equipment at the EMSA associated with returning approximately 4.8 million cubic yards of overburden from the EMSA to the Quarry pit during Phase 2. This alternative would eliminate an existing topographic feature (the EMSA) that shields some of the noise generated within the site from being audible at off-site residences. Consequently, the additional heavy equipment activity required to excavate and remove the EMSA, combined with removal of the feature that would help shield nearby residences from equipment noise, would likely result in greater noise impacts to the caretaker's residence and the Cristo Rey development than would occur under the Project.

4.13.7.2 Alternative 2: Central Materials Storage Area Alternative

The reclamation activities associated with Alternative 2 would be similar to the activities under the Project, except that under this alternative, overburden materials in the Quarry pit would be moved to new, more-distant locations within the Quarry instead of to the EMSA. Because the CMSA would be located adjacent to the western side of the EMSA, and would be lower in elevation than the existing height of the EMSA, the reclaimed EMSA would likely shield equipment activity within the CMSA from off-site residential receptors on the valley floor. Therefore, Alternative 2 would likely reduce noise effects relative to the Project because overburden storage (and therefore subsequent reclamation) would occur farther from sensitive receptors.

4.13.7.3 No Project Alternative

The No Project Alternative would extend the time period in which surface mining activities occur within the Project Area and delay final reclamation conditions by approximately 7 years. Because the No Project Alternative would not involve additional overburden storage at the EMSA, but instead would involve reclamation of the currently existing (smaller) EMSA, noise impacts related to the proximity of the EMSA to sensitive receptors would be lessened. Also, since quarrying operations would occur at a lower average rate compared to the Project, the No Project Alternative would result in lessened overall noise levels, albeit over a longer period of time.

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4.14 Population and Housing

This section identifies and evaluates issues related to Population and Housing in the context of the Project and alternatives. This section discusses population trends in the vicinity of the site, including incorporated and unincorporated areas of the County, including the City of Cupertino. This section relies primarily on information from the U.S. Census (Census), the Association of Bay Area Governments[1] (ABAG), and the Housing Elements of the County's and City of Cupertino's General Plans, including the County's Housing Element 2009. No future land uses involving residential or commercial development are considered under the Project.

4.14.1 Setting

4.14.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.14.1 provides setting information specific to population and housing.

County of Santa Clara

Population

According to ABAG data, the County is the most populous among the nine-county Bay Area region,[2] followed by Alameda and Contra Costa counties. The County's population was estimated to be approximately 1,822,000 in 2010.[3] The population of the unincorporated areas of the County was approximately 103,100. ABAG anticipates that by 2030, the County will have a population of approximately 2,310,800, with a population in the unincorporated areas of approximately 120,100 (ABAG, 2009).**Table 4.14-1** summarizes population trends in the Bay Area counties. The County's population growth was moderate between 2000 and 2010 (an increase of approximately 139,415 people, or 8 percent), while in the unincorporated areas of the County, the rate of population growth was much less (an increase of approximately 2,800 or 3 percent). Between 2015 and 2030, the County's overall population is expected to increase by about 19 percent, and the County is expected to maintain its ranking as the most populous Bay Area county. The unincorporated areas are expected to grow by 12 percent, or 12,900 people, during the same timeframe.

Table 4.14-2 summarizes population trends within the County. The unincorporated area of the County ranks as the fourth most populated area in the County, following San Jose, Sunnyvale, and Santa Clara.

1 ABAG is a regional planning agency, representing the cities and counties of the Bay Area.
2 The nine counties are: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.
3 According to the 2010 U.S. Census data, the County's population was 1,781,642.

TABLE 4.14-1
BAY AREA POPULATION PROJECTIONS BY COUNTY, 2000-2030

County	2000	2005	2010	% change 2000-2010	2015	2020	2025	2030	% change 2015-2030
Alameda	1,443,741	1,505,300	1,549,800	7%	1,626,100	1,705,900	1,787,300	1,874,600	15%
Contra Costa	948,816	1,023,400	1,090,300	15%	1,130,700	1,177,400	1,225,500	1,273,700	13%
Marin	247,289	252,600	256,500	4%	260,300	264,000	267,300	270,900	4%
Napa	124,279	133,700	138,800	12%	142,300	144,600	146,300	147,500	4%
San Francisco	776,733	795,800	810,000	4%	837,500	867,100	900,500	934,800	12%
San Mateo	707,163	721,900	733,300	4%	766,900	801,300	832,400	862,800	13%
Santa Clara	**1,682,585**	**1,763,000**	**1,822,000**	**8%**	**1,945,300**	**2,063,100**	**2,185,800**	**2,310,800**	**19%**
Solano	394,542	421,600	443,100	12%	458,500	472,100	484,600	495,800	8%
Sonoma	458,614	479,200	497,900	9%	509,900	522,500	535,200	548,400	8%
Bay Area	6,783,762	7,096,500	7,341,700	8%	7,677,500	8,018,000	8,364,900	8,719,300	14%

SOURCE: ABAG (2009)

TABLE 4.14-2
SANTA CLARA COUNTY POPULATION BY MUNICIPALITY, 2000-2030

Municipality	2000	2005	2010	% change 2000-2010	2015	2020	2025	2030	% change 2015-2030
Campbell	38,138	38,300	40,500	6%	41,800	44,100	45,200	45,900	10%
Cupertino	50,546	53,500	55,200	9%	55,800	56,300	56,700	57,100	2%
Gilroy	41,464	48,200	49,800	20%	55,000	58,700	62,100	66,000	20%
Los Altos	27,693	27,900	28,400	3%	28,700	29,400	29,600	30,200	5%
Los Altos Hills	7,902	8,500	8,800	11%	8,800	8,800	8,900	9,000	2%
Los Gatos	28,592	28,900	29,600	4%	29,900	30,000	30,000	30,100	1%
Milpitas	62,698	64,800	69,000	10%	74,700	82,300	90,400	98,100	31%
Monte Sereno	3,483	3,500	3,400	-2%	3,500	3,600	3,600	3,600	3%
Morgan Hill	33,556	36,500	38,200	14%	40,200	42,200	44,100	45,800	14%
Mountain View	70,708	71,800	72,100	2%	76,100	80,200	84,100	87,300	15%
Palo Alto	58,598	61,400	61,600	5%	66,200	70,400	73,400	80,400	21%
San Jose	894,943	943,300	981,000	10%	1,063,600	1,137,700	1,219,500	1,299,700	22%
Santa Clara	102,361	109,400	114,700	12%	120,700	128,800	138,600	148,200	23%
Saratoga	29,843	30,600	31,400	5%	31,400	31,400	31,400	31,400	0%
Sunnyvale	131,760	133,000	135,200	3%	141,700	147,300	152,000	157,900	11%
Unincorporated	**100,300**	**103,400**	**103,100**	**3%**	**107,200**	**111,900**	**116,200**	**120,100**	**12%**
County of Santa Clara	1,682,585	1,763,000	1,822,000	8%	1,945,300	2,063,100	2,185,800	2,310,800	19%

SOURCE: ABAG (2009)

Employment

The total number of jobs in the County, held by both County residents and non-residents, was estimated to be 906,270 as of 2010, with the total number of jobs in unincorporated areas of the County at 50,400. By 2030, the County is projected to include approximately 1,292,490 jobs, 62,620 of which would be held in unincorporated County areas. This represents an increase of 32 percent Countywide and an increase of 17 percent in the unincorporated areas. There were an estimated 31,780 jobs in the City of Cupertino as of 2010. This number is forecasted to increase by 10 percent between 2015 and 2030, to a total of 35,880 jobs (ABAG, 2009). **Table 4.14-3** summarizes employment trends within the County, unincorporated areas, and the City of Cupertino.

TABLE 4.14-3
SANTA CLARA COUNTY (COUNTYWIDE AND UNINCORPORATED) AND CITY OF CUPERTINO EMPLOYMENT TRENDS AND PROJECTIONS, 2005-2030

	Jobs							
Municipality	**2005**	**2010**	**% Change 2005-2010**	**2015**	**2020**	**2025**	**2030**	**% Change 2015-2030**
Cupertino	31,060	31,780	-17%	32,550	33,340	34,260	35,880	10%
Unincorporated	48,660	50,400	-3%	53,590	56,670	59,690	62,620	17%
County of Santa Clara	872,860	906,270	-13%	**981,230**	**1,071,980**	**1,177,520**	**1,292,490**	32%

SOURCE: ABAG (2009)

Housing

Between 2000 and 2010, the number of housing units increased throughout the Bay Area by approximately 8 percent. During this period, the County experienced an approximate 9 percent growth in the housing stock, adding about 50,179 units. In terms of the percentage increase, Santa Clara was among the counties that experienced a relatively moderate growth in the housing stock (counties with slower growth included San Mateo, Marin, and San Francisco). **Table 4.14-4** compares the number of housing units from 2000 to 2010 in each of the nine Bay Area Counties.

City of Cupertino

As noted in Section 4.11, *Land Use and Planning*, the site is partially within the City of Cupertino's urban services boundary. Based on Census 2005-2009 American Community Survey data, which includes the Census data closest to the June 2007 baseline date, the City of Cupertino contains 52,785 people, 18,915 housing units, and has an average household size of 2.92 (U.S. Census Bureau, 2011).

TABLE 4.14-4
NUMBER OF HOUSING UNITS BY COUNTY FOR THE BAY AREA 2000-2010

County	2000 Housing Units	2005 Housing Units	2010 Housing Units	% Change in Housing Units 2000-2010
Alameda	540,183	558,840	575,465	7%
Contra Costa	354,577	378,343	400,268	13%
Marin	104,990	107,482	108,850	4%
Napa	48,554	52,209	54,348	12%
San Francisco	346,527	355,903	368,136	6%
San Mateo	260,576	266,842	269,491	3%
Santa Clara	**579,329**	**607,035**	**629,508**	**9%**
Solano	134,513	146,251	153,280	14%
Sonoma	183,153	191,949	200,332	9%
Bay Area	2,552,402	2,664,854	2,759,678	8%

SOURCE: State of California (2010)

4.14.1.2 Regulatory Setting

County of Santa Clara

General Plan Housing Element

The County adopted its Housing Element (known as the 2009 Update) in August 2010. The County's Housing Element establishes comprehensive, long-term objectives and implementing policies for the housing within the County. Those guiding and implementing policies that are pertinent to the Project are discussed below. See Section 4.11, *Land Use and Planning*, for other policies in the Countywide Plan and the draft Countywide Plan Update applicable to the Project.

> ***Policy C-HG 2:*** Housing at urban densities shall be built within the cities, not in unincorporated areas.
>
> ***Policy C-HG(i) 2:*** Maintain and, where necessary, strengthen County and city's land use policies and agreements which focus urban development to areas within city urban service areas.

Implementation of the Project would be consistent with these policies.

4.14.2 Baseline

Baseline conditions reflect the 2007 operation of the Project Area as a limestone and aggregate mining quarry, including necessary staffing levels and operations and maintenance activities relating to mining operations and the surrounding open space areas. As described in Chapter 2, *Project Description*, the Quarry has employed an average of 35 persons over the last 10 years, including equipment operators, maintenance personnel, plant operators, site managers, plant engineers, administrators, weigh masters, and quality control technicians. As shown in Table 2-9, in 2007 the Quarry had 32 work days with one shift, 218 work days with two shifts, and 25 work days with three shifts, for a total of 275 work days. There were no residences located within the Project Area in 2007, nor are there any located there currently. The conditions described in the setting consist of time periods that include the year 2007. As such, the data adequately represent population and housing characteristics of the baseline year.

4.14.3 Significance Criteria

Consistent with County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact related to population and housing if it would:

a) Induce substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or

b) Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.

4.14.4 Discussion of Criteria with No Population and Housing Impacts

As explained below, the Project would have no impact related to either of the two established significance criteria.

a) The Project would not induce substantial population growth in an area, directly or indirectly.

The Quarry has employed an average of 35 persons over approximately the last 10 years, with actual employment at any given time depending upon market conditions, the level of production, and other considerations. Employees perform various operational, environmental, and administrative tasks. Employees include equipment operators, maintenance personnel, plant operator, site managers, plant engineers, administrators, and quality control technicians. As the proposed reclamation proceeds, an average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. Given the small number of additional staff, it is anticipated that the temporary positions would be filled from the local labor pool available in the County, with workers expected to commute to the site rather than move. As such, the additional employees would not directly induce population growth in the vicinity of the Project. No additional employees would be required during Phase 3 activities.

The Project also would not indirectly induce substantial population growth by creating new opportunities for local industry or commerce. Implementation of the Project would result in the reclamation of lands to make them suitable for future open space use. The increased suitability of lands for such use would not induce substantial numbers of people to move into the area. Accordingly, the Project would not induce a short- or long-term demand, either directly or indirectly, on population growth. The Project would cause no impact related to criterion a).

b) The Project would not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.

There is no existing housing, or people living, in the Project Area. Therefore, no existing housing or people would be displaced by the Project. For this reason, it would not be necessary, as result of the Project, to construct replacement housing elsewhere. Consequently, the Project would cause no impact related to criterion b).

4.14.5 Impacts and Mitigation Measures

Because implementation of the Project would cause no impact related to population and housing, there are no impacts and no mitigation measures to be discussed in this section.

4.14.6 Alternatives

4.14.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be the similar to the Project, and this alternative would use the same labor pool as the Project. Like the Project, Alternative 1 would not induce substantial population growth directly or indirectly, as temporary increases in staffing would be filled by the local labor pool, and this alternative would not create new opportunities for local industry or commerce. Furthermore, Alternative 1 would not displace any existing housing or people. Therefore, impacts related to population and housing would be the same as under the Project (No Impact).

4.14.6.2 Alternative 2: Central Materials Storage Area Alternative

Reclamation activities associated with Alternative 2 would be the similar to the Project, and this alternative would use the same labor pool as the Project. Like the Project, Alternative 2 would not induce substantial population growth directly or indirectly, as temporary increases in staffing would be filled by the local labor pool, and this alternative would not create new opportunities for local industry or commerce. Furthermore, Alternative 2 would not displace any existing housing or people. Therefore, impacts related to population and housing would be the same as under the Project (No Impact).

4.14.6.3 No Project Alternative

Reclamation activities associated with the No Project Alternative would be comparable to those of the Project, but would occur approximately 7 years later than the Project. This alternative would use the same labor pool as the Project. Like the Project, the No Project Alternative would not induce substantial population growth directly or indirectly, as temporary increases in staffing would be filled by the local labor pool, and this alternative would not create new opportunities for local industry or commerce. Furthermore, the No Project Alternative would not displace any existing housing or people. Therefore, impacts related to population and housing would be the same as under the Project (No Impact).

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4.15 Public Services

This section discusses public services provided in the vicinity of the Project Area and the Project's potential specifically to affect fire protection, police protection, and schools. Analysis of park-related public services is presented in Section 4.16, *Recreation*.

4.15.1 Setting

4.15.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.15.1 provides setting information specific to public services.

Fire Protection

The Santa Clara County Fire Department (SCCFD) is a California Fire Protection District serving unincorporated areas within the County and the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Morgan Hill, and Saratoga (SCCFD, 2011a). In 2008, SCCFD had over 265 employees, 40 volunteer firefighters, 16 fire stations, 5 other support facilities, and more than 100 vehicles to cover approximately 100 square miles and a population of over 210,000. By 2010, SCCFD expanded to over 285 employees, and 17 fire stations cover a population of over 246,000. In 2010, it responded to a total of 18,007 emergencies, 1,701 (9.45 percent) of which were fires (SCCFD, 2011b).

Monta Vista Station, at 22620 Stevens Creek Boulevard, is the designated first responder for the Project Area (Young, 2011). This station acquires and distributes weather information provided by Remote Automated Weather Stations, which provide the data used to determine the level of wildfire risk. In 2008 (and currently), the station housed one engine, two paramedic units, and a battalion rig. The Cupertino Station is located at 20215 Stevens Creek Boulevard in Cupertino and would be the secondary responder to the Project Area. In 2008, the station was equipped with one truck, one engine and one patrol rig. Currently the Cupertino station houses one ladder truck, one engine company, one patrol truck, and a California Office of Emergency Services (OES) engine for department use that is on agreement to respond where needed when called upon by the state.

The Project Area is located within a designated State Responsibility Area (SRA),[1] for which the Santa Clara Unit of the California Department of Forestry and Fire Protection (CalFIRE) primarily is responsible for addressing wildfires (CalFIRE, 2007). Santa Clara Unit's Battalion Three (Los Gatos) provides service for the Project Area. It is staffed with one battalion chief, seven permanent and two seasonal (May through October) fire captains, two fire pilots, two seasonal fire apparatus engineers, and 25 seasonal volunteers. Equipment for Battalion Three

1 Section 4102 of the Public Resources Code defines "State Responsibility Areas" as those areas of the state for which the State has the financial responsibility of preventing and suppressing fires. Under Public Resources Code §§4125 and 4126, these areas roughly correspond to vegetated lands that have watershed value. Lands in incorporated cities or owned by the federal government are excluded.

includes one utility, two fire engines, one helicopter, and one helicopter service unit (CalFIRE, 2008). The CalFIRE station nearest the Project Area is the Stevens Creek Station (13326 Stevens Canyon Road in Cupertino). This same station would provide first response in the case of a wildfire. Under a mutual aid agreement, it also would support SCCFD in response to a structural fire at the site (Bell, 2011). The CalFIRE station of second response, as well as equipment, would depend on the nature of the emergency and/or the extent of the wildland fire. Potential wildfire hazards are addressed in Section 4.9, *Hazards and Hazardous Materials*.

Police Protection

The Santa Clara County Office of the Sheriff (SCCOS) provides law enforcement services to Cupertino, Los Altos Hills, Saratoga, and unincorporated areas of the County, including the Project Area. In 2008, SCCOS was comprised of 586 sworn police officers and 223 non-sworn civilian staff; currently SCCOS comprises 1,429 sworn and 312 non-sworn personnel for a service population of approximately 197,000 (SCCOS, 2011). The Department's law enforcement services are divided into three major bureaus: Field Operations, Support Services, and Administrative Services. The West Valley Division, based at the Westside Sheriff's Substation at 1601 S. De Anza Boulevard in Cupertino, provides law enforcement patrol services in the vicinity of the site.

From January 2008 through June 2010, there were 17 calls for service to the vicinity of the site, of which the vast majority were unfounded calls to 911. Other calls were for trespassing, animal or adult disturbance, suspicious circumstances, theft, and follow-ups on felonies (Calderone, 2010). The department maintains response time goals for within the City of Cupertino of 5 minutes for Priority 1 calls (life-threatening in nature), 9 minutes for Priority 2 calls (response necessary, but not life-threatening), and 20 minutes for Priority 3 calls (immediate response not necessary, but provided when available). Although the site is outside of Cupertino, SCCOS strives to meet these response time goals for the site as well. Response time for Sheriff's deputies to the site area were 3.9 minutes for Priority 1 calls, 5.9 minutes for Priority 2 calls, and 9.7 minutes for Priority 3 calls (Calderone, 2010).

The California Highway Patrol (CHP) provides law enforcement along all state routes within California, including U.S. Interstate 280 and State Route 85, which are in the vicinity of the site. CHP also assists local governments during emergencies when requested. The CHP maintains local offices in San Jose.

Schools

The site lies within the boundaries of the Cupertino Union School District (CUSD) and Fremont Union High School District (FUHSD) (CUSD, 2005b; FUHSD, 2005; City of Cupertino, 2008). Both districts are at or near capacity, and both districts are in the process of modernization and expansion of their facilities.

In 2007, CUSD served over 16,500 students in the City of Cupertino and surrounding municipalities and unincorporated areas through 20 elementary and K-8 schools and five middle schools; in the 2009–2010 school year, CUSD served approximately 18,010 students (Great

Schools, 2007; Ed-Data, 2011a). The nearest elementary school to the site is Stevens Creek Elementary School, at 10300 Ainsworth Drive in Cupertino. Generally, in the vicinity of the site, students living north of Stevens Creek Boulevard attend Cupertino Middle School at 1650 South Bernardo Avenue in Sunnyvale, and students living south of the boulevard attend Kennedy Middle School at 821 Bubb Road in Cupertino (CUSD, 2005a).

In 2007, FUHSD served over 10,200 students in Cupertino, Sunnyvale, San Jose, and the surrounding areas through five high schools, an educational services center, and an adult and community education center; in the 2009-2010 school year, FUHSD served approximately 10,285 students (Ed-Data, 2011b). Students living in the vicinity of the site attend Monta Vista High School, at 21840 McClellan Road in Cupertino, which had a student population of 2,530 students in 2007, and 2,523 during the 2009-2010 school year (FUHSD, 2011).

Parks

For a description of park facilities in the vicinity of the Project Area see Section 4.16, *Recreation*.

Other Public Facilities

There are no libraries, hospitals, or other public facilities within 1 mile of the Project Area.

4.15.1.2 Regulatory Setting

County of Santa Clara

General Plan

Natural hazards, including extreme fire hazards, are addressed in the Health and Safety chapter of the County General Plan. Among other things, the General Plan's strategies and policies relate to inventorying and monitoring hazards and conditions; minimizing the residential population within high hazard areas; and designing, locating and regulating development so as to avoid or reduce hazard risks to acceptable levels. The following strategy and policies would be applicable to the Project:

> ***Policy R-HS 7:*** Areas of significant natural hazards, especially high or extreme fire hazard, shall be designated in the County's General Plan as Resource Conservation Areas, with generally low development densities in order to minimize public exposure to risks associated with natural hazards and limit unplanned public costs to maintain and repair public infrastructure.
>
> ***Strategy #3:*** Design, Locate and Regulate Development to Avoid or Withstand Hazards.
>
> ***Policy R-HS 9:*** Development in rural unincorporated areas affected by natural hazards should be designed, located, and otherwise regulated to avoid or reduce associated risks to an acceptable level:
>
> 1. In areas of highest potential hazard, such as floodways, active landslides, fault traces, and airport safety zones, no new habitable structures shall be allowed.

2. In other areas of lesser hazards, there shall be no major structures for involuntary occupancy, such as schools, hospitals, correctional facilities or convalescent centers.

Policy R-HS 10: In all hazard areas, projects shall be designed and conditioned to avoid placement of structures and improvements where they would:

a. be directly jeopardized by hazards;

b. increase the hazard potential; and/or,

c. increase risks to neighboring properties.

Policy R-HS 11: Proposals for General Plan amendments, zone changes, use permits, variances, building site approvals, and all land development applications subject to environmental assessment shall be reviewed for the presence of hazardous conditions, utilizing the best, most up-to-date information available. If a development proposal would require a major investment or addition to public infrastructure in areas subject to high hazards, objective estimates of the probable public costs of maintaining and repairing the infrastructure should be provided to decision-makers.

Policy R-HS 12: Proposals shall be conditioned as necessary to conform with County General Plan policies on public safety. Projects which cannot be conditioned to avoid hazards shall be conditioned to reduce the risks associated with natural hazards to an acceptable level or shall be denied.

Policy R-HS 13: Where needed to adequately assess the hazards of a proposal, the County shall require on-site investigations and analysis by certified professionals.

Policy R-HS 19: In areas of high potential for activation of landslides, there shall be no avoidable alteration of the land or hydrology which is likely to increase the hazard potential, including:

a. saturation due to drainage or septic systems;

b. removal of vegetative cover; and

c. steepening of slopes or undercutting the base of a slope.

Policy R-HS 20: Lands where soils are in a continually saturated condition should not be used for structural purposes or filled with heavy earth fills due to their inherently weak and unstable nature. Uses requiring septic systems in such areas should not be allowed.

Policy R-HS 21: Proposals involving potential geologic or seismic hazards shall be referred to the County Geologist for review and recommendations.

Implementation of the Project would be consistent with these policies and strategy.

Operational Area Emergency Operations Plan

Since the early 1950s, the County Office of Emergency Services (OES) has been the agency responsible for preparation of the County Emergency Plan and all supporting documentation (County of Santa Clara, 1994). OES is vested with the responsibility for coordinating all public and private support agencies to prepare and respond to extraordinary emergencies related to natural and human-caused disasters. Such agencies include law enforcement, fire and rescue, health, public works, transportation, welfare, and communications Countywide. The County Board of Supervisors approved the *Santa Clara County Operational Area Emergency Operations Plan* on March 18, 2008 (County of Santa Clara, 2008).

