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

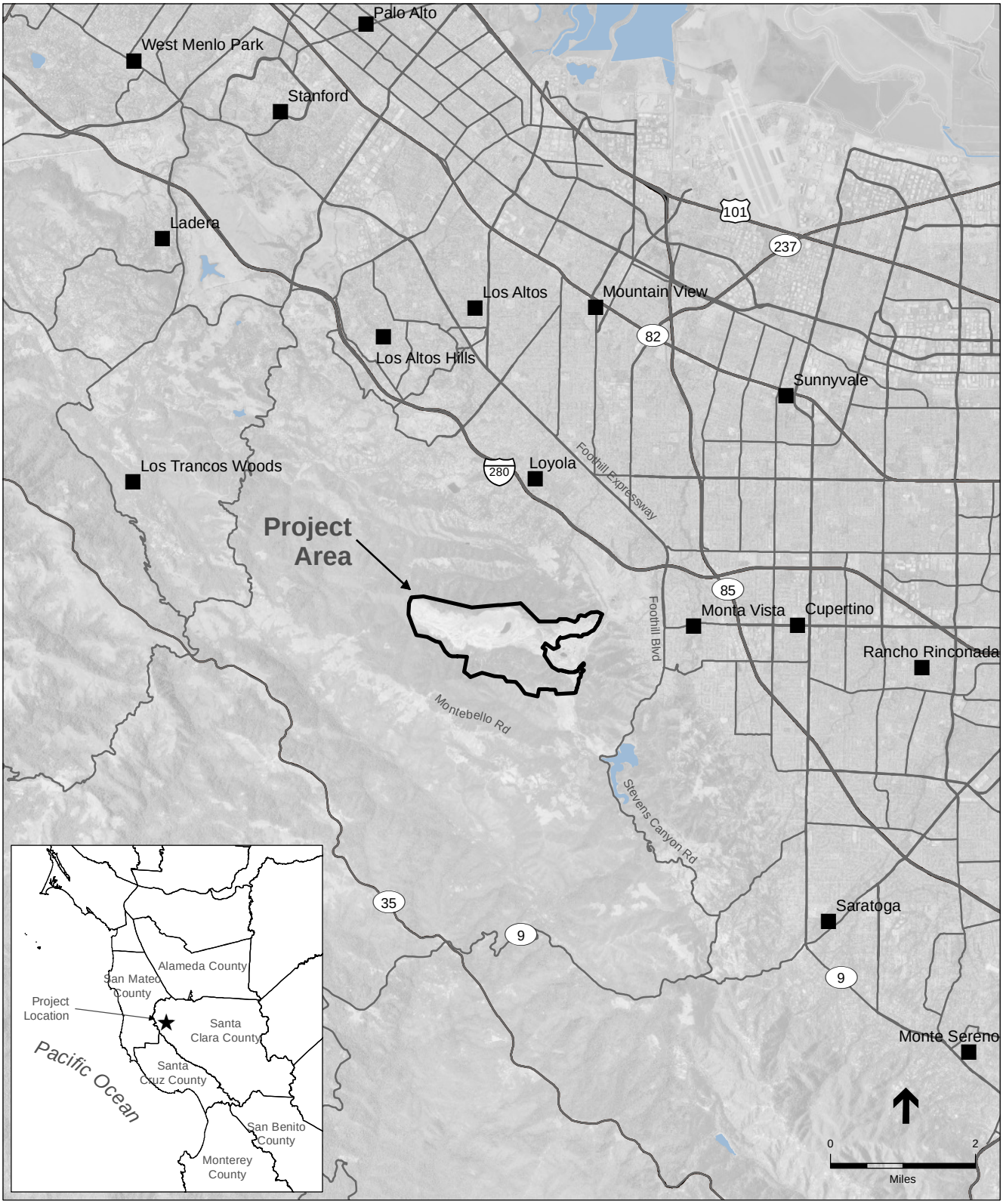
The Project Area is situated within the Applicant's 3,510-acre ownership. See **Figure 2-2**, *Project Area*. Of the total site acreage, 2,656 acres are subject to the County's land use jurisdiction (Santa Clara County, 2011a). The remaining 854 acres are located within the cities of Palo Alto and Cupertino. 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

