Reclamation Plan Amendment

for

Permanente Quarry

State Mine ID # 91-43-0004

Submitted to:

Santa Clara County

Prepared for:

Lehigh Southwest Cement Company
Permanente Quarry
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(Final Version – Incorporates all Comments)

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Figures

Tables

Attachments

1.0 Introduction

The Permanente Quarry (Quarry) is a limestone and aggregate mining operation located in the unincorporated foothills of Santa Clara County (County) (Figures 1.0-1 thru 1.0-4). Mining commenced in 1903 and has been continuous since 1939, and the Quarry is considered a legal nonconforming use (i.e., vested). Hanson Permanente Cement, Inc. owns the Quarry and Lehigh Southwest Cement Company is the operator (collectively, Lehigh).

The California Surface Mining and Reclamation Act (SMARA) provides that every mining operation in the state must have a lead agency-approved reclamation plan. The lead agency for the Quarry, the County of Santa Clara (County), approved the current reclamation plan in March 1985 (1985 Reclamation Plan, Attachment I). The 1985 Reclamation Plan encompasses 330 acres, representing areas that in 1985 supported active mining and material stockpiling (Figure 1.0-5).

This Reclamation Plan Amendment (Amendment) updates the 1985 Reclamation Plan to include an approximately 1,238.6-acre area (hereinafter, the RPA Area), that includes extraction areas, processing areas, roads, support features and other facilities (Figure 1.0-6). The activities described by this Amendment cover an estimated timeframe of approximately the next 20 years.