4.15.2 Baseline

Potential Project-related impacts to public services are analyzed relative to conditions as they existed in June 2007. As shown in the setting, the public service providers serving the Project Area have not changed since 2007; however, the number of SCCFD and SCCOS staff has expanded since 2007, and there have been minor fluctuations in student populations. In 2007 (and currently) the Project area did not have any residents, and was fenced and gated to prevent unauthorized public access.

4.15.3 Significance Criteria

Consistent with the County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact on public services if it would:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, school facilities, parks, or other public facilities.

4.15.4 Discussion of Criteria with No Public Services Impacts

As explained below, the Project would have no impact related to public services.

a) The Project would not result in substantial adverse physical impacts associated with the provision or need for new or physically altered governmental facilities for public services: fire protection, police protection, school facilities, parks or other public facilities.

Implementation of the Project would not result in the construction of new or expansion of existing government facilities for public services. An average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. No additional employees would be required during Phase 3 activities. Given the small number of additional staff, it is anticipated that the temporary positions would be filled from the local labor pool available in the County, with workers expected to commute to the site rather than move. Because the staff increase would come from the local labor pool, these workers are considered part of the existing demand on fire protection services, police protection, school facilities, parks, and other public facilities such as libraries or medical facilities. Therefore, the Project would not cause an increased demand or need for school facilities, parks, or other public facilities.

The proposed reclamation activities would involve the operation of existing equipment to conduct tasks that are generally similar to existing baseline activities, and so would not cause an increase in demand for fire or police protection services; therefore, there would be no need for new or expanded fire and police facilities.

Operation of the Project could require occasional response for fire protection and medical emergencies or for typical police protection services (e.g., for traffic enforcement, traffic control in the event of vehicular accident, trespassing/vandalism, etc.); however, in light of the substantial similarity between the amount and type of work that would occur under the Project relative to baseline conditions, existing fire and police protection facilities would be adequate to respond to the need for such services.

Reclamation activities would add potential fuel sources for wildfire (i.e., vegetation) while removing potential ignition sources, such as sparks from equipment or vehicles, blasting materials, and the like, which are present as part of baseline conditions. With the Project-related reduction and eventual elimination of employee presence and use of heavy equipment, vehicles, and fuel in the Project Area, the risk of wildfire would be less under the Project than it is under baseline conditions. Reclamation would make the site suitable for a future open space use; however, there is no indication that public access to the Applicant's private property would necessarily be granted. Because the Project would reduce fire hazard potential within the Project Area relative to baseline conditions, the Project would reduce the potential demand for fire response services. The Project would cause no impact related to criterion a).

4.15.5 Impacts and Mitigation Measures

Because implementation of the Project would cause no impact on public services, there are no impacts and no mitigation measures to be discussed in this section.

4.15.6 Alternatives

4.15.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be similar to the Project. Alternative 1 would require approximately the same number of employees as the Project, and would not induce substantial population growth directly or indirectly. Like the Project, Alternative 1 would not generate a substantial temporary or permanent service population that would result in the need for new or physically altered fire protection, police protection, school, park, or other public service facilities (No Impact).

4.15.6.2 Alternative 2: Central Materials Storage Area Alternative

Reclamation activities associated with Alternative 2 would be similar to the Project. Alternative 2 would require approximately the same number of employees as the Project, and would not induce substantial population growth directly or indirectly. Like the Project, Alternative 2 would not generate a substantial temporary or permanent service population that would result in the need for new or physically altered fire protection, police protection, school, park, or other public service facilities (No Impact).

4.15.6.3 No Project Alternative

Reclamation activities associated with the No Project Alternative would be the same as the Project, but 7 years later than under the Project. The No Project Alternative would require approximately the same number of employees as the Project, and would not induce substantial population growth directly or indirectly. Like the Project, the No Project Alternative would not generate a substantial temporary or permanent service population that would result in the need for new or physically altered fire protection, police protection, school, park, or other public service facilities (No Impact).

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4.16 Recreation

This section discusses the Project's relationship to existing parks and recreational resources provided in unincorporated areas of the County.

4.16.1 Setting

4.16.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.16.1 provides setting information specific to recreation-related resources.

The Santa Clara County Parks and Recreation Department (SCCPRD) oversees 28 parks and approximately 45,000 acres of publicly accessible recreation areas (County of Santa Clara, 2003; 2008). Regional parks in the County typically are 200 acres or more. SCCRPD further classifies regional parks in the County, or portions of parks within the County, as regional resource banks, regional natural park areas, regional park rural recreation areas, regional park urban recreation areas, and regional historic sites. SCCPRD parks in the Project vicinity include Rancho San Antonio County Park approximately 0.25 miles north of the EMSA, Stevens Creek County Park approximately 2.5 miles south of the Project Area, Sanborn Skyline County Park approximately 5 miles south of the Project Area, and Pescadero Creek County Park approximately 8 miles southwest of the Project Area. Other park lands include state and federal parks and preserves, which are areas with significant natural or cultural features and/or resources that merit preservation for public enjoyment and education. State and federal lands generally are preserved for residents and visitors to protect areas with scenic beauty or special habitat areas.

Mid-Peninsula Regional Open Space District

The Mid-Peninsula Regional Open Space District (MROSD) was established by voter initiative in 1972 for the purpose of acquiring and administering open space lands. The District is a public agency funded by a share of the annual total property tax collected within the District (1.7 cents per $100 of assessed property value). Other revenue sources may include federal and state grants, interest and rental income, donations, land gifts, and note issues. The District is not a regulatory agency and does not have the power of eminent domain; it acquires conservation easements through voluntary transactions with landowners, and also purchases land outright from willing sellers. Over 50,000 acres of mountainous, foothill, and bayland open space is protected within the MROSD, which includes 25 open space preserves and covers an area of 550 square miles. The closest MROSD preserve to the Project Area is the Rancho San Antonio Open Space Preserve, located adjacent to north of the Quarry site and a portion of the Project Area. The SCCPRD Rancho San Antonio County Park, located on the eastern edge of the Open Space Preserve and approximately 0.25 miles north of the EMSA, is leased to and operated by MROSD. The Rancho San Antonio County Park, combined with the adjacent Rancho San Antonio Open Space Preserve (RSA Preserve/Park), provide 2,300 acres of trails and other recreational features to the north and west of the Project Area. The PG&E Trail forms the Quarry site's northern property line for most of the western portion of the site; this trail is situated mostly on the north-facing slope of the hillside approximately 0.25 mile north of the Project Area (SCCPRD, 2011). The Hammond-Snyder Loop Trail is approximately 1 mile northeast of the Project Area.

Other MROSD open space preserves in the area include the Montebello Open Space Preserve, which provides an additional 3,177 acres of contiguous open space further to the west, approximately 2.5 miles from the site; and Picchetti Ranch Open Space Preserve and Fremont Older Open Space Preserve, located approximately 1.5 miles south of the site. All of these preserves contain hiking, equestrian, and bicycle trails. Other nearby trails include Black Mountain Trail to the west, and the Montebello Road/Trail to the south. In addition, there is one planned trail route that runs adjacent to the east of the Project Area (see "Countywide Trails Master Plan Update," below).

Peninsula Open Space Trust

The Peninsula Open Space Trust (POST) was founded in 1977 as a private, non-profit organization and since has protected more than 55,000 acres in Santa Clara and San Mateo counties by working directly with willing landowners. Using funds from private donors, POST is able to leverage matching funds from state and federal agencies to purchase open spaces. The nearest POST open space preserves and easements to the Project Area are the Nack Conservation Easement, The Closs 1 and Closs 2 projects within the Rancho San Antonio Open Space Preserve, the Consigny/Stevens Creek project, and the Schwabacher project within the Monte Bello Open Space Preserve. All are located within approximately 2 miles of the site.

4.16.1.2 Regulatory Setting

County of Santa Clara

Countywide Trails Master Plan Update

The *1995 Santa Clara County Countywide Trails Master Plan Update* (CWTMP) provides the County's trails route map and policies for a Countywide system that has been part of the County's General Plan since 1980 (County of Santa Clara, 1995). The intent of the CWTMP's policies is to "direct the County as it incrementally implements the plan while adhering to these five beliefs: 1) to build a realistic trail system that effectively meets the needs of County residents; 2) to respect private property rights through due process in the detail planning and design of trails; 3) to provide responsible trail management; inform the trail user that the idea of 'shared-use' includes respecting adjacent land uses; 4) to accept responsibility for any liability arising from the public's use of County trails; and 5) to implement trails involving private property only when the landowner is a willing participant in the process."

The *Countywide Trails Master Plan Update* Map indicates that one segment of the planned Regional Trail Route R1-A (Juan Bautista de Anza National Historic Trail-Northern Recreation Retracement Route) runs east of the EMSA on land that is outside of the Project Area, but within the site boundary (County of Santa Clara, 1995). This trail segment is designated as "trail route within private property," a designation intended for uses such as hiking, off-road bicycling, and equestrian use, according to the CWTMP. According to the CWTMP Map, these trail routes are to be considered when the landowner is a willing participant.

As stated in the trail policies of the CWTMP, the County shall ensure that trail planning accommodates public recreation and other needs while recognizing the rights of private property owners, the need for safety and the requirements of environmental protection.

Open Space Preservation: A Program for Santa Clara County

A 1987 report, entitled *Open Space Preservation: A Program for Santa Clara County* and also known as the *Report of the Preservation 2020 Task Force*, outlines the County's open space and park acquisition goals, in recognition of continued growth in the County due to the initial expansion of Silicon Valley (County of Santa Clara, 1987). The report identifies and ranks park and open space preservation acquisition priorities. The 4,300 acres surrounding Permanente Creek are designated as Study Area 13. Within this study area, Rancho San Antonio Park was included as a priority for park acquisition and the Permanente Creek study area a priority for open space. This area was recognized for its watershed, viewshed, and urban buffer qualities. It also states that the land use policies of the quarry should be monitored to ensure that the open space buffers surrounding the Quarry pit are maintained.

Implementation of the Project would be consistent with the recreation plans identified above.

4.16.2 Baseline

The baseline used to assess potential effects on recreation-related resources is June 2007. The regional and local setting described above describes the neighborhood and regional parks, preserves, and other recreational opportunities in the vicinity of the Project Area. There were no recreation-related facilities or opportunities within the Project Area in 2007, nor are there now.

4.16.3 Significance Criteria

Consistent with the County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact on recreation-related resources if it would:

a) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;

b) include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment;

c) be on, within or near a public or private park, wildlife reserve, or trail or affect existing or future recreational opportunities; or

d) result in loss of open space rated as high priority for acquisition in the "Preservation 2020" report.

4.16.4 Discussion of Criteria with No Impact to Recreation

As explained below, the Project would have no impact related to criteria a), b) or d). The potential for the Project to cause an impact related to criterion c) is discussed in Section 4.16.5.

a) The Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The Project does not entail new residential uses. An average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. No additional employees would be required during Phase 3 activities. Given the small number of additional staff, it is anticipated that the temporary positions would be filled from the local labor pool available in the County, with workers expected to commute to the site rather than move. Because the staff increase would come from the local labor pool, these workers are considered part of the existing demand on recreational facilities. Accordingly, the Project would not increase the demand for or use of existing neighborhood and regional parks or other recreational facilities, and no substantial physical deterioration of any such facility would occur or be accelerated. The Project would cause no impact related to criterion a).

b) The Project would not include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

The Project does not include recreational facilities and, as discussed above, would not increase demand or require the construction of new or expansion of existing recreational facilities. Accordingly, the Project would not involve any recreation-related construction that could have an adverse physical effect on the environment. The Project would cause no impact related to this criterion.

d) The Project would not result in loss of open space rated as high priority for acquisition in the “Preservation 2020” report.

The Permanente Creek area was rated as a high priority for acquisition in the “Preservation 2020” report due to its watershed, viewshed, and urban buffer quality. The proposed reclamation of the Project Area, including the PCRA, would make these lands suitable for future open space uses. The “Preservation 2020” report also suggests that the land use activities on the site should be monitored to ensure that a sufficient buffer is retained between surface mining operations and surrounding areas. The Project would increase the number of vegetated, open space acres set aside to provide physical separation of onsite operations from surrounding offsite uses. The Project would not result in loss of open space rated as high priority for acquisition in the “Preservation 2020” report, and so would cause no impact related to this criterion.

4.16.5 Impacts and Mitigation Measures

c) Would the Project be on, within, or near a public or private park, wildlife reserve, or trail or affect existing or future recreational opportunities?

There are no wildlife reserves on or in the vicinity of the Project Area; therefore, the Project would cause no impact related to wildlife reserves. The Project would be implemented on private property, and not on or within public parkland or trails. Further, the landowner has not established any private parks or trails in the Project Area. Consequently, the Project would cause no impact related to a location on or within a public or private park or trail. Implementation of the Project would cause no impact to existing recreational opportunities within the Project Area, because none exist.

Impact 4.16-1: The Project would be near a public park and trail and could affect existing or future recreational opportunities. (*Less than Significant Impact*)

Recreational opportunities at the existing parks, open space preserves, and trails surrounding the Project Area include hiking, biking, riding horses, and other activities. The Project would not cause direct effects on recreational opportunities at these nearby areas, as construction, operation and maintenance activities would not interfere with access to nearby recreational areas or deteriorate park facilities. The same recreational opportunities that were available in 2007 (and currently) at the existing parks, open space preserves, and recreational trails in the vicinity of the Project Area would continue to exist and be available to the public; Project impacts would therefore be less than significant.

Indirect effects on the quality of recreational opportunities while active reclamation activities are in progress include degradation of views from the increased presence of construction equipment, and increased levels of dust and noise in the vicinity of the Project. Although construction activities required to implement the Project would be similar to and use the same equipment as the baseline activities in the WMSA and Quarry pit portions of the Project Area, in 2007 few to no mining activities were occurring in the EMSA. Consequently, reclamation activities in the EMSA would increase the presence of industrial activities in that portion of the Project Area. However, effects to views (including construction dust) from recreational areas are addressed in Section 4.1, *Aesthetics*; and effects to recreational users from increased noise are addressed in Section 4.13, *Noise*.

Implementation of the Project would cause no adverse impact to future recreational opportunities within or near the Project Area. The Project is designed to make the reclaimed lands suitable for future open space uses. Although implementation of the Project would result in improved suitability of the Project Area for recreational opportunities, there is no evidence that the Project would have any effect on the landowner’s willingness to allow public use of its private property for recreational purposes. Accordingly, Project impacts to future recreational opportunities would be less than significant.

4.16.6 Alternatives

4.16.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be similar to the Project. Like the Project, Alternative 1 does not contain a residential component that would result in an increased use of existing recreational facilities, include or require the construction or expansion of recreational facilities, or result in the loss of open space rated as high priority for acquisition in the "Preservation 2020" report. Consequently, like the Project, Alternative 1 would have no impact for criteria a), b), and d). Regarding criterion c), Alternative 1 would cause no impact related to wildlife reserves, would not be located on or within public parkland or trails, and would cause no impact to existing recreational opportunities within the Project Area, because none exist. Alternative 1 would be near the same public parks and trails as the Project, and would not interfere with access to nearby recreational areas. However, Alternative 1 would cause slightly different indirect impacts to the quality of recreational areas than the Project, specifically for visitors to the RSA Park/Preserve. Under Alternative 1, approximately 4.8 million cubic yards of overburden stored in the EMSA would be returned to the Quarry pit during reclamation Phase 2. For visitors to the RSA Park/Preserve, removing the EMSA would eliminate the screening of views of and noises associated with the industrial uses occurring at the Cement Plant. However, effects to views (including construction dust) from recreational areas are addressed in Section 4.1, *Aesthetics*; and effects to recreational users from increased noise are addressed in Section 4.13, *Noise*. Overall, implementation of Alternative 1 would cause comparable impacts related to Recreation as those that would be caused by the Project.

4.16.6.2 Alternative 2: Central Materials Storage Area Alternative

Reclamation activities associated with Alternative 2 would be similar to the Project. Like the Project, Alternative 2 does not contain a residential component that would result in an increased use of existing recreational facilities, include or require the construction or expansion of recreational facilities, or result in the loss of open space rated as high priority for acquisition in the "Preservation 2020" report. Consequently, like the Project, Alternative 2 would have no impact for criteria a), b), and d). Regarding criterion c), Alternative 2 would cause no impact related to wildlife reserves, would not be located on or within public parkland or trails, and would cause no impact to existing recreational opportunities within the Project Area, because none exist. Alternative 2 would be near the same public parks and trails as the Project, and would not interfere with access to nearby recreational areas. Alternative 2 would cause slightly less indirect impacts to the quality of recreational areas than the Project, specifically for visitors to the RSA Park/Preserve. Under Alternative 2, the reclamation of the eastern and central portions of the EMSA would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored in an area farther removed from RSA Park/Preserve. For visitors to the RSA Park/Preserve, some noise impacts would be located further away than under the Project (at the CMSA instead of the EMSA), and reclamation would occur sooner than under the Project, lessening impacts related to views. However, effects to views (including construction dust) from recreational areas are addressed in Section 4.1, *Aesthetics*; and effects to recreational users from increased noise are addressed in Section 4.13, *Noise*. Overall, implementation of Alternative 2 would be slightly more advantageous than the Project with respect to impacts to Recreation.

4.16.6.3 No Project Alternative

Reclamation activities associated with the No Project Alternative would be similar to the Project, but seven years later than under the Project. Like the Project, the No Project Alternative does not contain a residential component that would result in an increased use of existing recreational facilities, include or require the construction or expansion of recreational facilities, or result in the loss of open space rated as high priority for acquisition in the “Preservation 2020” report. Consequently, like the Project, the No Project Alternative would have no impact for criteria a), b), and d). Regarding criterion c), the No Project Alternative would cause no impact related to wildlife reserves, would not be located on or within public parkland or trails, and would cause no impact to existing recreational opportunities within the Project Area, because none exist. The No Project Alternative would be near the same public parks and trails as the Project, and would not interfere with access to nearby recreational areas. The No Project Alternative would cause similar impacts to views for visitors to the RSA Park/Preserve, and slightly less indirect impacts to the quality of recreational areas because noise impacts would be lessened. However, effects to views (including construction dust) from recreational areas are addressed in Section 4.1, *Aesthetics*; and effects to recreational users from increased noise are addressed in Section 4.13, *Noise*. Overall, implementation of the No Project Alternative would cause comparable impacts related to Recreation as the Project.

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4.17 Transportation/Traffic

This section provides an evaluation of existing and cumulative traffic associated with the proposed RPA for the Permanente Quarry. The existing roadway network and access location to the site were examined. To assess the current safety conditions in and around the site, collision data was obtained for a recent three-year period. Travel demand estimates, including trip generation and distribution for existing and cumulative operations in the Project Area were analyzed. Lastly, potential transportation impacts associated with the proposed reclamation activities were evaluated and documented.

4.17.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.17.1 provides setting information specific to transportation and traffic. The site is located in an unincorporated area of the County and is not generally bounded by an existing roadway network. Adjacent uses to the site are comprised of several buffer areas and open space uses, including County parks and Mid-Peninsula Regional Open Space District preserves to the north, west, southwest, and southeast. The nearest roadway in proximity to the Project Area is Permanente Road, located in the eastern portion of the site, which serves as the main ingress and egress to the site. Permanente Road becomes Stevens Creek Boulevard, a major east-west collector roadway within Cupertino City Limits that provides direct connection to several local streets and regional highways. Figure 2-1 in Chapter 2, *Project Description*, shows the regional and local roadways near the site that are described below.

The study area relevant to transportation/traffic is the Project Area, which is located in an unincorporated area of the County. A portion of the Project Area also falls within the unincorporated Urban Service Area boundary of the City of Cupertino. Therefore, the city's transportation policies are also considered.

4.17.1.1 Regional and Local Setting

Regional Roadways

State Route 85 (SR 85) is a six-lane freeway that generally runs in a north-south alignment, east of the site. SR 85 provides access to Interstate 280 (I-280) and Stevens Creek Boulevard, as well as to multiple communities, including the cities of Cupertino, Mountain View, and Sunnyvale.

Interstate 280 (I-280) is an eight-lane freeway that generally runs in a southeast-northwest alignment north of the site. I-280 serves Cupertino and northwestern portions of the County; it connects with I-880/SR 17, U.S.101 to the east, and provides access to several regional and local roadways including SR 85 and SR 87. SR 85 also serves Cupertino, northwest and north central County and is one of the primary sources of connection between multiple communities throughout the County.

Local Roadways

Permanente Road serves as the ingress and egress to and from the site. It is a two-lane roadway, with no median barrier and no pedestrian or bicycle facilities. Permanente Road discontinues at the entrance gates of the Permanente Quarry. Permanente Road becomes Stevens Creek Boulevard east of Foothill Boulevard.

Stevens Creek Boulevard is located directly east of the site and serves as a main access point for vehicles traveling between the site and SR 85. The roadway is a two-lane arterial with left-turn pockets (where appropriate) and raised sidewalks along both sides of the roadway. The roadway also has a four-foot-wide Class II bicycle lane along both sides of the roadway. The arterial becomes Permanente Road west of Foothill Boulevard. Santa Clara Valley Transportation Authority (VTA) bus route #51 operates along the roadway (VTA, 2010). According to the City of Cupertino Municipal Code, the roadway is a designated truck route (City of Cupertino, 2010).

Foothill Boulevard is located directly east of the site and serves as a connecting road for vehicles traveling between the site and I-280. The roadway is a four-lane, divided arterial with a raised median, raised sidewalks along both sides of the roadway, and a four-foot-wide Class II bicycle lane along both sides of the roadway. VTA bus route #51 operates along the roadway, and under the County Code, the roadway is a designated truck route.

The intersection of Stevens Creek Boulevard and Foothill Boulevard is signalized, with 10-foot-wide, painted crosswalks along the northbound, southbound, and westbound approaches. Pedestrian signals are present to indicate when walking across the roadway is permitted for pedestrians.

Quarry Operations

The Quarry operates 24 hours a day, with two 12-hour work shifts. Vehicles associated with onsite operations access the site via Permanente Road. These vehicles operate along internal paved and unpaved roads within the site on a daily basis.

Existing Traffic Conditions

Field observations determined that Permanente Road and portions of Stevens Creek Boulevard (west of Foothill Boulevard) experiences moderate-to-low traffic volumes, with few vehicles traveling westbound from the Stevens Creek Boulevard / Foothill Boulevard intersection. The majority of traffic near the site is distributed along Foothill Boulevard, and traveling eastbound along Stevens Creek Boulevard. These vehicular travel patterns are primarily due to the existing retail, restaurant, and institutional uses (e.g., De Anza College) located east of the site along Stevens Creek Boulevard. No substantial queuing of vehicles was observed at the intersection of Stevens Creek Boulevard and Foothill Boulevard.

The theoretical daily carrying capacity (i.e., the highest traffic volume that can travel on a roadway in a day) ranges from about 10,000 to 15,000 vehicles for a two-lane road. The theoretical hourly carrying capacity is generally 10 percent of the daily capacity. Based on field observations, volumes along Permanente Road are lower than the road’s theoretical capacity.

Parking

Onsite parking is available for employees and visitors of the site. A gated entrance is located at the terminus of Permanente Road, and the entrance is monitored by an attendant. Employees and visitors must register with the attendant at the entrance gate in order to access the onsite, unpaved parking area. On-street parking is prohibited along Permanente Road.

Transit Service

Santa Clara Valley Transportation Authority (VTA) provides regional and local transit service throughout several communities in the County. Within proximity of the site, VTA Bus Route #51 operates along Stevens Creek Boulevard and Foothill Boulevard. There is no direct transit service to the site, and no bus operations occur along Permanente Road or along Stevens Creek Boulevard west of Foothill Boulevard.

Bicycle/Pedestrian Circulation

Bicycle lanes operate along Foothill Boulevard and Stevens Creek Boulevard. These are Class II bicycles facilities, in which a four-foot-wide, striped bicycle lane operates along a roadway and is exclusively for bicycle use, and there is no barrier between the bicycle lane and a vehicle travel lane. The bicycle lane along Stevens Creek Boulevard discontinues west of Foothill Boulevard, and no bicycle facilities are located along Permanente Road.