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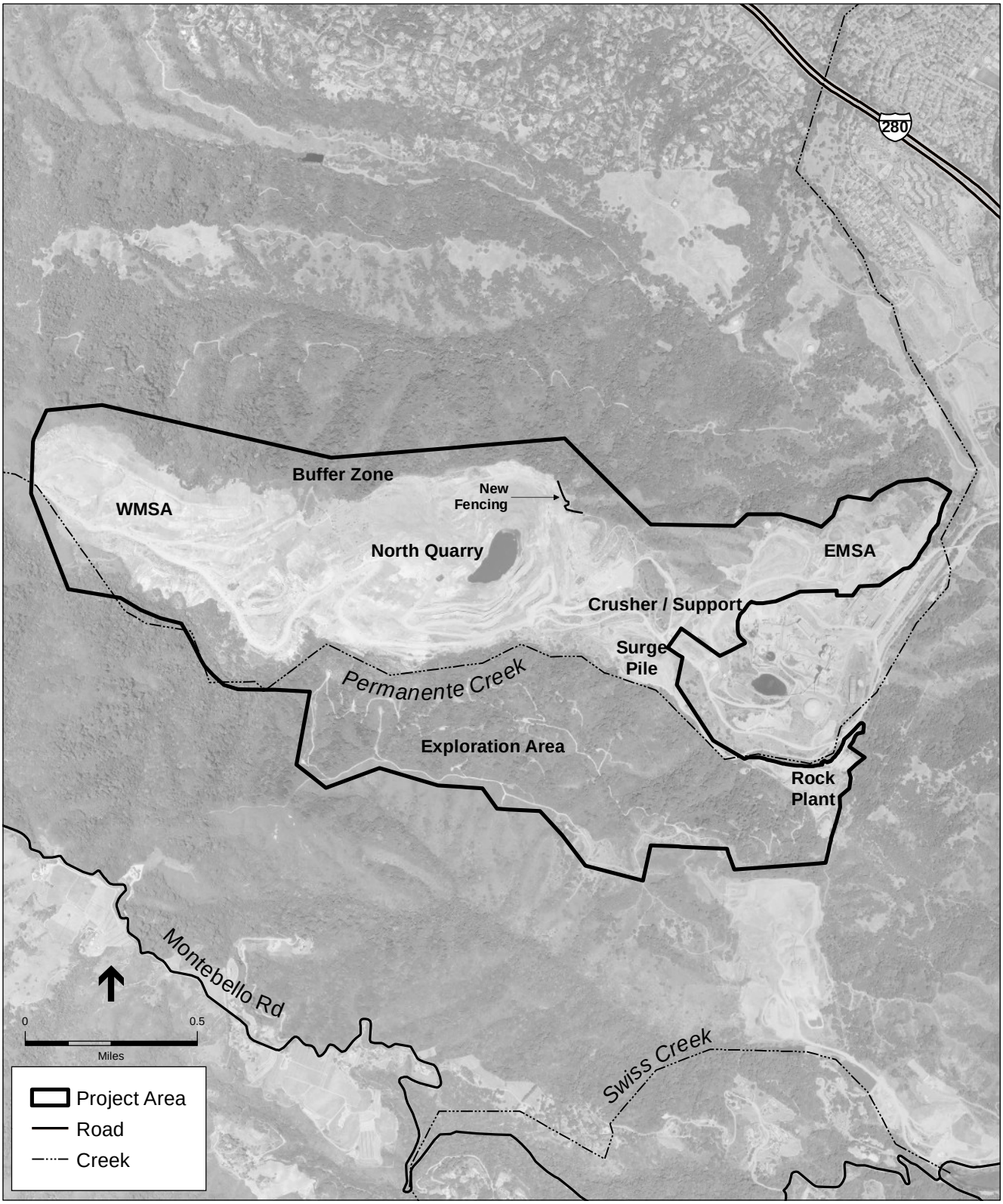
Figure 2-1
Regional Location