Figure 1.0-1 Regional Location Map

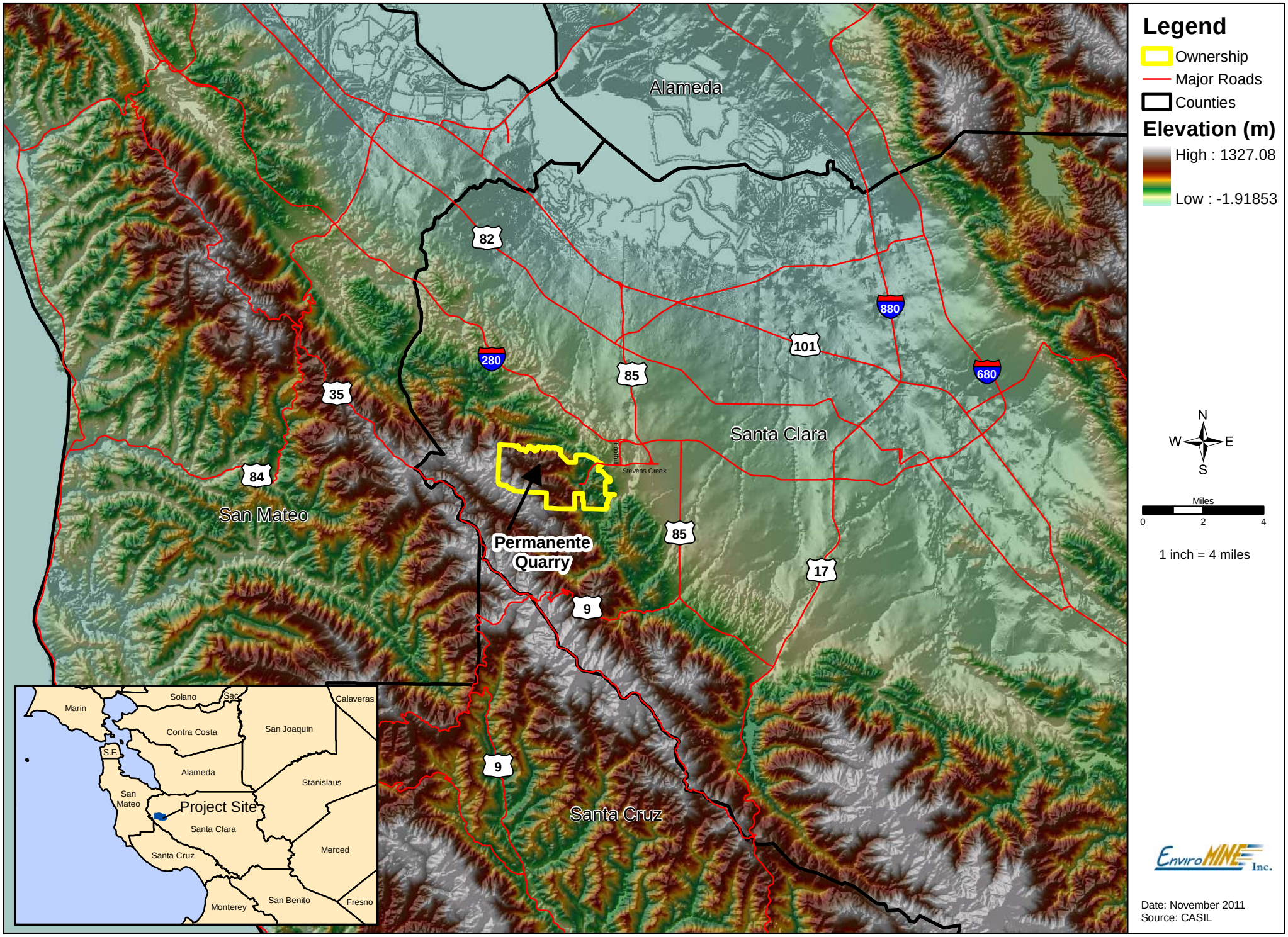


Figure 1.0-2 USGS Vicinity Map

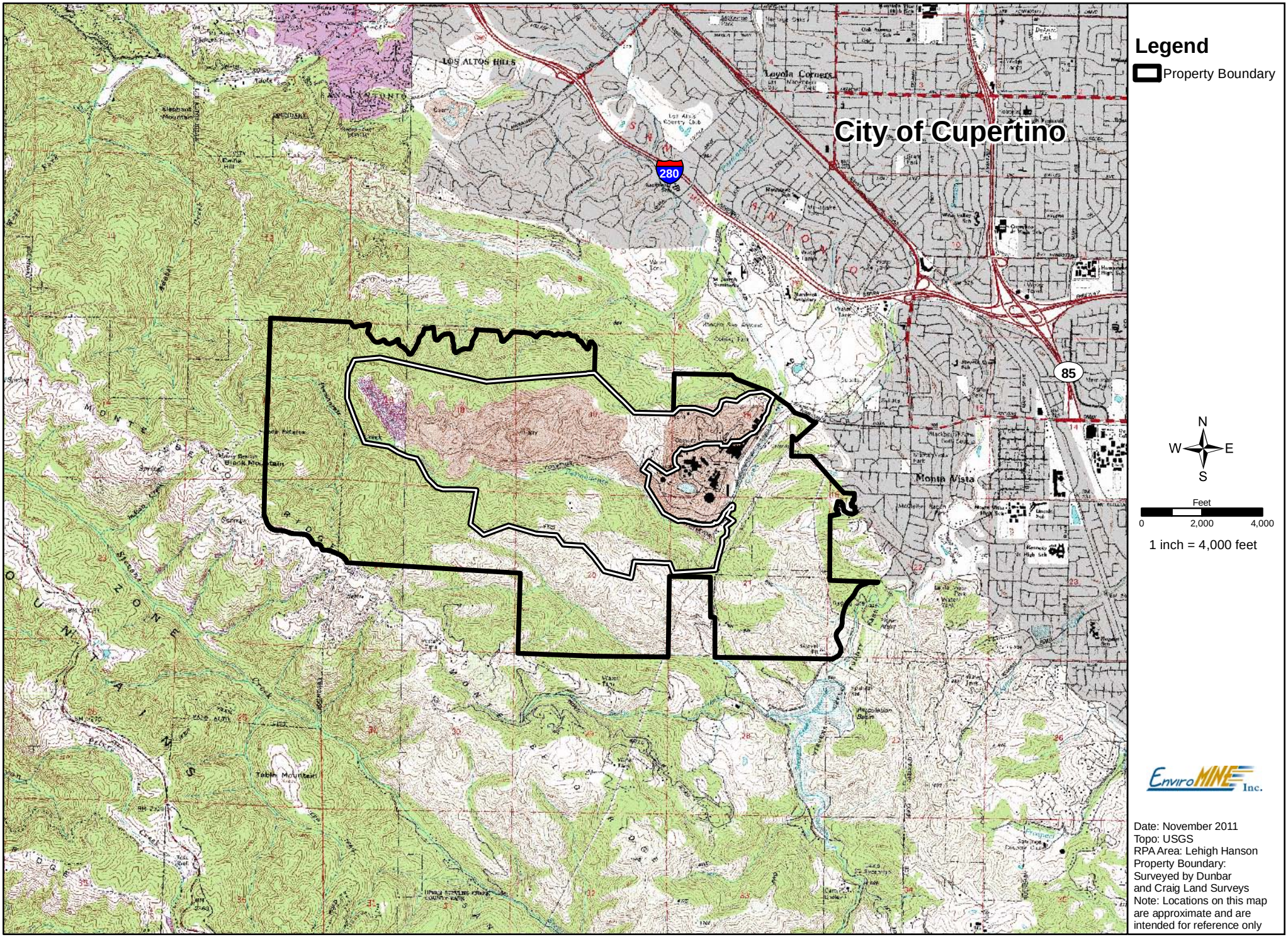


Figure 1.0-3 Quarry Location

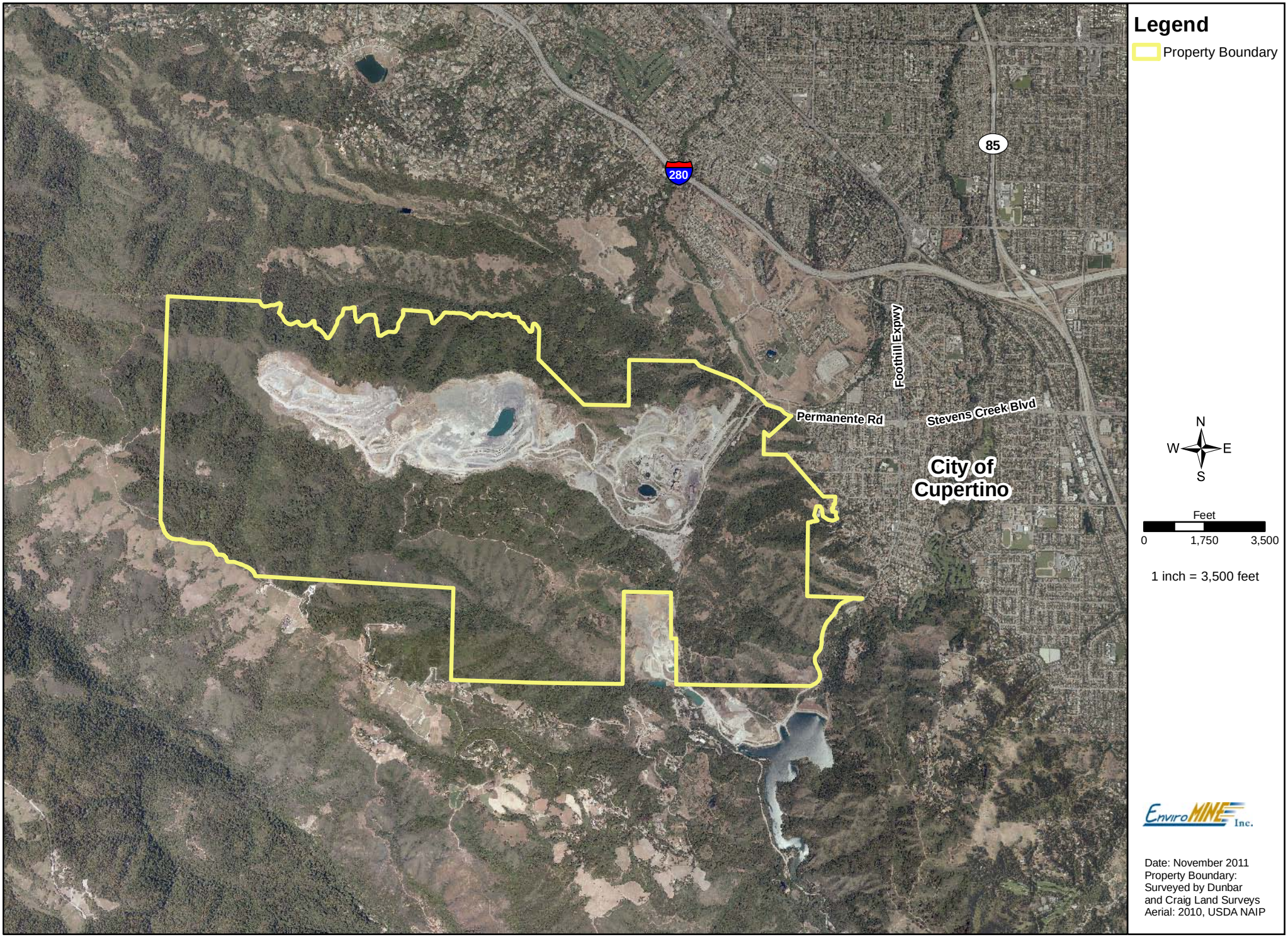


Figure 1.0-4 Quarry Parcels

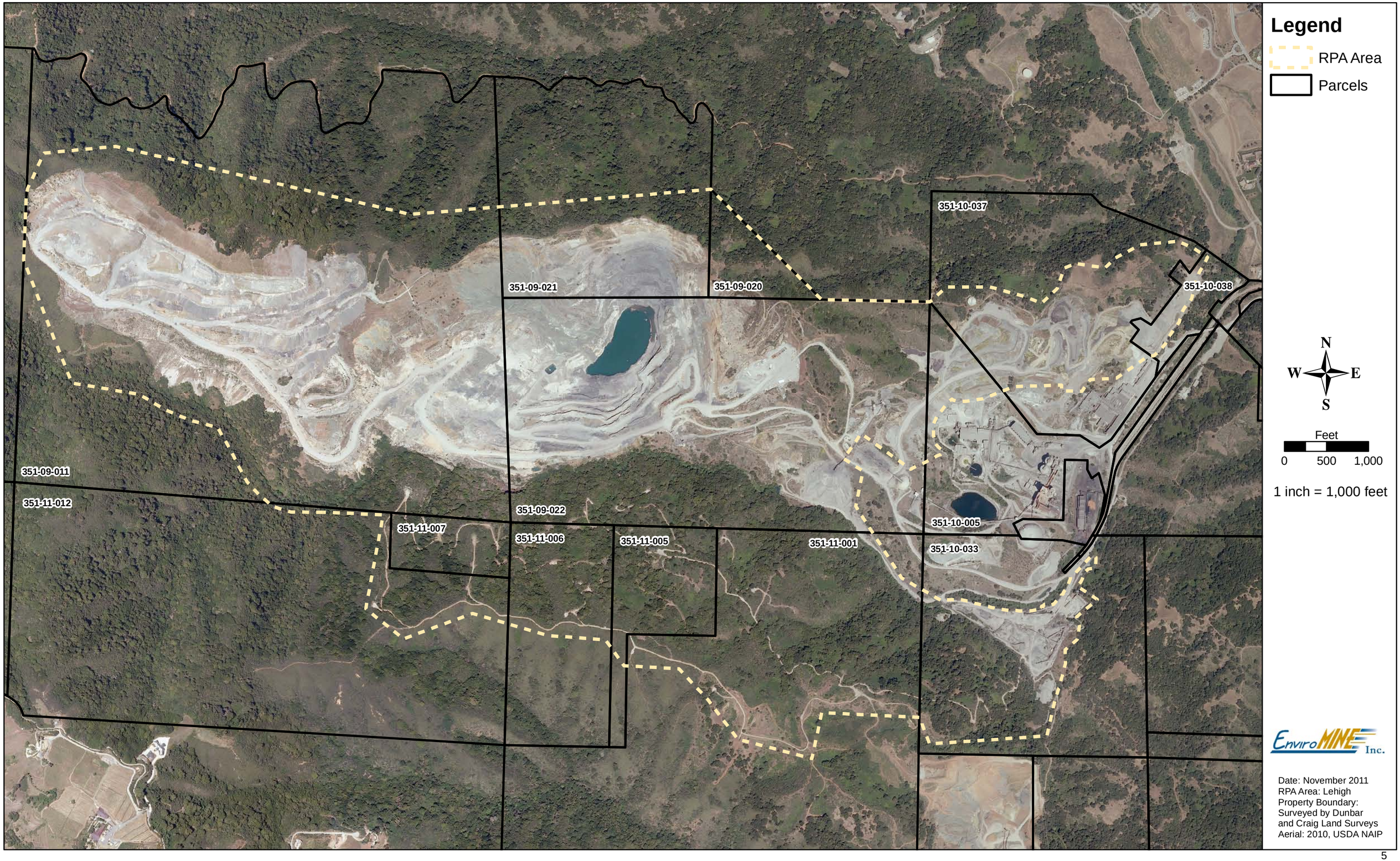


Figure 1.0-5 Reclamation Plan Boundaries

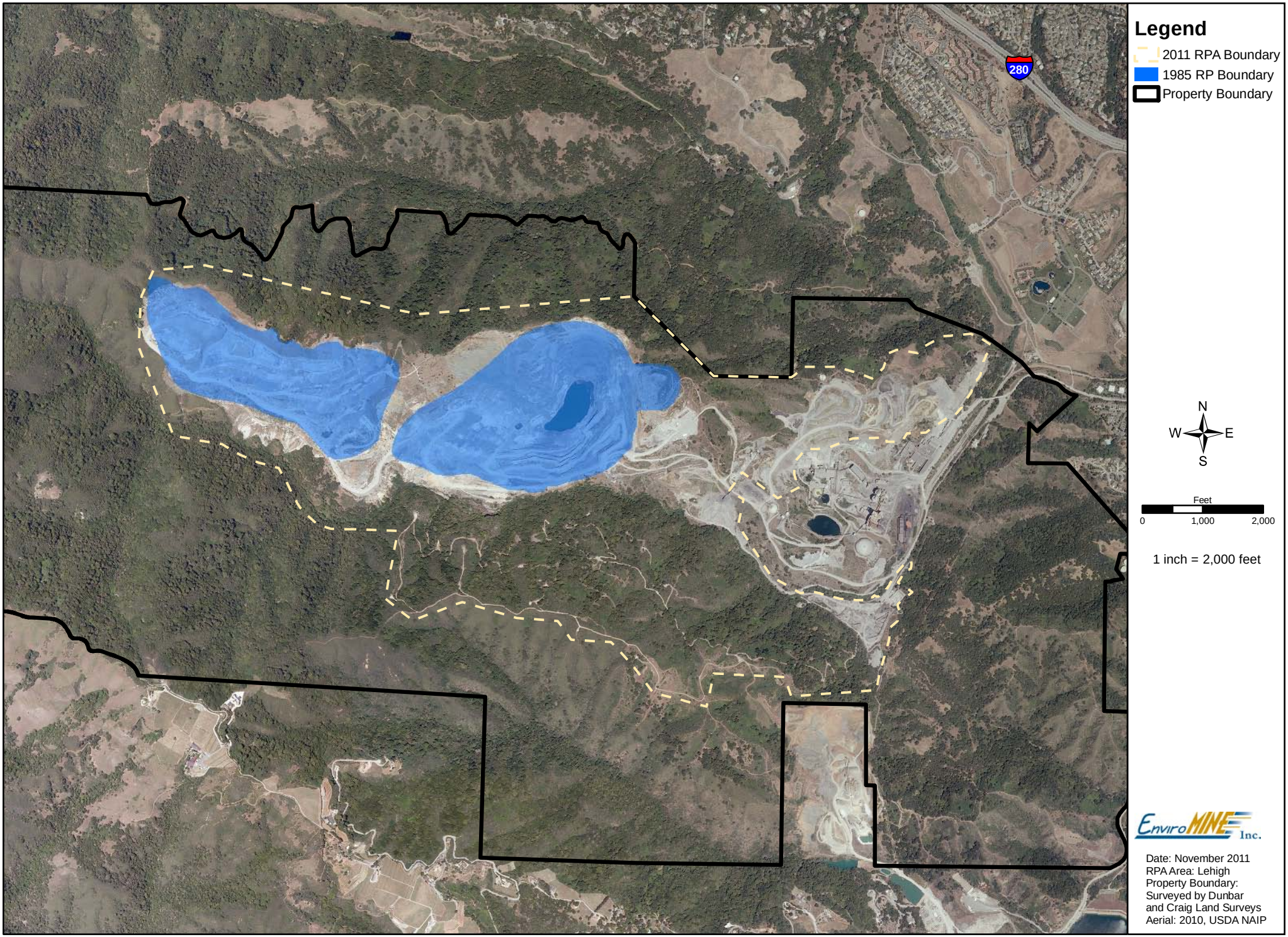
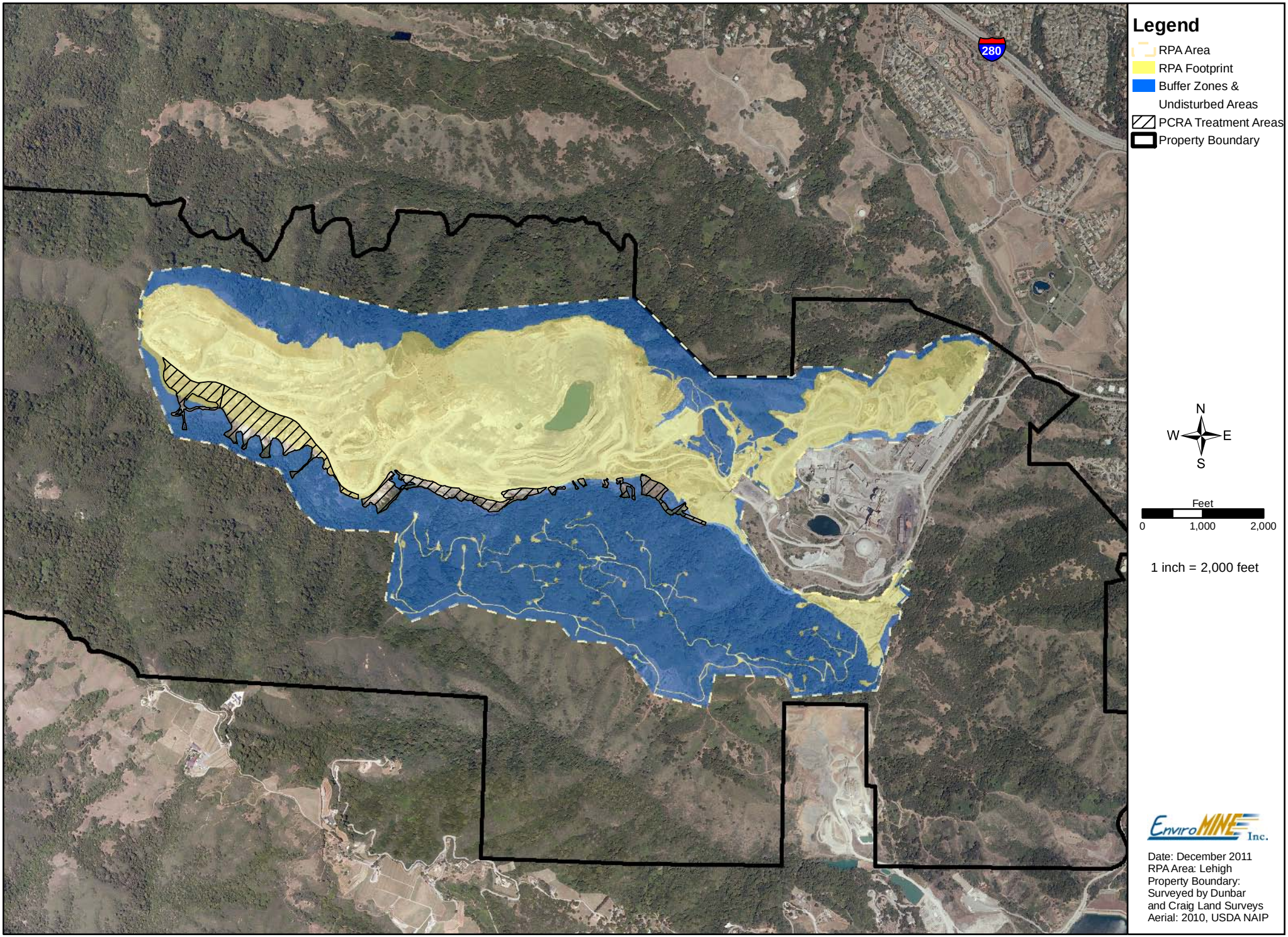


Figure 1.0-6 RPA Area



2.0 2.0 Environmental Setting

2.1 RPA Location

The area subject to this Amendment is referred to herein as the RPA Area. The RPA Area contains approximately 614 acres of existing or planned mining disturbance, representing mining excavations, overburden storage, roads and vehicle storage, exploration areas and other ancillary facilities. When combined with vegetated buffer areas where no mining operations will occur, and additional reclamation areas adjacent to Permanente Creek, the total RPA Area covers 1238.6 acres. Table 1 below lists the individual areas that comprise the overall RPA Area, and associated acreages for each.

The RPA Area is situated within the larger Lehigh ownership totaling approximately 3,510 contiguous acres. The Quarry is located in an unincorporated area of the western foothills of Santa Clara County near the city of Cupertino, approximately 2.0 miles west of Cupertino and 3.0 miles west of the intersection of Interstate 280 and Highway 85. The majority of Lehigh's land holdings is not incorporated into this Amendment and will remain undisturbed (See Figure 1.0-6). Quarry access is provided by Stevens Creek Boulevard and Foothill Expressway, continuing to the western terminus of Permanente Road.

2.2 Legal Description

The legal descriptions for parcels covered by the Amendment are provided in Attachment A.

2.3 Land Use and Zoning

Mining activity at the Quarry began by 1903. Surface mining activities have been continuous since at least 1939 and have been formally recognized by the County as a legal nonconforming (i.e., vested) use.

RPA Area

The majority of the RPA Area is designated under the County General Plan as Hillsides (HS) with a small portion designated as Other Public Open Lands (OPOL). The remainder has no County General Plan designation because it is within the City of Cupertino's Urban Service Area (See Figure 2.3-1). The entire RPA Area is subject to the County zoning ordinance, and is classified as Hillside (HS), Agricultural (A-d1) and General Use (A1-d1 and A1-20s-d1) (See Figure 2.3-2). The Cupertino General Plan designation for land within the Urban Service Area is Very Low Density Residential, and recognizes the existing quarrying uses within the Urban Service Area.

Uses of Surrounding Lands

The uses immediately surrounding the RPA Area are owned and controlled by Lehigh and function as a buffer between mining operations and other land uses (Figure 2.3-3). In many areas, these buffers are substantial. The nearest non-owned land-use to

the west of the RPA Area is approximately 0.5 miles away and is utilized as open space. To the south, the nearest non-owned land-use is another mining operation. Other non-owned land uses to the south, including some rural residential properties and small agricultural operations are over 0.5 miles away. Existing uses of non-owned lands to the north include the Rancho San Antonio County Park and lands of the Mid Peninsula Regional Open Space District (MPROSD). Non-owned lands to the east include the Rancho San Antonio County Park, a cemetery and residential subdivisions. The nearest residence is located approximately 2,000 feet to the northeast of the RPA Area. Surrounding lands are generally subject to the General Plans and zoning ordinances of Santa Clara County, the City of Cupertino (to the east) and the City of Palo Alto (to the west).

2.4 Climate

The RPA Area lies within a semi-arid Mediterranean climate zone characterized by warm summer and mild winter temperatures with a substantial slope effect contributing to vegetative community differences on north- and south-facing slopes. Rainfall occurs mainly from November through April. Average annual rainfall is about 22 inches; however, precipitation can range widely from year to year. On north-facing slopes, conditions are moister and less warm than on south-facing slopes as evidenced by the dramatic differences in vegetative communities. The RPA Area contains both north-facing and south-facing slopes.

Typically, winds tend to blow from the mountains toward the valley in a general southwest to northeast direction. Winds are light averaging between 6 to 10 mph. During the summer, winds shift to blow from the north and northeast. Summer wind speeds range from 5 to 10 mph.

Temperatures range from the low 40's to about 60 degrees Fahrenheit from November through April. During the remainder of the year, temperatures range from the high 40's to the high 80's.

2.5 Geology

The geologic structure underlying the RPA Area and vicinity are detailed in the Geotechnical Evaluations and Design Recommendations (Geotechnical Reports) under Attachment C. In general, the regional geologic structure is dominated by the Coast Range structural province, consisting primarily of large-scale northwest/southeast-trending structures. The San Andreas fault zone, located approximately three miles west-southwest of the Quarry, is the major tectonic feature of the province displaying this trend. The Sargent-Berrocal fault zone is located to the east. This fault zone subdivides into two subsidiary fault zones, the southwestern-most Berrocal Fault Zone and the northwestern-most Monte Vista Fault Zone. The Berrocal Fault Zone trends northwest, dips steeply northeast and bisects the larger Quarry property. A northerly trending splay fault off of the Berrocal Fault Zone (whose existence is uncertain and inferred) trends to the south of the RPA Area. The Monte Vista Fault Zone is composed of two closely spaced subparallel fault strands trending northwest along the foothills-alluvial plain interface. The Monte Vista Fault Zone passes approximately 500 feet northeast of the property boundary. Also, see Table 1 from the 1985 Reclamation Plan: *Active*

Figure 2.3-1 General Plan

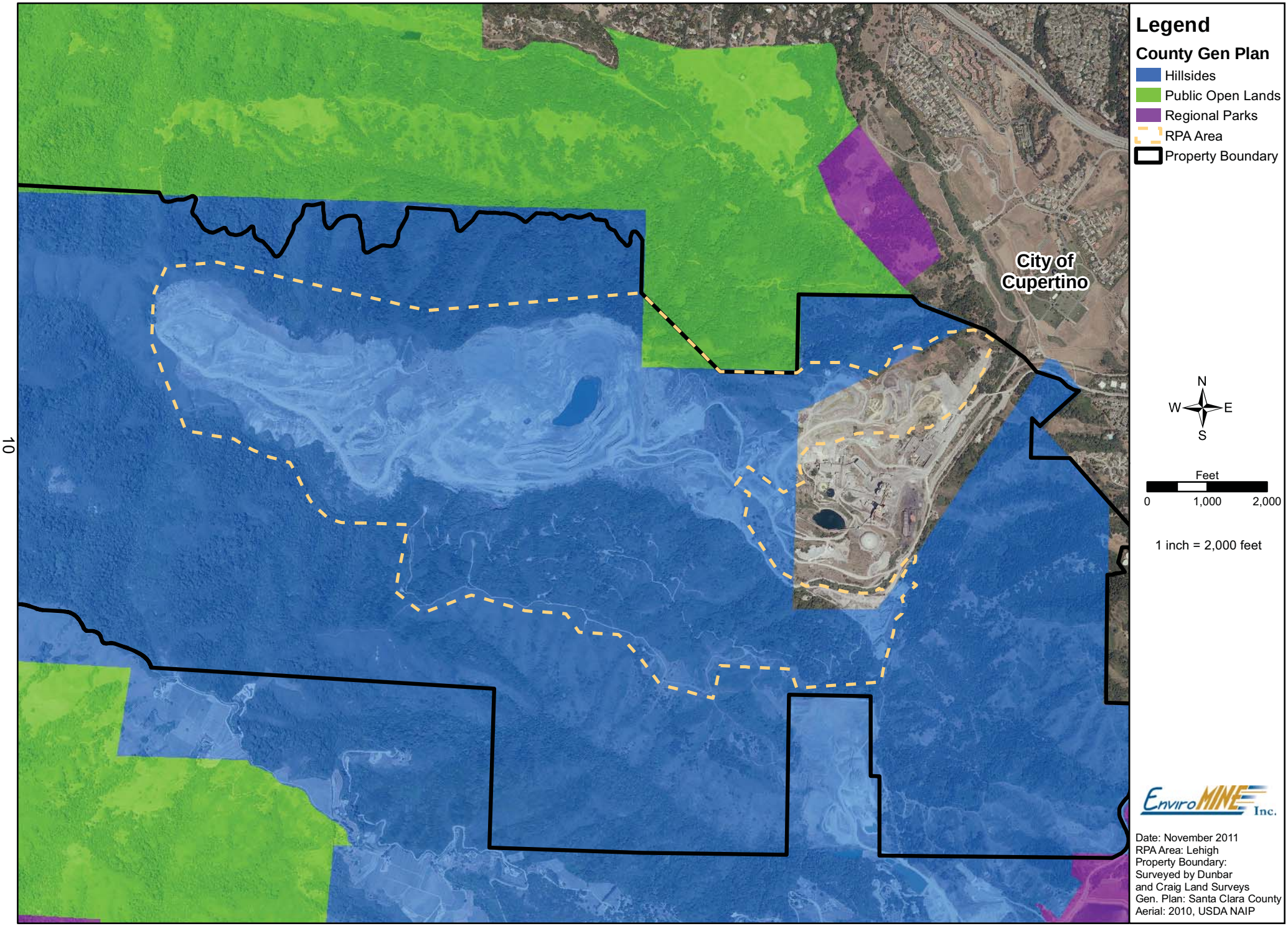


Figure 2.3-2 Zoning

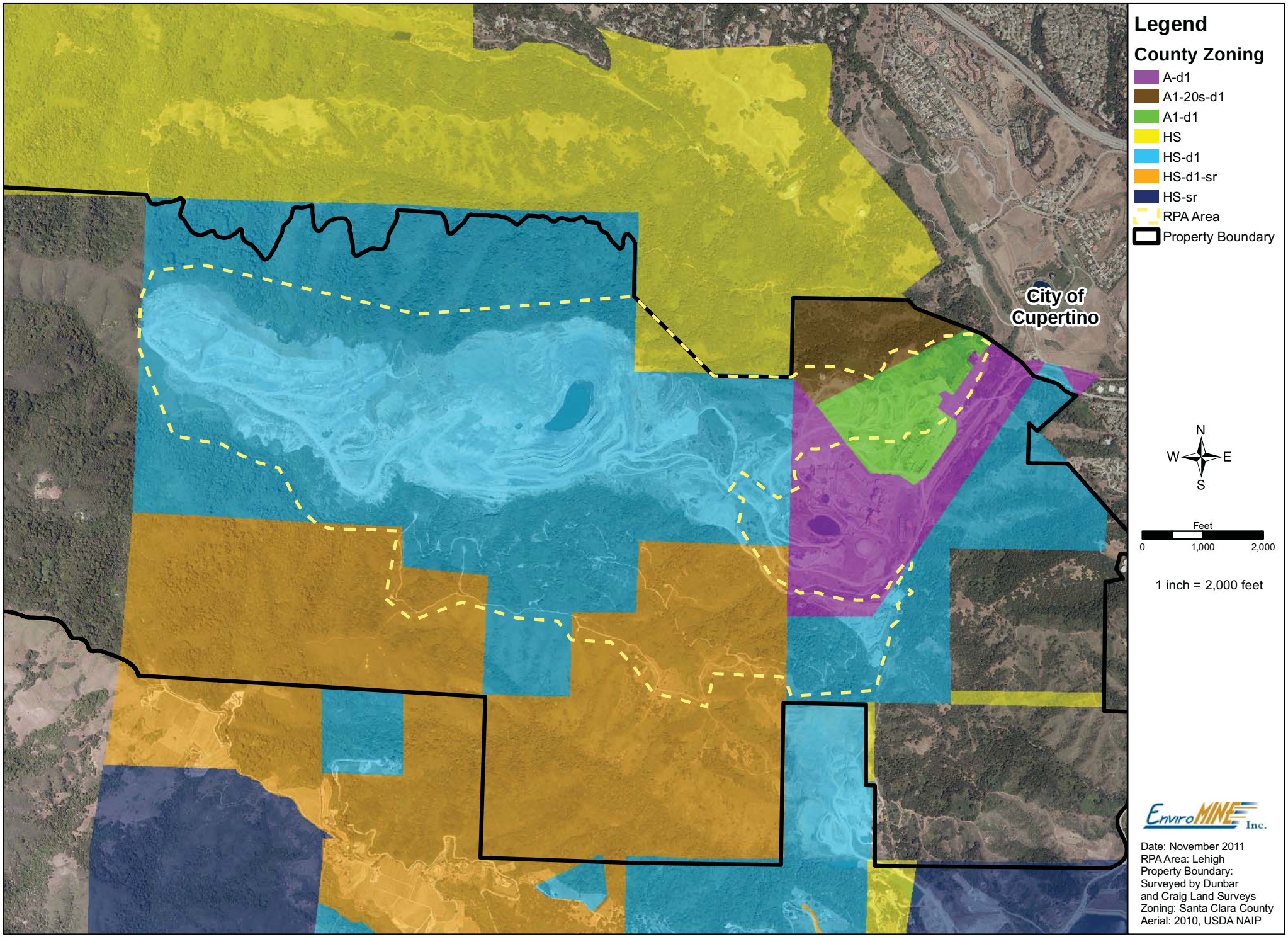
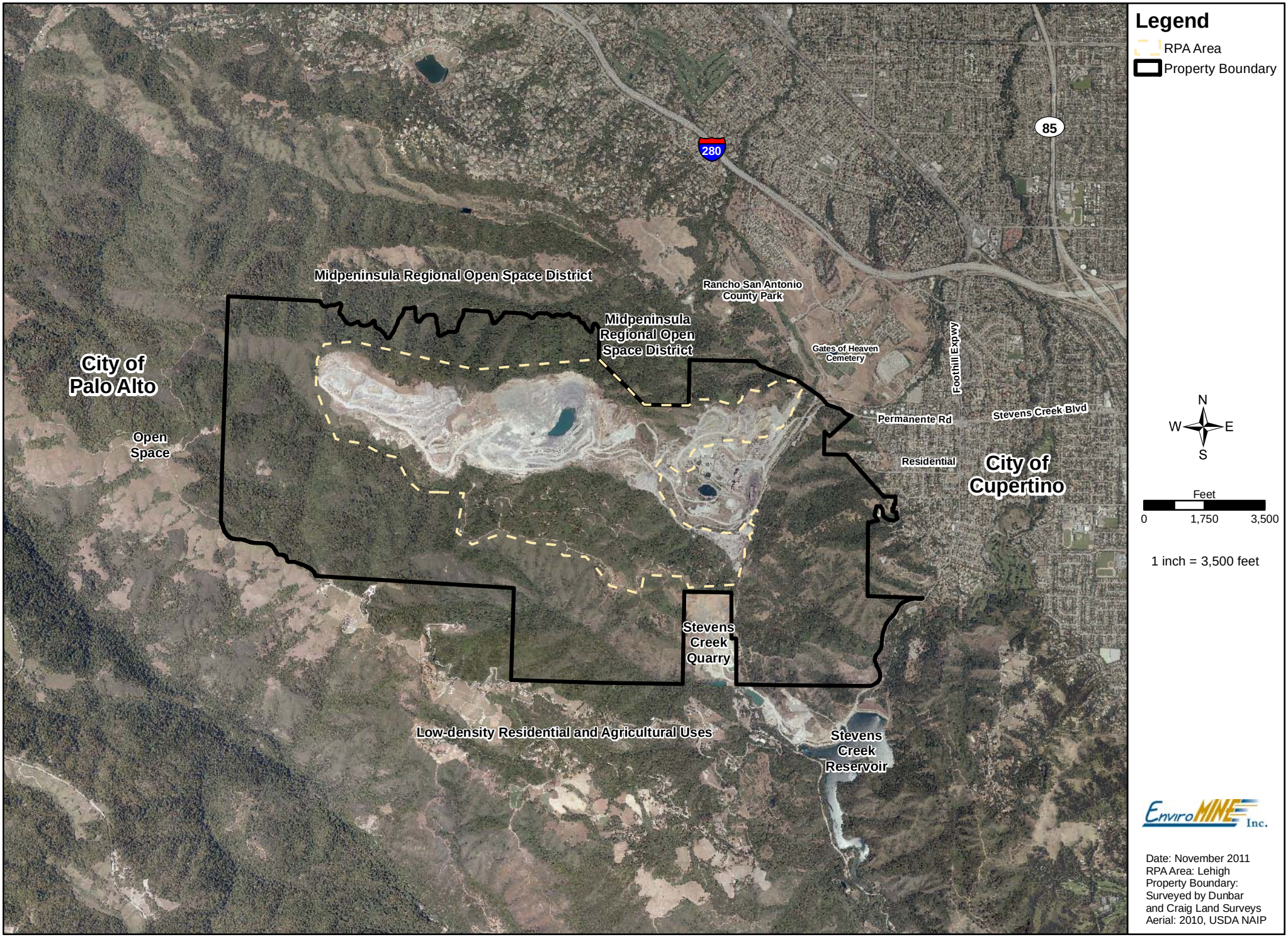


Figure 2.3-3 Surrounding Land Uses



and Potentially Active Faults and their Earthquake Characteristics. The principal rock types in the vicinity belong to the Franciscan Assemblage, which underlies most of the property. The predominant Franciscan rock type is the Calera Member Limestone. This limestone unit grades from a dark to black, bituminous limestone member to a gray to white, high-chert-content limestone member.