The majority of local roadways near the site include raised, four-foot-wide paved sidewalks for pedestrians. Striped crosswalks are present at intersections along with pedestrian “walk” signals. Sidewalks along the north side and south side of Stevens Creek Boulevard discontinue when the roadway becomes Permanente Road. There are no sidewalks at the entrance of the site.

Emergency Access

Permanente Road is the only access road for emergency vehicles into the Project Area. There are no auxiliary roadways to and from the site that could be accessible for emergency vehicles.

Traffic Safety

To assess the current safety conditions near the site, collision data was obtained from the Statewide Integrated Traffic Records System (SWITRS) for the three-year period of 2007-2009, for Stevens Creek Boulevard (between Foothill Boulevard and SR 85), and Foothill Boulevard (between Stevens Creek Boulevard and I-280) (CHP, 2010).

As shown in **Table 4.17-1**, the roadway segment of Stevens Creek Boulevard averaged 26 accidents per year with no accidents involving trucks. The roadway segment of Foothill Boulevard averaged nearly 15 accidents per year with an average of about one accident per year involving a truck. The predominant cause and type of accident over the three-year period was Failure to Heed Stop/Signal Sign and Broadside, respectively.

TABLE 4.17-1
COLLISION HISTORY IN PROJECT AREA[a]

Roadway Segment	Distance (miles)	2007	2008	2009	2007-2009 Average
Stevens Creek Boulevard (Foothill Blvd to State Route 85)	1.3	25 (0)	29 (0)	25 (0)	26.3 (0)
Foothill Boulevard (Stevens Creek Blvd to I-280)	0.8	12 (0)	16 (2)	16 (2)	14.6 (1.3)

[a] The total number of accidents, for each year, are shown, with accidents involving trucks shown in parenthesis.

SOURCES: ESA, using data from CHP, 2010.

4.17.1.2 Regulatory Setting

The development and regulation of the transportation network in the vicinity of the Project Area primarily involves state, county, and local jurisdictions. Applicable state and local laws and regulations related to traffic and transportation issues are discussed below.

State of California

California Department of Transportation

Caltrans manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Within proximity of the Project Area, there are two facilities that fall under Caltrans' jurisdiction: I-280 and SR 85.

County of Santa Clara

General Plan

The County General Plan Transportation Chapter provides information about the transportation needs of the County (County of Santa Clara, 1994a, 1994b). The Plan also includes Level of Service (LOS) standards for the County.[1] Currently, the County deems LOS D or better to be the acceptable service levels for intersections and roadway segments, and LOS E for designated Congestion Management Program (CMP) roadways. The following policies that pertain to the Project are from the General Plan Transportation Chapter:

> ***Policy C-TR 1*****:** the County should develop and maintain an adequate, balanced, and integrated transportation system that is affordable and convenient to use and that is capable of meeting projected future demand.
>
> ***Policy R-TR 2*****:** Transportation plans for facilities in the rural unincorporated areas should be periodically reviewed and revised.

1 Level of service (LOS) is a qualitative description of a roadway's or intersection's performance based on the average delay conditions experienced by motorists.

> ***Policy R-TR 9*: ** Rural roads should be designed and built to standards that will assure driving safety and provide access for emergency vehicles.
>
> ***Policy R-TR 11*: ** New development which would significantly impact private or public roads should be allowed only when safety hazards and roadway deterioration will be mitigated to a less than significant level.

Implementation of the Project would be consistent with the Santa Clara County General Plan.

4.17.2 Baseline

The overall baseline date for this EIR is June 2007. Although traffic count data are not available from that timeframe, for reasons described further under Approach to Analysis below, given the low trip generation associated with the proposed Project, traffic volumes and traffic flow conditions observed on affected roadways by professional transportation analysts provide an adequate baseline for determining the significance of potential transportation/traffic impacts.

4.17.3 Significance Criteria

Consistent with County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

a) 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;

b) 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;

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

e) Result in inadequate emergency access;

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities; or

g) Not provide safe access, obstruct access to nearby uses or fail to provide for future street right-of-way.

In addition to the above-listed criteria, the following criterion is derived from common engineering practice to apply to the Project-specific analysis presented herein. The Project would have a significant impact if it would:

a) Cause substantial damage or wear of public roadways by increased movement of heavy vehicles.

Approach to Analysis

A transportation analysis was conducted to determine the extent to which the Project may increase the level of traffic traveling to and from the site over time. Given the negligible increase in traffic associated with the Project on area roads external to the site (see Section 2.7.11.7, *Off-site Traffic and Onsite Circulation*), a detailed evaluation of level of service conditions on roadway segments and intersections with and without the Project was not necessary. Rather, professional transportation engineering judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. Estimates of daily vehicle trips based on the number of additional vehicle trips associated with the Project, and the effect of those daily trips on the existing and cumulative (Future Year 2030) transportation network were evaluated (see Impact 4.17-1 below). Cumulative impacts of the Project and other projects also are discussed.

4.17.4 Discussion of Criteria with No Transportation/Traffic Impacts

Due to the nature of the Project, there would be no impact related to significance criteria b), c), e) or f). Therefore, for the reasons described below, no impact discussion is provided for these topics in Section 4.17.5.

b) The Project would not 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.

There are three roadways in proximity to the project that are included in the CMP roadway network, I-280, SR 85, and Stevens Creek Boulevard, all of which Project traffic likely would utilize to access the Project Area. The level of service standards established by the Santa Clara Valley Transportation Authority (the designated County congestion management agency) and documented congestion management plans are intended to regulate long-term traffic impacts due to on-going traffic-generating land uses and do not apply to temporary projects whose increases in traffic volumes end when temporary activities end. Furthermore, upon completion of reclamation activities, the Project's activities would not result in a substantial increase in traffic volumes on area roads and would not affect service levels established by the congestion management agency. Therefore, the Project would result in no impact to criterion b).

c) The Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The Project site is about six miles from the nearest airport, and does not (and would not under Project conditions) place any object within the flight path for airplanes in the area. The Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. Consequently, the Project would cause no impact related to criterion c).

e) The Project would not result in inadequate emergency access.

In the event of an emergency, vehicles can access the Project Area only via Permanente Road, as there are no other auxiliary roadways that could be used. The absence of a second emergency access location could pose a safety hazard during the implementation of the Project. However, this is the existing condition, and the Project would neither change this condition, nor contribute to any adverse consequences of the lack of secondary (emergency) access. Therefore, the Project would result in no impact related to criterion e).

f) The Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The Project would not directly or indirectly eliminate alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts, etc.). In addition, the Project would not include changes in policies or programs that support alternative transportation. Therefore, the Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. No impact would result related to criterion f).

4.17.5 Impacts and Mitigation Measures

a) Would the Project 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?

Impact 4.17-1: The Project would cause increases in traffic volumes on area roadways, but would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system. ***(Less than Significant Impact)***

Travel Demand Estimate

Travel Patterns. Most traffic generated by the Project would use internal, onsite roads between and among the various areas to be reclaimed. Travel patterns (within and external to the site) would not be affected by the Project, as off-site Project-related vehicles would use the current site access road (Permanente Road) to enter and exit the site property, and the same roads leading to the access road (Stevens Creek Boulevard, Foothill Boulevard, I-280, and the Foothill Expressway) in substantially the same numbers as they do now; the same onsite vehicles and heavy equipment that currently conduct surface mining operations would be detailed to reclamation-related activities, and so continue to move along paved and unpaved roadways within the confines of the Project Area and the site and would not affect external roadways. Reclamation activities and vehicle trips associated with these activities would occur 24 hours a day, six days a week, and 50 weeks per year (i.e., approximately 300 workdays a year) (ALG, 2011).

Trip Generation. The intensity and nature of the Project activities would vary, and the number of vehicle trips generated by that activity would similarly vary. As noted in Chapter 2, *Project Description*, an average of 35 people has been employed at the Quarry over the last 10 years. As the proposed reclamation proceeds, an average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to 3 additional employees would be required during Phase 2. As a result, Phase 1 activities would generate approximately 14 daily employee commute trips (28 one-way trips) and Phase 2 activities would generate approximately three daily employee commute trips (six one-way trips). No additional employees would be required during Phase 3 activities and would generate no new trips (ALG, 2011, Table D-14).

The Project would generate truck trips during each phase of reclamation and as such, the analysis of potential impacts focused on each phase of the Project. Phase 1 would involve the reclamation of the EMSA site, and this phase would occur during a 9-year period. Activities during Phase 1 would generate a total of up to 348 external haul truck trips per year for fuel transport. Based on the schedule of activities during Phase 1, the increase in trucks for fuel transport would result in about one external truck trip per day (two one-way trips) (ALG, 2011; Table D-14). Phase 2 would involve excavation in the WMSA site and backfilling of the Quarry pit and would occur during a 5-year period. During Phase 2 activities would generate a total of up to 1,141 external haul truck trips per year for fuel transport and the importing of mulched green waste materials. Over the course of Phase 2 and based scheduled activities, the increase in truck traffic would be about eight external truck trips per day (16 one-way trips), which equates to about one truck trip per hour (ALG, 2011; Table D-14). Phase 3 would include the removal of equipment and structures throughout the Project Area, and this phase would occur during a 5-year period. It is estimated that over the course of the 5 years, there would be substantially fewer numbers of external truck trips than during Phases 1 and 2. Additional trips would occur internally, within the borders of the Quarry property (ALG, 2011).

Transportation Conditions with Project Activities. As stated, the number of vehicle trips generated by implementation of the Project would vary in step with the intensity and nature of reclamation-related activities, with a total of up to about 30 daily one-way trips during Phase 1, up to approximately 22 daily one-way trips during Phase 2, and substantially fewer than Phase 1 and Phase 2 trips during Phase 3. As stated, these trips per each phase would be spread over the course of a day, resulting in an average of less than one new truck trip per hour on any one day. Although drivers could experience delays if they were traveling behind a truck, the increase in traffic due to the reclamation-related activities would be negligible relative to both existing and cumulative (2030) traffic volumes, and Project traffic would not significantly increase delay experienced by motorists on area roadways or at area intersections.[2] The impact therefore would be less than significant, and no mitigation is required.

2 Day-to-day traffic volumes typically vary by as much as 10 percent (i.e., plus-or-minus five percent), and an increase of less than that is unlikely to be perceptible to the average motorist. Traffic volumes on area roadways likely would increase over time, and 2030 traffic volumes would be higher than existing volumes. However, the percent increase in traffic volumes due to the reclamation-related activities would be lower compared to the higher 2030 traffic volumes than to existing volumes, and the Project impact would be less than significant under both existing and cumulative conditions.

d) Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact 4.17-2: Traffic generated by Project activities could affect traffic safety of pedestrians and bicyclists. ***(Less than Significant Impact)***

As described under Impact 4.17-1, above, Project operations and associated vehicle trips would not cause any significant impacts to local traffic conditions. There is little pedestrian and bicycle activity on Permanente Road, and pedestrian and bicycle activity on Foothill Boulevard and Stevens Creek Boulevard are accommodated in Class II bicycle lanes and on raised sidewalks. The additional vehicle trips to and from the Project would not change the physical character of a roadway, or the mix of vehicles (autos and trucks) on a roadway. Based on the recent collision data involving trucks and heavy vehicles, Project activities would not increase the potential for traffic hazards to bicyclists or pedestrians. The impact would be less than significant.

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g) Would the Project fail to provide safe access, obstruct access to nearby uses, or fail to provide for future street right-of-way?

Impact 4.17-3: The Project would provide safe access, and would not obstruct access to nearby uses or fail to provide for future street right-of-way. ***(Less than Significant Impact)***

As described under Impact 4.17-1, above, traffic levels would remain low along Permanente Road, as the Project would generate a minimal amount of vehicle trips that would be spread over the course of a day. Additionally, the Project would not change the physical character of the roadway, and as such would not obstruct access to nearby uses along Permanente Road or other affected roads. Furthermore, according to the County *General Plan* (1994) and the VTA *Transportation Plan 2035* (2009), there are no plans to alter or modify the future right-of-way of Permanente Road or any other roadways that would be utilized by Project vehicles. Therefore, the Project would not introduce any obstructions or result in any implications that would fail to provide for future right-of-way of Permanente Road and other affected roadways.

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h) Would the Project cause substantial damage or wear of public roadways by increased movement of heavy vehicles?

Impact 4.17-4: Traffic generated by the Project would contribute to pavement wear-and-tear on area roadways. ***(Less than Significant Impact)***

The use of heavy vehicles to transport equipment and material to and from the Project Area could affect pavement conditions along haul routes by increasing the rate of road wear. The degree to which this impact would occur depends on the roadway design (pavement type and thickness) and the existing condition of the road. Freeways, such as I-280 and SR 85, are designed to handle a mix of vehicle types, including heavy trucks. The Project's impacts would be negligible on those roads. In addition, ongoing Project operations, including placement and grading of overburden, would generate few, if any, external heavy truck trips. Site reclamation would involve mostly light- to medium-duty vehicles, which would have only minor impacts on pavement. Because the Project would involve no substantial heavy hauling activities to or from the Project site, the Project's impacts on area roadway pavement would be less than significant.

4.17.6 Alternatives

4.17.6.1 Alternative 1: Complete Backfill Alternative

The reclamation activities associated with Alternative 1 would be similar to the activities under the Project. Under this alternative, overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities, but that activity would generate traffic on-site only and would not affect nearby roadways. Traffic on roads external to the Project site would be the same for Alternative 1 as for the Project. Therefore, potential impacts to transportation conditions under this alternative would be the same as the Project.

4.17.6.2 Alternative 2: Central Materials Storage Area Alternative

The reclamation activities associated with Alternative 2 would be similar to the activities under the Project. Under this alternative, overburden materials in the Quarry pit would be moved to new, more-distant locations within the Quarry, but that activity would generate traffic on-site only and would not affect nearby roadways. Traffic on roads external to the Project site would be the same for Alternative 1 as for the Project. Therefore, potential impacts to transportation conditions under this alternative would be the same as the Project.

4.17.6.3 No Project Alternative

The No Project Alternative would extend the time period in which surface mining activities occur within the Project Area and delay final reclamation conditions by approximately 7 years, but would not substantially alter the level of traffic on roads external to the Project site generated by reclamation activities. Therefore, potential impacts to transportation conditions under this alternative would be the same as the Project.

References – Transportation/Traffic

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4.18 Utilities and Service Systems

This section identifies and evaluates issues related to Utilities and Service Systems the context of the Project and alternatives. It identifies public utility and service providers and systems in the Project Area, describes the regulatory setting, presents the criteria used to evaluate the significance of impacts on identified resources as a result of implementing the Project and alternatives, and analyzes potential impacts on these services and systems.

4.18.1 Setting

4.18.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.18.1 provides setting information specific to utilities and service systems in and in the vicinity of the Project Area.

Water

The San Jose Water Company (SJWC) provides water service to the Project Area. In 2007, the Applicant purchased approximately 103.5 million gallons of water from the SJWC for use in the Project Area; Rock Plant use consumed approximately 69 million gallons of purchased water, and other Quarry uses consumed approximately 34.5 million gallons (Howell, 2011). The SJWC purchases its water from the Santa Clara Valley Water District (SCVWD), the County's principal water wholesaler. SCVWD provides water to 13 water retailers in the County, and manages 10 local surface reservoirs, 3 groundwater sub-basins, and 3 water treatment plants. SCVWD also imports water from the Central Valley Project and the State Water Project.

In addition to purchased water, an additional approximately 18 million gallons of water is pumped annually from the Quarry pit for dust control purposes. The surface mining operation uses up to seven 12,000-gallon water trucks per day, depending on the level of operations.

Wastewater

The Project Area is not connected to a municipal wastewater conveyance system for sewage disposal. The Quarry office has a septic system, and portable toilets with hand-wash stations are located throughout the Project Area. United Disposal regularly empties the portable toilets stationed in the Project Area. Use of these facilities does not generate substantial amounts of wastewater.

Storm Water

No municipal storm water facilities are used by the current surface mining operation. Storm water runoff in the Project Area is conveyed to numerous detention basins to remove sediment and debris prior to discharge. As shown in Table 2-12 in Chapter 2, *Project Description*, there are 26 existing sedimentation basins (or "ponds") on the site, 21 of which are within the Project Area.

Each is described in the facility's Storm Water Pollution Prevention Plan (URS, 2010). Storm water runoff is discussed in Section 4.10, *Hydrology*.

Solid Waste Generation and Disposal

Recology South Bay currently provides solid waste pickup service to unincorporated areas surrounding Cupertino, including the Project Area. Solid waste generated in unincorporated areas of the County is sent to several different landfills. In 2007, unincorporated Santa Clara County disposed of 54,419 tons of solid waste (CalRecycle, 2011a). This was down from 76,341 tons in 2000. There were 21 disposal facilities used by unincorporated Santa Clara County in 2009, of which four received 90 percent of the waste stream (CalRecycle, 2011b). The John Smith Road Class III Landfill (San Benito County) received 26,877 tons of this waste, followed by the Johnson Canyon Sanitary Landfill (Monterey County) with 12,935 tons, the Crazy Horse Sanitary Landfill (Monterey County) with 8,675 tons, and the Newby Island Sanitary Landfill (City of San Jose) with 7,873 tons. The John Smith Road landfill has 77 percent of its capacity remaining, and an estimated closure date of 2024. The Johnson Canyon Sanitary Landfill has 50 percent of its capacity remaining, and an estimated closure date of 2040. The Newby Island landfill has 36 percent of its capacity remaining, and an estimated closure date of 2025. The Crazy Horse Sanitary Landfill is closing (CalRecycle, 2011c).

4.18.1.2 Regulatory Setting

State of California

Assembly Bill 939 and Senate Bill 1016

The California Integrated Waste Management Act of 1989, or Assembly Bill (AB) 939, established the California Integrated Waste Management Board (CIWMB), required the implementation of integrated waste management plans and also mandated that local jurisdictions divert at least 50 percent of all solid waste generated (from 1990 levels), beginning January 1, 2000, and divert at least 75 percent by 2010. In 2006, Senate Bill (SB) 1016 updated the requirements. The new per capita disposal and goal measurement system moves the emphasis from an estimated diversion measurement number to using an actual disposal measurement number as a factor, along with evaluating program implementation efforts. These two factors will help determine each jurisdiction's progress toward achieving its Integrated Waste Management Act (AB 939) diversion goals. The 50 percent diversion requirement is now measured in terms of per-capita disposal expressed as pounds per person per day. In 2010, the CIWMB was abolished, and its administrative functions transferred to the new California Department of Resources Recycling and Recovery (CalRecycle), within the Natural Resources Agency.

Surface Mining and Reclamation Act Reclamation Standards

The reclamation of mined lands within the state must be implemented in conformance with the standards set forth in the regulations implementing the SMARA (14 Cal. Code Regs. §§3700-3713). Two of these standards relate to waste management.

Relating to the removal of buildings, structures, and other equipment, §3709 requires all equipment, supplies, and other materials to be stored in designated areas shown in an approved reclamation plan; all waste to be disposed of in accordance with state and local health and safety ordinances; and all buildings, structures, and equipment to be dismantled and removed prior to final mine closure except those buildings, structures, and equipment that are approved in the reclamation plan as necessary for the end use.

Relating to mine waste management, §3712 requires mine waste disposal units to be reclaimed in conformance with the State Water Resources Control Board's mine waste disposal regulations (27 Cal. Code Regs. §§22470-22510). Under §22510, new and existing mining units must be closed so that they do not pose a threat to water quality.

Section 2.8 of the Project Description summarizes how the Project addresses these standards.

Regional

Regional Water Quality Control Board

The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates the discharge of municipal waste water into the San Francisco Bay. The three sewage treatment plants that serve all of the urban communities in Santa Clara County include: the San Jose / Santa Clara Water Pollution Control Plant (WPCP), the Palo Alto Regional Water Quality Control Plant, and the Sunnyvale WPCP. Treated effluent from these South Bay municipal dischargers is discharged to shallow sloughs contiguous with the Bay, south of the Dumbarton Bridge (RWQCB, 2011). The Project would not contribute waste water to the municipal wastewater system.

County of Santa Clara

General Plan

Water supply and solid waste management issues are discussed in the Resource Conservation Chapter of the County General Plan, and wastewater disposal is discussed in the Health and Safety Chapter. Although the related strategies and policies apply Countywide, they are not directly applicable to the Project.

In 2010, the County of Santa Clara Board of Supervisors adopted the Water Conservation in Landscaping Ordinance, which implements Assembly Bill 1881: The California Water Conservation in Landscaping Act. The purpose of the ordinance is to reduce water waste in Santa Clara County by promoting the use of region-appropriate plants that require minimal supplemental irrigation, and by establishing standards for irrigation efficiency. However, the ordinance does not apply to "Surface mine reclamation projects that do not require a permanent irrigation system" (Santa Clara County Code B33-2(b)(4)). Because the Project would not require a permanent irrigation system, the ordinance does not apply to the Project.

4.18.2 Baseline

The baseline for purposes of analyzing potential impacts to utilities and service systems is June 2007. The actual demand for utilities and services, as described above, represents the best available information about baseline conditions in 2007, when the County received the Applicant’s first reclamation plan amendment application. Although waste disposal facilities described above are from 2009, the Quarry would have used similar disposal facilities in 2007.

4.18.3 Significance Criteria

Consistent with the County of Santa Clara Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact related to utilities if it would:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

d) Require new or expanded entitlements in order to have sufficient water supplies available to serve the project;

e) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments;

f) Not be able to be served by a landfill with sufficient permitted capacity to accommodate the Project’s solid waste disposal needs; or

g) Be in non-compliance with federal, state, and local statutes and regulations related to solid waste.

4.18.4 Discussion of Criteria with No Impacts Related to Utilities and Service Systems

As explained below, the Project would have no impact related to significance criteria a), b), d), e), and g). Potential impacts related to the remaining criteria are analyzed in Section 4.18.5, *Impacts and Mitigation Measures.*

a) The Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

No wastewater service is available in the Project Area, and the Project does not propose to extend such service into the Project Area. Existing wastewater needs are handled by a septic system and portable toilets. Because the Project would not be served by a municipal wastewater service provider, it would have no impact on wastewater treatment facilities regulated by the RWQCB. The Project would cause no impact related to criterion a).

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b) The Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

As discussed above, there would be no change to existing wastewater treatment in the Project Area during construction, and a reduction in wastewater generation during operation and maintenance of the Project. Wastewater currently generated in the Project Area from Quarry office use is disposed into a septic system located near the Quarry offices. Portable toilets with hand-wash stations are located strategically throughout the Quarry. With implementation of the Project, the septic system would be removed and reclaimed in compliance with all legal requirements. Therefore, no new or expanded wastewater treatment facilities would be constructed to serve Project-related demand.

As discussed in Impact 4.18-2, the Project would require a temporary increase in water purchased from SJWC during construction, for dust-suppression. Phase 2 would require an increase in purchased water of approximately 3.5 million gallons per year, for 5 years. However, this additional water demand would be temporary in nature and would not generate wastewater that would require treatment or disposal. As such, no new or expanded water treatment facilities would be constructed to serve Project-related demand, and no significant environmental effects could result relating to the construction of new or expansion of existing water or wastewater treatment facilities. The Project would cause no impact related to criterion b).

Stormwater treatment facilities are discussed below under criterion e), and in Section 4.10, *Hydrology and Water Quality*.

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d) The Project would not require new or expanded entitlements in order to have sufficient water supplies available to serve the Project.

At no point during its implementation or maintenance would the Project require new or expanded entitlements in order to have sufficient water supplies available to serve the Project. The water demand during Phase 1 would be the same as baseline conditions. During Phase 2, the Project could demand an increase of approximately 3.5 million gallons of water above baseline conditions from SJWC during the five years of Phase 2 (Hungerford, 2011; Ashworth Leininger Group, 2011). However, SJWC has indicated that this increase in water would be available from its sources (SJWC, 2011). During Phase 3, water demand would diminish greatly in the Project Area because most of the heavy earthmoving work would have ended and the Rock Plant and quarrying operations would have ceased. Based on the preliminary results of test plots at the site, it is not expected that temporary irrigation would be necessary to help establish trees and shrubs. Even if water were determined to be required to provide temporary irrigation, the amount required could be accommodated by existing entitlements. In any event, water purchases from SJWC would decline substantially during Phase 3 relative to existing conditions as operations in the Project Area wind down. Following completion of reclamation activities and the establishment of vegetation, no water supplies would be needed. Therefore, the Project would cause no impact related to criterion d).