SOURCE: SOURCE: Lehigh, 2011; ESRI, 2011

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Figure 2-2
Project Area

2.3 Existing Land Use

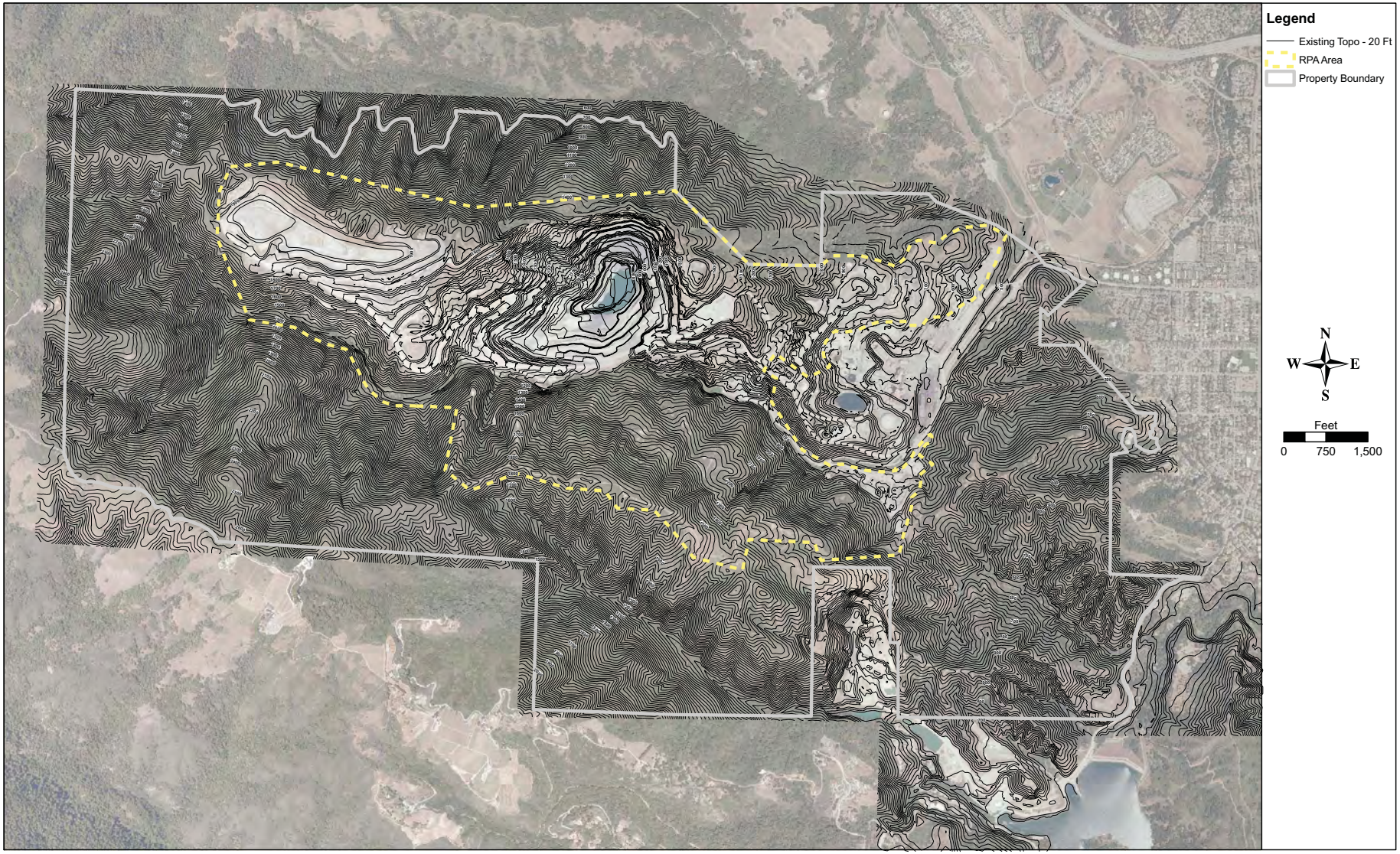
2.3.1 Existing Land Use in the Project Area

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

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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.