2.6 Soil Types

The USDA *Soil Survey of Santa Clara Area, California* (USDA 1958) indicates that the RPA has nine native soil types (map units) and depicts excavated Quarry areas as a "Pit" map unit. These map units are described in detail below. According to the soil survey, the native soils of the RPA were subject to erosion and gullying, were generally quite shallow, and hosted a plant community almost wholly dominated by scrub. Although historical Quarry activities have disturbed the native soils, previous successful restoration plantings and the Quarry's test Plot program have shown that plant communities and soil characteristics may be restored.

Pit (Ec) - This map unit consists of areas large enough to map where excavations have been made and where the original soil has been removed. Excavations in this area have been principally for limestone and aggregate production.

Azule silty clay, 20-30 percent slopes (At) - Azule silty clay surface soil consists of brown or pale-brown silty clay that normally varies from 8 to 15 inches in depth. The surface soil overlies a brown or pale-brown slightly compact subsoil of silty clay texture. The underlying material occurs at depths of 20 to 45 inches and is light-brown or light yellowish brown unconsolidated material of clay loam or silty clay loam texture. In a few places a small amount of gravel occurs in the profile. The native vegetation is mostly brush, but there are some areas of this soil type in grassland and woodland.

Los Gatos clay loam, 20-35 percent slopes (La) - The Los Gatos surface soils are brown and become nearly reddish brown when moist. They grade into brown or reddish brown subsoil of clay loam texture. In most places some rock fragments occur in the subsoils. The number and size of fragments increase with depth. The soils are underlain by hard but generally broken or shattered metamorphosed sedimentary rock at depths of 26 to 38 inches.

Los Gatos clay loam, slightly eroded, 20-35 percent slopes (Lc) - This soil differs from the noneroded Los Gatos clay loam described above mainly in degree of erosion. In a number of places, the exposed soil is somewhat redder and somewhat finer textured than typical, because of partial or complete removal of the surface soil and mixture with subsoils.

Los Gatos - Maymen stony soils, undifferentiated, 50+ percent slopes (Lf) – This map unit consists of very steep and stony areas of Los Gatos and Maymen soils. Slopes are steep, and in most places rock outcrops are numerous. The vegetation is a dense growth of brush. The Los Gatos soils predominate, but in some places fairly large areas of Maymen soils occur. The Los Gatos surface soils are brown and become nearly reddish brown when moist. They grade into brown or reddish brown slightly compact subsoils of finer texture than the surface soils. In most places some rock

fragments occur in the subsoils. The number and size of fragments increase with depth. The soils are underlain by hard but generally broken or shattered shale or sandstone that has undergone varying degrees of metamorphosis. Maymen surface soils are light brown or pale brown. They overlie light brown or light reddish brown medium textured subsoils. In most places rock fragments occur in the subsoils and in the surface soils. The subsoils grade irregularly at shallow depths into hard sandstone or conglomerate bedrock.

Maymen loam, 20-35 percent slopes (Md) - The typical uneroded soil profile for Maymen loam soils are light-brown or pale-brown loams to depths of 6 to 10 inches. In most places some rock fragments are present. This surface soil grades into a light-brown or light reddish-brown loam subsoil that contains numerous rock fragments. At depths of 11 to 16 inches, the subsoil grades into hard sandstone or conglomerate bedrock. Slightly eroded Maymen loams are associated with other Maymen soils and with soils of the Los Gatos series, mainly on Monte Bello Ridge.

Permanente stony soils, undifferentiated, 50+ percent slopes (Pa) - These very steep areas of Permanente soils are very shallow and stony. The surface soils are brown (becoming nearly reddish brown when moist), medium textured, stony, and generally non-calcareous. In most places fragments of bedrock are mixed with the surface soils, which grade irregularly at very shallow depths into light-gray or white hard limestone bedrock. The natural vegetation is almost entirely brush.

Soper gravelly loam, 20-35 percent slopes (Sm) - The surface soil is a brown or light-brown, slightly or medium acid gravelly loam to depths of 8 to 13 inches. The surface soil grades into a slightly more reddish-brown, moderately compact, weakly blocky subsoil of gravelly clay loam texture. The subsoil retards drainage somewhat and causes waterlogging of the surface soil during heavy rains. At depths of 23 to 32 inches the subsoil grades into a noncalcareous moderately or weakly consolidated conglomerate bedrock that is somewhat more permeable than the subsoil.

Soper gravelly loam, 35-50 percent slopes (So) - This soil is normally somewhat shallower than that on less steep slopes. The natural vegetation is a thick growth of brush. The typical slopes of Soper soils usually range from 20 to 35 percent, but steep slopes are more common in this area. The surface soils are brown or light brown, medium textured, and generally gravelly. The surface soils grade into slightly more reddish-brown, moderately compact, weakly blocky subsoils of gravelly clay loam texture. The subsoils in most places are dense enough to retard drainage to a moderate degree. The subsoils grade into brown or yellowish-brown noncalcereous, moderately or weakly consolidated conglomerate bedrock.

2.7 General Physiography

Topography in the RPA Area and surrounding lands consists of gentle to steep terrain. These areas contain a series of ridges and valleys trending in a general east-west direction. Steep slopes predominate, with flatter terrain occurring within some previously disturbed areas. Elevations within the larger Quarry ownership generally increase from west to east, ranging from about 500 feet mean sea level (msl) near the entrance to the Quarry to about 2,640 feet msl at the western and southwestern property boundaries. Elevations within the RPA Area range from approximately 500

feet msl at the eastern edge to approximately 2,000 feet msl at the western edge (See Figure 2.7-1).

2.8 Surface and Groundwater

Surface Water

Natural hydrological sources for the RPA Area include direct precipitation, groundwater seepage, and limited surface run-off from adjacent lands. The RPA Area contains tributaries to Permanente Creek. The Biological Resources Assessment (Attachment D) contains a complete description of surface water features. Overland flows from most of the RPA Area drain into Permanente Creek through natural drainages or various storm water facilities. Overland flows originating in the far northern portion of the RPA Area drain to the north, and enter Permanente Creek via an unnamed USGS blue-line steam to the north of the RPA Area. After leaving Lehigh's property, Permanente Creek flows generally northwards where it receives flows from Hale Creek in Mountain View before reaching Mountain View Slough and South San Francisco Bay.

Groundwater

The RPA Area lies within the Santa Clara subbasin of the Santa Clara Valley groundwater basin. The Santa Clara subbasin totals approximately 240 square miles occupying a structural trough parallel to the northwest trending Coast Ranges. The Diablo Range bounds it on the east and the Santa Cruz Mountains form the basin boundary on the west. It extends from the northern border of Santa Clara County to the groundwater divide near the town of Morgan Hill approximately 25 miles southeast of the RPA Area. The dominant geohydrologic feature is a large inland valley east of the RPA Area. The valley is drained to the north by tributaries to San Francisco Bay including Coyote Creek, the Guadalupe River, and Los Gatos Creek.

The depth to groundwater varies based on the location within the RPA Area. A complete description of groundwater, seeps, and springs located within the RPA Area are discussed in the attached Geotechnical Report (Attachment C) and Hydrologic Investigation (Attachment E).

2.9 Biological Resources (§3703)

Existing Plant Communities

The majority of the RPA Area north of Permanente Creek is already disturbed by mining operations, and little new disturbance is contemplated under the timeframe covered by this Amendment. To the south of Permanente Creek, the RPA Area is predominantly undisturbed apart from limited areas of past mine exploration that are in the revegetation process. Primarily due to the presence of Buffer Zones, the RPA Area does include biological communities that should be noted although in large part they will remain unaffected by mining and reclamation activities under this Amendment. The Biological Resources Assessment (Attachment D) contains a full description of the existing plant communities. In summary, eighteen (18) vegetation

types were identified within the RPA Area. Figure 2.9-1 shows the existing vegetation communities within the RPA Area.

Eighteen (18) distinct biological communities are located within the RPA Area. Non-sensitive biological communities include: 1) ruderal herbaceous grassland, 2) mixed scrub, 3) northern mixed chaparral, 4) chamise chaparral, 5) oak chaparral, 6) poison oak scrub, 7) non-native annual grassland, 8) California bay forest, 9) rock outcrop, 10) reclaimed areas, 11) active quarry, 12) disturbed areas, and 13) settling ponds operational water features. Sensitive biological communities include: 14) wetland, 15) willow riparian forest and scrub, 16) white alder riparian forest, 17) oak woodland, 18) and streams and ponds.

Non-Sensitive Biological Communities

Ruderal herbaceous grassland - Ruderal herbaceous grassland is not described by Holland (1986) but includes habitats previously disturbed and/or reclaimed which have been inactive long enough to recruit a plant community dominated by herbaceous weeds and non-native grasses. Species typical of this plant community in California include brome grasses (*Bromus* spp.), wild oats (*Avena* spp.), Italian thistle (*Carduus pycnocephalus*), wild mustard (*Brassica* sp.), and filaree (*Erodium* sp.). This community is widespread throughout California.

Within the RPA Area, ruderal herbaceous grassland primarily occurs on slopes between quarry roads, or in areas adjacent to quarry activities. Areas identified as ruderal herbaceous grassland have predominantly been disturbed by historic quarry activities. Species typical of this biological community include Italian thistle, field mustard (*Brassica rapa*), lupine (*Lupinus* sp.), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), yellow star thistle (*Centaurea solstitialis*), oleander (*Nerium oleander*), and slender wild oats (*Avena barbata*). Wildlife observed in this plant community include Dark-eyed Junco (*Junco hyemalis*), Ring-necked Snake (*Diadophis punctatus*), and California Towhee (*Pipilo crissalis*).

Mixed scrub - Mixed scrub includes shrub-dominated communities dominated by coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), and California buckwheat (*Eriogonum fasciculatum*) partially described as Diablan Sage Scrub by Holland (1986). This community occurs on shallow rocky soils, typically on hot southern exposures of the coast range from Oregon to Central California in areas out of the range of coastal fog incursion.

Mixed scrub was mapped in the eastern portion of the RPA Area on southern exposures. Additionally, small patches of this community type were mapped throughout the RPA Area where coyote brush or California buckwheat is the dominant shrub type. Mixed scrub is characterized as dense to moderately open stands to 1.5 meters tall dominated by coyote brush, California sagebrush, and/or California buckwheat with little to no understory vegetation. Associated species include sticky monkey flower (*Mimulus auranticaus*), poison oak (*Toxicodendron diversilobum*), deerweed (*Lotus scoparius*), black sage (*Salvia mellifera*), golden yarrow (*Eriophyllum confertiflora*), and California cudweed (*Gnaphalium californica*). This community type intergrades with chaparrals and oak woodlands. Wildlife observed in

this community type include Hermit Thrush (*Catharus guttatus*), Northern Pacific Rattlesnake (*Crotalus viridis oreganus*), and Wrentit (*Chamaea fasciata*).

Northern mixed chaparral - Northern mixed chaparral is a community of broadleaved sclerophyll shrubs two to four meters tall forming dense often impenetrable stands dominated by chamise (*Adenostoma fasciculatum*), scrub oak (*Quercus berberidifolia*), various manzanitas (*Arctostaphylos* spp.), and various members of the genus *Ceanothus* (Holland 1986). This community type occurs on dry, rocky, steep, typically south-facing slopes with thin to little soil. It usually occurs below 3,000 feet elevation in Northern California. It is widely distributed throughout the mountain ranges of California.

Within the RPA Area, northern mixed chaparral was mapped in various locations on east and south-facing slopes. Northern mixed chaparral forms dense impenetrable stands two to three meters tall with high species diversity in the shrub strata. It intergrades with oak woodlands and oak chaparrals on deeper soils, and chamise chaparral on southern exposures. Species typical of this community type include chamise, scrub oak, Eastwood's Manzanita (*Arctostaphylos glandulosa* ssp. *glandulosa*), jimbrush (*Ceanothus oliganthus* var. *sorediatus*), buckbrush (*Ceanothus cuneatus*), birch-leaf mountain mahogany (*Cercocarpus betuloides*), poison oak, yerba santa (*Eriodictyon californicum*), white pitcher sage (*Lepichinia calycina*), coffeeberry (*Rhamnus californicus*), and redberry (*Rhamnus crocea*). There is little to no understory, but where present include Indian warrior (*Pedicularis densiflorus*), Pacific sanicle (*Sanicula crassicaulis*), coyote mint (*Monardella villosa* ssp. *villosa*), and Indian paintbrush (*Castilleja affinis*). Wildlife observed in this community type includes Brush Rabbit (*Sylvilagus bachmani*), California Thrasher (*Toxostoma redivivum*) and California Quail (*Callipepla californica*).

Chamise chaparral - Chamise chaparral is a one to three meter-tall chaparral community dominated by chamise with associated species contributing little to overall cover and mature stands containing very little herbaceous understory (Holland 1986). Associated species typically include Manzanita species, scrub oak, buckbrush, birch-leaf mountain mahogany, yerba santa, sage (*Salvia* sp.), and California buckwheat. It has a general distribution similar to northern mixed chaparral, but is more abundant in southern California.

Within the RPA Area, chamise chaparral dominates southern exposures with shallow soils. Chamise chaparral ranges from 0.5 to three meters tall forming impenetrable stands with no herbaceous understory. It intergrades with northern mixed chaparral on eastern exposures, and abruptly borders oak woodland and oak chaparral at ridgelines. Occasional associates include scrub oak, toyon (*Heteromeles arbutifolia*), and madrone (*Arbutus menziesii*). Wildlife observed in this community type includes Spotted Towhee (*Pipilo maculatus*), Bewick's Wren (*Thryomanes bewickii*), and Anna's Hummingbird (*Calypte anna*).

Oak chaparral - Oak chaparral includes plant communities described in Holland (1986) as scrub oak chaparral and undescribed plant communities dominated by canyon live oak (*Quercus chrysolepis*) under four meters tall. Oak chaparral is a dense, evergreen chaparral dominated by oak shrubs (*Quercus berberidifolia*, *Q. chrysolepis*, and *Q. agrifolia*) with considerable cover of birch-leaf mountain

mahogany and accumulated leaf litter in the understory. It ranges from Tehama County to Baja California in the western Sierra Nevada and Coast Ranges.

Within the RPA Area, oak chaparral was mapped on various north and east-facing slopes where conditions are slightly more mesic than other slopes. It intergrades with northern mixed chaparral on northern exposures, chamise chaparral on eastern exposures, and oak woodlands on flatter north-facing slopes. Species typical of this community include scrub oak, bush interior live oak (*Quercus wislizeni* var. *frutescens*), coffeeberry, madrone, chaparral pipestem (*Clematis lasiantha*), poison oak, and birch-leaf mountain mahogany. Wildlife observed in this community type include Hutton's Vireo (*Vireo huttoni*), Blue-gray Gnatcatcher (*Polioptila caerulea*), and Fox Sparrow (*Passerella iliaca*).

Poison oak scrub - Briefly described in Holland (1986), poison oak scrub is a shrub-dominated community maintained by frequent fires or other disturbance and completely dominated by poison oak. Within the RPA Area, poison oak scrub contains extremely dense, monotypic stands of poison oak to two meters tall. There are no other species associated with this community type. Wildlife observed in this community type includes Ruby-crowned Kinglet (*Regulus calendula*), Wrentit, and San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*).

Non-native annual grassland - Non-native annual grassland is described in Holland (1986) as a dense to sparse cover of annual grasses and herbs 0.2 to 0.5 meters high. Characteristic species include wild oats, soft chess (*Bromus hordeaceus*), filaree (*Erodium botrys*, *E. cicutarium*), Italian ryegrass (*Lolium multiflorum*), small fescue (*Vulpia microstachys*), and various native and non-native herbs and wildlfowers. This community type is distributed throughout the valleys and foothills of most of California below 3,000 feet.

Non-native annual grassland was mapped within the RPA Area in various landscape positions. Non-native annual grassland intergrades with chaparrals and oak woodlands on slopes and ridgelines. Species typical of this community type include wild oats, ripgut brome (*Bromus diandrus*), soft chess, Italian ryegrass, filaree, small fescue, California poppy (*Eschscholzia californica*), bird vetch (*Vicia cracca*), and birdfoot trefoil (*Lotus corniculatus*). Wildlife observed in this plant community include Western Meadowlark (*Sturnella neglecta*), Bobcat (*Lynx rufus*), and Violet-green Swallow (*Tachycineta thalassina*).

California bay forest - California bay forest is described in Holland (1986) as similar to a mixed evergreen forest but typically consisting entirely of California bay to 30 meters tall. It usually occurs on moist, north-facing slopes and intergrades with redwood forests in moister canyons and mixed chaparral on drier, rockier slopes. This community type is usually very dense and supports little or no understory. Characteristic species include jimbrush, dogwood (*Cornus* sp.), blackberries (*Rubus* sp.), and snowberry. It is distributed along the coast ranges from the Oregon border to northern San Luis Obispo County below 3,000 feet, with patchy occurrences of stands usually limited to a few acres.

Within the RPA Area, this community type occurs on north-facing slopes and in the protected valley bottoms. This community type consists of dense, monotypic stands

of California bay with little to no understory. Reproduction is primarily vegetative with many stems arising from a single root system. Wildlife observed in this plant community include Stellar's Jay (*Cyanocitta stelleri*), Chestnut-backed Chickadee (*Poecile rufescens*), and Mule Deer (*Odocoileus hemionus*).

Rock outcrop - Rock outcrop includes areas that host little to no soil or plant cover. On the Permanente Property, they are primarily vertical exposures of various rock types amidst chaparral communities on all aspects. Many small rock outcrops are scattered throughout the Permanente Property, but were primarily too small to map in this effort. The largest rock outcrop on the Permanente Property is on the southern side of Permanente Creek in the center of the Permanente Property. This rock outcrop supports sparse coverage of bigleaf maple (*Acer macrophyllum*) saplings and pacific stonecrop (*Sedum spathulifolium*).

Reclaimed areas - Reclaimed areas are defined here as historically disturbed slopes that have been reclaimed by grading to a final contour, planted with native grass species, and/or planted at a low to moderate density with native shrubs and trees including coyote brush, chamise, and oaks from locally collected cuttings and acorns. Irrigation has been applied to some of the more recent, large-scale revegetated areas to encourage the establishment of planted trees and shrubs, and protective cages have been installed around most container plantings to reduce damage from deer browsing. Generally, these areas are dominated by grass species including wild oats, brome grasses, small fescue, and Italian rye-grass with some establishment of yellow star thistle throughout the open areas. Wildlife observed in this plant community include Grasshopper Sparrow (*Ammodramus savannarum*), Bewick's Wren, and Spotted Towhee.

Active quarry - Within the RPA Area, areas identified as active quarry have been disturbed by past or ongoing quarry activities and in some locations host a very small number of weedy and/or native plant species including yellow star thistle, coyote brush, chamise, wild oats, sweet fennel (*Foeniculum vulgare*), and field mustard. Generally, plant cover in these areas is very sparse due to the lack of topsoil. This community offers little habitat for plants or animals.