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e) The Project would not result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

The Project would not be served by a municipal wastewater treatment provider. An average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. No additional employees would be required during Phase 3 activities. These additional employees would temporarily increase the use of portable toilets in the Project Area. However, such an increase would generate a relatively small volume of wastewater for a limited time, which could be accommodated by United Disposal. Therefore, the Project would not affect a wastewater treatment provider's capacity to serve its existing commitments. The Project would cause no impact related to criterion e).

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g) The Project would comply with federal, state, and local statutes and regulations related to solid waste.

The Applicant would adhere to all applicable laws and regulations pertaining to solid waste disposal, including the SMARA performance standards. All buildings, structures, and other equipment within the Project Area that are not determined necessary in the approved RPA for future open space use would be dismantled and removed before the proposed reclamation is complete. Demolition debris generated by reclamation activities would be sent to a recycling facility certified to divert greater than 50 percent of solid waste from landfills. Given the substantial value of materials and equipment to be removed from the Project Area, the percentage of materials to be recycled or salvaged would likely be considerably higher. Consequently, the Project would cause no impact related to criterion f).

4.18.5 Impacts and Mitigation Measures

c) Would the Project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

New stormwater drainage facilities including 4 sedimentation ponds (ponds 40A, 40B, 40C, and 40I, described in **Table 4.18-1**) and other improvements such as catch basins, ditches, and down drains would be constructed in the Project Area. Construction of ponds 40A through 40C would occur pursuant to the grading and contouring of the Quarry pit and WMSA, respectively. Pond 40I would be constructed as part of the reclamation of the Rock Plant and Surge Pile during

TABLE 4.18-1
PROPOSED PONDS IN THE PROJECT AREA

Basin	Proposed Location	Description
40A	Quarry pit final floor (990 foot elevation)	*Basin floor length*: 86-feet *Basin floor width*: 43-feet *Storage volume*: 22,892 cubic feet (cf) *Minimum outlet pipe*: 72-inch HDPE *Minimum depth*: 10-feet This sedimentation/de-siltation pond would release flows to PCRA Subarea 6 via pipes installed under the access road. The outfall pipe would release to engineered grouted rip-rap pads, which would dissipate the outflow energy.
40B	WMSA south slope	*Basin floor length*: 36-feet *Basin floor width*: 18-feet *Storage volume*: 3,722 cf *Minimum outlet pipe*: 42-inch HDPE *Minimum depth*: 10-feet This sedimentation/de-siltation pond would be installed at the conclusion of Phase 2 when the WMSA has been excavated to its final contours. Would include an impervious lining (concrete or other approved material) to prevent infiltration from affecting adjacent slopes. Would release flows to existing drainages located in the PCRA. Outlets would extend to the bottom of the slope. Outfall pipes would release to engineered grouted rip-rap pads to be installed within the existing drainages to dissipate outflow energy, protect the ravines from erosion, and direct the outflow to the existing rock drainage to minimize the potential for erosion.
40C	WMSA south slope	*Basin floor length*: 44-feet *Basin floor width*: 22-feet *Storage volume*: 5,852 cf *Minimum outlet pipe*: 48-inch HDPE *Minimum depth*: 10-feet This sedimentation/de-siltation pond would be installed at the conclusion of Phase 2 when the WMSA has been excavated to its final contours. Would include an impervious lining (concrete or other approved material) to prevent infiltration from affecting adjacent slopes. Would release flows to existing drainages located in the PCRA. Outlets would extend to the bottom of the slope and the outfall pipes would release to engineered grouted rip-rap pads to be installed within the existing drainages, which would dissipate the outflow energy, provide an armored blanket to protect the ravines from erosion, and direct the outflow to the existing rock drainage to minimize the potential for erosion
40I	South of the Surge Pile.	*Basin floor length*: 8-feet *Basin floor width*: 16-feet *Storage volume*: 350 cf *Minimum outlet pipe*: 18-inch HDPE *Minimum depth*: 5-feet

SOURCES: Chang, 2011 (Sheet 2); EnviroMINE, 2011a

reclamation Phase 3. The proposed ponds would be installed temporarily (Chang, 2011), maintained until areas of disturbance are revegetated sufficiently to allow for self-sustained erosion control, and then would be reclaimed. Natural reclamation would occur over a period of years, meaning that they would be allowed to accumulate sediment, and revegetation would occur. Pond 40A would be actively revegetated with wetlands vegetation to serve as eventual wetland habitat as described in the Revegetation Plan (WRA, 2011).

Typical down drains would be semi-circular in shape, 3 feet wide and 1.5 feet deep, with a concrete lining, grouted riprap, or an approved equivalent (Chang, 2011, Sheet 2). Ditches could be unlined.

Impact 4.18-1: The Project would require and result in the construction of new storm water drainage facilities, the construction of which could cause environmental effects. *(Less than Significant Impact)*

Construction of the proposed stormwater drainage facilities would be accomplished during the dry season in previously-disturbed areas, away from sensitive environmental areas. The construction of sedimentation basins would involve the use of backhoes and excavators to excavate stockpiled material and, in the case of Ponds 40B and 40C, the installation of a concrete or other impervious lining. The construction of ditches and other conveyance facilities would require loaders and backhoes or excavators and could (but may not) be lined. No limestone materials would be used for basins, ditches, or other stormwater drainage facilities (SES, 2011; Chang, 2011, Sheet 2). All construction activities associated with the new drainage facilities would be in accordance with the provisions of an industrial stormwater permit and the SWPPP's construction-related best management practices. The proposed new drainage features would be an integral part of the proposed Reclamation Plan, for which the potential environmental effects from construction and implementation are identified and analyzed in this EIR. Further, the purpose of the proposed new drainage features is to reduce or avoid impacts from surface water runoff, and thus their construction would reduce the potential for environmental harm. Accordingly, the Project would cause a less than significant impact related to criterion c).

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f) Would the Project not be able to be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?

This criterion relates to non-hazardous solid waste. For setting information and impacts pertaining to hazardous waste, see Section 4.9, *Hazards and Hazardous Materials*.

Impact 4.18-2: The Project may not be able to be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs. *(Less than Significant Impact)*

Similar to existing operations, employees working at the Quarry would generate minor amounts of trash that would require disposal. This waste would be regularly collected and transported to area landfills. An average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. No additional employees would be required during Phase 3 activities. Although this staff increase would slightly increase the quantity of material generated by this waste stream, the increase would be small enough that it could be accommodated by area landfills.

Reclamation activities would involve removal of structures at the Rock Plant, including conveyors, crushers, screens, wash plants, scales and miscellaneous structures. Demolished equipment would be taken to Valley Recycling Center in San Jose, a facility certified by the City of San Jose for recovery/recycling. Facilities certified under the Construction and Demolition Debris Deposit (CDDD) program have been audited by the City to verify that at least 50 percent of the material accepted is diverted from burial in landfills (City of San Jose Environmental Services, 2011). Salvageable equipment such as screens, crushers, wash plant, scales and moveable trailers would be relocated to an equipment salvage dealer for resale. Other components such as steel, electrical panels and conveyor belting are also considered to have substantial value (EnviroMINE Inc., 2011b). Based on these considerations, most of the equipment identified to be removed would likely be salvaged rather than disposed of in a landfill.

Nonetheless, to be conservative, this analysis assumes that all equipment would be placed in a landfill. As discussed above under Setting, at least 20 landfills receive solid waste from unincorporated areas of Santa Clara County. Among the facilities that receive approximately 90 percent of the waste stream generated within the County, substantial capacity remains: for the John Smith Road Landfill, approximately 77 percent of its 4,625,827 cubic yard permitted capacity remains (CalRecycle, 2011e); for the Johnson Canyon Sanitary Landfill, approximately 50 percent of its 13,834,328 cubic yard permitted capacity remains (CalRecycle, 2011d); and for the Newby Island Landfill, approximately 36 percent of its 50,800,000 cubic yard permitted capacity remains (CalRecycle, 2011f). Of these facilities, the Johnson Canyon Sanitary Landfill is not slated to close until 2040. Assuming that all of the materials to be disposed of under the Project would be disposed of during Phase 3 of the Project (2026-2030), the Johnson Canyon Sanitary Landfill would have sufficient capacity to serve Project needs. Therefore, the Project would cause a less than significant impact related to solid waste disposal capacity.

4.18.6 Alternatives

4.18.6.1 Alternative 1: Complete Backfill Alternative

Reclamation, maintenance, and monitoring-related impacts for Alternative 1 would be similar to those identified for the Project, which were determined to be no impact or less than significant, requiring no mitigation. Implementation of Alternative 1 would involve similar construction methods as those described for the Project. As such, the demands placed on local water, wastewater, storm drainage, and solid waste service providers as a result of this alternative would be identical to the Project. No part of reclamation, maintenance, or monitoring of this alternative would use water or generate wastewater or solid waste in amounts exceeding the capacity of local facilities serving the area. Like the Project, Alternative 1 would not exceed wastewater treatment requirements, require or result in the construction of new water or wastewater treatment facilities, require new or expanded water entitlements, result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the alternative project’s needs, or be out of compliance with any statute and regulation related to solid waste (No Impact). Impacts regarding construction of new or expanded storm water drainage facilities and landfill disposal capacity would be less than significant with no mitigation required. Therefore, Alternative 1 would result in no impact to utility services regarding criteria a), b), d), e), and g) (No Impact), and less-than-significant impacts regarding criteria c) and f). Overall, implementation of Alternative 1 would cause comparable impacts related to Utilities and Service Systems as those that would be caused by the Project.

4.18.6.2 Alternative 2: Central Materials Storage Area Alternative

Reclamation, maintenance, and monitoring-related impacts for Alternative 2 would be similar to those identified for the Project, which were determined to be no impact or less than significant, requiring no mitigation. Implementation of Alternative 2 would involve similar construction methods as those described for the Project. As such, the demands placed on local water, wastewater, storm drainage, and solid waste service providers as a result of this alternative would be identical to the Project. No part of this alternative would use water or generate wastewater or solid waste in amounts exceeding the capacity of local facilities serving the area. Like the Project, Alternative 2 would not exceed wastewater treatment requirements, require or result in the construction of new water or wastewater treatment facilities, require new or expanded water entitlements, result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the alternative project’s needs, or be out of compliance with any statute and regulation related to solid waste (No Impact). Impacts regarding construction of new or expanded storm water drainage facilities and landfill disposal capacity would be less than significant with no mitigation required. Therefore, Alternative 2 would result in no impact to utility services regarding criteria a), b), d), e), and g) (No Impact), and less-than-significant impacts regarding criteria c) and f). Overall, implementation of Alternative 2 would cause comparable impacts related to Utilities and Service Systems as those that would be caused by the Project.

4.18.6.3 No Project Alternative

Reclamation, maintenance, and monitoring-related impacts for the No Project Alternative would be the same as those identified for the Project (no impact or less than significant, requiring no mitigation), but 7 years later. Construction of the No Project Alternative would involve the same construction methods as those described for the Project. As such, the demands placed on local water, wastewater, storm drainage, and solid waste service providers as a result of this alternative would be identical to the Project. No part of construction or maintenance of this alternative would use water or generate wastewater or solid waste in amounts exceeding the capacity of local facilities serving the area. Like the Project, the No Project Alternative would not exceed wastewater treatment requirements, require or result in the construction of new water or wastewater treatment facilities, require new or expanded water entitlements, result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the alternative project’s needs, or be out of compliance with any statute and regulation related to solid waste (No Impact). Impacts regarding construction of new or expanded storm water drainage facilities and landfill disposal capacity would be less than significant with no mitigation required. Therefore, the No Project Alternative would result in no impact to utility services regarding criteria a), b), d), e), and g) (No Impact), and less-than-significant impacts regarding criteria c) and f). Overall, implementation of Alternative 1 would cause the same impacts related to Utilities and Service Systems as would be caused by the Project.

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CHAPTER 5
Comparison of Alternatives

This section compares the environmental advantages and disadvantages of the Project and alternatives evaluated in detail in this EIR. This comparison is based on the analysis of environmental impacts of the Project and alternatives provided in Sections 4.1 through 4.18 and the descriptions of the Project provided in Chapter 2, *Project Description*, and the alternatives in Section 3.3.1, *Alternatives Evaluated in Detail in this EIR*. This comparison is designed to satisfy the requirements of CEQA Guidelines §15126.6(d), which states:

> *The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.*

5.1 Comparison of Methodology

The following methodology was used to compare alternatives in this EIR:

Step 1: **Identification of Alternatives.** The alternatives development and screening process described in Chapter 3 was used to identify potential alternatives to the Project. Among the many potential alternatives initially considered, the Complete Backfill Alternative, Central Materials Storage Area Alternative, and the No Project Alternative were carried forward for detailed environmental review. No other reasonable feasible alternatives meeting the basic Project Objectives were identified that would substantially reduce or eliminate significant environmental effects of the Project.

Step 2: **Determination of Environmental Impacts.** Potential environmental impacts of the Project and each of the alternatives were identified and analyzed in detail in Chapter 4.

Step 3: **Comparison of Proposed Project with Alternatives.** Environmental impacts of the Project were compared to those of each alternative carried forward for analysis to determine the Environmentally Superior Alternative.

5.2 Comparison of Alternatives

As analyzed and documented in Chapter 4, the Project would cause the significant and unavoidable impacts listed below, and would cause a less-than-significant impact (or an impact that would be less than significant with mitigation incorporated) or no impact for the remaining environmental considerations. The following significant and unavoidable impacts would be caused by the Project:

- Aesthetics, as related to a scenic vista (Anza Knoll), a scenic roadway (I-280) and the alteration or substantial degradation of the existing visual character or quality of the Project Area;
- Biological Resources, related to deleterious effects to aquatic organisms and their prey base from selenium-burdened runoff prior to final reclamation;
- Cultural Resources, related to the demolition of historic features, which contribute to a California Register-eligible historic district (Kaiser Permanente Quarry Mining District); and
- Hydrology and Water Quality, relating to increased concentrations of selenium in Permanente Creek prior to final reclamation, and alteration of the existing drainage pattern resulting in increased stormwater runoff rates and on-or offsite flooding post-reclamation.

Two alternatives in addition to the No Project Alternative were identified for evaluation in this EIR. The potential environmental impacts of each alternative are analyzed in comparison to the Project in each of the 18 resource areas in Sections 4.1 through 4.18.

The results of the comparative analysis of each of the 18 resource areas analyzed in those sections of Chapter 4 are set forth in **Table 5-1**, which compares the conclusions of the impact analyses for the alternatives against the conclusions for the Project. The comparative analysis summarized in Table 5-1 shows no preference among the alternatives for Agriculture and Forestry Resources, Cultural and Paleontological Resources, Hazards and Hazardous Materials, Land Use and Planning, Population and Housing, Public Services, Transportation and Traffic, and Utilities and Service Systems. Of the remaining resource areas:

- The Project was preferred over the alternatives for Aesthetics, Visual Quality, Light, and Glare; and Recreation.
- Alternative 2 was preferred with respect to Biological Resources.
- The Project and Alternative 2 were equally preferred with respect to Hydrology and Water Quality.
- The Project and the No Project Alternative were equally preferred for Energy Conservation.
- The Project was slightly preferred for Air Quality and GHG emissions over Alternative 1 and Alternative 2, but would not be as environmentally advantageous in this respect as the No Project Alternative, which was most preferred for Air Quality and GHG emissions.
- Alternative 1 was most preferred among the alternatives related to Geology and Soils and Mineral Resources.
- Alternative 2 and the No Project Alternative were equally preferred for Noise.

TABLE 5-1
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Aesthetics, Visual Quality, and Light and Glare	Impacts determined to be significant and unavoidable relating to a scenic vista (Anza Knoll), a scenic roadway (I-280) and the alteration or substantial degradation of the existing visual character or quality of the Project Area. All other impacts determined to be less than significant or no impact. **Preferred.**	Implementation of Alternative 1 would cause greater impacts to a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, than the Project, due to the lower height of the EMSA. **Least Preferred.**	Implementation of Alternative 2 would be less environmentally advantageous than the Project relative to a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, due to the lower height of the EMSA. **Not Preferred.**	Implementation of the No Project Alternative would be less environmentally advantageous than the Project relative a scenic vista, scenic and major roadways, and the visual character or quality of the Project Site, due to the lower height of the EMSA. **Not Preferred.**
Agriculture and Forest Resources	Implementation of the Project would cause no impact to agriculture and forestry resources. **No Preference.**	Implementation of Alternative 1 would cause the same impact (no impact) to agriculture and forestry resources as the Project. **No Preference.**	Implementation of Alternative 2 would cause a greater impact to forestry resources than the Project because it would result in the conversion of forest land to a non-forest use. **Not Preferred.**	Implementation of the No Project Alternative would cause the same impact (no impact) to agriculture and forestry resources as the Project. **No Preference.**
Air Quality	Impacts to air quality and health risk would be less than significant or less than significant with mitigation. **Slight Preferred.**	Implementation of Alternative 1 would cause a greater impact to air quality and health risk than the Project. **Not Preferred.**	Implementation of Alternative 1 would cause a greater impact to air quality than the Project and the same impact to health risk. **Not Preferred.**	The No Project Alternative would result in a similar or lesser impact for air quality than the Project, and less impact to health risk. **Most Preferred.**
Biological Resources	Impacts to biological resources would be less than significant or less than significant with mitigation for all significance criteria except selenium-related impacts to aquatic habitats, which would be significant and unavoidable until final reclamation is complete. **No Preference.**	Implementation of Alternative 1 would cause similar impacts as the Project except for selenium-related impacts to Permanente Creek, which would be essentially the same until final reclamation is complete and slightly less post-reclamation. **No Preference.**	Implementation of Alternative 2 would cause similar impacts as the Project except for selenium-related impacts to Permanente Creek, which would be slightly less than the Project both pre- and post-reclamation. **Preferred.**	Implementation of the No Project Alternative would cause similar impacts as the Project for all areas except selenium-related impacts to Permanente Creek. Because the interim period before reclamation would be longer than for the proposed Project, the extended timeframe would result in a longer period of selenium-related impacts to aquatic habitat. **Not Preferred.**
Cultural and Paleontological Resources	Impacts to historical resources determined to be significant and unavoidable. Impacts to archaeological, paleontological, and human remains determined to be less than significant with mitigation. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**	Impacts to cultural resources would be the same as the proposed Project. **No Preference.**

TABLE 5-1 (Continued)
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Energy Conservation	Impacts to energy conservation would be less than significant. **No Preference.**	Impacts to energy conservation would be greater than the Project, as more fossil fuel would be required to excavate and move the EMSA materials and thereafter to contour the area. **Not Preferred.**	Impacts to energy conservation would be greater than the Project, as more fossil fuel would be required to implement this alternative based on the increased surface area. **Not Preferred.**	Impacts of the No Project Alternative would be substantially the same as the Project. **No Preference.**
Geology and Soils	Impacts to geology and soils would be less than significant. **Slight Preferred.**	Impacts to geology and soils would be less than the Project due to additional buttressing of the North Quarry and elimination of potential impacts of the EMSA. **Most Preferred.**	Impacts to geology and soils would be similar to or slightly greater than the Project due to the combined height of the EMSA/CMSA and slightly reduced factors of safety. **Not Preferred.**	Impacts to geology and soils would be greater, because baseline conditions of marginal slope stability would continue for a longer period of time. **Not Preferred.**
Greenhouse Gas Emissions	Impacts to greenhouse gas emissions would be less than significant or less than significant with mitigation. **Slight Preferred.**	Implementation of Alternative 1 would cause a greater impact to greenhouse gas emissions than the Project. **Not Preferred.**	Implementation of Alternative 1 would cause a greater impact to greenhouse gas emissions than the Project. **Not Preferred.**	The No Project Alternative would result in lesser impacts for greenhouse gas emissions than the Project. **Most Preferred.**
Hazards and Hazardous Materials	The Project would have no impact or less than significant impacts pertaining to hazards and hazardous materials. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**	Impacts to hazards and hazardous materials would be the same as the proposed Project. **No Preference.**
Hydrology and Water Quality	Impacts related to water quality would be less than significant with mitigation except for selenium-related impacts to water quality in Permanente Creek, which would be significant and unavoidable until final reclamation is complete. Drainage and flooding impact would be significant and would be unavoidable if adequate detention facility is not feasible. Groundwater impacts would be less than significant. **Preferred.**	Impacts related to long term selenium leaching to surface water would be less than under the Project; however, the larger area and higher slopes would result in more severe drainage and flooding impacts, and the longer interim period before WMSA and EMSA reclamation could result in more severe interim impacts to water quality. **Not Preferred.**	Impacts to hydrology and water quality would be similar to or slightly less than the Project. **Preferred.**	The interim period before reclamation would be longer than for the proposed Project; the extended timeframe would result a longer period of selenium-related water quality impacts. Downstream flooding impacts resulting from backfilling the Quarry pit would be similar to the proposed Project but would occur several years later. **Not Preferred.**
Land Use and Planning	Impacts to land use and planning determined to be less than significant. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**	Impacts to land use and planning would be the same as the proposed Project. **No Preference.**

TABLE 5-1 (Continued)
PROPOSED PROJECT VS. ALTERNATIVES
SUMMARY OF ENVIRONMENTAL IMPACT CONCLUSIONS

Resource Area	Proposed Project	Complete Backfill Alternative (Alternative 1)	Central Materials Storage Area Alternative (Alternative 2)	No Project Alternative
Mineral Resources	Impacts to mineral resources determined to be less than significant. **No Preference.**	Impacts to mineral resources would be slightly less than the proposed Project due to the increased ease with which potential aggregate material contained within native geologic materials underlying the EMSA could be accessed. **Preferred.**	Impacts to mineral resources would be the same as the proposed Project. **No Preference.**	Impacts to mineral resources would be the same as the proposed Project. **No Preference.**
Noise	Noise impacts on the caretaker's residence and the Cristo Rey residential area associated with reclamation during Phase 1 would be less than significant with mitigation incorporated. All other impacts would be less than significant. **Not Preferred.**	Impacts from noise would be greater than the Project due to the additional heavy equipment activity required to excavate and remove the EMSA, combined with removal of the feature that would help shield nearby residences from equipment noise. **Not Preferred.**	Impacts from noise would be less than the Project because the reclaimed EMSA would likely shield equipment activity within the CMSA from off-site residential receptors on the valley floor. **Preferred.**	The No Project Alternative would result in lessened overall noise levels compared to the proposed Project, albeit over a longer period of time. **Preferred.**
Population and Housing	The Project would have no impact to population and housing. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**	Impacts to population and housing would be the same as the proposed Project. **No Preference.**
Public Services	The Project would have no impact to public services. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**	Impacts to public services would be the same as the proposed Project. **No Preference.**
Recreation	Impacts to recreation determined to be no impact or less than significant. **Preferred.**	Implementation of Alternative 1 would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **Not Preferred.**	Implementation of Alternative 2 would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **No Preference.**	Implementation of the No Project Alternative would be less environmentally advantageous than the Project because of the shorter height of the EMSA. **No Preference.**
Transportation and Traffic	Impacts to transportation and traffic determined to be less than significant. **No preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**	Impacts to transportation and traffic would be the same as the proposed Project. **No Preference.**
Utilities and Service Systems	Impacts to utilities and service systems determined to be less than significant. **No preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**	Impacts to utilities and service systems would be the same as the proposed Project. **No Preference.**

5.3 Identification of the Environmentally Superior Alternative

CEQA Guidelines §15126.6(e)(2) requires an EIR to identify an environmentally superior alternative. If the environmentally superior alternative is the No Project Alternative, the EIR also must identify an environmentally superior alternative from among the other alternatives. In general, the environmentally superior alternative is defined as that alternative with the least adverse impacts to the project area and its surrounding environment. CEQA Guidelines §15126.6(a) places emphasis on alternatives that "avoid or substantially lessen the significant effects" of a project; distinctions between impacts that are less than significant or are mitigated to less than significant typically are not considered when selecting an environmentally superior alternative.