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

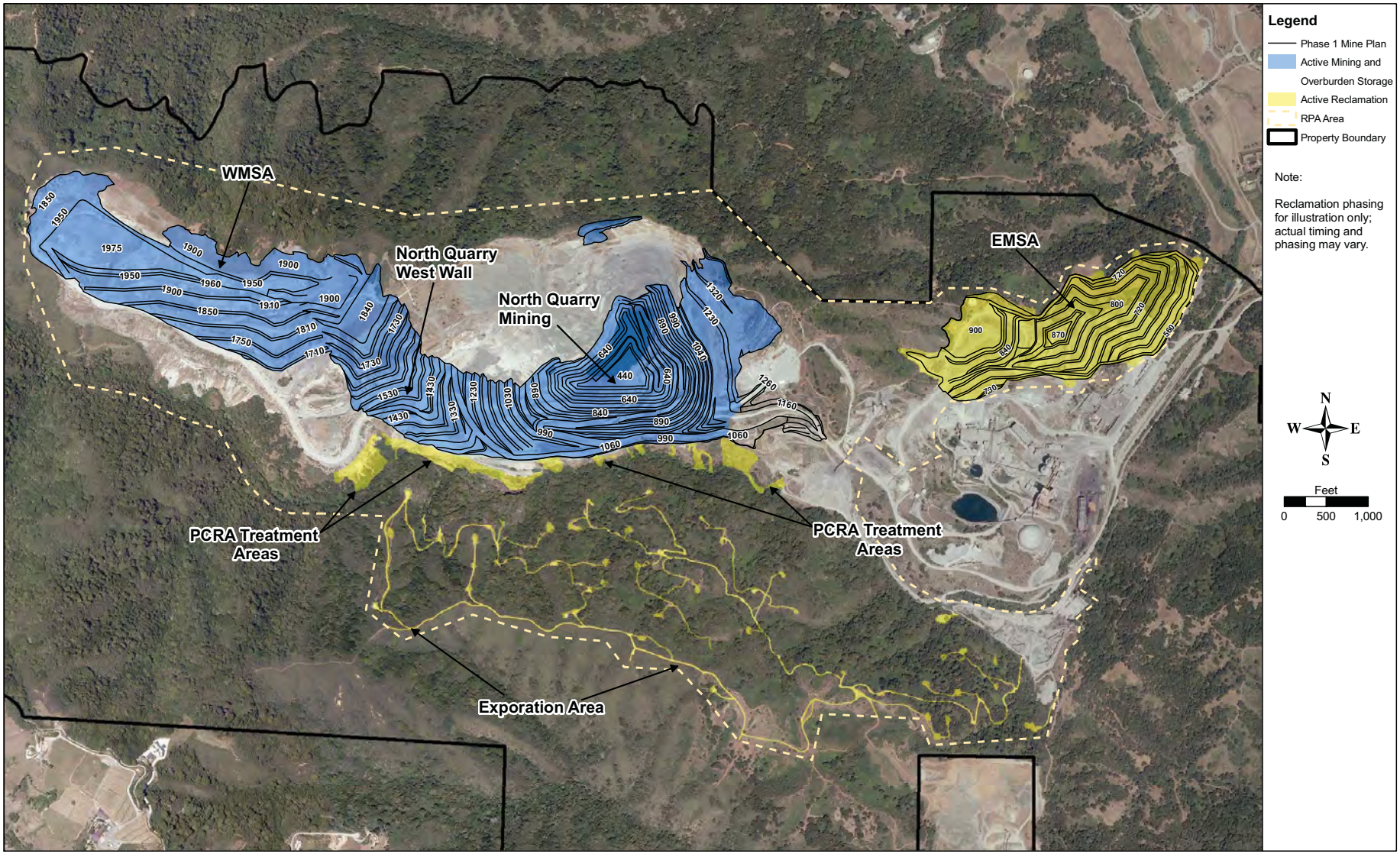
The Project would be implemented in the three phases shown in **Table 2-2**. The actual timing of each phase of reclamation would depend on the rate of extraction and the availability of overburden for use in backfilling the Quarry pit, which could vary based on market conditions and the quality of mineral 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

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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