Disturbed areas - Within the RPA Area, certain areas identified as disturbed have been recently disturbed by non-quarry activities such as plowing for fuel breaks and construction and maintenance of dirt roads and clearing of hiking trails. Disturbed areas generally have highly compacted soils and provide little habitat for plants or animals.

Settling ponds and operational water features - Settling ponds for quarry runoff and operational water ponds were identified within and adjacent to the RPA Area as identified in the Biological Resources Assessment.

Sensitive Communities

Wetland - Wetlands mapped on the Permanente Property include two types of wetland: wetland seeps and freshwater emergent wetlands. Wetland seeps are not described in Holland (1986) but are characterized by a dominance of perennial herbs and ferns that are adapted to wetland conditions. On the Permanente Property,

wetland seeps occur along slopes where freshwater lenses intersect the soil surface, or along intermittent spring-fed streams. Wetland seeps on the Permanente Property are dominated by California elk clover (*Aralia californica*), wild ginger (*Asarum caudatum*), giant chain fern (*Woodwardia finbriata*), maiden hair fern (*Adiantum jordanii*), and five-fingered fern (*Adiantum aleuticum*). Wildlife observed in this plant community on the Permanente Property include Stellar's Jay, Bewick's Wren, and California Newt (*Taricha torosa*).

Emergent freshwater wetland occurs in quiet sites permanently flooded with freshwater (Holland 1986). This community is dominated by perennial emergent monocots to five meters tall. Characteristic species of this community type include sedges (*Carex* sp.), bulrush (*Scirpus* sp.), cattails (*Typha* sp.), and spike rush (*Eleocharis* sp.). This community type occurs along the California coast and in coastal valleys near river mouths and around the margins of lakes and springs.

Emergent freshwater wetland on the Permanente Property includes areas adjacent to Permanente Creek which are permanently flooded and host a plant community dominated by perennial emergent grasses and herbs. Four constructed sedimentation basins (Ponds 13, 14, 21 and 22) were mapped as freshwater marshes due to the recruitment of this plant community in the accumulated sediments between maintenance cycles. Species typical of this community type on the Permanente Property include cattail, watercress (*Rorippa nasturtium* ssp. *aquaticum*), field horsetail (*Equisetum arvense*), stinging nettle (*Urtica dioica*), and short spike hedge nettle (*Stachys pycnantha*). Wildlife observed in this plant community on the Permanente Property include Song Sparrow (*Melospiza melodia*), Pacific Tree Frog (*Pseudacris regilla*), and Red-winged Blackbird (*Agelaius phoeniceus*).

Willow riparian forest and scrub - Willow riparian forest and scrub is not described in Holland (1986), but is characterized as a riparian community dominated by various willow species (*Salix* spp.). Species typical of this community type include arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and black willow *(S. gooddinggii*). The overstory ranges from dense to open, and heights range from one to six meters. Associated understory species include short spike hedge nettle, stinging nettle, poison oak, California blackberry (*Rubus ursinus*), and western creek dogwood (*Cornus sericea* ssp. *occidentalis*). It occurs along flat areas adjacent to Permanente Creek and wet tributaries. Wildlife observed in this plant community include Lincoln's Sparrow (*Melospiza linconii*), Wilson's Warbler (*Wilsonia pusilla*), and Great Blue Heron (*Ardea herodias*).

White alder riparian forest - White alder riparian forest is described in Holland (1986) as a medium-tall broadleaf deciduous streamside forest dominated by white alder (*Alnus rhombifolia*) typical of perennial streams in incised canyons below 6,000 feet. Stands in the coast ranges have abundant willows, poison oak, California wild rose (*Rosa californica*), and snowberry in the understory. Associated species include bigleaf maple, western creek dogwood, and Oregon ash (*Fraxinus latifolia*). White alder riparian forest is best formed along rapidly flowing, bedrock-constrained, steep sided canyons, so the riparian corridor is typically narrow.

White alder riparian forest was mapped on the Permanente Property along portions of Permanente Creek. This community type on the Permanente Property is dominated

by white alder with abundant bigleaf maple, western creek dogwood, willows, poison oak, and snowberry. Wildlife observed in this plant community on the Permanente Property include Nuttall's Woodpecker (*Picoides nuttallii*), Black Phoebe (*Sayornis nigricans*), and Pacific Slope Flycatcher.

Oak woodland – Several oak woodland community types are described in more detail in Holland (1986), but were lumped in this vegetation mapping effort due to the lack of dominance of one oak species in most of the woodlands encountered within the RPA Area. Species characteristic of these oak woodland types include blue oak (*Quercus douglasii*), coast live oak, canyon live oak, California buckeye, grey pine (*Pinus sabiniana*), California bay, elderberry, toyon, madrone, coffeeberry, poison oak, gooseberries (*Ribes* spp.), and manzanitas. These oak woodland types are distributed throughout California typically in protected valleys and north-facing slopes, intergrading with chaparrals on drier sites and mixed evergreen forests on moister sites.

Oak woodlands were mapped within the RPA Area primarily along north-facing slopes and in valley bottoms. Oak woodlands are predominantly characterized as coast live oak and blue oak woodlands. A few small pockets of oak woodland dominated by interior live oak (northern portion of the Permanente Property) are also present. Oak woodlands within the Permanente Property have dense and diverse overstories containing madrone, tanbark oak (*Lithocarpus densiflorus*), and California bay with occasional grey pine, and douglas-fir (*Pseudotsuga menziesii*). Species characteristic of the understory include poison oak, coffeeberry, ocean spray (*Holodiscus discolor*), elderberry, toyon, and gooseberries. Wildlife observed in this plant includes Cooper's Hawk (*Accipiter cooperii*), Oak Titmouse (*Oak Titmouse*), and California Deer Mouse (*Peromyscus californicus*).

Streams and ponds - Streams and ephemeral drainages were mapped within the RPA Area. The most significant of these is Permanente Creek, a perennial stream that flows adjacent to the RPA Area from its headwaters in the west to the northeastern boundary of the site. Portions of the creek typically convey surface water for only a few weeks during annual peak rains. Tributaries to Permanente Creek as well as tributaries to Ohlone Creek to the north and to Monte Bello Creek to the south of the RPA Area were mapped and are described in detail in a jurisdictional determination report submitted to the U.S. Army Corps of Engineers in January 2010. A complete description of all vegetation communities and wildlife identified on-site can be found in the Biological Resources Assessment (Attachment D).

Figure 2.6-1 Soil Types

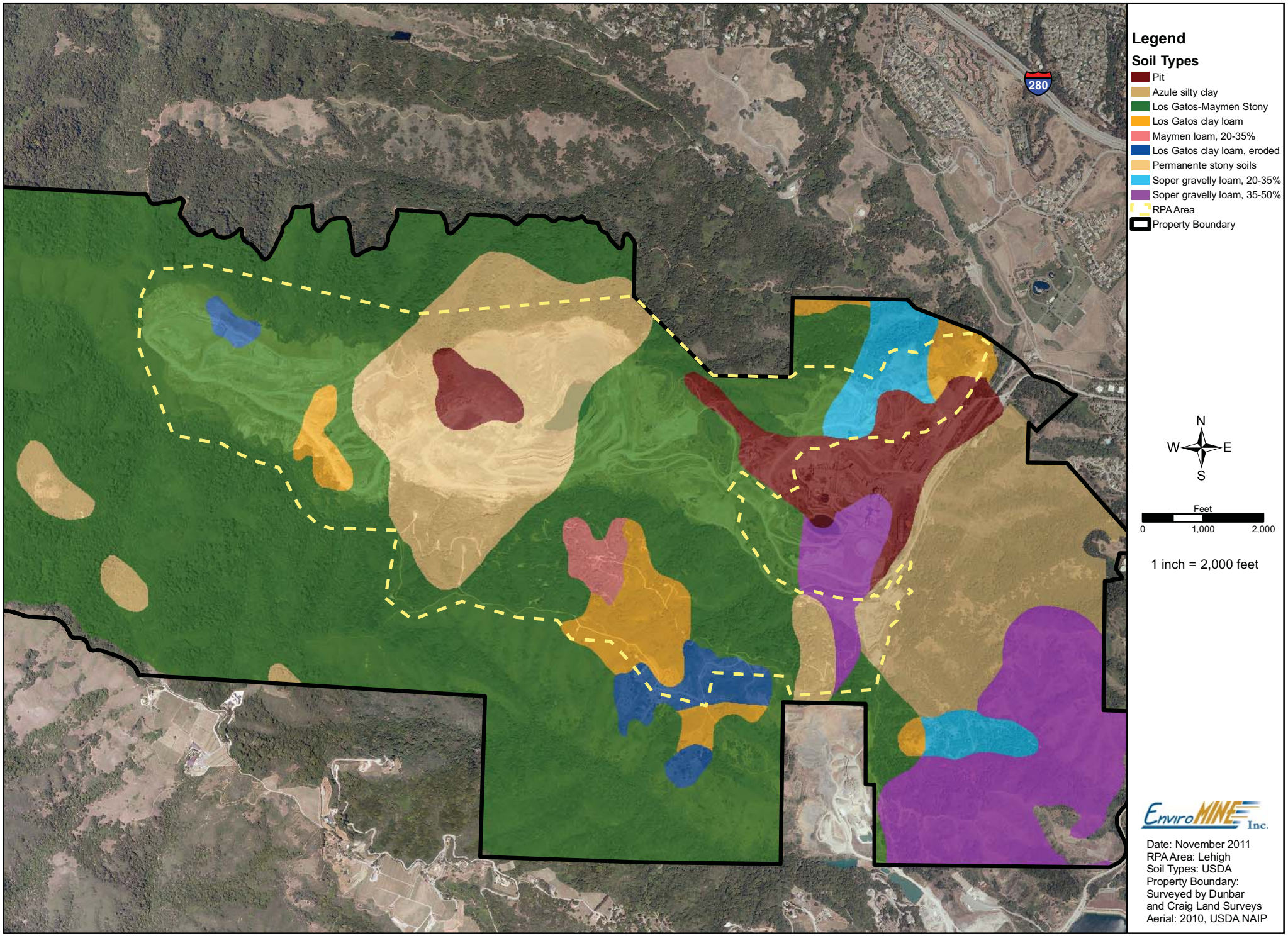


Figure 2.7-1 Existing Topography

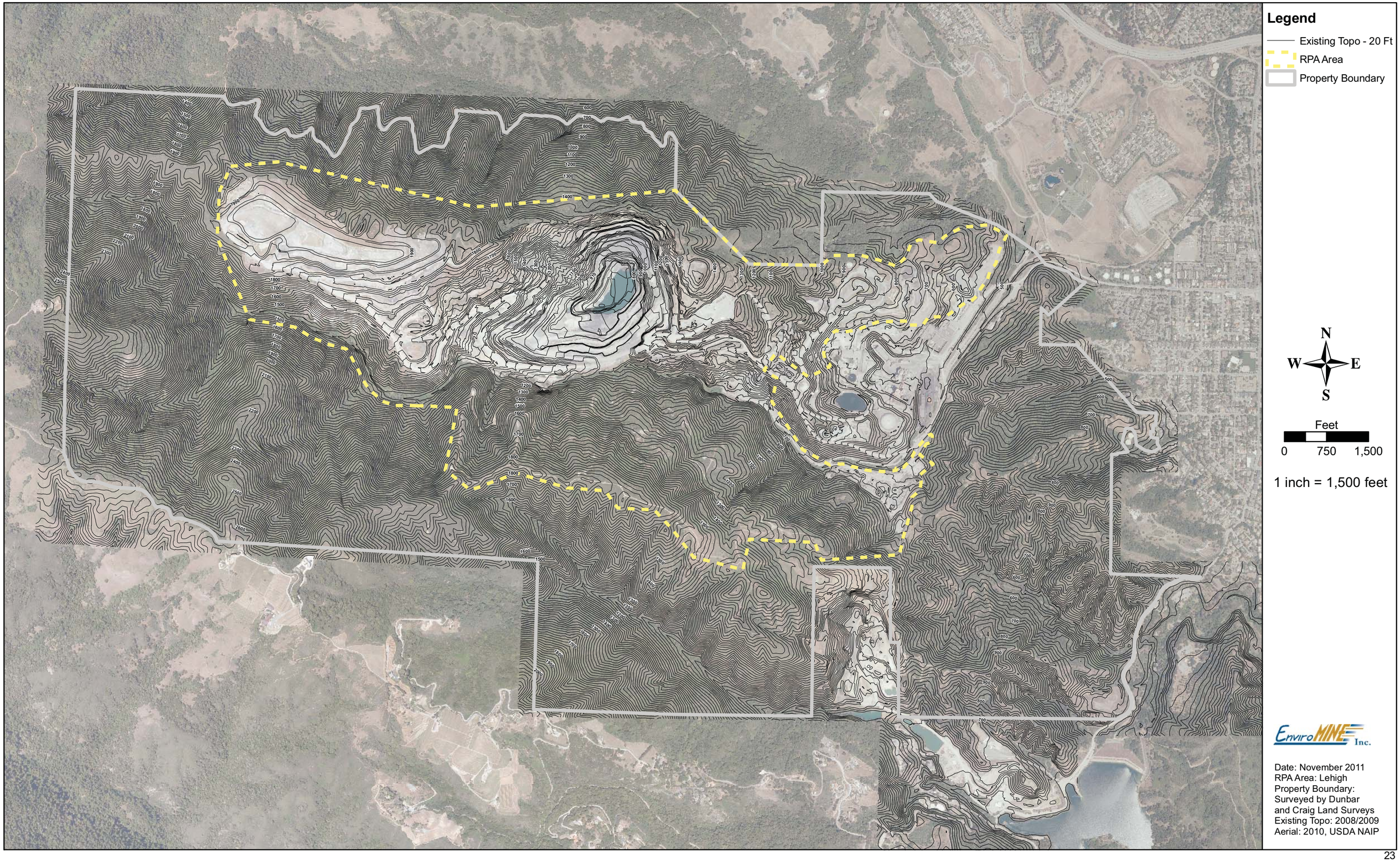
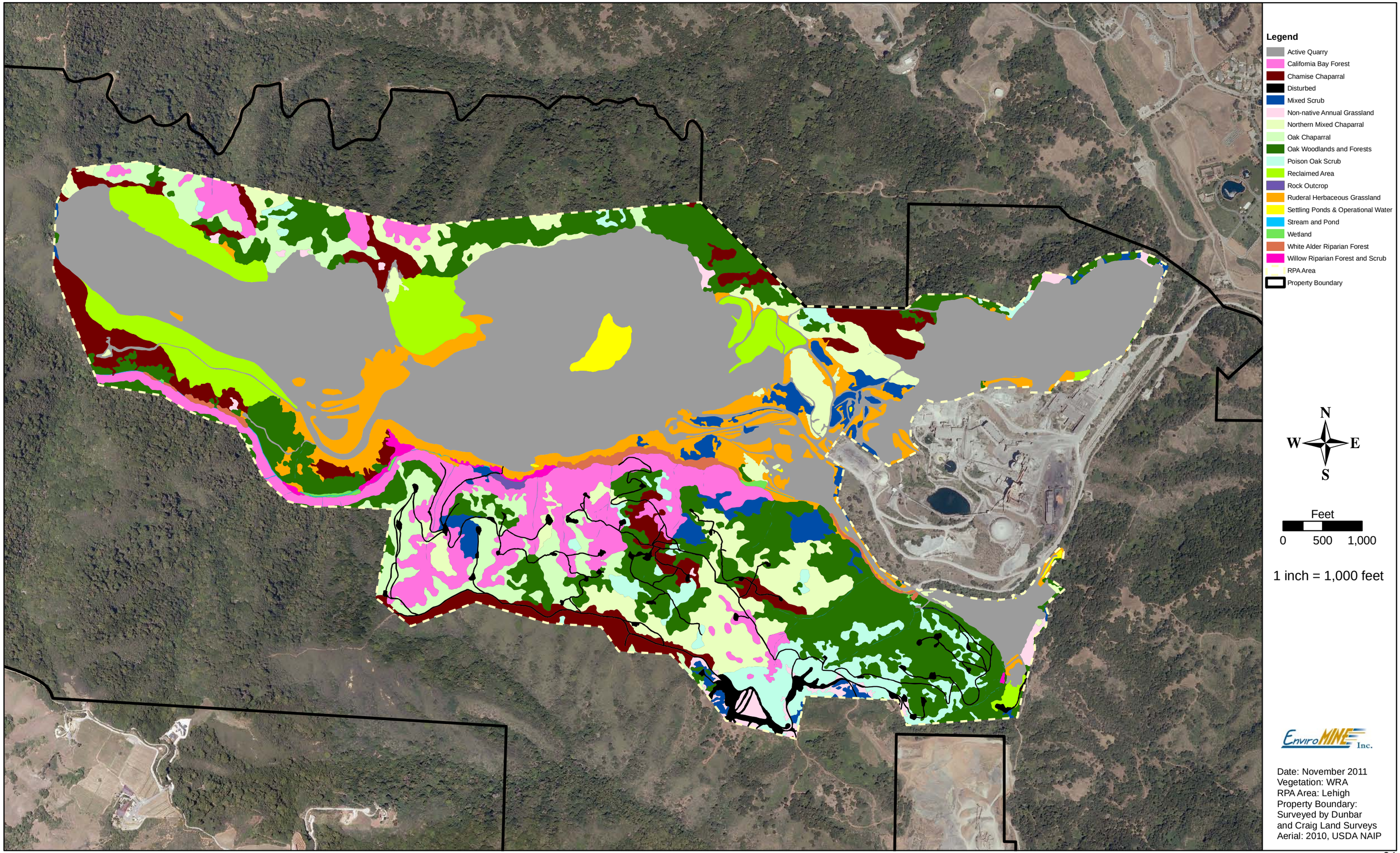


Figure 2.9-1 Vegetation Communities



3.0 Reclamation Plan

3.1 Owner / Operator / Agent

Owner:

Hanson Permanente Cement, Inc.
300 E. John Carpenter Freeway #1645
Las Colinas, TX 75062

Operator:

Lehigh Southwest Cement Company
12667 Alcosta Blvd., Suite 400
San Ramon, CA 94583

Site Contact:

Henrik Wesseling, Plant Manager
24001 Stevens Creek Blvd.
Cupertino, CA 95014-5659

3.2 Operations Data

The Amendment incorporates approximately 1238.6 acres (RPA Area) of the greater 3,510 acre ownership. Of the 1238.6 acres, 614 acres represents existing and scheduled mining and reclamation activities. The remainder is composed of "buffer" areas that will not be disturbed by mining activities, and a reclamation area addressing predominantly historic mining disturbance in and adjacent to Permanente Creek (Figure 1.0-6).

Mineral Commodity

The Quarry primarily produces limestone for cement production and low calcium carbonate limestone for construction aggregate uses. In this document, "limestone" refers to cement-grade limestone, and "aggregate" means other limestone grades and greenstone suitable for use in construction aggregate products. "Overburden" refers to overburden and rock materials that are not suitable for use as limestone or aggregate.

Starting Date of Operations

The Quarry is currently active and has been in continuous operation since the early 1900s.

Estimated Life of Operation

Mining operations at the Quarry will continue for an estimated 14 years or more, assuming a robust market demand for construction materials. Mining operations during Phase 1 will initially include extraction in the North Quarry and disposal of overburden in the East Materials Storage Area and North Quarry west wall. Subsequently, Phase 2 mining operations will shift to extraction and reprocessing from the West Materials Storage Area and the production and disposal of overburden

from the West Materials Storage Area to the North Quarry. Under this schedule, mining operations are estimated to terminate by December 31, 2025.

Total Anticipated Production

The total anticipated production of aggregate and limestone is estimated at 35-45 million tons. The maximum anticipated depth of the North Quarry excavation is 440 feet msl.

3.3 Operational Characteristics

The RPA Area is comprised of the components listed in Table 1 and described in more detail below.