The Project would cause significant and unavoidable impacts to Cultural Resources; Aesthetics, Visual Quality, Light, and Glare; Hydrology and Water Quality; and Biological Resources. The comparative analysis summarized in Table 5-1 shows that there was no preference among the alternatives with respect to Cultural Resources: any of them, if adopted, would result in significant and unavoidable impacts to this resource area. The Project would be less adverse than any of the alternatives with respect to Aesthetics, Visual Quality, Light, and Glare, with Alternative 1 being the least preferable because it would result in a worsened long-term impact (i.e., removal of the EMSA would open up views to the Cement Plant). With respect to Hydrology and Water Quality, Alternative 2 would have only slightly less impacts than the Project, with Alternative 1 and No Project being least preferable. With respect to Biological Resources, Alternative 2 was more preferable than the Project, with No Project being the least preferred.

In summary, the comparative analysis summarized in Table 5-1 shows that there are no potential impacts for which the proposed Project is the Least Preferred alternative. For the four resource areas with significant and unavoidable impacts, the Project would be Preferred for two (Aesthetics, Visual Quality, Light, and Glare and Hydrology and Water Quality) and would not be the Least Preferred or Not Preferred for any. Alternative 2 would also be Preferred for two (Cultural Resources and Biological Resources) but would be Not Preferred for Aesthetics, Visual Quality, Light, and Glare. It should be noted that the preference for Alternative 2 over the Project for Biological Resources is for an interim impact prior to final reclamation; post-reclamation, impacts to Biological resources for the two alternatives would be essentially the same. Alternatives 1 and the No Project Alternative would not be Preferred for any of the four resource areas with significant and unavoidable impacts.

Based upon this analysis, none of the three alternatives would provide a material lessening of significant adverse impacts compared with the proposed Project, whereas the Project would be either Preferred over or equivalent to the other alternatives with regard to long-term impacts. Consequently, the proposed Project is the Environmentally Superior Alternative.

CHAPTER 6
Cumulative Impacts

CEQA defines cumulative impacts as two or more individual impacts that, when considered together, are substantial or that compound or increase other environmental impacts. The cumulative analysis is intended to describe the “incremental impact of the project when added to other, closely related past, present, or reasonably foreseeable future projects” that can result from “individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines §15355).

The analysis of cumulative impacts is a two-phased process that first involves the determination of whether the Project, together with past, present, and reasonably foreseeable future projects, would result in a significant impact. If there would be a significant cumulative impact of all such projects, the EIR must determine whether the Project’s incremental contribution to the impact is cumulatively considerable, in which case, the Project itself is deemed to have a significant cumulative effect (CEQA Guidelines §15130).

CEQA Guidelines §15130(b) provides two approaches to analyzing cumulative impacts. The first is a projections-based approach wherein the relevant projections contained in an adopted general plan or other planning document designed to evaluate regional or area-wide conditions are summarized. Sources containing projections relied upon in the cumulative impacts analysis in this EIR are identified in Section 6.1.1. The second is the “list approach,” which requires a listing of past, present, and reasonably probable future projects that could cause related or cumulative impacts. A list of such projects is provided in Section 6.1.2. This document uses a combination of the projections- and list-based and approaches; together the projections and projects analyzed are referred to as the “cumulative scenario.”

The geographic scope of area and time horizon considered for each cumulative impact evaluated in the EIR is dictated by the specific type and nature of impact being considered. For example, when considering the Project’s incremental contribution to cumulative air quality criteria pollutants, the geographic scope of area is the Bay Area air basin under the jurisdiction of the BAAQMD. Cumulative effects related to air quality could occur at any time during the reclamation period and/or during the post-reclamation maintenance and monitoring period. In contrast, geology impacts are site-specific and limited to the physical footprint of the Project Area, and water quality impacts are considered within the watershed in which the Project Area is located. Specific geographic and temporal scopes of cumulative effects consideration are identified on a resource-by-resource basis in Section 6.2.

6.1 The Cumulative Scenario

6.1.1 General and Regional Plans Containing Projections Considered in the Cumulative Scenario

This analysis of cumulative effects is based, in part, on a summary of the projections that have been included in one or more of the following adopted local, regional, or statewide plans:

- Santa Clara County General Plan (County of Santa Clara, 1994a, County of Santa Clara, 1994b);
- City of Cupertino General Plan 2000 – 2020 (City of Cupertino, 2005);
- The California Regional Water Quality Control Board San Francisco Bay Region's Water Quality Control Plan (Basin Plan) (RWQCB, 2010); and
- The BAAQMD's Bay Area 2010 Clean Air Plan (BAAQMD, 2010a)

These adopted plans have been prepared by local agencies to meet the requirements of state law, and reflect comprehensive, long-term visions for physical development within the region.

6.1.2 Projects Considered in the Cumulative Scenario

The cumulative effects analysis also relies in part on the "list of projects" approach (CEQA Guidelines §15130(b)(1)) to identify past, present, and reasonably foreseeable probable future projects that could cause environmental impacts that are closely related to those of the Project. Factors considered in determining whether to include a project on the list include whether it would cause impacts of the same nature as the Project, its location, the timing of its impacts, and the type of project. Other on-site activities are described in Section 6.1.2.1; other mining and reclamation activities that have occurred, are occurring, or will occur in the County are described in Section 6.1.2.2; and off-site, non-mining or reclamation-related activities are described in Section 6.1.2.3.

Development projects, the environmental impacts of which could combine with those of the Project, are or would be developed within approximately 3 miles of the Project Area. These projects are listed in **Table 6-1** and shown in **Figure 6-**1. As noted above, the geographic scope of cumulative effects consideration varies on a resource-by-resource basis. In general, the distance for each resource is bounded by the maximum reasonable extent that the Project could contribute to cumulative effects. The range varies from global, which is the appropriate area within which to consider GHG emissions, to the physical footprint of the proposed Project, which is the appropriate area within which to consider earthquake-related and similar hazards. Three miles was selected because it provides a reasonable range within which Project impacts could interact with the impacts of other projects for multiple resource areas, such as hazards and hazardous materials, noise, and traffic. Where the appropriate geographic scope of cumulative consideration varies from this distance, distinctions are noted on a resource-by-resource basis below.

TABLE 6-1
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT CUMULATIVE IMPACT ANALYSIS PROJECTS LIST

Map Key	Project Name	Location	Approximate Distance from Project Site	Description	Status/Schedule
Other On-site Activities					
1	Surface Mining	Within the Project Area	0 miles	See Section 6.1.2.1	Ongoing, scheduled to cease during the Project
2	Operation of the Permanente Cement Plant	Adjacent to the Project Area	0 miles	See Section 6.1.2.1	Ongoing
3	Permanente Creek Long-term Restoration Plan	Within and adjacent to the Project Area	0 miles	See Section 6.1.2.1	Ongoing
Other Santa Clara County Surface Mining and Reclamation Activities					
4	Curtner Quarry	Northeast of the City of Milpitas, east of Highway 680, off Scott Creek Road	14 miles	See Section 6.1.2.2	Active Mine
5	Lexington Quarry	East of the Lexington Reservoir, in the Santa Cruz Mountains southeast of the City of Los Gatos	9.5 miles	See Section 6.1.2.2	Active Mine
6	Stevens Creek Quarry	Approximately 3 miles south of Highway 280 and adjacent to the southern boundary of the Permanente Quarry property	0.85 mile	See Section 6.1.2.2	Active Mine
7	Freeman Quarry	South of Gilroy and west of Highway 101	23 miles	See Section 6.1.2.2	Active Mine
8	Serpa Quarry	Off Old Calaveras Road, near the City of Milpitas	14 miles	See Section 6.1.2.2	Reclamation in Progress
9	Acevedo Quarry	Surrounded by the City of San Jose on property west of Monterey Highway commonly known as Communications Hill	13 miles	See Section 6.1.2.2	Reclamation in Progress
10	Calaveras Quarry	East of the City of Milpitas, adjacent to Ed Levin County Park abutting Calaveras Road	14 miles	See Section 6.1.2.2	Reclamation in Progress
City of Los Altos Projects					
11	A few single-family residential replacement/ rebuilds and some new home construction are anticipated.	Within the City of Los Altos	The city limit is approximately 0.75 mile from the site	Single-family residential development	Undetermined

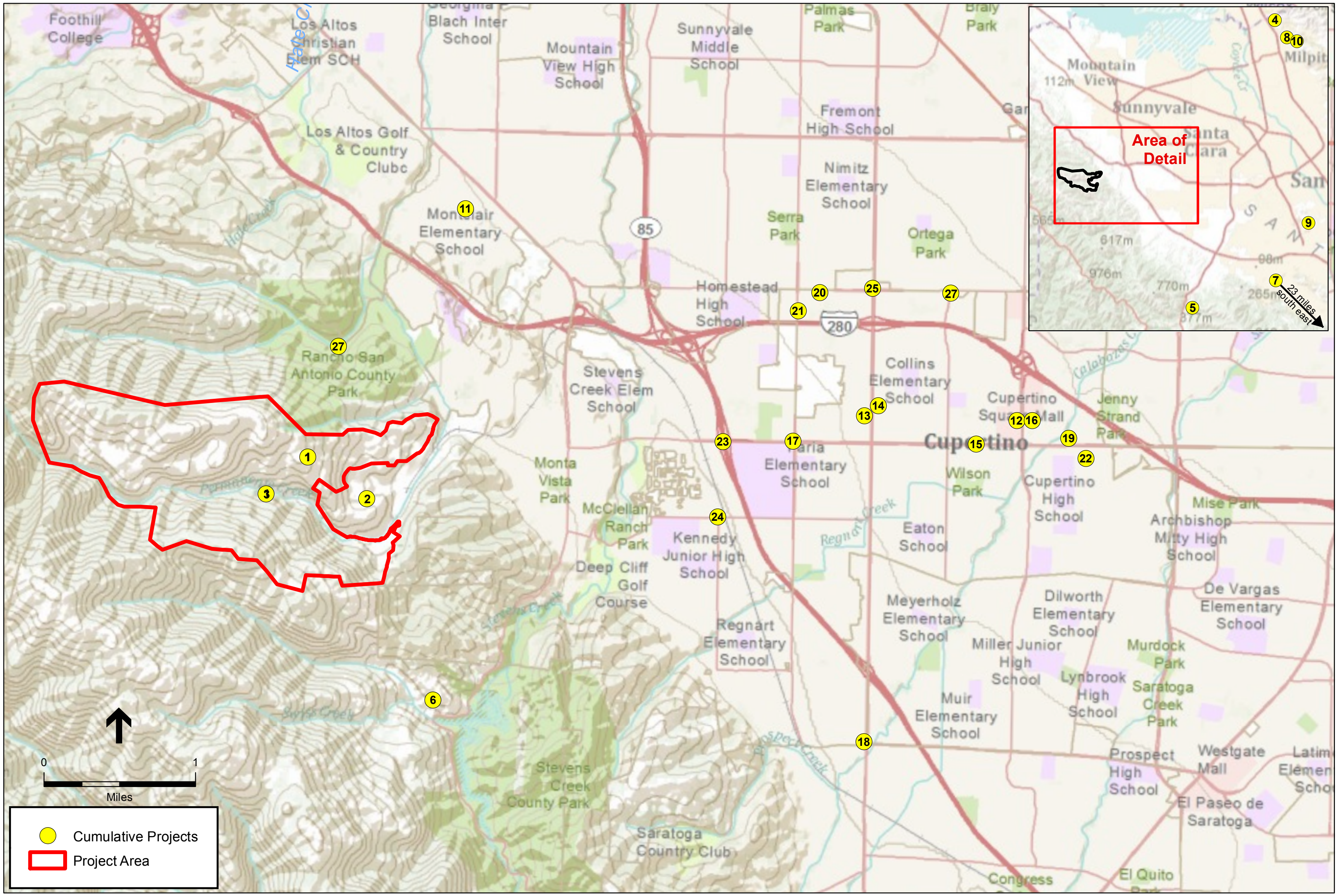
TABLE 6-1 (Continued)
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT CUMULATIVE IMPACT ANALYSIS PROJECTS LIST

Map Key	Project Name	Location	Approximate Distance from Project Site	Description	Status/Schedule
City of Cupertino Projects					
12	Vallco Mall	N. Wolfe Road & Vallco Parkway	3.75 miles	204 condominium dwelling units, 589,000 square feet of retail space, and 12,000 square feet of restaurant space. The development is expected to generate 518 a.m. peak hour trips and 2,231 p.m. peak hour trips.	Project approval expired, new project is anticipated but not approved.
13	Hyatt Place Hotel	10165 N. De Anza Blvd.	3 miles	4-story, 84,410-square-foot hotel including 123 rooms.	Under construction
14	The Learning Game	10212 N. De Anza Blvd.	3 miles	2,007-square-foot addition and conversion of an existing 2,864 square foot former auto repair building into retail commercial.	Recently completed.
15	Marketplace of Cupertino Building C	19770 Stevens Creek Blvd.	3.5 miles	34,300 gross square feet of mixed retail. The development is expected to generate 33 a.m. peak hour trips and 121 p.m. peak hour trips.	Recently completed.
16	Vallco Hotel	N. Wolfe Rd. & Vallco Parkway	3.75 miles	200-room hotel. The development is expected to generate 111 a.m. peak hour trips and 108 p.m. peak hour trips.	Anticipated but not approved.
17	De Anza College Expansion	Stevens Creek Blvd. & N. Stelling Rd.	2.5 miles	Expansion of existing campus. Expected to generate 980 a.m. peak hour trips and 1,120 p.m. peak hour trips.	Under construction.
18	Valero Gas Car Wash	1699 S. De Anza Blvd.	3.25 miles	846-square-foot automated car wash addition to existing gas station.	Recently completed.
19	Main Street Cupertino	North side of Stevens Creek Boulevard between Finch Avenue & Tantau Avenue	4 miles	250-room hotel, 160 units of senior housing, 150,000 square feet of retail, 100,000 square feet of office, 145,000-square-foot athletic club. Expected to generate 622 a.m. peak hour trips and 1,265 p.m. peak hour trips.	Approved January 2009; revised application anticipated November 2011.
20	Villa Serra	20800 Homestead Rd./10807 N. Stelling Rd.	2.75 miles	116 new apartment units added to existing residential development. Expected to generate 61 a.m. peak hour trips and 82 p.m. peak hour trips.	Recently completed.
21	U-2006-13	10855 N. Stelling Rd.	2.5 miles	19 dwelling units. Expected to generate 25 a.m. peak hour trips and 27 p.m. peak hour trips.	Recently completed.

TABLE 6-1 (Continued)
LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT CUMULATIVE IMPACT ANALYSIS PROJECTS LIST

Map Key	Project Name	Location	Approximate Distance from Project Site	Description	Status/Schedule
City of Cupertino Projects (cont.)					
22	Tantau Retail and Parking Garage	10100 Tantau Ave.	4.25 miles	10,582 square feet of retail and a 26,500-square-foot parking garage. Expected to generate 73 a.m. peak hour trips and 53 p.m. peak hour trips.	Permit approval extended to August 2013.
23	Oaks Shopping Center	Stevens Creek & SR 85	2 miles	122-room hotel, 18,200 square feet of retail, 18,300 square feet of office, 14,400 square feet of meeting rooms. Expected to generate 178 a.m. peak hour trips and 355 p.m. peak hour trips.	Approved, expires September 2012.
24	One Results Way	Bubb Rd & McClellan Rd.	2 miles	11,015 square feet of office.	On hold; permit approval extended to July 2014.
25	Homestead Square	N. De Anza Blvd & Homestead Rd.	3 miles	17,340-square-foot pharmacy, 138,424-square-foot retail center, 48,024-square-foot supermarket. Expected to generate 63 a.m. peak hour trips and 261 p.m. peak hour trips.	Approved May 2010, revised application under review.
26	Apple Campus 2	Homestead Rd. & S. Wolfe Rd.	4 miles	2.8 million square feet of office, research and development space; 1,000 seat corporate auditorium; fitness center; central plant; 300,000 square feet of research facilities; and parking.	The City of Cupertino is currently preparing a Draft EIR, projected to be completed in the Spring of 2012.
Santa Clara Valley Water District / Santa Clara County Parks					
27	Permanente Creek Flood Protection Project	In Santa Clara County Rancho San Antonio Park	0.5 mile	Construction of detention basins and relocation of a parking lot. Excavation of materials is estimated to be approximately 187,000 cubic yards from the San Antonio Park site. Fill was to be exported off-site to an approved disposal site; however, the Water District and Lehigh have agreed to allow deposit of the material on the Lehigh property. This material would be deposited in late 2012. The future stockpile would be located near the EMSA.	The Water District certified a FEIR for the project in June 2010. The District is currently preparing a Supplemental EIR to address project changes including those at the San Antonio site. The NOP comment period closed in July 2011

SOURCE: County of Santa Clara_2011c; City of Cupertino, 2011c.



SOURCE: Lehigh, 2011; ESRI, 2011

Lehigh Permanente Quarry Reclamation Plan Amendment . 211742

Figure 6-1
Cumulative Projects

6.1.2.1 Other On-site Activities

Surface Mining at the Permanente Quarry

The Project Area contains approximately 1,238 acres that have been affected by surface mining operations since SMARA was adopted. Mining operations commenced at the Permanente Quarry site at least as early as 1903 and have been continuous in portions of the Project Area since 1939. The Quarry produces limestone for cement production and low calcium carbonate limestone for construction aggregate uses. Materials are extracted from the Quarry pit and overburden is disposed of in the WMSA, EMSA and along the west wall of the Quarry pit. For the EMSA, overburden material is added to the area and then rough-graded according to geotechnical design. Existing operational areas include: the Quarry pit, WMSA, EMSA, Crusher and Quarry Office Area, Surge Pile, and Rock Plant. Materials extraction is expected to continue until approximately 2025, depending on market demands for the mineral commodities produced.

As explained in the Reclamation Plan Amendment filed by the Applicant in July 2011 (EnviroMINE, Inc., 2011), mining activities occur 24 hours per day, 365 days per year. Such activities generally involve the removal of topsoil and overburden using heavy earth-moving equipment; excavation of mineral commodities using excavators, drilling, and blasting (blasting generally occurs Monday to Saturday between 10 a.m. and 6 p.m.); hauling of materials using front-end loaders, 100-ton and 150-ton off-road haul trucks, and conveyors; and then processing of the materials using vibrating screens, crushing and rock washing units, stockpiling, and storage. Final slopes then are graded to engineered slopes and benches.

Mining activity-related stormwater and erosion control measures are implemented, operated, and maintained within and adjacent to the Project Area, including settling ponds to address quarry run-off and operational water ponds.

Permanente Creek Long-term Restoration Plan

On July 27, 1999, the San Francisco Bay Regional Water Quality Control Board (RWQCB, or Regional Board) issued Cleanup and Abatement Order No. 99-018 regarding the “discharge of concrete and other wastes into Permanente Creek” from the Permanente Quarry, aggregate plant, and Cement Plant (RWQCB, 1999; URS, 2011). The order required the implementation of interim and long-term corrective actions, most of which have been satisfied. To fulfill the last requirement, Lehigh/ Hanson proposed the *Permanente Creek Long-term Restoration Plan* (Plan) to the Regional Board in March 2011 (URS, 2011). The Plan identifies reach-specific and site-specific restoration recommendations, identifies optional restoration design alternatives, contains implementation schedules, and updates prior reports based on more recent field reconnaissance. It focuses on the long-term removal of structures in and adjacent to the creek and the restoration of the creek’s riparian zone. Restoration recommendations are classified as one of four categories:

- Category I recommendations would address conditions that represent active erosion or other sediment sources to the Creek, have the potential to threaten site infrastructure (e.g., roads), and could implemented without interfering with active operations. Category I recommendations be implemented within 5 years of final Plan approval.

- Category II recommendations are contingent upon the ability to remove infrastructure, and so are recommended for implementation upon closure of the Quarry, aggregate plant, and Cement Plant.
- Category III recommendations would be implemented only as warranted by post-closure monitoring.
- Category IV recommendations are not recommended for implementation.

On March 26, 2010, the Regional Board issued the Cement Plant a Notice of Violation for failure to comply with stormwater protection requirements. This notice required two things to occur: First, an update of site maps to clearly identify all structural control measures that affect stormwater discharges, authorized non-stormwater discharges, and areas where stormwater enters the site from surrounding areas; and second, the implementation and maintenance of best management practices to eliminate discharge of pollutants from Ponds 9 and 17 into Permanente Creek, reduce sediment discharge into Pond 9, prevent discharge of sediments from slope erosion, minimize exposure of pollutants to stormwater at the vehicle and equipment shop and washing area, eliminate prohibited non-stormwater discharges relating to vehicles and equipment, minimize exposure of pollutants to stormwater at a concrete maintenance pad, and prevent the discharge of sediments from the unstabilized Upper Quarry Road and areas around it.

A subsequent notice of violation was issued by the Regional Board on February 18, 2011, related to non-storm water discharges at the Cement Plant. On April 29, 2011, the Regional Board issued a complaint alleging that a pipe outfall (discharge) to Permanente Creek had not been disclosed despite a requirement to have done so, and, on June 10, 2011, the Cement Plant became subject to a Porter-Cologne Water Quality Control Act Section 13267 Investigative Order related to water quality concerns (RWQCB, 2011).

Cement Plant Operations

The Cement Plant is adjacent to the Project Area, south of the EMSA. It operates under a Use Permit that first was issued on May 8, 1939 (County File No. 173.023). The County approved Use Permit modifications in June 1950 and May 1955 to add rotary kilns to the operations, and on December 5, 1977, to modernize the plant (County of Santa Clara, 2011b). The Cement Plant employs approximately 175 skilled workers (Howell, 2007), and operates 24 hours per day, 7 days per week.

The Cement Plant produces Portland cement, the type of cement used in virtually all concrete, from raw materials including limestone, calcium, silica, alumina, and iron. Some of these materials are excavated from the Project Area; others are imported by rail or truck. The raw materials are crushed into a fine powder and blended in specified proportions and then heated in a pre-heater and rotary kiln, where it reaches temperatures of approximately 2,800 degrees Fahrenheit (BAAQMD, 2010b). The material formed in the kiln, called “clinker,” subsequently is ground and blended with gypsum to form the cement. According to the operator, the Cement Plant will continue to manufacture cement “long after the Quarry is exhausted of its limestone resource” (Howell, 2007). The Cement Plant also produces and sells construction aggregates, stores raw materials and water, and treats wastewater (BAAQMD, 2010b; RWQCB, 2011). Specific environmental resource-related considerations are described below.

Aesthetics

The Cement Plant is visible from surrounding areas nearby including visually several sensitive locations that include trails within the RSA County Park/Preserve, and the Anza Knoll scenic vista.

Air Quality

As a major facility under the Clean Air Act, the Cement Plant operates pursuant to a permit issued by the Bay Area Air Quality Management District (BAAQMD) under Title V of the 1990 Clean Air Act Amendments, the federal Operating Permit Program and BAAQMD’s Regulation 2, Rule 6-Major Facility Review (BAAQMD Facility No. A0017). The Cement Plant’s first Title V Permit was issued on November 5, 2003; the comment period on a proposed revision of the facility’s Title V Permit closed in Spring 2011. The primary criteria air pollutants emitted from cement manufacturing consist of nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulate matter (PM). BAAQMD reports current emissions from the Cement Plant to be in compliance with the requirements of the Title V permit (County of Santa Clara, 2011b). Related to particulate matter, Lehigh has prepared a Fugitive Dust Control Plan that contains mitigation measures, techniques and practices for monitoring and preventing dust emissions, as well as guidelines for employee training (Lehigh, 2011a).

Small quantities of volatile organic compounds (VOC), including the toxic air contaminant (TAC) benzene, also are emitted from the kiln. Other TAC emissions from the Cement Plant include trace metals such as mercury, cadmium, chromium, arsenic, and nickel (BAAQMD, 2010b). BAAQMD distributed a Health Risk Assessment (HRA) in September 2010, which contains information about mercury and other Cement Plant emissions. The HRA includes Table ES-2, which shows the average annual emission rate for mercury by the Lehigh Cement Plant was 582 pounds per year during 2005 (the high end of the plant’s production) and 337 pounds per year in 2010, due to reduced production (County of Santa Clara, 2011b). Lehigh has committed to implement efforts to reduce mercury emissions by approximately 90 percent overall at the Cement Plant by 2013 (BAAQMD, 2011a).