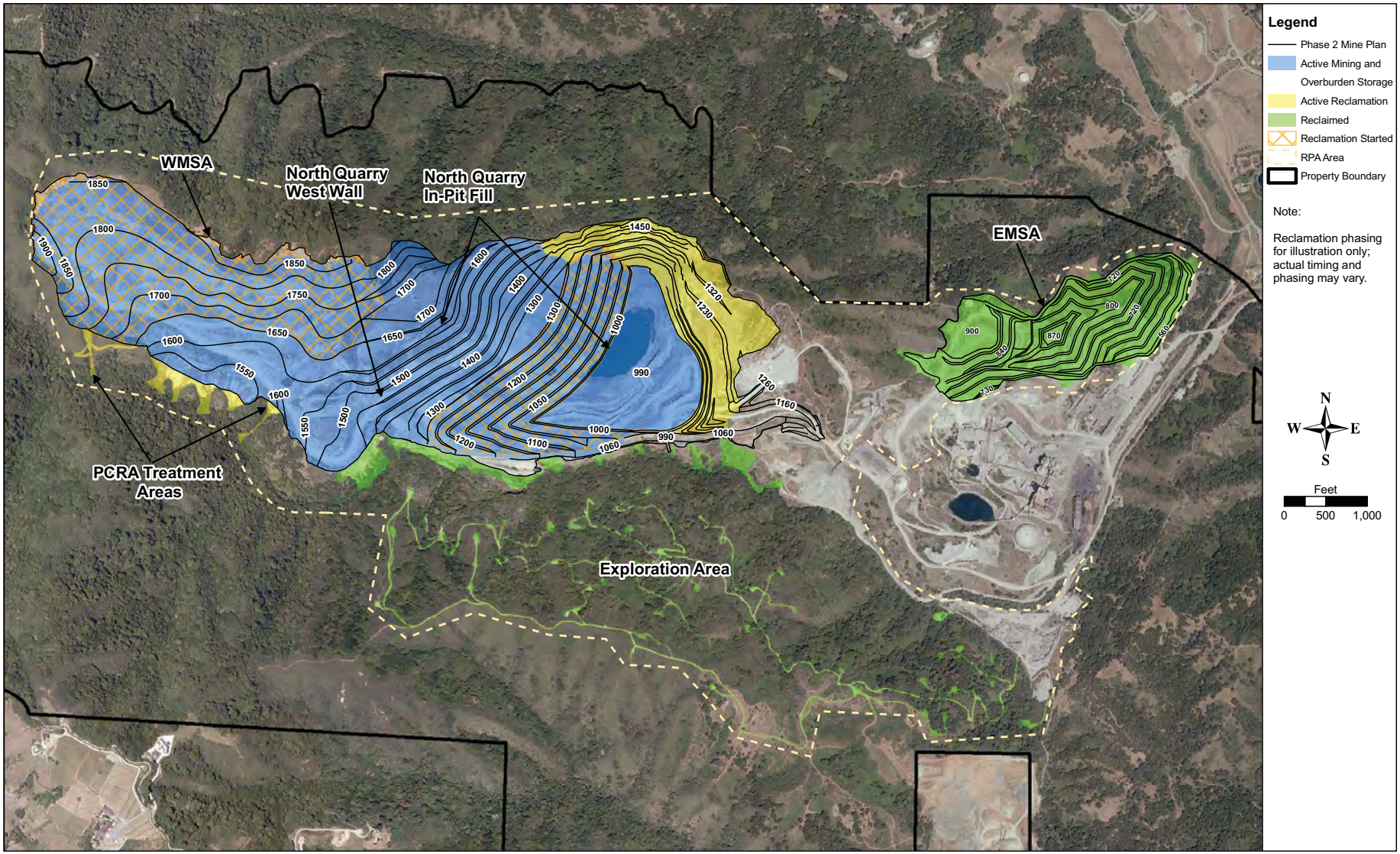
The proposed reclamation of the EMSA would achieve final contours and establish native vegetation and oak woodland habitats consistent with the surrounding area and topography. Reclamation of the EMSA would occur during Reclamation Phase 1.

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).