Table 1. Quarry Components

Component	Acreage
North Quarry	264.9
West Materials Storage Area	172.6
East Materials Storage Area	75.2
Crusher and Support Area	53.4
Surge Pile	8.8
Rock Plant	19.1
Exploration Areas	19.5
Buffer Zones	599.3
Permanente Creek Reclamation Area Disturbance	49.2[1]
Total RPA Area	**1238.6**

North Quarry: The North Quarry is where mineral extraction currently takes place. The North Quarry will encompass approximately 264.9 acres at build-out. The North Quarry currently features elevations ranging from approximately 750 feet msl to 1,750 feet msl. Existing slope angles in the North Quarry are 1.0H:1.0V overall. Under this Amendment, mineral extraction in the North Quarry will continue for a limited time, and thereafter the North Quarry will be backfilled with material currently stored within the WMSA. This process will completely backfill the North Quarry, and establish final elevations between 990 and 1,750 feet msl. Approximately 12 million tons of backfill material will be generated by ongoing mining operations in the North Quarry, to be placed initially in a buttress against the North Quarry's west wall. Subsequently, an additional 48 million tons will be excavated from the WMSA as backfill material. Backfilling will create gentler slope angles at a maximum of 2.5H:1.0V that will be generally consistent with the surrounding topography and which ensure long-term slope stability.

[1] The PCRA acreage listed in the table includes 23.3 acres that also are categorized in the table also as WMSA but not double counted in calculating the total RPA Area. This portion of the WMSA will be subject to the PCRA interim erosion controls in Section 3.19.

East Materials Storage Area (EMSA): The EMSA accepts overburden and low-calcium limestone generated by mining at the Quarry, and is currently the main overburden storage site for mining operations. The EMSA is located near the eastern border of the RPA Area. The EMSA is designed to accept total overburden placement of approximately 6.5 million tons (approximately 4.8 million cubic yards), and provide overburden storage until approximately 2015 (see Section 3.16 below). Actual storage quantities and timelines are estimates, which depend on market demand, the rate of overburden production, and other operational factors. The final elevations in the EMSA at reclamation will be a maximum of approximately 900 msl, and overall slope angles reach a maximum gradient of 2.6(H):1.0(V). Operational phases for the EMSA are shown in Figures 3.16-5 through 3.16-7. The post-reclamation landform is shown on Figure 3.16-9.

West Materials Storage Area (WMSA): The WMSA is an overburden storage area located to the west of the North Quarry. The WMSA currently includes approximately 140 acres with elevations ranging from approximately 1,500 to 1,975 feet msl. Approximately 48 million tons of overburden currently stored in the WMSA will be utilized to backfill the North Quarry. This will eventually deplete most of the WMSA's overburden stockpiles and return the area to a lower elevation. During the overburden relocation process, valuable limestone and aggregate may be screened out for processing. The ultimate landform for the WMSA will cover about 172.6 acres with a maximum elevation of approximately 1,900 feet msl. Overall slope angles in the WMSA reach a maximum gradient of 2.5(H):1.0(V).

Crusher and Support Area: The Crusher and Support Area is an existing area which contains primary and secondary crushing stations, Quarry offices and maintenance areas. The Crusher and Support Area is located to east of the North Quarry and to the west of the EMSA. This part of the Quarry currently totals approximately 60 acres and serves as a general support area for ongoing operations. Approximately 7 acres of the Crusher and Support Area will be incorporated into the North Quarry under this Amendment, reducing the final acreage to approximately 53.4 acres.

Surge Pile: The Surge Pile is an existing stockpile of crushed aggregate located southeast of the North Quarry. The Surge Pile covers approximately 8.8 acres, and holds aggregate materials pending further processing at the Rock Plant to the southeast. Material is transported from the Surge Pile to the Rock Plant via conveyor belts.

Rock Plant: The Rock Plant is an existing rock processing facility. The Rock Plant is located to the southeast of the Surge Pile. The facility occupies approximately 19.1 acres with gentle slopes ranging from approximately 580 to 770 feet msl. The Rock Plant is a collection of crushing, conveying, screening and washing facilities that processes rock into an assortment of types and grades of aggregate products. Aggregate products are stored in silos or stockpiles until picked up by customers' haul trucks.

Exploration Areas: The RPA Area includes approximately 19.5 acres associated with exploratory activities to the south of Permanente Creek. The disturbance within this area is comprised of former exploratory drilling sites and access roads along the

north-facing hillside above the creek. Much of this area has already been placed by the operator in active reclamation.

Buffer Zones: The Amendment will maintain approximately 599.3 acres of Buffer Zones within the RPA Area. Buffer Zones are primarily undeveloped lands and are characterized at the site mostly by steep hillsides and thick vegetation. Buffer Zones function to protect the Quarry from land use encroachment, and also to protect nearby land uses from the potentially adverse sights, sounds and other characteristics of mining. Buffer Zones also generally include areas that are within the RPA Area but will not be disturbed.

Permanente Creek Reclamation Area Disturbance: The RPA Area also includes a reclamation area totaling approximately 49.2 acres, located on the hillside slopes adjacent to Permanente Creek and within the creek channel. This area is composed of a combination of historic (pre-SMARA) mining disturbance, old mining-related fills that have recently eroded, areas disturbed by post-SMARA erosion-control activities, and other areas where the operator will be performing creek restoration. The area has been included in the Amendment at the County's request, and is subject to the reclamation treatments and standards set forth in Section 3.19.

Most of Lehigh's 3,510-acre property is not covered by this Amendment. These land holdings primarily hold undeveloped lands with steep hillsides and thick vegetation. To the extent that Lehigh's property outside of the RPA Area is valuable for future mining operations, Lehigh may develop them in the future.

Figure 3.3-1 Quarry Components

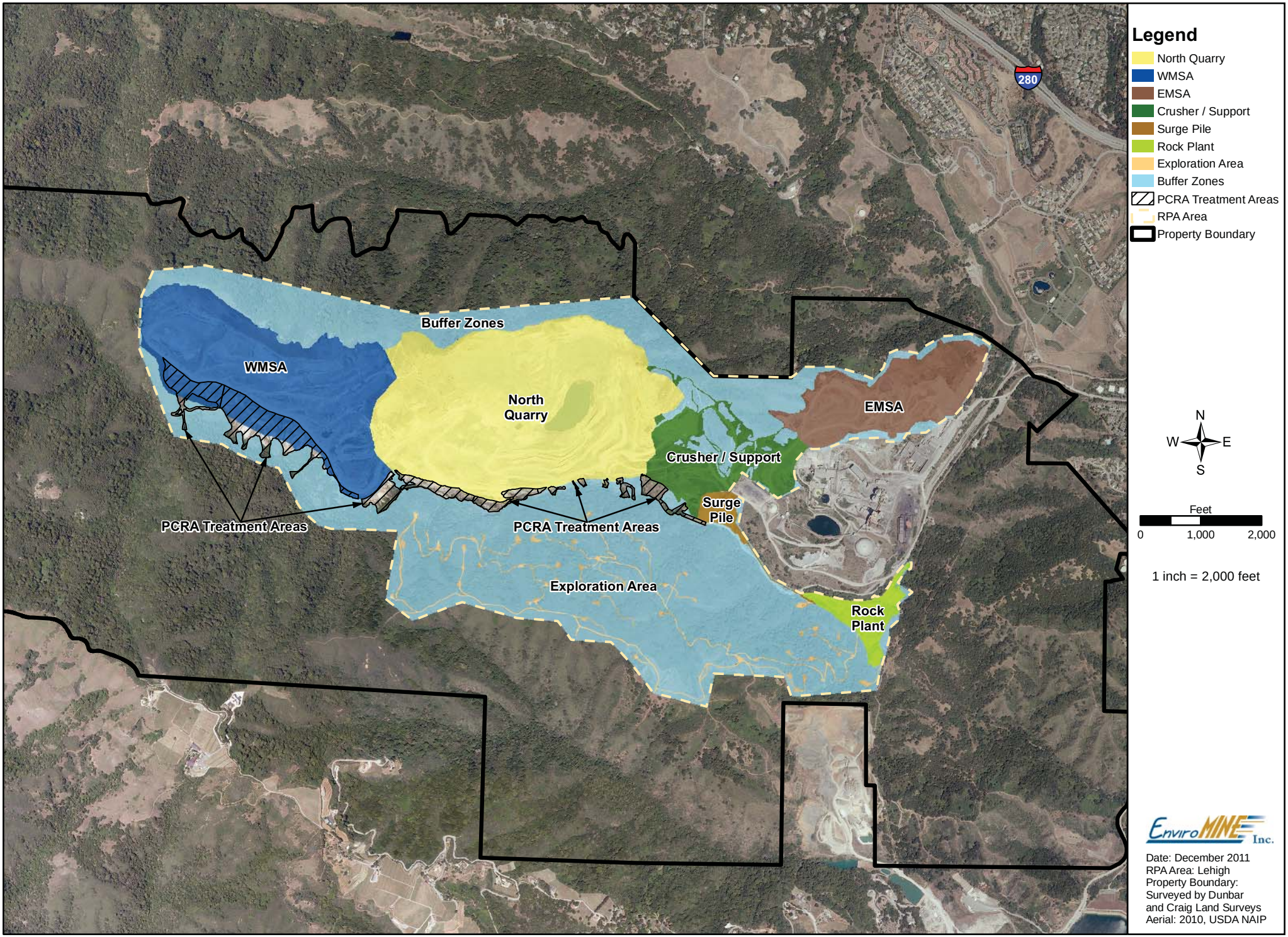
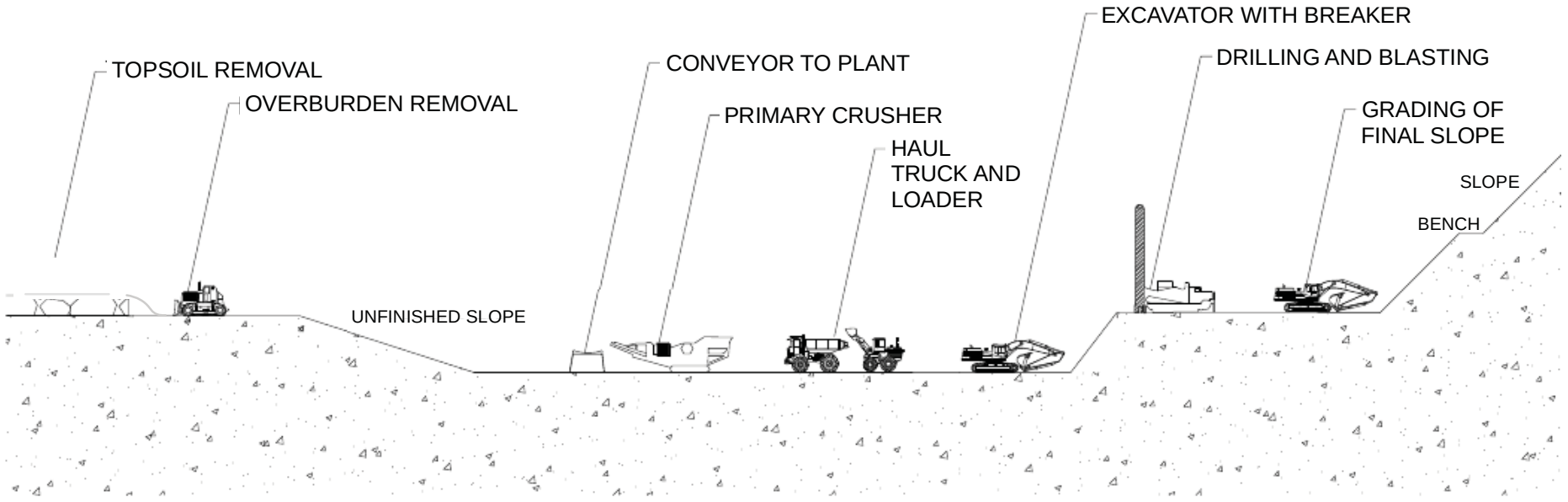


Figure 3.3-2 Mining Process



Not to Scale

EnviroMINE Inc.

Date: November 2011

General Description of Mining and Processing

Ongoing mineral extraction will occur only in the North Quarry. A description of mining and processing is included in the following sections. The mining process is illustrated on Figure 3.3-2.

3.4 Topsoil and Overburden Management

Extraction begins by harvesting any topsoil from mining areas to ensure that it remains available for later use during the reclamation process. Where topsoil remains in the North Quarry, it will be salvaged prior to mining and transported by haul trucks to temporary storage locations for later use in reclamation activities. Topsoil stockpiles will be clearly marked in the field for identification. Specific methods for storing topsoil to preserve and maximize nutrient values are included in the Revegetation Plan (Attachment B).

Following topsoil removal, the overburden is removed from the area to be mined. This occurs using heavy earth-moving equipment. Overburden is delivered by haul trucks to the EMSA, and eventually the North Quarry west wall. Arriving overburden material will be deposited by end-dumping to the angle of repose in a series of lifts and phases. (See Figures in Section 3.16). Materials are then keyed into existing slopes and rough-graded according to geotechnical recommendations.

3.5 Blasting

Ongoing North Quarry mining operations utilize blasting to loosen rock for extraction. Blasting occurs in the North Quarry at the rate of between one to two "shots" per week, depending on market demand and geologic factors encountered. A licensed blasting contractor is responsible for performing and supervising all blasting activities, including the following:

- Drilling pattern design
- Pre-blast inspection
- Load explosives
- Pre-blast notifications
- Detonation procedures including safety meetings, site security, and warning signals
- Post-blast inspection and re-entry procedures
- Maintenance of the blasting record

Blasting will generally occur Monday through Saturday from 10:00 a.m. until 6:00 p.m. No blasting will occur after sunset. No explosives are, or will be, stored on-site. Explosives are transported to the site as needed by a licensed and permitted explosives delivery contractor. Upon arrival, mine safety personnel inspect the transport vehicles for compliance with regulations and escort vehicles to the blast site. Ground vibration and air overpressure are monitored in each "shot" for compliance with the limits provided by the Office of Surface Mining Reclamation and Enforcement and the U.S. Bureau of Mines. Blasting activities are conducted in strict compliance with applicable Federal, State, and County requirements.

3.6 Material Handling

Blasted rock will be loaded into off-road haul trucks by front-end loaders. Limestone and aggregate will be delivered to the primary crusher for crushing, then delivery via conveyor belts to the Rock Plant or adjacent cement plant for further processing. Overburden generated from North Quarry mining activities will be hauled to the EMSA or North Quarry west wall.

3.7 Material Processing

The processing of mined rock begins with its removal from active extraction areas. Blasted rock is loaded into 100-ton or 150-ton off-road haul trucks by front-end loaders. Aggregate and limestone are delivered to the primary crusher located at the southeast of the North Quarry.

Once crushed, material is transported via belt conveyors to the Surge Pile and Rock Plant, or to the adjacent cement plant, depending on whether the rock is limestone or aggregate (Figure 3.7-1). Material destined for the Rock Plant is conveyed approximately 2,450 feet east (through a 550-foot tunnel) to a conveyor junction, then diverted south another 1,000 feet before discharging into the Surge Pile. Material placed in the Surge Pile is fed through vibrating screens to a conveyor belt, and transported southeast approximately 2,750 feet to the Rock Plant. Material destined for the cement plant follows the same initial path from the primary crusher to the conveyor junction, but is diverted before reaching the Surge Pile to an alternative route into the adjacent cement plant.

Additionally, the WMSA contains pockets of limestone and aggregates materials, which will be mechanically screened out as the WMSA is excavated. These materials will be transported via conveyors or haul trucks to the Rock Plant or adjacent cement plant for further processing as described in this section. Overburden material in the WMSA that is not marketable will be transported to the North Quarry for backfilling by off-road haul trucks and a fixed and temporary portable conveyor system. The conveyor system will be constructed during Phase II and will be relocated around the WMSA as backfilling of the North Quarry is completed. Proposed conveyor locations are shown on Figure 3.7-2, but may change depending on to geologic and operational conditions encountered during construction.

The Rock Plant occupies approximately 19.1 acres of the Quarry. The Rock Plant consists of equipment and facilities that screen, wash, sort and temporarily store processed materials prior to distribution off-site. It also consists of the following equipment as shown on Figure 3.7-3:

- Secondary and tertiary crushing units
- Series of vibrating screens and rock washing units
- Conveyors linking processing facilities with stockpiles
- Finished material stockpiles
- Imported sand stockpile
- Storage silos for customer loadout
- Access roads and customer loadout lanes
- Clarifying water basin and water storage tank

At the Rock Plant, material conveyed from the Surge Pile arrives at an initial crushing and screening station, then is distributed into a series of additional crushing and screening facilities, belt conveyors, and stockpiles. Crushed rock is screened and sorted to create the desired products. Crushing and screening units are enclosed and vented to particulate collection systems, known as baghouses, for dust control; water is sprayed at crushing units and conveyor transfer points to control dust.

The Rock Plant makes various sizes of aggregate products stored in a series of stockpiles. The Rock Plant imports a limited amount of sand that is blended with on-site sand to customer specifications. The Rock Plant does not include asphalt or concrete ready-mix facilities, nor are asphalt or concrete ready-mix facilities planned under this Amendment.

Aggregate products are placed onto customer trucks utilizing front-end loaders, or by positioning trucks underneath the Rock plant's four storage silos via fully-enclosed loading bins. Scales ensure that trucks are accurately loaded. Dust control measures, such as watering the aggregate materials, are employed when front-end loaders load aggregates directly to customer trucks from stockpiles.

All crushing, conveying and processing units currently operate according to Permits to Operate issued by the Bay Area Air Quality Management District (BAAQMD). Lehigh complies with all BAAQMD rules and regulations, including requirements for the control of fugitive dust. These requirements include the use of best available control technology (BACT), which includes enclosures, water sprays, and baghouses to reduce or eliminate dust emissions.

3.8 Operational Water and Dust Control

Water is used at the Quarry for dust control, and for washing aggregate rock products at the Rock Plant. Water used at the Quarry comes from two sources: the City of Cupertino municipal source and from water stored in the bottom of the North Quarry.

The Rock Plant uses water obtained from the City of Cupertino for material processing and dust control. Approximately 90 percent of the process water is recycled. Such water is collected after use and pumped to a clarifier located within the Rock Plant site. Solids settle and are periodically excavated and disposed of in a material storage area. Cleaned water is then reused.

Water collected in the North Quarry is used for controlling dust on unpaved access roads. Watering intervals for dust control depend on weather conditions, but generally occur multiple times per day. As the North Quarry is backfilled and ceases to hold water, a sump will be constructed within the North Quarry for storm water and erosion control purposes (see Section 3.9). Water stored in this sump will be used to support Quarry operations.