In light of concerns about hexavalent chromium emissions near cement plants in California, the US EPA installed a detection system at Stevens Elementary School, which is located approximately 2 miles from the Permanente Cement Plant to take measurements. The results of six months of testing in 2009-2010 were that “levels of hexavalent chromium in the air at the school are below levels of concern for long-term exposure” (USEPA, 2010).

Hydrology and Water Quality

For a discussion of hydrology and water quality issues pertaining to operation of the Cement Plant, see the discussion above under Permanente Creek Long-term Restoration Plan. As noted in this discussion, the San Francisco Bay Regional Water Quality Control Board has issued several Notices of Violation to the Operator regarding stormwater discharge. These violations may encompass stormwater discharges associated with either or both Quarry and Cement Plant operations. The Restoration Plan is intended to address water quality issues.

Noise

Operation of the Cement Plan kilns produces a low level "hum" that is slightly audible from nearby areas when other ambient noise is at its lowest, normally during the nighttime. Noise from the Cement Plant was accounted for as part of background noise evaluated in Section 4.13, *Noise*.

Traffic and Transportation

Operation of the Cement Plant is authorized under a use permit that the County issued on May 8, 1939. The use permit has been modified several times over the years, including 1950, 1955, 1977, and 1980. The permit does not impose any conditions on the number of trucks which may travel to and from the Cement Plant or by what routes. According to Lehigh, over the past 11 years (January 1990 to December 2010), the Cement Plant generated average of 45,112 truck trips per year. Traffic control/safety measures are in place along Stevens Creek Boulevard, including signage regarding speed limit for trucks and cameras to capture vehicles and trucks exceeding the speed limit (County of Santa Clara, 2011c).

6.1.2.2 Other Local Mining and Reclamation Activities

In addition to the Permanente Quarry, there are seven surface mining sites subject to SMARA within the County. Of these seven, four are actively engaged in extraction activities and three are in various stages of final reclamation (County of Santa Clara, 2011a). Each is shown in Figure 6-1 and described below; as shown in Figure 6-1, there is no geographic overlap between Permanente Quarry and the seven other surface mining sites.

Active Mining Operations

The Curtner Quarry (State Mine ID 91-43-0001) is located in an unincorporated part of the County northeast of the City of Milpitas, east of Highway 680, off Scott Creek Road. The County approved the current reclamation plan amendment for this quarry on August 14, 2008.

The Lexington Quarry (State Mine ID 91-43-0006) is located in an unincorporated part of the County east of the Lexington Reservoir, in the Santa Cruz Mountains southeast of the City of Los Gatos. Greywacke sandstone is mined at the quarry for construction aggregate, road base and general fill. The County certified an EIR and approved a use permit, reclamation plan amendment, and lot line adjustment on June 3, 2010, for a geographic expansion of mining operations and reclamation areas as well as an expansion of the hours of operation (OPR, 2010). The County determined that the project would result in cumulatively significant aesthetic impacts; however, all of the other potential significant effects would be mitigated to a less-than-significant level, including: impacts to recreational users along Alma Bridge Road, impacts to California Bay Riparian Forest, impacts to California red-legged frogs from quarrying activities, impacts to nesting raptors during vegetation removal, impacts to Limekiln Creek from sediment during reconstruction of the tributary creek channel onsite, impacts to groundwater resources for neighboring residential wells from quarrying activities on the east face, impacts to drainage systems and reclamation from debris flows caused by placement of fines on quarry cut slopes, impacts to Limekiln Creek from potential debris flows and rockfall associated with mining activities, and impacts to neighboring residences from increased noise associated with mining and reclamation activities (County of Santa Clara, 2010a).

The Stevens Creek Quarry (State Mine ID 91-43-0007) is located in an unincorporated part of the County, approximately 3 miles south of Highway 280 and adjacent to the southern boundary of the Permanente Quarry property. It is owned and operated by Stevens Creek Quarry, Inc. (County of Santa Clara, 2009). The County approved a reclamation plan amendment for the Stevens Creek Quarry in 2009 to addresses compliance issues identified by OMR, including encroachment of quarry slopes at the eastern edge of the mined area, and disturbance of areas outside the approved reclamation plan boundary (an updated planting palette also was approved) (County of Santa Clara, 2011a, 2009a, 2009b; OPR, 2009). Mitigation Measures imposed as part of the County-approved Mitigated Negative Declaration for the reclamation plan amendment addressed impacts related to air quality (construction equipment-related air emissions), biological resources (Western Leatherwood, robust monardella, nesting birds, California red–legged frog, western pond turtles and/or southwestern pond turtles, bats, and oak woodland), cultural resources (prehistoric and historic cultural artifacts, human remains, and paleontological resources), geology and soils (slope stability), stormwater, and construction equipment-related noise (County of Santa Clara, 2009b).

The Freeman Quarry (State Mine ID 91-43-0010) is located in an unincorporated part of the County south of Gilroy and west of Highway 101. The County approved the current reclamation plan amendment for the quarry in 2008. The mine operator has submitted an application to the County for a use permit modification to authorize an expansion of the quarry from 61 acres to 149 acres, expand the allowed hours of materials transportation from 6 a.m. to 4 p.m. Monday through Saturday, and to amendment the reclamation plan accordingly (OPR, 2011). The County issued a Notice of Preparation and, on August 10, 2011, held a public scoping meeting about the project. Preparation of a draft EIR is underway. County staff project that the draft EIR will be published in the spring or summer of 2012 (County of Santa Clara, 2011a).

Mines in the Reclamation Process

The Serpa Quarry (State Mine ID 91-43-0002) is located in an unincorporated part of the County off Old Calaveras Road, near the City of Milpitas. The County approved a reclamation plan amendment for this quarry on March 11, 2010 (County of Santa Clara, 2010b. The quarry operator submitted an application for another reclamation plan amendment on July 8, 2011, which, if approved, would modify the final contours of the land following completion of reclamation. The County expects to complete its environmental review and reached a decision on the proposed reclamation plan amendment by the end of 2011 (County of Santa Clara, 2011a).

The Azevedo Quarry (State Mine ID 91-43-0003) is surrounded by the City of San Jose on property west of Monterey Highway commonly known as Communications Hill. Active mining operations ceased in 1999 (County of Santa Clara, 2011a). Reclamation commenced under the approved reclamation plan in 1995; however, the County became aware in 2010 that active reclamation had stopped but was not complete. It is reasonably foreseeable that remaining reclamation activities would be undertaken at the Azevedo Quarry at the same time that reclamation activities are occurring in the Project Area. In addition, a recycling facility located at the quarry processes and sells recycled concrete, asphalt, and soil (County of Santa Clara, 2011a).

The Calaveras Quarry (State Mine ID 91-43-0008) is located in an unincorporated part of the County east of the City of Milpitas, adjacent to Ed Levin County Park abutting Calaveras Road. This mine has not been active and has not produced any material for more than 18 years (County of Santa Clara, 2011a). On July 8, 2010, the County approved a reclamation plan amendment for the quarry to reduce the amount of grading that would be necessary to complete reclamation, protect existing biological habitat on the site, and change the re-vegetation plan to a mix more compatible with native species. Grading, hydro-seeding of disturbed areas, and installation of erosion control activities occurred in November and December 2010. The only on-going activities at the quarry include only monitoring and maintaining revegetated areas (County of Santa Clara, 2011a).

6.1.2.3 Off-site, Non-mining or Reclamation-related Activities

To identify off-site, non-mining, and non-reclamation related activities that would cause impacts that could interact with the incremental impacts caused by the Project, the County contacted the cities of Cupertino and Los Altos, Santa Clara Valley Water District, Caltrans, and evaluated projects being undertaken by the County Parks Department and Roads and Airports Department. The Santa Clara County Roads and Airports Department reported no projects. Projects identified by other local agencies are identified and summarized in Table 6-1.

6.2 Cumulative Effects Analysis

In reaching a conclusion for each resource area, five factors were considered: (i) the geographic scope of the cumulative impact area for that resource; (ii) the timeframe within which Project-specific impacts could interact with the impacts of other projects; (iii) whether a significant adverse cumulative condition presently exists to which Project impacts could contribute; (iv) any incremental Project-specific contribution to cumulative conditions; and (v) whether any project specific contributions are considered cumulatively considerable and thus are significant. The geographic scope of the cumulative effects analysis for each resource area is tailored to the natural boundaries of the affected resource. Existing conditions within the cumulative impacts area of effect reflect a combination of the natural condition and the effects of past actions. The analysis of cumulative impacts for each resource area analyzed in Sections 4.1 through 4.18 of this document is set forth below.

6.2.1 Aesthetics, Visual Quality, and Light and Glare

The geographic scope of cumulative impacts to visual quality includes the viewsheds that would be affected by the Project, consisting of views from public areas such as major or scenic roadways, parks and recreational areas, and scenic vistas. The temporal scope of impacts would include construction, operation, and maintenance of the Project.

The Project is located within a Design Review Zoning District, and would not conflict with applicable General Plan policies or Zoning Ordinance provisions. During reclamation activities, construction of the Project would result in impacts to affected viewsheds including scenic vistas, scenic roadways, and park and recreational areas during the 20-year period while reclamation is occurring. Construction impacts would be significant and unavoidable for the scenic vista at the Anza Knoll, from I-280 (a County-designated scenic roadway), and from trails within the RSA Preserve/ Park. Construction impacts would be less than significant for other scenic vistas, major and scenic roadways, and from other recreational and park areas. Long-term monitoring and maintenance of the Project would result in less than significant impacts for all impact criteria. Lighting required during construction would not adversely affect daytime or nighttime views in the Project Area with implementation of mitigation, and the Project would not create new sources of light or glare that would affect daytime or nighttime views in the area.

The Project would contribute to cumulative adverse conditions where construction activity and/or topography modifications occupy the same field of view as other built facilities or impacted landscapes that are currently in the viewsheds of sensitive viewers in the vicinity of the Project Area. The past, present, and reasonably foreseeable future projects described in Chapter 6, *Cumulative Projects*, include eight projects that would be within the same viewsheds as the Project (i.e., construction of the proposed Project and the cumulative project both would be visible from a given vantage point). These cumulative projects are identified below by Map Key number, consistent with Figure 6-1, *Cumulative Projects*, and Table 6-1:

(1) Surface Mining – onsite activity within the Project Area; ongoing, scheduled to cease during the Project.

(2) Operation of the Permanente Cement Plant – onsite activity adjacent to the Project Area; ongoing.

(6) Stevens Creek Quarry – approximately 0.85 mile from the Project site; active mine.

(15) Marketplace of Cupertino Building C – approximately 3.5 miles from the Project site on Stevens Creek Boulevard; 34,300 square feet of mixed retail; completed.

(17) De Anza College Expansion – approximately 2.5 miles from the Project site on Stevens Creek Boulevard; expansion of existing campus; under construction.

(19) Main Street Cupertino – approximately 4 miles from the Project site on Stevens Creek Boulevard; new hotel, senior housing, retail, office space, and athletic club; project approved.

(23) Oaks Shopping Center – approximately 2 miles from the Project site on Stevens Creek Boulevard; new hotel, retail, office space, and meeting rooms; project approved.

(27) Permanente Creek Flood Protection Project – approximately 0.5 mile from Project site in Rancho San Antonio County Park; construction of detention basins and relocation of a parking lot including excavation of approximately 187,000 cubic yards of materials; FEIR certified, Supplemental EIR under preparation.

Ongoing surface mining within the Project Area, operation of the Permanente Cement Plant, and operation of the Steven's Creek Quarry (cumulative projects (1), (2) and (6), above) were ongoing activities in 2007, and as such, are part of the visual baseline. When considered in combination with the impacts of these cumulative projects, the Project's incremental contribution to visual resources would not be cumulatively considerable because the continued operation of these industrial facilities is not anticipated to substantially alter the visual landscapes in which they are located. Damage to the visual character of the cumulative project locations has already occurred, and continued operation of these facilities will maintain the existing visual character (i.e., industrial) of the sites on which they are located. Accordingly, the Project's contribution would not be cumulatively considerable.

The construction of hotels, retail, office space, campus facilities, meeting rooms, and an athletic club (cumulative projects (15), (17), (19) and (23)) on Stevens Creek Boulevard would increase the presence of construction equipment and activity for viewers on this major roadway, which also provides views of the Project Area. However, these facilities would be constructed in a highly developed commercial/retail corridor, along which many other commercial buildings currently exist. Furthermore, the duration of construction for these projects is substantially shorter than the construction of the Project. The combined effects of the construction of cumulative projects (15), (17), (19) and (23) and the construction monitoring and maintenance of the Project would not substantially degrade scenic vistas, scenic highways, or the Project Area and its surroundings, nor would the combined effects create a new source of substantial light or glare. Accordingly, the Project's contribution would not be cumulatively considerable.

Impact 6-1: Project construction activities could make a cumulatively considerable contribution a substantial adverse effect on a scenic vista and degradation of the existing visual character or quality of the Project Area. ***(Significant and Unavoidable Impact)***

Construction of the Permanente Creek Flood Protection Project would result in temporary visual disruption related to grading for the flood basin, and would create views of construction debris, construction staging and materials storage areas, soil stockpiles, and construction vehicles and equipment. Affected viewers would include recreationalists using the nearby trails within the RSA Preserve/ Park, and residents on Cristo Rey Drive. The period of construction-related visual disruption would be limited (approximately nine months during the first year of project construction), and mitigation would reduce impacts to a less-than-significant level by providing visual screening for affected construction areas, consisting of an 8-foot-high chain-link fence covered with fabric, or an equivalent. However, as discussed above, the proposed Project would have a significant and unavoidable impact to views from the Anza Knoll and trails within the RSA Preserve/Park, including the PG&E and Hammond-Snyder Loop trails. Construction of the Permanente Creek Flood Protection Project would occur concurrent with construction of Phase 1 of the Project; the Project would cumulatively contribute to the impacts caused by the Permanente Creek Flood Protection Project. As discussed in Section 4.1, *Aesthetics*, no mitigation measures have been identified to reduce significant impacts to views from the Anza Knoll scenic vista (Impact 4.1-1), or views from the RSA Preserve/Park (Impact 4.1-5). Similarly, no feasible mitigation measure at the Project level have been identified that would be sufficient to reduce the cumulative impact to a level that is no longer significant.

Mitigation: None feasible.

Significance after Mitigation: Significant and Unavoidable.

6.2.2 Agriculture and Forestry Resources

The Project would have no impact on Agriculture and Forest Resources; therefore, it would not cause or contribute to any cumulative impact in this regard.

6.2.3 Air Quality

6.2.3.1 Criteria Air Pollutants

The geographic scope of potential cumulative criteria air pollutant impacts encompasses the Project Area, site, areas along the access and hauls routes to the Project Area, and the San Francisco Bay Area Air Basin. The temporal scope includes construction, operation and maintenance of the Project. The past, present, and reasonably foreseeable future projects described above in Table 6-1 include numerous development projects and quarries in Santa Clara County that could substantially increase the criteria air pollutant emissions within the Project vicinity and Bay Area Air Basin. According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards within the regional air basin. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2011b). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described in Section 4.3, *Air Quality*, in the context of Impacts 4.3-1 and 4.3-2, Project emissions of ROG, NO_x, PM10, PM2.5, and CO would not exceed the applicable BAAQMD thresholds and therefore would be less than significant and thus not cumulatively considerable.

6.2.3.2 Toxic Air Contaminants

The BAAQMD's *CEQA Air Quality Guidelines* include new standards and methods for determining the significance of cumulative health risk impacts for individual projects (BAAQMD, 2011b). The method for determining health risk requires the tallying of health risk from permitted sources and major roadways in the vicinity of a project, then adding the project impacts to determine whether the cumulative health risk thresholds are exceeded. Cumulative health impacts of cancer risks, chronic impacts, and PM2.5 concentrations are analyzed.

BAAQMD has developed a geo-referenced database of permitted TAC emissions sources throughout the San Francisco Bay Area and has developed the *Stationary Source Risk & Hazard Analysis Tool* (dated May 2011) for estimating health risks from permitted sources. One permitted source (the Lehigh cement kiln, plant baghouses, stationary generators, and fugitive sources) is located within 1,000 feet of the Project Area boundary. Cumulative health risk information associated with these sources was developed from the *Revised AB2588 Health Risk Assessment 2005, Average 2008/2009, and 2013 Production Scenarios for the Lehigh Southwest Cement Company* (AMEC Geomatrix, 2011). The HRA was approved by BAAQMD and OEHHA.

BAAQMD also has developed a geo-referenced database of roadways throughout the San Francisco Bay Area and has developed the *Highway Screening Analysis Tool* (dated May 2011) for estimating health risks from roadways. State Route 85 and Interstate 280 are located immediately east and north, respectively, but not within 1,000 feet of the site. Thus, the health impacts from these roadways were not included in the analysis. However, health impacts resulting from ongoing truck traffic associated with the hauling of cement and aggregate from the Lehigh site were included within the cumulative analysis.

Table 6-2 shows the cumulative cancer risk, chronic hazard, and PM2.5 concentrations (in μg/m^3) associated with nearby sources and the Project. As indicated in Table 6-2, the cumulative total cancer risk, acute and chronic hazard, and PM2.5 concentrations would be below the respective BAAQMD significance thresholds and therefore would not be considered cumulatively significant.[1] Note that with Mitigation Measures 4.3-3a and 4.3-3b (or, alternatively, 4.3-3c) as described in Section 4.3, *Air Quality*, the cumulative impact would be even further reduced.

TABLE 6-2
CUMULATIVE HEALTH IMPACTS

Site No.	Facility Type	Address	Cancer Risk (per million)	Acute Hazard Index	Chronic Hazard Index	PM2.5 (μg/m^3)
17	Lehigh Southwest Cement Company	24001 Stevens Creek Blvd	8.5	2.1	0.34	0.02[a]
	Cement Trucks	24001 Stevens Creek Blvd	2.8	0.01	0.01	0.04
		Total: Cumulative Sources	**11.3**	**2.11**	**0.35**	**0.06**
		Proposed Project - Mitigated	69.5	1.13	0.27	0.58
		Total: Project + Cumulative	**80.8**	**3.24**	**0.62**	**0.64**
		BAAQMD Cumulative Significance Criteria	**100**	**10**	**10**	**0.8**
		Significant Cumulative Impact?	**No**	**No**	**No**	**No**

[a] Adapted from Lehigh, 2011b, Table 8B
SOURCE: KB Environmental Sciences, Inc, 2011 (included in this EIR as Appendix E)

1 The locations of maximum impact for the cement plant and for the Project are not the same, so adding the maximum impacts together is an overestimate of what the actual maximum cumulative impact would be at any sensitive receptor.

6.2.4 Biological Resources

The geographic context for analysis of cumulative impacts on biological resources encompasses the eastern side of the Santa Cruz Mountains and the Santa Clara Valley adjacent to San Francisco Bay, within a 5-mile radius of the Project Area. 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 Project 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. Much of the Santa Clara Valley adjacent to San Francisco Bay is developed or otherwise built out. Each of the projects in Table 6-1 is considered for its contributions to any existing cumulative impacts in the region.

Impacts for all phases of the Project are considered in this cumulative assessment, as Project-level impacts potentially contributing to cumulative impacts could occur in any phase of reclamation. The temporal nature of impacts produced by cumulative projects in the region was considered, as impacts from cumulative projects may not occur simultaneously with Project-level impacts, which in turn could affect whether these impacts are cumulatively considerable.

Impacts on biological resources associated with the Project include removal of trees and shrubs that provide foraging opportunities, cover, and nesting and roosting opportunities for birds and bats; elevated sound levels that result in failure of nests and roosts for birds and bats; ground disturbance of ruderal and previously disturbed areas that results in failure of nests for disturbance-averse ground nesting birds; destruction of dusky-footed woodrat nests or removal of dense shrub habitat supporting woodrat nests; introduction of pathogens or invasive species that could jeopardize oak woodlands surrounding the Project Area; and potential secondary effects to aquatic habitat associated with selenium runoff to Permanente Creek. 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 with the exception of short-term impacts to Permanente Creek from selenium runoff. After final reclamation is complete, the impact from selenium runoff would be mitigated to a less than significant level.

Past projects, including establishment of seven other quarries in the region and extensive urban development in the Santa Clara Valley, have created cumulative impacts on special-status species, wetlands, and oak woodlands in the region. Existing operations at the Quarry and other quarry projects listed in Table 6-1 have the potential to contribute to cumulative impacts on biological resources. Much like the Quarry, these other facilities typically are located outside of urban development and adjacent to undisturbed natural habitats, which can potentially support special-status species and sensitive natural communities. Most quarries in the region were established no later than 1950, and the majority of their current operations occur in disturbed areas and do not affect biological resources considered in CEQA analyses. Additionally, all quarries are required to have a reclamation plan, which results in revegetation of habitats originally disturbed by the quarry operations and reduction of permanent impacts to biological resources. However, the potential for considerable contributions to the existing cumulative impacts on special-status species, wetlands, and oak woodlands still exists, especially if quarries disturb natural habitat during overburden staging or maintenance activities. While a reclamation plan may prevent permanent impacts, temporary impacts over a period of decades still would occur while quarries are actively mining materials, and such impacts could contribute to existing cumulative impacts. Other projects potentially contributing to cumulative impacts include the Permanente Creek Flood Protection Project, which will occur in Rancho San Antonio County Park north of the Project Area. For that project, California red-legged frog populations could be impacted by excavation and construction of detention basins, along with wetlands and oak woodland habitat. Such impacts are not anticipated for the Project.

Despite many projects in the area potentially contributing to existing cumulative impacts, the Project’s incremental impact would not be cumulatively considerable except for the impact from selenium runoff (discussed separately below). Temporary impacts on nesting birds and roosting bats could result from regrading and revegetation during implementation of the Project. No habitats in the Project Area are completely undisturbed, however, and wildlife present in the area is habituated to some degree of disturbance from quarrying activities. Measures proposed as part of the Project along with additional measures would prevent or reduce the magnitude of these temporary impacts. Once reclamation is implemented fully, habitat would be considerably improved for special-status species, as woodland, grassland, and scrub areas would be more abundant, and aquatic habitat conditions would be improved as a result of the removal of limestone-bearing boulders from and restoration of Permanente Creek and other areas of the PCRA from which they could enter the creek. No impacts on wetlands or oak woodland would occur during Project implementation, and so the Project would not contribute to cumulative impacts on these sensitive habitats.

With regard to short-term impacts from selenium runoff to Permanente Creek, the Project’s individual contribution has been determined to be significant and unavoidable. Consequently, the cumulative impact would be cumulatively significant. Once final reclamation is complete, however, the Project’s impact would be less than significant as selenium runoff would be effectively controlled. At that time, as there are no other cumulative projects in the area that could contribute incrementally to selenium concentrations in Permanente Creek, the Project would not contribute to a cumulative impact in that regard.

6.2.5 Cultural and Paleontological Resources

Because significant cultural and paleontological resources contribute to a region-wide understanding of prehistory and history, all past, present, and reasonably foreseeable projects within the southern San Francisco Bay Area could potentially contribute to a cumulative impact on these types of resources. In the example of the California Register-eligible Kaiser Permanente Quarry Mining District, a portion of the District’s significance derives from its association with the nationally renowned historic figure of Henry J. Kaiser, and so the cumulative scenario for cultural resources in this analysis includes projects that could impact other properties that are associated with Kaiser. Archives & Architecture (2011) identified one other site in the San Francisco Bay Area that, like the Project site, is associated directly with Kaiser’s expansion period from 1939 – 1940s: Richmond Shipyard Number Three. This shipyard is part of the National Park Service's Rosie the Riveter-World War II Home Front National Historical Park, and is located at Potrero Point in Richmond. The Kaiser Richmond Field Hospital was the first Kaiser Permanente hospital, and is listed in the National Register of Historic Places as a contributor to the National Historical Park. The field hospital is now closed and remains in its original location in South Richmond along Cutting Boulevard. The Kaiser Permanente Quarry Mining District and Richmond Shipyard Number Three are two sites in the region associated with the expansion period of Henry J. Kaiser. There are numerous other Kaiser-associated resources located throughout the Bay Area region. In addition, each of the projects listed in Table 6-1 are considered for their contributions to a potential cumulatively considerable impact to cultural and paleontological resources.

The Project would result in permanent impacts to cultural resources; therefore, the cumulative scenario analysis addresses both interim term (i.e., the period of active reclamation activities) and long-term potentially significant cumulative impacts.