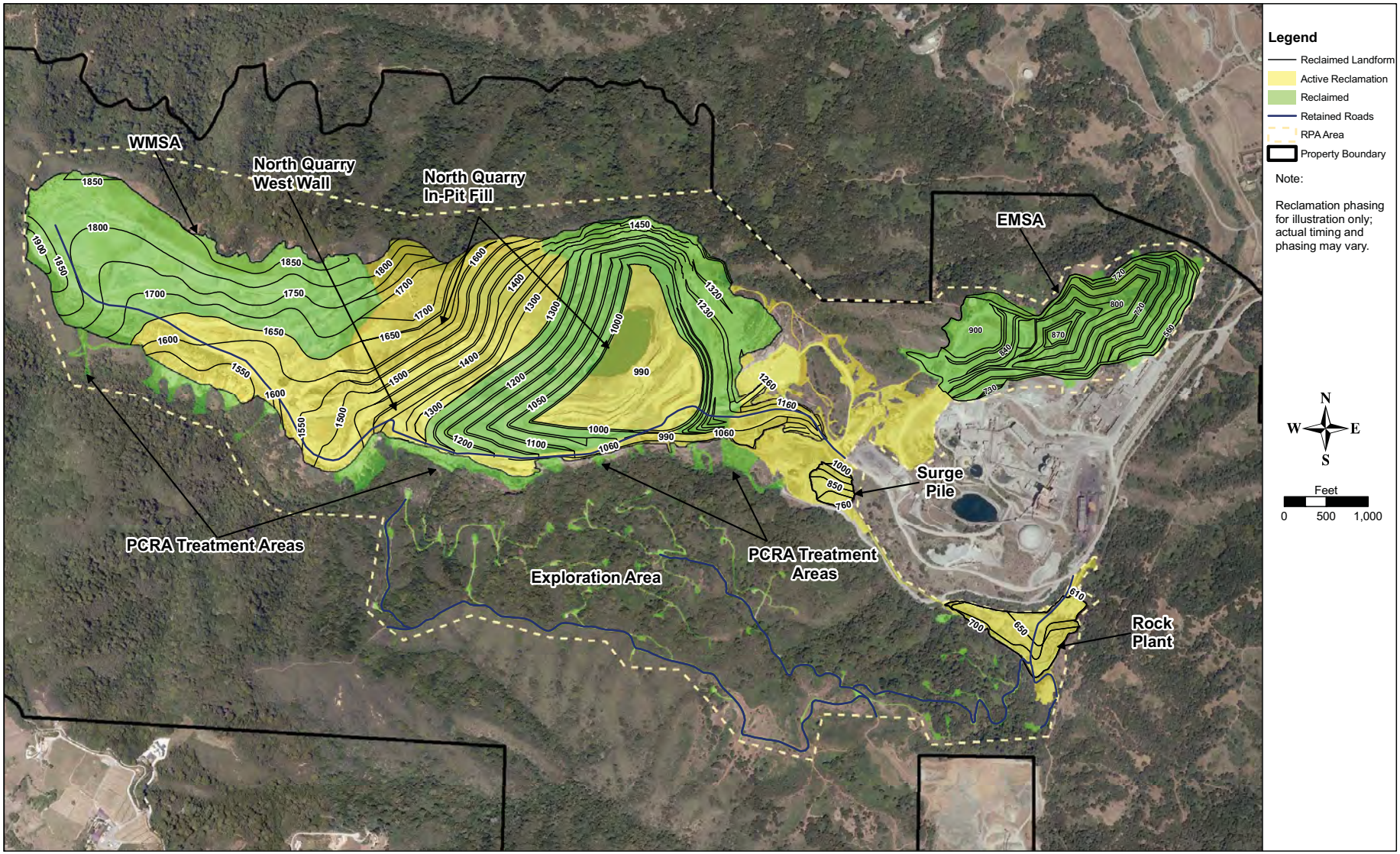


SOURCE: EnviroMine Inc., 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

Figure 2-5

Reclamation Plan Amendment Phase 2



SOURCE: EnviroMine Inc., 2011

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

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

Lehigh Permanente Quarry Reclamation Plan Amendment. 211742

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		
	Shrub	**Herb**	**Riparian Area**
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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