Figure 3.7-1 Quarry Conveyor Circuit

Figure 3.7-2 Portable Conveyor System For WMSA Extraction and North Quarry Backfilling

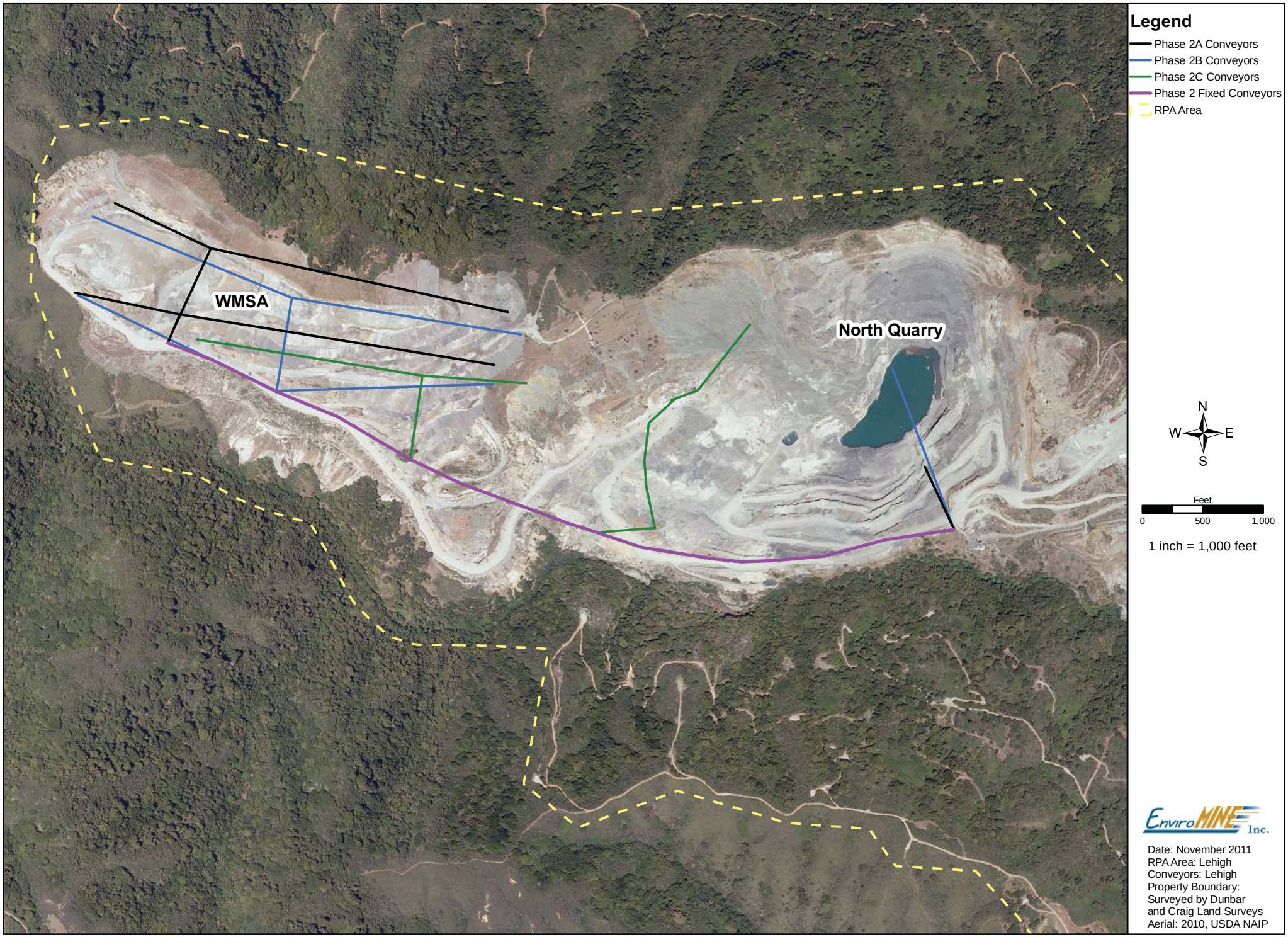
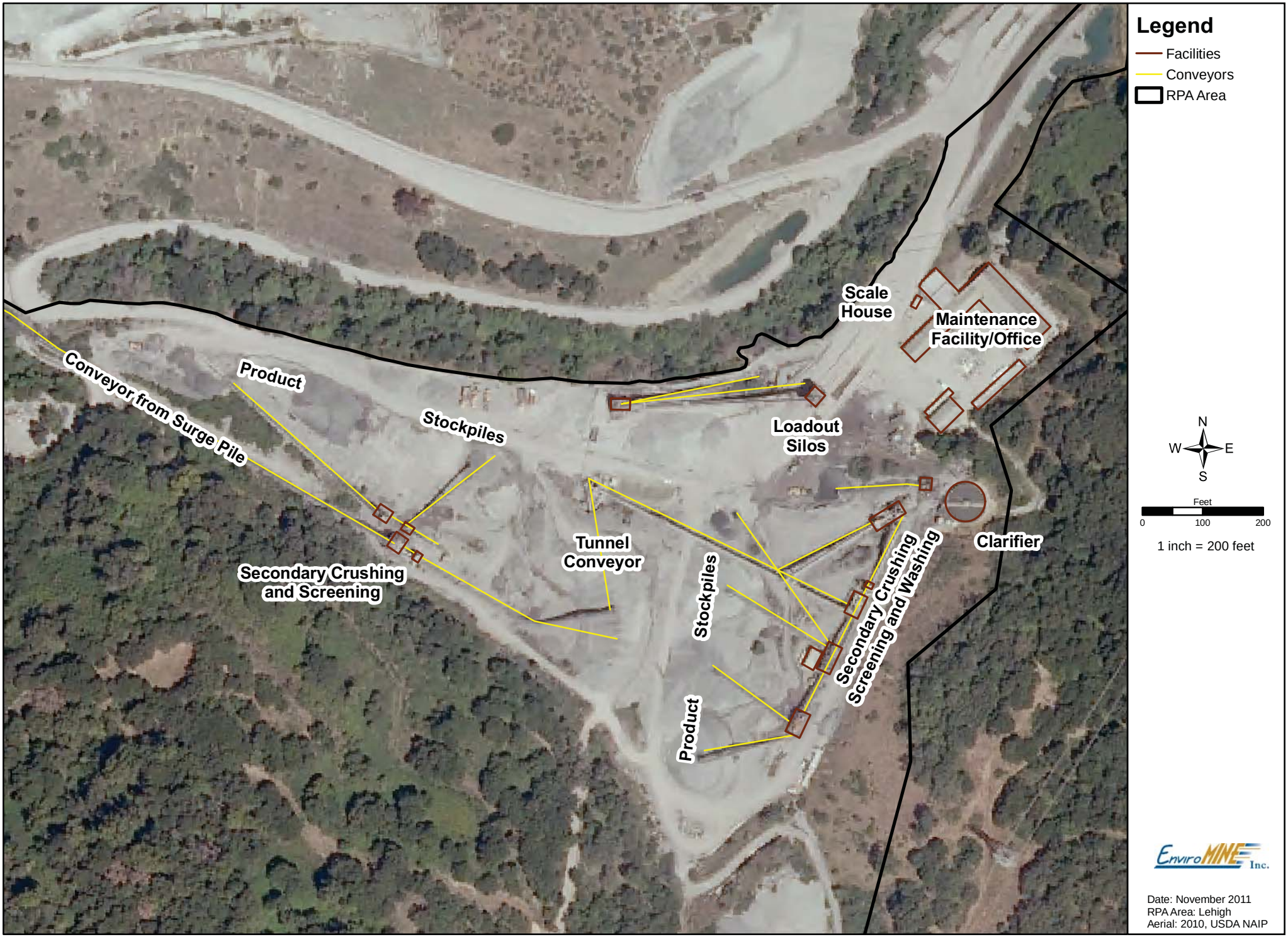


Figure 3.7-3 Rock Plant Facilities



3.9 Storm Water and Erosion Control

Activities described in this Amendment are 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. These goals are achieved through a series of Best Management Practices (BMPs) pursuant to the Drainage Report (Attachment F) and Storm Water Pollution Prevention Plan (SWPPP). Drainage and erosion controls apply at all stages of operation and reclamation, and are designed to exceed the 20-year storm event. These are described in more detail in Section 3.18 below. The SWPPP for the site will be amended following approval of this Amendment to include the additional drainage and erosion controls specified below and in the attachments.

3.10 Process Fines

Processing activities at the Rock Plant will generate some process fines that are not suitable for sale as aggregate products. These fines will be transported to the North Quarry for permanent storage. Alternatively, process fines may be blended with topsoil and overburden to support the revegetation effort, as described in the Revegetation Plan. Process fines have a clay loam texture and contains a substantially greater amount of silt and clay compared to the overburden rock. Blending the Rock Plant fines material with the overburden rock improves soil texture conditions.

3.11 Site Security and Safety

Consistent with existing operations, Quarrying activities will continue to take place 24 hours per day, 365 days per year under this Amendment.

Public health and safety are protected in accordance with SMARA and the County's standards for undeveloped land. Lehigh's property is located generally in an isolated area with limited access. The steep slopes and rugged terrain limit the potential for the public to trespass onto the property, which is privately owned, with the exception of the Mid-Peninsula Regional Open Space District (MPROSD) land to the north. In most areas, Buffer Zones and the Quarry Buffer provide appropriate distance between mining activities and adjacent non-owned lands.

A guard house controls vehicular access to the site at the western terminus of Stevens Creek Boulevard. Portions of the property boundary have been fenced near the MPROSD border where unauthorized access may be a problem. Elsewhere, the risk of unauthorized access is considered low and the property boundaries are posted with warning signs. Security fencing consists of 6-foot chain link fence with angle iron and barbed wire. All MSHA standards will be employed to protect both the public in general and onsite employees in particular.

Night lighting is employed within the Rock Plant and at strategic locations around the Quarry. Night lighting is designed to minimize glare onto neighboring areas, and to comply with the County Zoning Code, which requires the use of certain types of light fixtures on non-residential properties to minimize the amount of light cast on adjoining properties and to the night sky. Generally, pole-mounted sodium, metal

halide, or fluorescent lighting are employed to minimize energy use and, in combination with cut-offs, to reduce light pollution.

3.12 Utilities

Existing utility services to the Quarry include water from the City of Cupertino, electrical from Pacific Gas and Electric (PG&E), sewer and telecommunications. Major equipment, facilities and structures receiving electricity include:

- Primary crusher
- Secondary crusher
- Quarry conveyor
- Rock Plant conveyor
- WMSA Conveyor (not yet installed)
- Rock Plant (secondary and tertiary crushers, screens, conveyors)
- Quarry offices
- Quarry lighting of certain access roads, conveyors and processing facilities

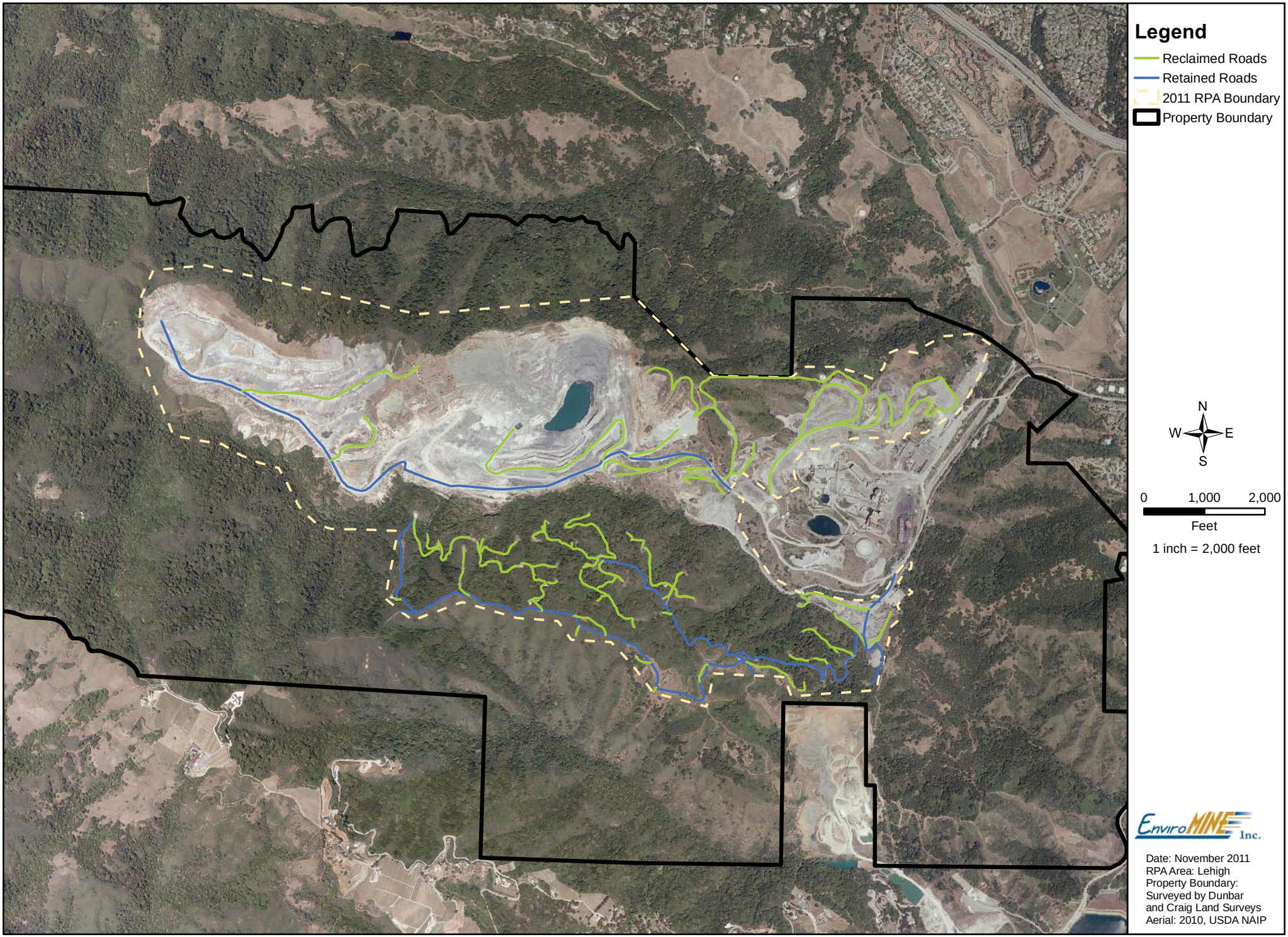
Sewage generated from the Quarry offices, comprised of two portable trailers located immediately east of the North Quarry, is disposed into a septic system. Portable toilets are stationed throughout the Quarry as needed. The septic system and portable facilities are properly maintained and cleaned with hand-wash stations provided at each portable facility.

Current conditions find an inactive power line and a gas pipeline crossing the EMSA. Prior to placement of overburden on these areas, the power line will be dismantled. The existing natural gas pipeline may remain in-place or be rerouted to serve existing facilities. Any infrastructure supporting mining and reclamation activities will be properly dismantled or abandoned in-place once their functionality for serving the Quarry has ended.

3.13 On-Site Access Roads

A network of roads exists within the RPA Area and is utilized by Lehigh to gain access to various areas of the site. On-site roads are used by quarry personnel for site access and to haul material around the site. Most roadways within the network are surfaced with gravel or are unimproved, however a small percentage are paved. Roadway widths range from 100' wide to 12' wide, to accommodate the wide range of vehicles that utilize the access roads. In total there are approximately 86,000 linear feet of roadways, approximately 55,000 feet will be reclaimed and 31,000 feet will remain for site access after reclamation is complete. On-site access roads to be reclaimed during the RPA reclamation and roads to be retained for post mining land use are shown on Figure 3.13-1)

Figure 3.13-1 On-Site Access Roads



3.14 Off-Site Traffic

Existing mining activities at the Quarry generate off- and on-site traffic. Generally, traffic occurs in one of the following categories:

- Customer haul trucks to Rock Plant
- Quarry employees
- Deliveries of materials and supplies
- Contractor visits
- Reclamation work crews

Customer haul trucks visiting the Rock Plant utilize Stevens Creek Boulevard, Foothill Boulevard, Highway 280, and the Foothill Expressway. There is a staffed guard house at the entrance to the property at the western terminus of Stevens Creek Boulevard. Upon entry through the main gate, haul trucks proceed to the south along a private road to the Rock Plant. Loaded haul trucks depart along the reverse course. Other types of traffic, including employees, delivery vehicles, contractors and reclamation crews, enter the property in the same fashion and travel to various areas of the Quarry using the existing road network.

No change in existing traffic levels is anticipated while mining operations continue. When the site enters final reclamation, off-site traffic can be expected to be reduced. 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.

3.15 Reclamation Overview

The post-reclamation land condition will be suitable for open space uses. This use is consistent with the applicable land-use policies and zoning requirements for the RPA Area. Accordingly, the reclamation objectives are to 1) visually integrate the post-extraction landform with surrounding areas 2) stabilize the post-extraction landform and control erosion, and 3) establish native species on revegetated areas using plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments, or fertilizer.

The following discussion provides a detailed description of the reclamation process for each Quarry component.

<u>North Quarry</u>

The North Quarry reclamation strategy is designed to achieve long-term slope stability, preserve the ridgeline on the North Quarry's northern rim, and create final contours that are consistent with the surrounding topography and open space end uses.

The central feature of North Quarry reclamation is the placement of a large volume of overburden within the North Quarry excavation (see Figures 3.16-2 through 3.16-4). The WMSA will be the primary source of this fill material. Continued mining in the North Quarry will also generate overburden that will be used as fill material. As

described in this Amendment, the progressive storage of overburden in the North Quarry will transform the existing mining excavation to a downward-sloping hillside that is generally consistent with the surrounding natural topography.

Backfilling will improve slope stability in four areas: 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 North Quarry's west wall. Each of these areas, and the measures scheduled to achieve long-term slope stability, are described in the Geotechnical Report (Attachment C). Backfilling will be accomplished using approximately 60 million tons of material, comprised of approximately 12 million tons generated by continued extraction in the North Quarry, and 48 million tons excavated from the WMSA.

The North Quarry will be reclaimed to maximum slope angles of 2.5(H):1.0(V) overall. Reclamation will generally proceed on a lift by lift basis as backfilling activities are complete in a given area of the North Quarry. After each lift is graded to final contours, revegetation will occur as described in the Revegetation Plan. In general, reclamation will consist of grading fill slopes to final contours, applying growth medium, installation of erosion control measures, reseeding and planting activities, and maintenance and monitoring.

Revegetation of the North Quarry will generally occur in three phases, A, B, and C, as shown in Figure 3.16-11. North Quarry Phase A will include reclamation of the upper elevations of the North Quarry northern and eastern faces, generally ranging between 990 and 1,460 feet msl. North Quarry Phase B will involve slopes below 1,300 feet msl. North Quarry Phase C will include the west face above 1,300 feet msl, the North Quarry floor, the main haul road, and any other areas within the North Quarry that have not been reclaimed (see Figure 3.16-11).

West Materials Storage Area (WMSA)

The majority of overburden currently stored in the WMSA will be utilized to backfill the North Quarry. This will deplete most of the WMSA's overburden stockpiles and return the area to a lower elevation. As part of the ultimate design, the eastern end of the WMSA will blend with the North Quarry, with final contours resembling naturally occurring south-facing slopes in the vicinity of the Quarry.

The WMSA stockpile will be excavated progressively in a general north-northwest to south-southeast direction. Final overall slope angles in the WMSA will not exceed 2.5(H):1.0(V).

In general, reclamation will consist of grading slopes to final contours, applying growth medium, installation of erosion control measures, reseeding and planting activities, and maintenance and monitoring. Where mining activities have resulted in the compaction of soil, ripping, discing or other means will be used to establish a suitable rooting zone in preparation for planting.

Reclamation will generally proceed in three phases, A, B and C as detailed in Figure 3.16-10. WMSA Phase A generally involves slopes above 1,750 feet msl. WMSA

Phase B consists of south-facing slopes between 1,650 and 1,750 feet msl. WMSA Phase C includes south-facing slopes below 1,650 feet msl. After each area is graded to final contours, revegetation will occur as described in the Revegetation Plan.

East Materials Storage Area (EMSA)

Reclamation in the EMSA is intended to establish final contours, native vegetation and oak woodland habitats that are consistent the surrounding area and topography. EMSA reclamation also is designed to improve views by visually screening on-site operations from the surrounding community (see Section 3.16.3.2).

The maximum elevation in the EMSA at reclamation will be approximately 900 msl. Interim elevations may temporarily exceed this height by a small extent prior to final contouring. Final overall slope angles in the EMSA will not exceed 2.6H:1V (Figure 3.16-9). These slopes will be comprised of 2H:1V inter-bench slopes, interrupted by 25-foot wide benches spaced at 40-foot vertical intervals. These slopes have been determined to be stable under static and seismic loading conditions and are suitable for the proposed end use. Fill slopes will conform to the surrounding hillside topography and natural contours.

Crusher and Support Area

Reclamation of the Crusher and Support Area will involve the dismantling and demolition of structures as required. The scrap will be sold for salvage value or removed from the site. Facilities located within the Crusher and Support Area include the primary crusher, secondary crushers and an equipment maintenance facility. A small amount of hazardous materials such as fuels, oils and other vehicle fluids are stored at the equipment maintenance facility. Containers holding these materials will be transported off-site by an approved carrier per State and Local regulations. The Quarry offices are portable and will be removed from the site. The above ground fuel tank located adjacent to the Quarry offices will be emptied, cleaned and tested per State and Local regulations prior to transporting offsite by an approved carrier.