Project Impact 4.5-1 acknowledges that the Project's reclamation activities would have a significant and unavoidable permanent impact on contributing features of the California Register-eligible Kaiser Permanente Quarry Mining District. While mitigation is proposed to lessen this impact (Measures 4.5-1a through 4.5-1c), these measures would not fully offset the impact resulting from demolition of the Permanente Quarry Conveyor System and related tunnel and the remains of the early 1940s crusher. Impacts 4.5-2, 4.5-3, and 4.5-4 describe the potential for inadvertent discovery of archaeological resources, paleontological resources, and human remains during any earthmoving activities associated with reclamation. Mitigation measures are recommended for each of these Project impacts to reduce them to a less-than-significant level.

Other onsite activities, such as the Permanente Creek Restoration project, ongoing mining, and cement plant operations, would have no impact to cultural resources. For example, the Permanente Creek Restoration project would avoid the area near the historic Kaiser cabin.

6.2.5.1 Permanent Impacts to Historical Resources

The projects listed in Table 6-1 include mining and mine reclamation proposals similar to the Project, as well as residential and commercial development. None of the projects listed in Table 6-1 is known to affect any historical resources associated with Kaiser's expansion period; as described above, the only other historical site in the region associated with Kaiser's expansion period is the Kaiser Richmond Field Hospital, a contributor to the Rosie the Riveter-World War II Home Front National Historical Park. Although now closed, the Richmond site does not appear to be threatened. This facility stands by itself as a historic resource, and as such, the demolition of contributing features to the Kaiser Permanente Quarry Mining District would not directly affect the Kaiser Richmond Field Hospital site or the Rosie the Riveter/World War II Home Front National Historical Park, or other Kaiser-associated resources in the region.

Permanent impacts to historical resources within the region would be cumulatively considerable if development results in a net loss of regionally important historical resources. Although reclamation activities would demolish several contributing resources of the Kaiser Permanente Quarry Mining District, the Project would not result in a significant loss of regionally important historical resources, given the large number of Kaiser-associated resources in the Bay Area that would continue to exist if the Project were approved, including such examples as the Kaiser Richmond Field Hospital site or the Rosie the Riveter/World War II Home Front National Historical Park. Therefore, the Project would not cause or contribute to a significant cumulative impact.

6.2.5.2 Short-term Impacts to Archaeological and Paleontological Resources and Human Remains

Many of the projects listed in Table 6-1 would involve grading, trenching, excavation, or other earthwork that has the potential to damage or destroy subsurface cultural and paleontological resources. Active mining projects, mine reclamation, residential and commercial construction, and infrastructure/civic projects such as the Permanente Creek Flood Protection Project all have the potential for inadvertent discovery of these resources during ground-disturbing activities. However, existing conditions in this respect are not significantly adverse. Consequently, the Project's less-than-significant impact would not cause or contribute to a significant cumulative impact, and its incremental contribution would not be cumulatively considerable.

6.2.6 Energy Conservation

Impacts resulting from the RPA would have a less than significant cumulative effect on energy resources with other past, present, or reasonably foreseeable future actions. The Project would consume electricity, diesel fuel, and gasoline, each of which are sourced and supplied on different geographic scales. While increasing global energy demand will impact the overall supply of these energy sources, supply and demand for these resources are more sensitive to local fluctuations in the energy market. Local demand, conservation efforts, and availability of energy providers and infrastructure all determine the local energy suppliers' capacity to provide services to additional energy consumers. Therefore, the geographic scope of the cumulative effects analysis for energy resources is localized to Santa Clara County. This geographic scope of cumulative impacts analysis includes local substations and distribution lines, as well as gasoline and diesel providers, all of which would service the project site and cumulatively relevant projects. The temporal scope of the cumulative impact analysis for energy resources spans all three phases of the Project, which is expected to be a total of 20 years. Throughout the reclamation process the Project would consume energy -- at times it would consume more than the baseline electricity, gasoline, and diesel use values and at other times it would consume less.

The reclamation process would restore the Project Area to a non-energy consumptive environment, which would ultimately help to reduce the County's energy use amid the growing energy demand created by the cumulative projects in Table 6-1. However, to reclaim the Project Area, a minimal amount of energy would be used to fill the Quarry pit and recontour the land. As explained in Section 4.6 the Project would have a less than significant impact on energy resources and would comply with all relevant state and federal energy policies or standards. During reclamation Phase 1, the Project would exceed baseline diesel consumption values and, during reclamation Phase 2, would exceed baseline electricity values. Other than those limited-duration increases in energy consumption, the Project would consume less electricity, diesel, and gasoline than the baseline values. Additionally, the Project would utilize electricity-powered conveyors rather than petroleum-fueled vehicles to transport Quarry fill material. Based on the resulting energy efficiency, the Project would not have a cumulatively significant impact on energy resources.

All of the cumulative projects listed in Table 6-1 are energy consumptive projects. Three of the projects listed are reclamation projects, like the RPA; therefore, these three sites will be returned to their baseline conditions and reduce energy demand in the County. The majority of the remaining projects listed are mining, housing, hotel, and shopping center projects. The construction projects would require the use of petroleum-fueled vehicles during their temporary construction period. Once these projects are complete the majority of their energy use will be in the form of electricity consumption to heat and light the facilities. The local electric service provider, PG&E, has an obligation to meet electricity demand, allowing assurance that the cumulative projects' long term energy requirements will be met and electric resources will not reach capacity. The finite and temporary energy demand created by the RPA would be a less than significant contribution to the energy demanded by the cumulative projects in the County. Accordingly, no significant cumulative impact would result from the cumulative scenario to which the Project's incremental impact could contribute.

6.2.7 Geology, Soils and Seismicity

The entire Bay Area lies within a seismically-active region with a wide range of geologic and soil conditions that can vary widely within a short distance. Thus the cumulative context for potential impacts to people and structures related to geologic and seismic hazards is more localized or site-specific. The temporal scope includes construction, operation and maintenance of the Project. As analyzed in Section 4.7, *Geology and Soils*, the Project would have no impacts related to being located on expansive soils, or having soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. The Project would cause less-than-significant, and in some areas beneficial, impacts related to exposing people or structures to potential substantial adverse effects (e.g., rupture of a known earthquake fault, strong seismic ground shaking, seismically induced ground failure, or landslides), erosion or loss of topsoil, unstable geologic units or soil, compaction or over-covering of soil, or changes in topography or unstable soil conditions.

Three of the projects in the cumulative scenario are adjacent to or within the Project site: cumulative projects (1) surface mining within the Project Area, (2) operation of the Permanente Cement Plant adjacent to the Project Area, and (3) restoration of Permanente Creek within and adjacent to the Project area. However, mining activity-related erosion control measures are implemented, operated, and maintained within and adjacent to the Project Area. It is not anticipated that these cumulative projects would result in significant impacts to geology or soil resources within or outside of the Project Area. Furthermore, as discussed in Section 4.7, *Geology and Soils*, implementation of the Project would improve slope stability in the WMSA and the Quarry pit above baseline conditions, and successful reclamation of the Project Area would return erosion and soil loss to pre-mining conditions. The EMSA, which is the only RPA element that increases slope heights and gradients relative to the baseline setting, has been designed in a manner adequate to avoid unstable slope conditions. In addition, the potential for fault rupture within the Project Area is minor (in terms of both probability and magnitude). Therefore, when considered in combination with the impacts of other projects in the cumulative scenario, the Project’s incremental contribution to geology and soils would not be cumulatively considerable.

6.2.8 Greenhouse Gas Emissions

The geographic scope of potential cumulative GHG impacts encompasses BAAQMD’s jurisdictional area, statewide, national, and international. However, for purposes of practicality and reasonableness (see CEQA Guidelines §15130(b)), this analysis focuses on the state as a reasonable geographic boundary, including considerations related to effects on the attainment of state global climate change policies. The temporal scope includes construction, operation and maintenance of the Project. GHG emission-related impacts are by their nature exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA, 2008). Thus, the analysis and conclusions provided in Section 4.8, *Greenhouse Gas Emissions*, in Impacts 4.8-1 and 4.8-2 also are the cumulative effects analysis of GHG emissions. In summary, Project emissions of GHGs would be less than significant with implementation of mitigation measures (see Impact 4.8-1), and the Project would not conflict with any plans, policies, or regulations to reduce GHGs (see Impact 4.8-2). Thus, the Project would not result in a cumulatively considerable effect related to GHG emissions.

6.2.9 Hazards and Hazardous Materials

For hazards and hazardous materials, there are no Project-specific impacts related to location of the Project on a known hazardous materials site, within 0.25 mile of an existing or proposed school, or within 2 miles of a public airport or private airstrip. There are no impacts related to safety hazards due to site plan or construction of a building, road or septic system on a slope. In addition, there are no impacts on adopted emergency response or evacuation plans or wildland fire hazards. Construction, operation and decommissioning of the Project would result in less-than-significant impacts related to the potential for accidents and for the routine use of hazardous materials to release hazardous materials into the environment or cause harmful exposures. The Project also would result in a less-than-significant impact related to breeding grounds for vectors.

Depending on the pathway of exposure, the geographic scope for cumulative effects relating to hazardous materials would be the air basin, watershed boundary, groundwater basin, or extent of affected soils. Materials delivery routes also would be included in the event of a traffic accident-related spill. The temporal scope of hazardous materials impacts would occur throughout the life of the Project activities. The geographic scope for vectors would include areas of the County where standing water occurs. The Project could contribute to a cumulative effect related to vectors only during the interim phase while active reclamation is occurring. Thereafter, Project-specific ponds and basins would be reclaimed.

Many of the existing and reasonably foreseeable projects identified in Section 6.1 could cause similar impacts related to the potential for accidents and spills resulting in a release of hazardous materials during routine use, transportation, storage and disposal for construction and operation of these projects. Alone, the incremental impacts of the Project would not cause a significant adverse cumulative impact. Impacts caused by the cumulative projects, combined with the Project, would not result in a significant cumulative impact even if all of the projects were to be constructed simultaneously because the Project and all cumulative projects would be required to adhere to the robust body of regulations that govern hazardous materials transportation, storage and handling, water quality best management practices, and worker safety. Together, these measures would ensure that impacts related to exposure to hazardous materials would be minimized and/or avoided. Therefore, the Project's incremental contribution to any hazards and hazardous material-related cumulative impact would not be cumulatively considerable.

With respect to the potential to provide a breeding ground for vectors, several projects identified in Section 6.1 could cause similar impacts resulting from the use of stormwater sedimentation basins, including the surface mining in the Project Area, Cement Plant operations, and the Permanente Creek Flood Protection Project. Currently, the Quarry and Cement Plant operate about 25 basins, 20 of which are in the Project Area, and it is not known how many basins would be associated with the Permanente Creek Flood Protection Project. The Project would only contribute up to a 15 percent temporary increase in the number sedimentation basins in the Permanente Creek vicinity. Because the existing sedimentation basins have not been identified as mosquito breeding grounds or a vector control problem by the Santa Clara County Vector Control District (Romano, 2011). Accordingly, no significant cumulative impact would result from the cumulative scenario to which the Project's incremental impact could contribute.

6.2.10 Hydrology and Water Quality

The geographic scope of potential cumulative impacts related to hydrology and water quality is the Permanente Creek Watershed and the reach of Permanente Creek from the Project Area to the Stevens Creek Diversion structure. The geographic scope then includes Stevens Creek and Permanente Creek out to the San Francisco Bay. The temporal scope includes all three phases of reclamation starting with the reclamation of the EMSA in Phase I, ending after reclamation is complete, surface water conveyance is complete, and vegetative covers are established.

The two primary impacts are water quality and drainage. As discussed in Section, 4.10, *Hydrology and Water Quality*, during Project implementation there would be ongoing discharges from the Quarry pit from groundwater intrusion and stormwater runoff (including from a portion of the WMSA) and stormwater runoff from the EMSA and other portions of the Project Area. These discharges would contain selenium, total dissolved solids (TDS), and other constituents and would flow into Permanente Creek from the Project Area throughout the duration of the Project given the amount of ground disturbance, steep slopes, and construction activity. Selenium is the constituent of most concern because it is generated from the limestone rock present throughout the site and is found in higher concentrations along Permanente Creek adjacent to the EMSA and WMSA. This would be a significant and unavoidable impact during the Project. Once reclamation is complete, however, implementation of mitigation measures is expected to reduce the levels of selenium in the discharges and runoff to the Creek to Basin Plan Benchmarks.

Other projects that would cause water quality impacts like those of the Project include the onsite surface mining (Cumulative Project No. 1) and operation of the Lehigh Cement plant (Cumulative Project No. 2). The onsite Permanente Long Term Restoration Plan (Cumulative Project No. 3) would likely reduce water quality impacts associated with sediment and selenium loading in Permanente Creek over the long term. Cumulative Project No. 27, the Permanente Creek Flood Protection Project, could generate sediment and, considering that the sediment would be placed on the EMSA, could potentially contribute to the sediment load in Permanente Creek. Through the implementation of BMPs during Project activities, when considered in combination with the impacts of other projects in the cumulative scenario, the Project's incremental contribution to sedimentation would not be cumulatively significant. However, because the BMPs would not be fully effective in preventing selenium-bearing discharges from entering Permanente Creek, the Project's incremental contribution to water quality impacts from selenium would be both individually and cumulatively significant. Once reclamation is complete, compliance with the various measures to stabilize slopes in the EMSA, manage storm water runoff, cap the EMSA and former WMSA with non-limestone materials, and revegetate these areas, selenium discharges would be substantially reduced and the impact to water quality would not be cumulatively considerable.

Aside from water quality impacts, the issue of drainage is perhaps most profound because the Project, when completed, would result in higher storm water flows leaving the site and entering Permanente Creek. This is in large part due to the backfilling of the Quarry pit, which under baseline conditions, acts like a large detention basin for the majority of site drainage. Once filled, stormwater that would otherwise be detained in the Quarry pit would be discharged to Permanente Creek. The impact of drainage is considered significant and unavoidable unless it is feasible to construct a detention basin capable of managing sediment and detaining peak flows from a 100-year event. While various detention basins are proposed for the Project and the drainage plan is designed to meet SMARA and Santa Clara County Drainage standards, the potential of downstream flooding would still exist unless mitigated.

Impact 6-2: Incremental Project-specific activities could contribute to downstream flooding. *(Significant and Unavoidable Impact)*

The Permanente Creek Flood Protection project is also likely to improve flow and reduce the potential of localized flooding along the upper reaches of Permanente Creek. Following Phase 3 of Project implementation, when storm flows no longer are captured in the Quarry pit, they would be discharged to Permanente Creek. This additional flow would cause an exceedence of the 100-year peak flow in a FEMA 100-year flood hazard zone located on the site and could exacerbate a flooding condition downstream and offsite. While the Permanente Flood Control Project may lessen the effects of future flooding in this reach of Permanente Creek, it is not known whether it would ameliorate flooding that could result from the increased 100-year peak flows released from the Project Area after the completion of reclamation. Therefore, when considered in combination with the impacts of other projects in the cumulative scenario, the Project's incremental contribution to downstream flooding would be cumulatively considerable.

> **Mitigation Measure 6-2: Construction of Onsite Detention Facility.** The Applicant shall design and construct facilities that would manage runoff on the site, reduce excessive discharges to Permanente Creek and develop the capacity to detain and release the 100-year flow using on-site detention ponds while optimizing groundwater infiltration. Desiltation ponds proposed in other smaller Project Areas such as the EMSA, also shall be engineered to function as detention basins and manage 100-year peak flow to the extent practical. These mechanisms would be in place to control and manage 100-year flows to Permanente Creek and verify that these flows are not are increased.

Significance after Mitigation: Significant and unavoidable. Implementation of Mitigation Measure 6-2 would provide the necessary facilities to reduce offsite storm water discharge during the 100-year storm event. However, because it is unknown whether this mitigation measure is feasible, the impact would remain significant and unavoidable.

6.2.11 Land Use and Planning

The Project would have no impact with respect to physically dividing an established community or conflicting with applicable land use plans, policies, or regulations, or with special policies; therefore, it would not cause or contribute to any cumulative impact in these regards. Cumulative effects related to the Project's compatibility with adjacent land uses, such as adverse effects on adjacent recreational, open space, and residential land uses due to visual impacts, air pollutant emissions, noise, and traffic, are addressed in Sections 6.2.1, *Aesthetics, Visual Quality, and Light and Glare*; 6.2.3, *Air Quality*; 6.2.13, *Noise*; and 6.2.17, *Transportation/Traffic*, respectively.

6.2.12 Mineral Resources

The geographic scope of potential cumulative impacts related to mineral resources includes all areas in Santa Clara County that have been mapped as MRZ-2 (an area where the available geologic information indicates that mineral deposits are likely to exist, but the significance of the deposits is undetermined) or MRZ-3 (an area where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists). The temporal scope includes construction, operation and maintenance of the Project. The Project would cause less-than-significant impacts related to the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, and loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Two of the projects in the cumulative scenario involve mining activity adjacent to or within the Project site: cumulative projects (1) surface mining within the Project Area, (2) operation of the Permanente Cement Plant adjacent to the Project Area. In addition, there are seven surface mining sites subject to SMARA within Santa Clara County, four of which are actively engaged in extraction activities (Curtner, Lexington, Stevens Creek, and Freeman quarries) and three of which are in various stages of final reclamation (Serpa, Azevedo, and Calaveras quarries).

Reclamation of mining sites could make certain sites unavailable for future mineral resource extraction. However, for similar reasons outlined for the Project under Impact 4.12-1, reclamation of the other quarries included in the cumulative project list would not reduce the overall availability of mineral resources because reclamation of surface mining operations occur when the resource has been depleted, when continued extraction of the resource is infeasible from geotechnical standpoint, or when no longer economically advantageous. Because the quarries being reclaimed are no longer producing mineral resources, the combined effects of implementing the proposed Project and cumulative projects would not result in the loss of availability of a known mineral resource of value to the region or residents of the state, or the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Furthermore, like the Project, operation and reclamation of the cumulative project mining activities would be subject to the provisions of SMARA, the County's Surface Mining and Reclamation Ordinance (County Code §4.10.370), and by the County's Surface Mining and Land Reclamation Standards. Cumulative impacts consequently would be less than significant.

6.2.13 Noise

The geographic scope of cumulative impacts associated with noise would be limited to projects located within approximately 0.5 mile of the Project that could affect the existing noise environment in the Project Area, including nearby sensitive receptors and ambient noise levels. The past, present, and reasonably foreseeable future projects described in cumulative scenario include three projects that would be within 0.5 mile of the Project. These cumulative projects are identified in Figure 6-1, *Cumulative Projects*, and Table 6-1, *Lehigh Permanente Quarry Reclamation Plan Amendment Cumulative Impact Analysis Projects*, and include surface mining within the Project Area, operation of the Permanente Cement Plant, and the Permanente Creek Flood Protection Project. It should be noted that although several of the projects identified in Table 6-1 (including those farther than 0.5 from the site, such as the Stevens Creek Quarry) could generate offsite traffic on the same roads that would be used by the commuting employee vehicles and trucks that would be associated with the Project, the Project's daily contribution to trips would be up to approximately 30 one-way trips per day. This Project related increase in truck trips would not result in a cumulatively considerable increase to off-site traffic noise. The temporal scope of impacts would include the total duration of the Project.

With the exception of reclamation Phase 1, all noise and vibration related impacts of the Project would be less than significant. Reclamation Phase 1 would cause significant noise impacts associated with exceedances of the County's nighttime noise ordinance criteria and increases in ambient noise levels at the Cupertino Historical Society caretaker's residence, and exceedances of the City of Cupertino's noise ordinance at the Cristo Rey residential neighborhood. However, these impacts would be reduced to less-than-significant levels with implementation of Mitigation Measures 4.13-1a and 4.13-1b.

Ongoing surface mining within the Project Area and operation of the Permanente Cement Plant were ongoing activities in 2007, and as such, are part of the ambient noise conditions. When considered in combination with the impacts of these cumulative projects, the Project's incremental contribution to noise levels at nearby residences would not be cumulatively considerable because the continued operation of these industrial facilities is not anticipated to substantially alter the ambient noise conditions in which they are located. Adverse effects to local noise levels due to these cumulative projects have already occurred, and continued operation of these facilities will maintain existing noise levels in the Project Area. It should be noted that although ongoing operation of the Permanente Cement Plant would continue concurrently with Project activities, surface mining at the quarry would cease during the Project, which would reduce the overall cumulative noise levels in the Project Area. Accordingly, the Project's contribution to cumulative noise impacts would not be cumulatively considerable.

Construction of the Permanente Creek Flood Protection Project would result in temporary noise levels related to grading for the flood basin, construction staging and materials storage areas, and other activities associated with construction vehicles and equipment. Affected residences would be the caretaker's residence and the residences on Cristo Rey Drive. Construction of the Permanente Creek Flood Protection Project could occur concurrent with reclamation Phase 1. As discussed in Section 4.13, *Noise*, Mitigation Measures 4.13-1a and 4.13-1b would reduce the significant impacts to these residences that would be caused by the Project, and at a distance of 0.5 mile, noise levels associated with the flood protection project would not be expected to cumulatively contribute to the impacts caused by the Project. Accordingly, the Project's contribution to cumulative noise impacts would not be cumulatively considerable and the cumulative impact would be less than significant.

6.2.14 Population and Housing

The Project would have no impact on Population and Housing; therefore, it would not cause or contribute to any cumulative impact in this regard.

6.2.15 Public Services

The Project would have no impact on Public Services; therefore, it would not cause or contribute to any cumulative impact in this regard.

6.2.16 Recreation

Implementation of the Project would cause no impact related to a potential increase in the use of existing neighborhood and regional parks or other recreational facilities in the Project area in such a way that could contribute to or accelerate their substantial physical deterioration, the inclusion of recreational facilities or a requirement for the construction or expansion of recreational facilities, or the loss of open space rated as high priority for acquisition in the "Preservation 2020" report. Therefore, it would not cause or contribute to any cumulative impact in these regards. However, the Project would cause a less than significant impact related to being near a public park and trail with the possibility of affecting existing or future recreational opportunities. The geographic scope of potential cumulative impacts for this recreation-related consideration includes the trails and recreation-related facilities and values surrounding the Project Area. The temporal scope of cumulative impacts related to recreation is the interim period during which active reclamation activities would be in progress because the Project would have no impact on recreation after construction is completed.

The past, present, and reasonably foreseeable future projects described in Table 6-1 include one project located within recreational facilities in the vicinity of the Project: the Permanente Creek Flood Protection Project is located in the RSA Preserve/Park, approximately 0.5 mile north of the Project Area. Construction of this project could cause temporary indirect effects on the quality of recreational opportunities including degradation of views from the increased presence of construction equipment and increased levels of dust and noise in the vicinity of the project. However, disruption of the recreational experience would be limited to approximately 9 months during the first year of project construction. Moreover, cumulative effects to views (including construction dust) from recreational areas are addressed in Section 6.2.1, *Aesthetics, Visual Quality, Light and Glare*, and effects to recreational users from increased noise are addressed in Section 6.2.13, *Noise*. The combined effects of these two projects on recreational use would not result in significant and adverse recreation-related conditions, and the incremental impact of the Project would not be cumulatively considerable.

6.2.17 Transportation/Traffic

Cumulative transportation and traffic impacts resulting from the Project would occur if similar impacts of other projects located within the geographic extent of this analysis were to occur during the same time period as those impacts of the Project, including during each reclamation phase.

Overlapping and concurrent activities would result in increased traffic volumes along roadways due to the presence of vehicles from multiple projects in the same vicinity. The past, present, and reasonably foreseeable future projects described in cumulative scenario include three projects that would be within 0.5 mile of the Project. Reclamation activities associated with the Project would contribute incrementally to cumulative traffic increases from a number of other projects in the area that could be under construction at the same time. The combination of activities from these multiple projects could result in adverse cumulative impacts related to transportation conditions roadways in the Project Area. These cumulative projects are identified in Figure 6-1, *Cumulative Projects*, and Table 6-1, and include surface mining within the Project Area, operation of the Permanente Cement Plant, the Permanente Creek Long-Term Restoration Plan, and the Permanente Creek Flood Protection Project. The temporal scope of impacts would include the total duration of the Project.