Reclamation will consist of finish grading, applying growth medium, installation of erosion control measures, reseeding and planting activities, and maintenance and monitoring (Figure 3.16-12). Where mining activities have resulted in the compaction of soil, ripping, discing or other means will be used to establish a suitable rooting zone in preparation for planting. Revegetation will occur as described in the Revegetation Plan.

Surge Pile

The Surge Pile will be reclaimed by removing the stockpiled material and restoring to approximately the natural topography (Figure 3.16-12). Materials stored in the Surge Pile will be transported to the Rock Plant via conveyor belts or haul trucks. These materials may also be transported directly off-site from the Surge Pile. Following removal off all materials from the Surge Pile, structures including vibrating screens and conveyor belts will be dismantled and transported off-site. The scrap will be sold for salvage value or removed from the site.

Reclamation will consist of finish grading, applying growth medium, installation of erosion control measures, reseeding and planting activities, and maintenance and monitoring. Where mining activities have resulted in the compaction of soil, ripping, discing or other means will be used to establish a suitable rooting zone in preparation for planting. Revegetation will occur as described in the Revegetation Plan.

Rock Plant

Reclamation of the Rock Plant will involve the dismantling and demolition of structures as required. The scrap will be sold for salvage value or removed from the site. In addition to the processing plant structures, facilities located at the Rock Plant include a light vehicle maintenance facility and truck tire wash facility. A small amount of hazardous materials such as fuels, oils and other vehicle fluids are stored at the light vehicle maintenance facility. Containers holding these materials will be transported off-site by an approved carrier per State and Local regulations.

Reclamation will consist of finish grading, applying growth medium, installation of erosion control measures, reseeding and planting activities, and maintenance and monitoring (Figure 3.16-12). Where mining activities have resulted in the compaction of soil, ripping, discing or other means will be used to establish a suitable rooting zone in preparation for planting. Revegetation will occur as described in the Revegetation Plan.

Exploration Areas

Reclamation of the former exploration areas located south of Permanente Creek has already commenced. Reclamation will consist of finish grading, installation of erosion control measures, reseeding activities, and maintenance and monitoring (Figure 3.16-13). The relatively small amount of disturbance in this area consists of exploratory drilling pads and associated access roads. Most pads and roads have already been placed in active reclamation, and will be monitored and maintained in accordance with the reclamation standards that apply generally within the RPA Area. Those roads still in use will be reclaimed according to the same standards during Phase 1. The main roads in this area will be retained after reclamation for future site access (see Figure 3.13-1)

Permanente Creek Reclamation Area

Reclamation in the PCRA is described in Section 3.19 below. This section describes the reclamation treatment of approximately 49.2 acres on the hillsides adjacent to Permanente Creek and the creek channel. The reclamation treatments described in Section 3.19 emphasize erosion control and revegetation of the adjacent slopes, with limited areas of restoration in the creek channel.

3.16 Reclamation Phasing

This Amendment adopts phasing schedules to ensure that reclamation begins at the earliest possible time after the conclusion of mining. This section describes

reclamation phasing within the RPA Area with the exception that phasing in the PCRA subareas is contained in Section 3.19 below.

Activities described in this Amendment are scheduled to proceed in a total of three phases (Phases 1 through 3), shown in the table below. Reclamation in individual areas including the North Quarry, WMSA and EMSA also is subject to certain sub-phases, generally identified as A, B and C in each area. The actual timing of reclamation depends upon the rate of extraction and overburden storage, which is variable. The dates provided are estimates and may change subject to market demand and the quality of resource encountered during the mining process.

Table 2. Phasing Timeline

Phase	Years	Start Date	End Date
Phase 1	9	2011	2020
Phase 2	5	2021	2025
Phase 3	5	2026	2030

Existing conditions are shown in Figure 3.16-1. The attached Reclamation Plan Exhibits include maps detailing the progression of development for the North Quarry, WMSA, and EMSA. These maps show conditions at the conclusion of each phase for a given area. Illustrations of this progression also are shown in Figures 3.16-1 through 3.16-4.)

Figures 3.16-8 through 3.16-13 illustrate how the final treatment of lands (i.e., final grading, erosion controls, resoiling and revegetation) will progress from existing conditions to final reclamation. Mining and reclamation phases may overlap in time and extent. Additional time periods may apply to each phase to allow for maintenance and monitoring of revegetation activities until the reclamation goals and standards described below and in the Revegetation Plan are met.

The following discussion provides a general description of reclamation phases as they relate to mining phases and the anticipated beginning and ending dates for each reclamation phase.

Phase 1

Phase 1 covers the time period beginning with approval of the Amendment and ending when mining in the North Quarry concludes. The current estimate is for mining to continue in the North Quarry through at least 2020, although this schedule is dependent on market demands and conditions in the field. This phase is characterized by the closure and commencement of final reclamation in the EMSA, and reclamation of the exploration drill pads and roads south of Permanente Creek.

EMSA reclamation is scheduled to occur in Phase 1 and commence by or before 2015. Reclamation in the EMSA will proceed in three sub-phases, A, B and C, as detailed in Figures 3.16-5 through 3.16-7 and Figure 3.16-9. After each lift is graded to final contours, revegetation will occur as described in the Revegetation Plan. The eventual timing of reclamation depends upon the rate of overburden storage, which

is variable depending on market conditions and other factors. Additional time periods may apply to each phase to allow for maintenance and monitoring of revegetation until the reclamation goals and standards described below are met.

Because EMSA reclamation is scheduled to occur before mining concludes in the North Quarry, overburden storage activities in this phase will transition from the EMSA to the North Quarry west wall (Figure 3.16-2). During this phase, the west wall area will be backfilled to approximately 1,840 feet msl and will effectively link the western edge of the North Quarry with the eastern portions of the existing WMSA.

Phase 2

Phase 2 will commence when North Quarry extraction is complete, and the North Quarry is able to accept backfill material available from the WMSA. WMSA material will be placed within the North Quarry and tie into the west wall established during Phase 1. Materials will be keyed into slopes and rough-graded according to geotechnical recommendations. The backfill in the North Quarry will raise the depth of the North Quarry excavation from approximately 440 feet msl to 990 feet msl (see Figure 3.16-3).

Excavated WMSA material will be transported by either haul truck or a portable conveyor circuit. It is anticipated that at least 75 percent of the WMSA material can be transported by conveyor, with the remainder by haul trucks. Generally, oversized material (12-inch plus) will be separated by a mobile heavy-duty static grizzly, then stockpiled and loaded into trucks for transport to the North Quarry. Minus 12-inch size material will drop onto a heavy-duty belt feeder that loads a series of portable conveyors. These conveyors will transport material to the east to designated dump locations in the North Quarry for placement as backfill. Haul trucks will use the existing WMSA haul road to deliver backfill material to the North Quarry (see Figure 3.16-3).

Mining operations during this phase will occur directly from the WMSA stockpile as material is excavated and screened. Marketable limestone and aggregate materials will be separated then transported via conveyors or haul trucks to the Crusher and Support Area for additional processing. These materials will then be delivered to the Rock Plant or adjacent cement plant for further processing as described in Section 3.7.

This phase generally includes North Quarry Reclamation Phase A. Reclamation will also be initiated for North Quarry Reclamation Phase B and WMSA Reclamation Phases A and B.

Phase 3

Phase 3 includes final reclamation and will commence when the North Quarry has been backfilled to its ultimate height and configuration (Figure 3.16-4). This includes the removal of equipment and structures throughout the RPA Area, and use of any remaining materials in the Surge Pile for processing at the Rock Plant This phase also includes finish grading and revegetation activities in the WMSA (Sub-Phase C), North Quarry (Sub-Phase C), Crusher and Support Area, Rock Plant, Surge

Pile and other areas of disturbance shown on Figure 3.16-12. In the Crusher and Support Area, Phase 3 also includes the dealing and reclamation of the conveyor tunnel after the conveyor is dismantled and removed. Long-term monitoring and maintenance will continue in this phase until reclamation is certified as complete (Figure 3.16-13).

Final Reclamation

Final reclamation refers to the process of bringing areas in active reclamation to conclusion, according to the reclamation performance standards set forth in the Amendment (refer to Section 3.16). A complete description of reclamation activities can be found in Sections 3.14 through 3.16 of this Amendment and the Revegetation Plan.

Figure 3.16-1 Existing Operations

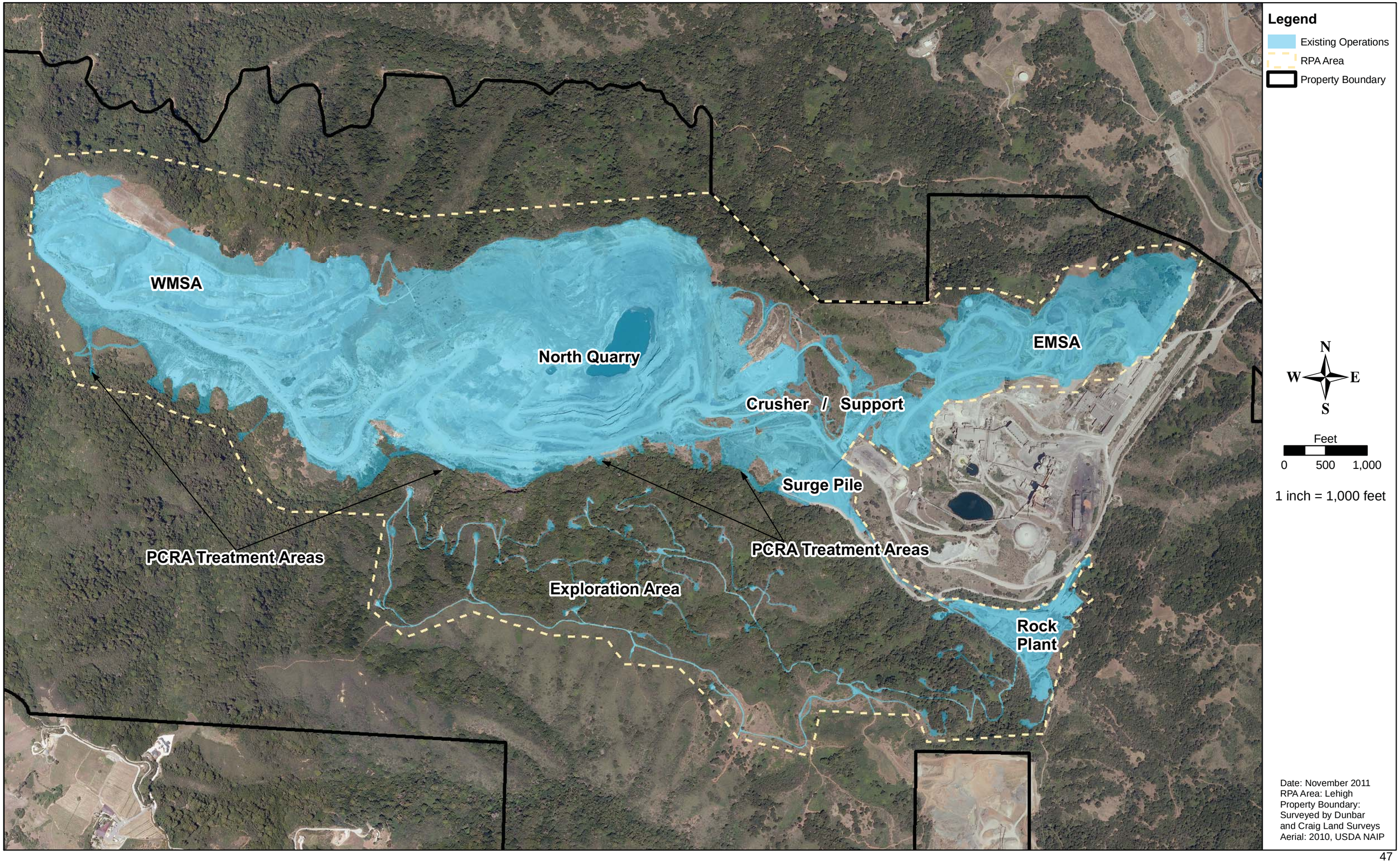
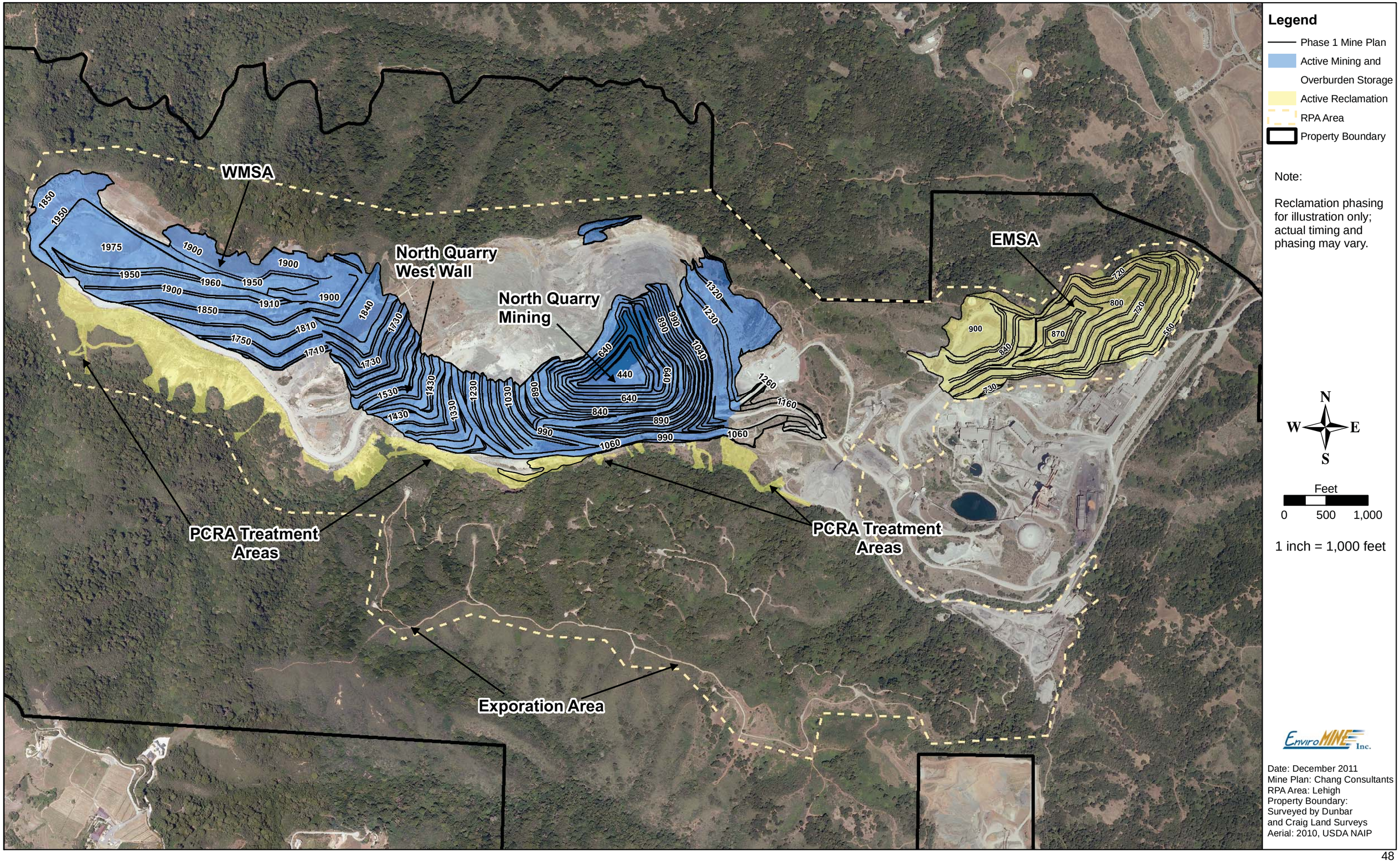


Figure 3.16-2 Mining and Reclamation Phase 1



Legend

- Phase 1 Mine Plan
- Active Mining and Overburden Storage
- Active Reclamation
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

Feet

0 500 1,000

1 inch = 1,000 feet

EnviroMINE Inc.

Date: December 2011
Mine Plan: Chang Consultants
RPA Area: Lehigh
Property Boundary:
Surveyed by Dunbar
and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-3 Mining and Reclamation Phase 2

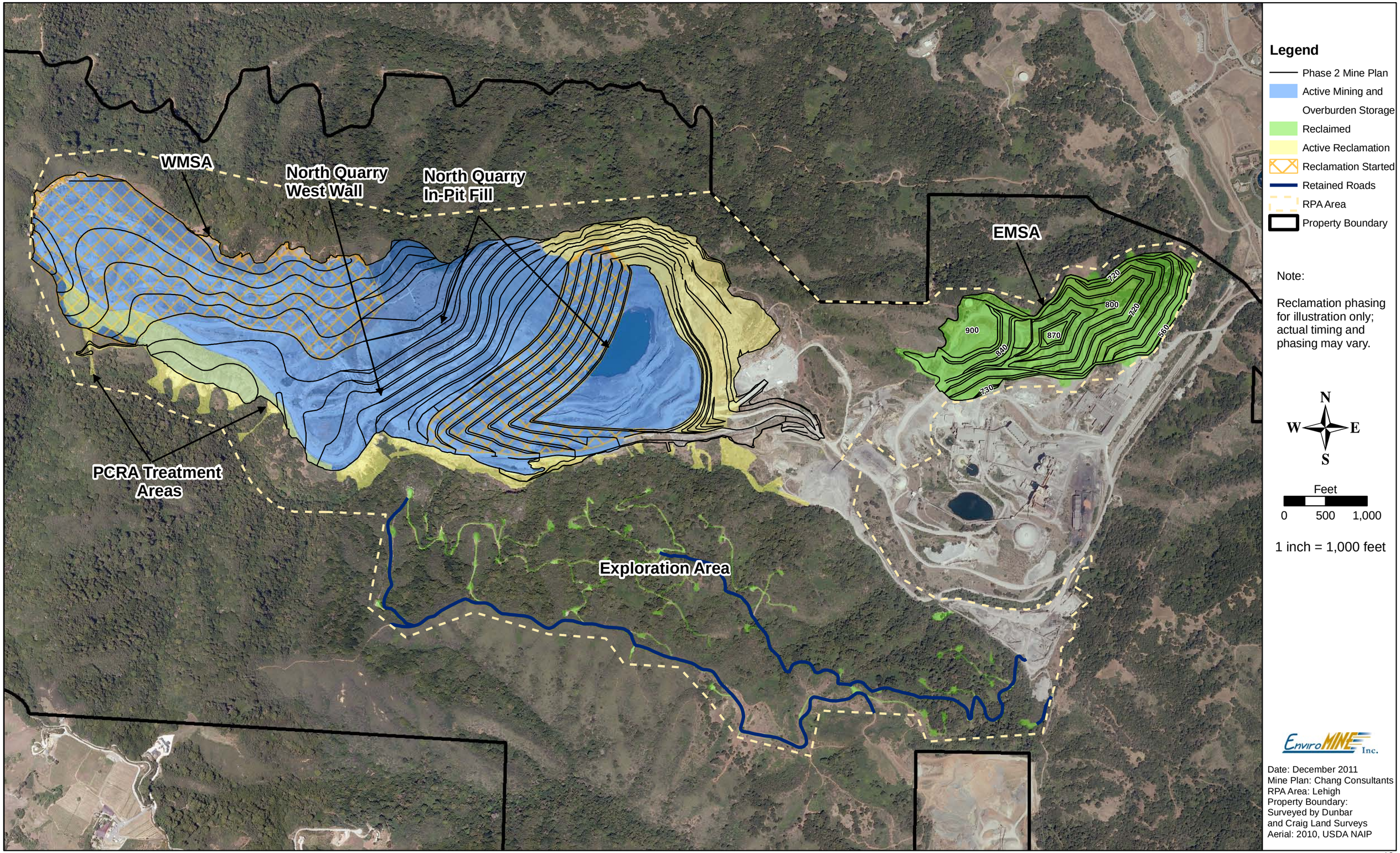
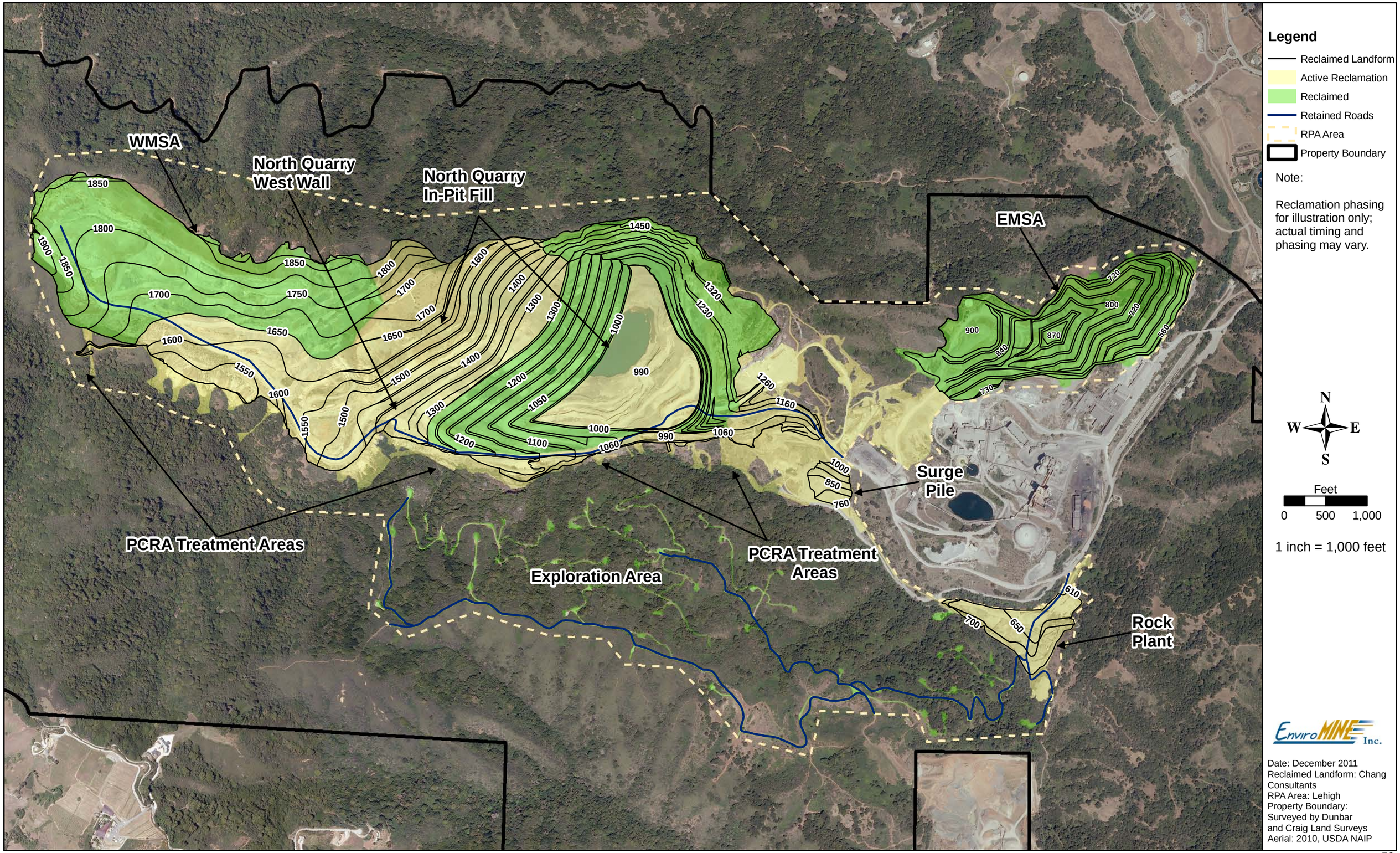