Under each reclamation phase, all transportation and traffic related impacts of the Project, including effects on traffic flow and traffic safety conditions along affected roadways, and emergency access, would be less than significant.

Surface mining within the Project Area and operation of the Permanente Cement Plant were ongoing activities in 2007, and as such, are part of the baseline traffic conditions. When considered in combination with the impacts of the above-cited cumulative projects, the Project's incremental contribution to traffic along nearby roadways would not be cumulatively considerable because the current operations of the projects, in combination with the Project would not result in any adverse transportation and traffic impacts to the surrounding circulation system.

Construction of the Permanente Creek Flood Protection Project could result in a temporary increase in traffic along roadways in the Project Area, due to activities associated with construction vehicles and hauling of materials. As stated in Table 6-1, excavation and export of spoils from this project may occur on Lehigh property; therefore the project would generate no external vehicle trips. Because there would be a minimal amount of external, daily traffic associated with the Project during each reclamation phase, and the Permanente Creek Flood Protection Project would not be expected to generate any external trips, the Project, in combination with the flood protection project, would not be cumulatively considerable, and the cumulative impacts would be less than significant.

The Project's less-than-significant impact on transportation and traffic conditions would be limited to the interim phase during which active reclamation is occurring. Generation of traffic by other development projects would not combine with the Project's contribution to create a cumulatively considerable impact because roadways that serve the Project have sufficient capacity to accommodate the anticipated, temporary increase in traffic from the Project and nearby projects. Therefore, implementation of the Project would not result in a cumulative transportation impact or result in an incremental contribution to a cumulative transportation impact.

6.2.18 Utilities and Service Systems

Implementation of the Project would cause no impact related to an exceedance of the wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board; the construction of new or expansion of existing storm water drainage facilities; wastewater treatment capacity; or compliance with federal, state, and local statutes and regulations related to solid waste. Therefore, it would not cause or contribute to any cumulative impact in this regard. As analyzed in Section 4.18.5, the Project would cause a less than significant impact related to other utilities and service systems-related considerations. The geographic scope of cumulative impacts related to utilities and service systems is Santa Clara County, which encompasses the service areas of the providers that would serve the Project. The temporal scope of cumulative impacts related to utilities and service systems includes the construction, operation, and maintenance of the Project because utilities and service systems would be necessary for the duration of the Project.

SJWC supplies water to over 1 million people in the greater San Jose metropolitan area, including the Project Area and surrounding locations. The County is also served by 12 other water retailers. The Project's less-than-significant impact on sufficient water supplies would be limited to reclamation Phase 2, during which time the Project could demand an increase of approximately 3.5 million gallons of water above baseline conditions. Therefore, cumulative impacts would be limited to projects occurring during the same time period (2021-2025), that also require water from SJWC. However, the projects listed in Table 6-1 either are ongoing (and so already part of the water usage baseline), reclamation plans that are not anticipated to have major water usage, or construction projects that are expected to be completed well before 2021. Furthermore, SJWC has indicated that the Project's increase in water would be available from its sources (Sneed, 2011). Therefore, no cumulative impact or incremental contribution to a cumulative impact would result from implementation of the Project.

The Project's less-than-significant impact on solid waste generation would be limited to the interim phase during which active reclamation is occurring. Generation of solid waste by other development projects would not combine with the Project's contribution to create a cumulatively considerable impact because the landfills serving the Project have sufficient capacity to accommodate the regional waste needs for several decades. Therefore, no cumulative impact or incremental contribution to a cumulative impact would result from implementation of the Project.

Resources – Cumulative Impacts

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CHAPTER 7
Other CEQA Considerations

CEQA requires an EIR to consider the significant environmental effects of a proposed project (CEQA Guidelines §15126.2). Direct and indirect, short- and long-term effects of the Project are analyzed in Chapter 4, *Environmental Analysis*, which concludes that the Project would have no impact relating to Agriculture and Forestry Resources, Population and Housing, and Public Services. Impacts were found to be less than significant or less than significant with mitigation for: Air Quality; Energy Conservation; Geology, Soils, and Seismicity; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Land Use and Planning; Mineral Resources; Noise; Recreation; Transportation/Traffic; and Utilities and Service Systems. This chapter considers significant and unavoidable impacts in Section 7.1, significant irreversible environmental effects in Section 7.2, and growth-inducing impacts in Section 7.3.

7.1 Significant Unavoidable Environmental Impacts

CEQA §21100(b)(2)(A) requires an EIR to identify significant environmental effects that cannot be avoided if a project is implemented. Most of the impacts of the Project either would be less than significant or would be mitigated to a less-than-significant level. The impacts below are those that would remain significant and unavoidable after mitigation.

- **Aesthetics:** Construction of the Project would have a significant and unavoidable direct impact on views from the Rancho San Antonio Open Space Preserve/County Park, including from the Anza Knoll scenic vista (Section 4.1.5, Impact 4.1-1), and the Hammond-Snyder Loop Trail and PG&E Trail (Section 4.1.5, Impact 4.1-5). Given the long construction timeframe (approximately 10 years at the EMSA), the high visual sensitivity of the viewsheds, and the moderate to high visual change, the Project would significantly alter and substantially degrade the existing visual character and quality of the Project Area.

- **Biological Resources:** Project activities could result in selenium-burdened runoff reaching aquatic habitats and, thereby, in deleterious effects to aquatic organisms and their prey base. During the Project, active ground disturbance would occur in the Project Area as a result of excavation, grading, contouring, hauling, and, in the PCRA, boulder removal from Permanente Creek and affected upslope areas. If the appropriate type of limestone were to be exposed to air and precipitation, then selenium could be produced and reach Permanente Creek in the form of runoff. Implementation of Mitigation Measure 4.4-5 would reduce the potential for stormwater runoff to deliver sediment and selenium to Permanente Creek during the Project activities, but would not be sufficient to fully eliminate the possibility. Therefore, this interim impact would remain significant and unavoidable until final reclamation is completed.

- **Cultural Resources:** Removal of the existing Permanente Quarry Conveyor System and related tunnel, powerhouse, and structures (including the remains of the early 1940s crusher), which are contributing features of the Kaiser Permanente Quarry Mining District, would cause a significant unavoidable direct impact to the significance of an historical resource pursuant to CEQA Guidelines §15064.5 and the County's Historic Preservation Ordinance (Section 4.5, Impact 4.5-1). An indirect impact to the overall setting within the District also would result from the proposed reclamation activities. Since preservation in place is not an option for the reasons discussed in Section 4.5, the impact would remain significant and unavoidable.

- **Hydrology:** Interim reclamation activities within the Project Area would contribute concentrations of selenium, Total Dissolved Solids (TDS), and sediment in Permanente Creek. Implementation of Mitigation Measures 4.10-2a and 4.10-2b would reduce the potential for stormwater runoff to deliver sediment and selenium to Permanente Creek during the Project activities, but would not be sufficient to fully eliminate the possibility. Therefore, this interim impact would remain significant and unavoidable until final reclamation is completed. In addition, the Project would alter the existing drainage pattern of the site, which could result in increased storm water runoff rates and on- or off-site flooding. The 100-year discharge to the Quarry floor was calculated at 235 cfs for the proposed reclaimed condition in Phase 3. Without detention, this peak flow would discharge to Permanente Creek and constitute a 230.5 cfs increase from the approved maximum discharge of 4.5 cfs under existing conditions. This magnitude of increased runoff from the site would result in potential downstream flooding, hydromodification effects along Permanente Creek and potential adverse flow effects at the Permanente Diversion structure. Implementation of Mitigation Measure 4.10-4 would provide the necessary facilities to reduce offsite stormwater discharge during the 100-year storm event to less than significant. However, if this is not determined to be feasible, the impact would remain significant and unavoidable.

The Project is being proposed notwithstanding these effects because, if approved, the RPA would ensure the Quarry is in compliance with State and local law. The proposed RPA is designed to make the reclaimed lands suitable for future open space uses, and includes site-specific activities to satisfy the reclamation requirements of SMARA and SMARA's implementing regulations,[1] as well as the County of Santa Clara's surface mining ordinance (Santa Clara County Code §4.10.370) and Surface Mining and Land Reclamation Standards (Santa Clara County, 2000).

7.2 Significant Irreversible Changes

CEQA §21100(b)(2)(B) requires that an EIR identify any significant effect on the environment that would be irreversible if the project were implemented. CEQA Guidelines §15126.2(c) describes irreversible environmental changes as follows:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project.

1 SMARA is set forth in Public Resources Code Section 2710 et seq.; its implementing regulations are found in Title 14 of the California Code of Regulations Section 3500 et seq.

Construction of the Project would require some nonrenewable resources, such as fuel for construction vehicles and equipment. However, for diesel fuel such use would represent an increase above baseline conditions only during construction Phase 1; for gasoline fuel, the Project would represent a decrease in fuel usage from baseline conditions for all phases of construction. The temporary construction -related use of vehicle fuel would not result in a significant use of nonrenewable resources, and would not commit future generations to similar uses. At the conclusion of reclamation Phase 3, all conveyor systems (existing and new) and other energy-consumptive uses would be decommissioned, dismantled, and removed from the Project Area. No further energy demand would be generated in the Project Area. Consequently, the temporary and limited increase in consumption of nonrenewable resources that would be caused by the Project relative to existing conditions is justified.

Accidents, such as the release of hazardous materials, could trigger irreversible environmental damage. However, Project construction would result in the transport of hazardous materials including fluids for vehicle operation and maintenance such as fuels, oils, liquid polymer, battery acid, coolant, and cleaner, off-site by an approved carrier in accordance with state and local regulations. As such, construction of the Project would result in a decrease in the use, handling, and storage of hazardous materials when compared to existing use levels at the Project site (see Chapter 2, *Project Description*, Section 2.7.11.6 *Hazardous Materials and Hazardous Waste*, for a range of hazardous materials that could be handled in the Project Area). Considering the types and minimal quantities of hazardous materials that are and would continue to be used at the site, and emergency response plans and procedures that would be implemented as a part of the Project, accidental release of substantial quantities is unlikely. State and federal regulations and safety requirements, as described in the regulatory setting in Section 4.9, *Hazards and Hazardous Materials*, would ensure that public health and safety risks are maintained at acceptable levels, so that significant irreversible changes from accidental releases are not expected.

7.3 Growth-Inducing Impacts

CEQA Guidelines §15126.2(d) states that an EIR must 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 directly through implementation of projects that create new housing and employment opportunities, and indirectly through elimination of obstacles to growth and stimulation of economic activity within a region. CEQA requires a discussion of how a project could increase population, employment, or housing in the areas surrounding the project, as well as an analysis of the infrastructure and planning changes that would be necessary to implement the project.

Section 4.14, *Population and Housing*, analyzes the Project’s overall effect on population and housing, including growth-inducing considerations. The proposed reclamation activities would be implemented over an approximately 20-year period; an average of up to 14 additional employees (49 employees) would be required during Phase 1 activities, and up to three additional employees would be required during Phase 2. No additional employees would be required during Phase 3 activities. Given the small number of additional staff, it is anticipated that the temporary positions would be filled from the local labor pool available in Contra Costa County, with workers expected to commute to the site rather than move. As such, the additional employees would not directly induce population growth in the vicinity of the Project. Furthermore, the Project does not involve construction of new housing, new public roads, or new electrical infrastructure, and the increased suitability of lands for open space use would not induce substantial numbers of people to move into the area. Because the Project would not directly or indirectly create new housing or employment opportunities, nor would it eliminate obstacles to growth, the Project would not induce a short- or long-term demand, either directly or indirectly, on population growth.

References – Other CEQA Considerations

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CHAPTER 8
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8.2 Agencies and Organizations Consulted

The County of Santa Clara submitted a copy of the Notices of Preparation to the following agencies and organizations:

Federal

U.S. Fish and Wildlife Service

State

California Air Resources Board

California Department of Conservation, Office of Mine Reclamation

California Department of Transportation District No. 4

California Department of Transportation Planning

California Department of Fish and Game Region No. 3

California Department of Forestry and Fire Protection

California Department of Parks and Recreation

California Department of Water Resources

California Resources Agency

Native American Heritage Commission

Regional Water Quality Control Board, Region No. 2 (San Francisco Bay)

State Office of Historic Preservation

State Water Resources Control Board, Water Quality

Local

Bay Area Air Quality Management District

City of Cupertino

City of Los Altos

City of Palo Alto

City of Saratoga

City of Sunnyvale

Mid-peninsula Regional Open Space District

Santa Clara County Open Space Authority

Santa Clara Valley Water District

Town of Los Altos Hills

Libraries

Cupertino County Library

Los Altos County Library

Saratoga County Library

CHAPTER 9
Glossary and Acronyms

9.1 Glossary

A number of technical terms are used in surface mining and reclamation and at the Permanente Quarry to describe the operations and equipment that are in use there. This glossary includes selected definitions and acronyms to aid decision-makers and the public in evaluating the environmental impacts of the Project.

backfill	Earth, overburden, mine waste or imported material used to replace material removed during mining (14 Cal. Code Regs. §3501). With implementation of the Project, the Quarry pit would be backfilled using overburden rock from the West Materials Storage Area and ongoing mining activities.
buffer zone	An area within the Project Area of undeveloped, vegetated open space where no active mining activities have occurred and that has been designated to remain in this condition to serve as a physical separation between the Quarry's activities and other land uses.
critical gradient	The maximum stable inclination of an unsupported slope under the most adverse conditions that it will likely experience, as determined by current engineering technology.
crusher	A machine that crushes larger sizes of excavated materials to sizes appropriate for commercial use. There are primary and secondary crushing stations located at the Crusher and Quarry Office Support Area.
East Materials Storage Area (EMSA)	The existing 75.2-acre overburden disposal area on the eastern side of the Project Area.
Exploration Area	The area located south of Permanente Creek that has been subject to mining-related exploratory activities but not mineral extraction.
grizzly unit	A machine that screens larger sizes of excavated materials from smaller pieces. A grizzly unit would be used to screen out materials larger than 12 inches from the West Materials Storage Area for additional processing for commercial uses.
highwall	The unexcavated face of exposed overburden and ore in a surface mine. Some areas of highwall would remain in the Quarry pit after reclamation and would be treated to achieve revegetation.

mined lands The surface, subsurface, and ground water of an area in which surface mining operations will be, are being, or have been conducted, including private ways and roads appurtenant to any such area, land excavations, workings, mining waste, and areas in which structures, facilities, equipment, machines, tools, or other materials or property which result from, or are used in, surface mining operations are located (Pub. Res. Code §2729).

mining waste The residual of soil, rock, mineral, liquid, vegetation, equipment, machines, tools, or other materials or property directly resulting from, or displaced by, surface mining operations (Pub. Res. Code §2730). The Project Area is within the jurisdiction of the San Francisco Regional Water Quality Control Board, which regulates the disposal and reclamation of Project-related mining waste.

overburden Soil, rock, or other materials that lie above a natural mineral deposit or in between mineral deposits, before or after their removal by surface mining operations (Pub. Res. Code §2732). Overburden produced from excavation of the Quarry pit is stored in the East Materials Storage area and West Materials Storage Area, and portions of this overburden would be used to reclaim the Quarry pit.

Permanente Creek Restoration Area (PCRA) An area of approximately 23.1 acres along Permanente Creek and the adjacent hillsides that have been affected by mining activities, erosion events, and activities to control erosion in that area. The Project would involve activities to reclaim Permanente Creek and the affected upslope areas.

Quarry pit The 265.4-acre area excavated for mineral extraction. This area would be reclaimed through backfilling, recontouring, and revegetating the remaining slopes.

reclamation The combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations so that mined lands are reclaimed to a usable condition for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures (Pub. Res. Code §2733). The Project involves the reclamation of disturbed lands within the Project Area.

reclamation plan The applicant's completed and approved plan for reclaiming the lands affected by its surface mining operations conducted after January 1, 1976, as called for in Section 2772 of the Surface Mining and Reclamation Act of 1975 (SMARA). The Lehigh Southwest Cement Company's existing, completed reclamation plan for the Permanente Quarry was approved by Santa Clara County in 1985 and is referred to in this EIR as the "1985 Reclamation Plan."

rock plant An existing, fully-integrated rock processing facility in which rocks are crushed, conveyed, washed, and screened into an assortment of types and grades of aggregate products. The rock plant is located southeast of the surge pile and would be reclaimed as part of the Project.

settling pond	A collection basin for stormwater runoff that allows suspended materials to settle out of the water. Settling ponds are operated and maintained within and adjacent to the Project Area for water quality control purposes.
surface mining operations	All, or any part of, the process involved in the mining of minerals on mined lands by removing overburden and mining directly from the mineral deposits, open-pit mining of minerals naturally exposed, mining by the auger method, dredging and quarrying, or surface work incident to an underground mine. Surface mining operations shall include, but are not limited to: (a) Inplace distillation or retorting or leaching; (b) The production and disposal of mining waste; and (c) Prospecting and exploratory activities (Pub. Res. Code §2735). The term also includes segregation and stockpiling of mined materials and the recovery of same (14 Cal. Code Regs. §3501).
surge pile	An existing, approximately 9-acre stockpile of crushed aggregate located southeast of the Quarry pit that holds mined materials pending transport via conveyor belt to the rock plant for further processing.
telestacker	A telescoping conveyor that distributes material in stockpiles for placement by heavy earthmoving equipment.
West Materials Storage Area (WMSA)	The existing 172.6-acre overburden disposal area on the western side of the Project Area.
Crusher/ Quarry office support area	An existing, approximately 60-acre area located east of the Quarry pit and west of the East Materials Storage Area. It contains primary and secondary crushing stations, two portable trailers used for office purposes, and maintenance areas, and serves as a general support area for ongoing Quarry operations. This area would be reclaimed as part of the Project.

9.2 Acronyms and Abbreviations Used in this EIR

µg/l	micrograms per liter
µPa	micro-Pascals
AB 32	California Global Warming Solution Act of 2006
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACMs	Asbestos Containing Materials
ADT	average daily traffic
AGO	Australian Greenhouse Office
AGR	Agricultural Water Supply
ALG	Ashworth Leininger Group
ALUC	Airport Land Use Commission

amsl	above mean sea level
ARRA	American Recovery and Reinvestment Act of 2009
ASA	Architecture and Site Approval
ASCE	American Society of Civil Engineers
AST	aboveground storage tank
ATCM	Asbestos Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BAT	best available technology
BCT	best conventional pollutant control technology
BFEs	base flood elevations
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOS	Board of Supervisors
CAA	Clean Air Act
$CaCO_3$	calcium carbonate
CalFIRE	California Department of Forestry and Fire Protection
Cal-OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CAR	Climate Action Reserve
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CAT	Climate Action Team
CBC	California Building Code
CBECS	Commercial Buildings Energy Consumption Survey
CCR	California Code of Regulations
CDDD	Construction and Demolition Debris Deposit
CDFG	California Department of Fish and Game
CDMG	California Division of Mining and Geology
CDPR	California Department of Pesticide Regulation
CEC	California Energy Commission
CEQA	California Environmental Quality Act

CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CIWMB	California Integrated Waste Management Board
CLUP	Comprehensive Land Use Plan
cm	centimeters
CMP	Congestion Management Program
CMSA	Central Materials Storage Area
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
COLD	Cold Freshwater Habitat
CRLF	California red-legged frog
CSRL	California Soil Resource Lab
CUPA	Certified Unified Program Agency
CUSD	Cupertino Union School District
CWA	Clean Water Act
CWTMP	*1995 Santa Clara County Countywide Trails Master Plan Update*
dB	decibels
DOC	California Department of Conservation
DOC	California Department of Conservation's State Mining and Geology Board and Office of Mine Reclamation
DOT	California Department of Transportation
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
DWR	Department of Water Resources
EEI	Electricity Energy Intensity
EIR	Environmental Impact Report

EMSA	East Materials Storage Area
ESLs	Environmental Screening Levels
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMMP	Farmland Mapping and Monitoring Program
FOS	factor of safety
FTA	Federal Transit Administration
FUHSD	Fremont Union High School District
FY	fiscal year
g	gravity
g/bhp-hr	grams per brake horsepower-hour
GHG Plan	Greenhouse Gas Emissions Reduction Plan
GHG	greenhouse gas
GIS	geographic information system
GLO	United States General Land Office
gpm	gallons per minute
GWP	Global Warming Potential
H	horizontal distance
HABS	Historic American Building Survey
HAER	Historic American Engineer Record
HALS	Historic American Landscapes Survey
HAPs	Hazardous Air Pollutants
HCP	Habitat Conservation Plan
HDPE	high-density polyethylene
HFCs	hydrofluorocarbons
HMBPs	Hazardous Materials Business Plans
HRA	Health Risk Assessment
HRSA	Health Risk Screening Assessment
Hz	Hertz
I-280	Interstate 280
IBC	International Building Code

IND	Industrial Service Water Supply
IPCC	Intergovernmental Panel on Climate Change
Kg	greenstone
Kls	limestone
Ks	greywacke
kW	kilowatts
kWh	kilowatt hours
LCFS	Low Carbon Fuel Standard
L_{dn}	Day-Night Average Level
L_{eq}	Equivalent Sound Level
L_{max}	Maximum Sound Level
L_n	Percentile-Exceeded Sound Level
LOS	Level of Service
LUST	leaking underground storage tank
M	Richter Magnitude
MACT	Maximum Achievable Control Technology
MCLs	Maximum Contaminant Levels
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MIGR	Fish Migration
MM	Modified Mercalli
MOA	Memorandum of Agreement
MPROSD	Mid-Peninsula Regional Open Space District
MPROSP	Mid-Peninsula Regional Open Space District’s Rancho San Antonio Preserve
MRZ	Mineral Resource Zone
MSHA	Mine Safety and Health Administration
MT	metric tons
MTBA	Migratory Bird Treaty Act
MTC	Metropolitan Transportation Commission
MUN	Municipal and Domestic Water Supply
Mw	Maximum Moment Magnitude Earthquake

N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOD	Notice of Determination
NOP	Notice of Preparation
NOV	Notice of Violation
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWIC	Northwest Information Center
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	California Office of Emergency Services
OHP	Office of Historic Preservation
OPR	California Governor’s Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PCRA	Permanente Creek Restoration Area
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PGA	peak ground acceleration
PLM	Polarized-Light Microscopy
PM	particulate matter
Porter-Cologne	Porter-Cologne Water Quality Control Act
POST	Peninsula Open Space Trust
ppm	parts per million
PPV	peak particle velocity
PROC	Industrial Process Water Supply

PSHA	probabilistic seismic hazard assessment
PVC	polyvinyl chloride
REC-1	Body Contact Recreation
REC-2	Noncontact Recreation
REL	reference exposure level
RMS	root mean square
ROG	reactive organic gases
ROWD	Report of Waste Discharge
RPA	Lehigh Permanente Quarry Reclamation Plan Amendment
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBCAPCD	Santa Barbara County Air Pollution Control District
SBFZ	Sargent-Berrocal Fault Zone
SCBWMI	Santa Clara Basin Watershed Management Initiative
SCCDEH	County Department of Environmental Health
SCCFD	Santa Clara County Fire Department
SCCOS	Santa Clara County Office of the Sheriff
SCCPRD	Santa Clara County Parks and Recreation Department
SCCVCD	County Vector Control District
SCVTA	Santa Clara Valley Transportation Authority
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
SF_6	sulfur hexafluoride
SFHA	Special Flood Hazard Area
SFRWQCB	San Francisco Bay Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SiO_2	Silica
SIPs	State Implementation Plans
SJWC	San Jose Water Company
SMARA	Surface Mining and Reclamation Act of 1975
SMGB	State Mining and Geology Board
SO_2	sulfur dioxide
SPL	sound pressure level
SPWN	Fish Spawning

SR 85	State Route 85
SVP	Society of Vertebrate Paleontology
SWITRS	Statewide Integrated Traffic Records System
SWMP	Storm Water Monitoring Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TCR	The Climate Registry
TDM	transportation demand management
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Loads
TPZ	Timberland Production Zone
UCMP	University of California Museum of Paleontology
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
V	vertical height
VdB	Decibel notation
VOCs	volatile organic compounds
VTA	Santa Clara Valley Transportation Authority
WARM	Warm Freshwater Habitat
WILD	Wildlife Habitat
WMSA	West Materials Storage Area
WPCP	Water Pollution Control Plant