Figure 3.16-4 Mining and Reclamation Phase 3 / Final Reclamation



Legend

- Reclaimed Landform
- Active Reclamation
- Reclaimed
- Retained Roads
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

Feet
0 500 1,000

1 inch = 1,000 feet

EnviroMINE Inc.

Date: December 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-5 EMSA Subphase A

Figure 3.16-6 EMSA Subphase B

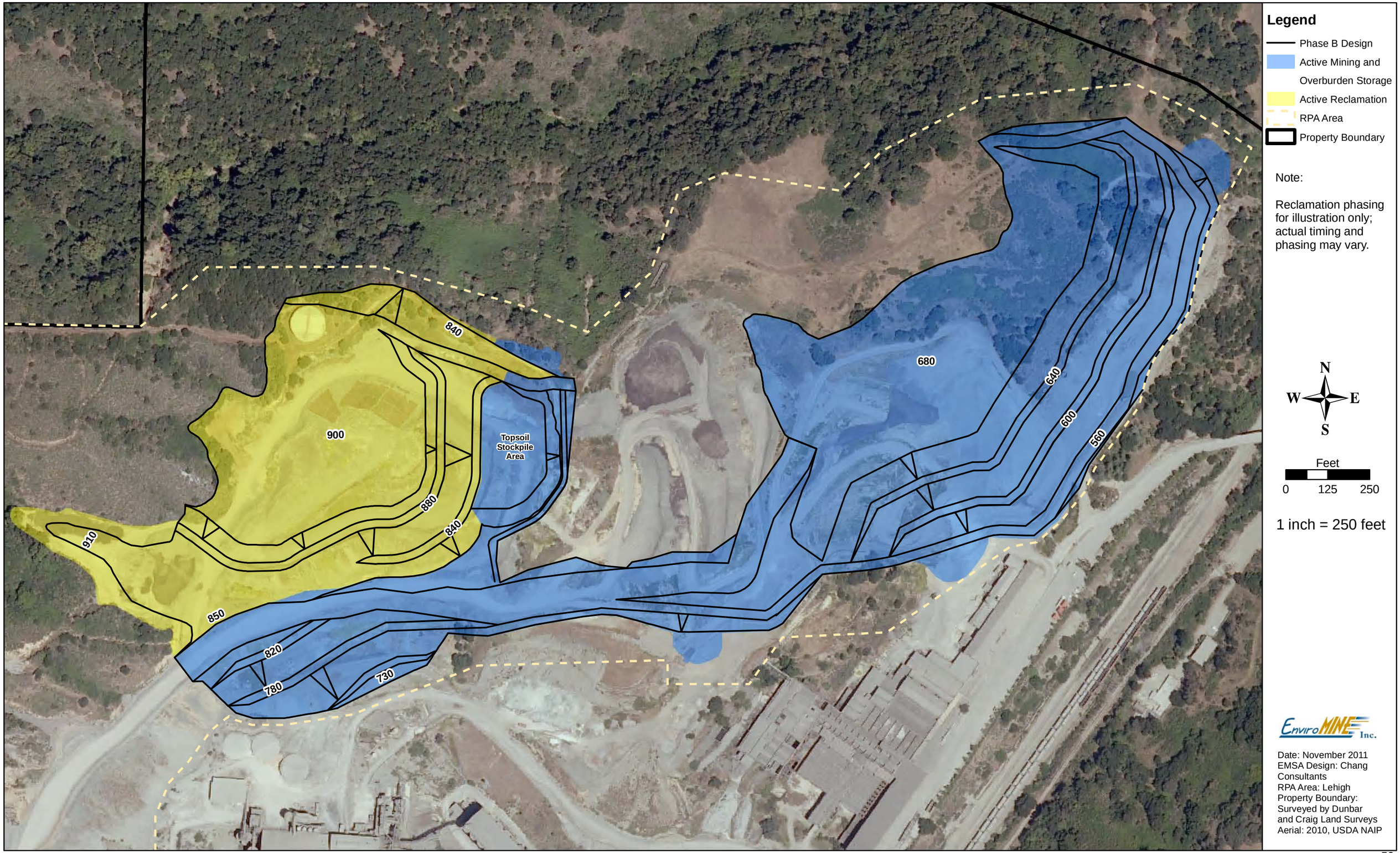
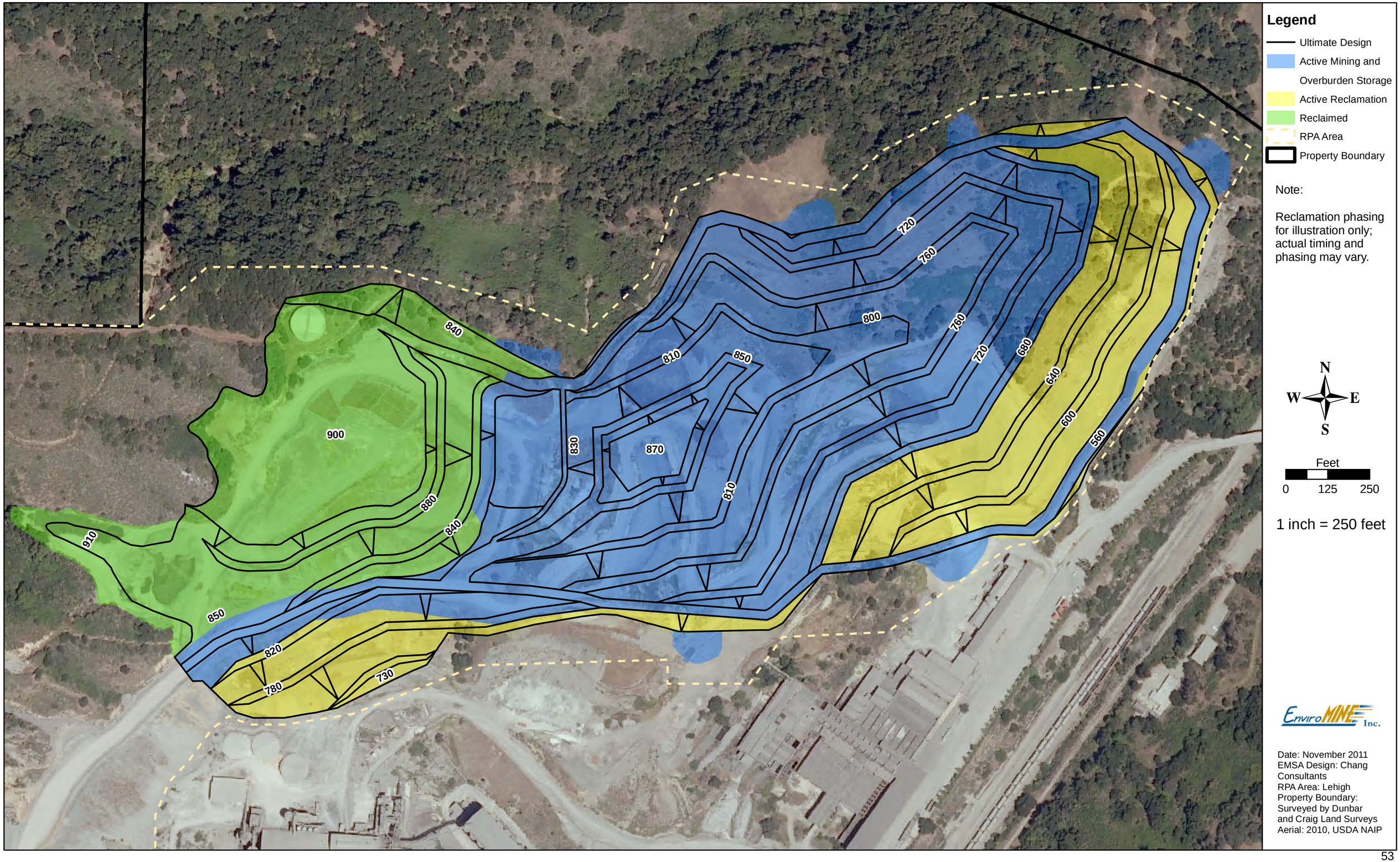


Figure 3.16-7 EMSA Subphase C



Legend

- Ultimate Design
- Active Mining and Overburden Storage
- Active Reclamation
- Reclaimed
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

Feet

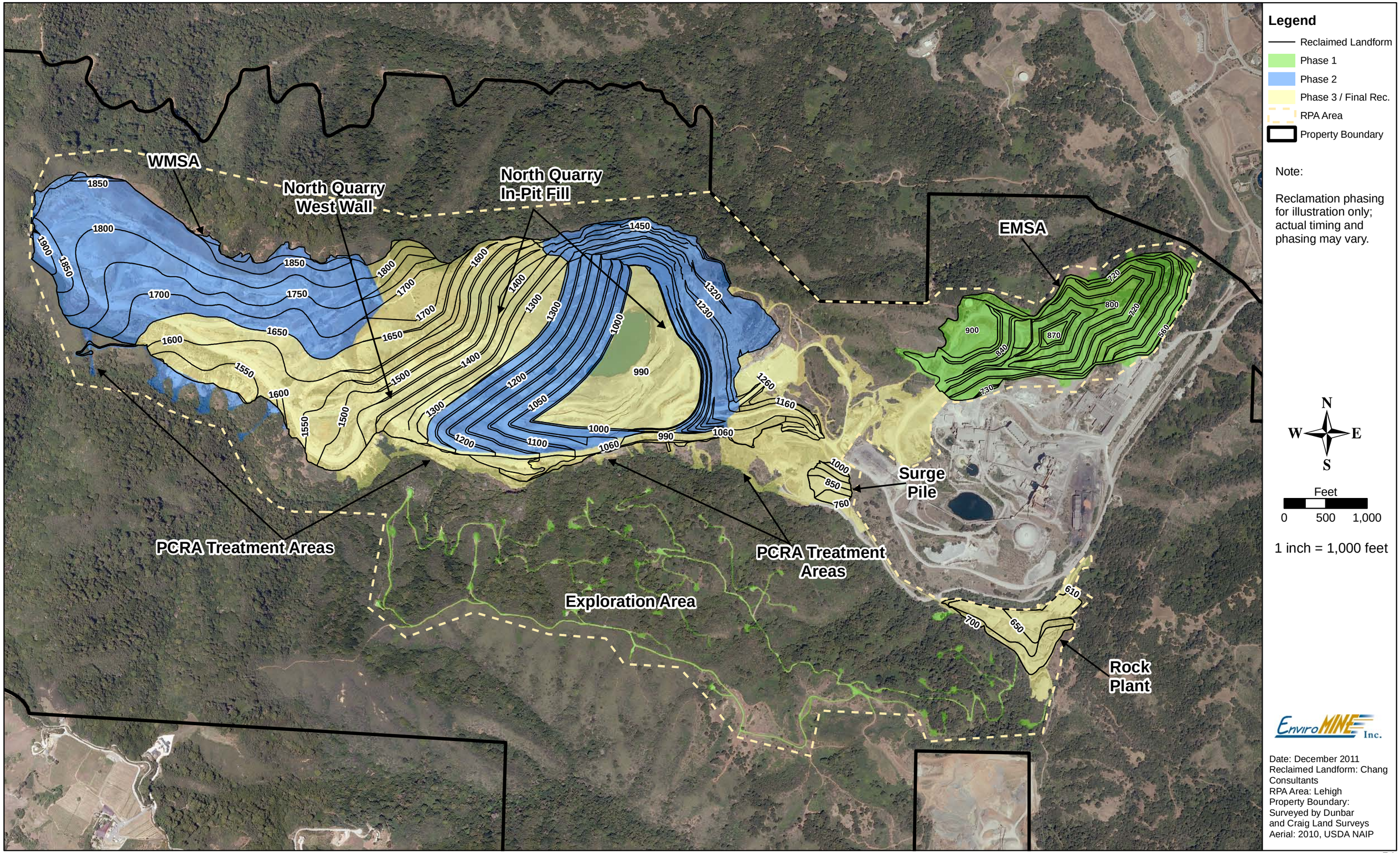
0 125 250

1 inch = 250 feet

EnviroMINE Inc.

Date: November 2011
EMSA Design: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-8 Reclamation Phasing Overview



Legend

- Reclaimed Landform
- Phase 1
- Phase 2
- Phase 3 / Final Rec.
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

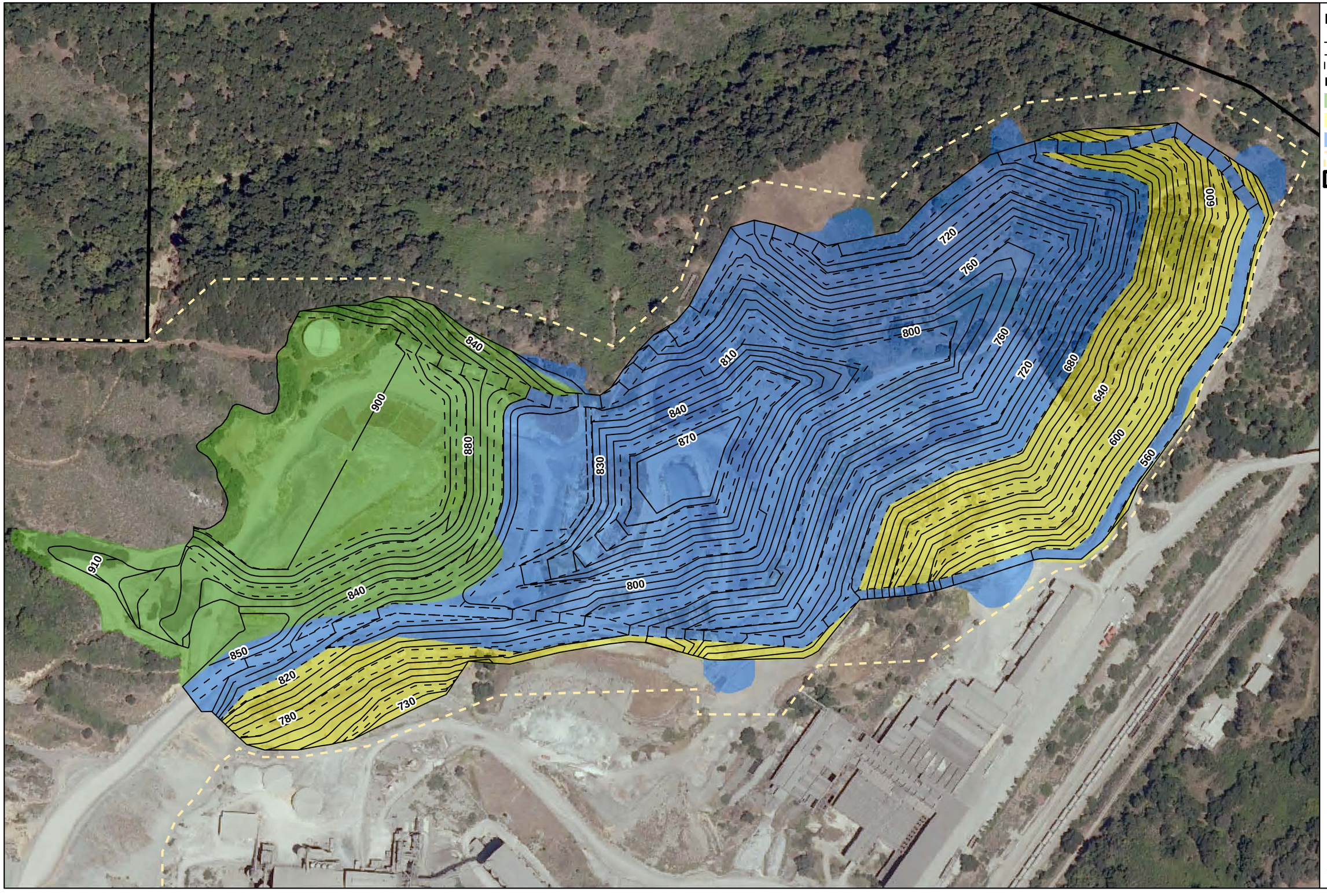
Feet
0 500 1,000

1 inch = 1,000 feet

EnviroMINE Inc.

Date: December 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-9 EMSA Reclamation Subphases



Legend

- Reclaimed Landform
- Benches

EMSA Reclamation

- Phase A
- Phase B
- Phase C
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

Feet

0 125 250

1 inch = 250 feet

EnviroMINE Inc.

Date: November 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-10 WMSA Reclamation Subphases

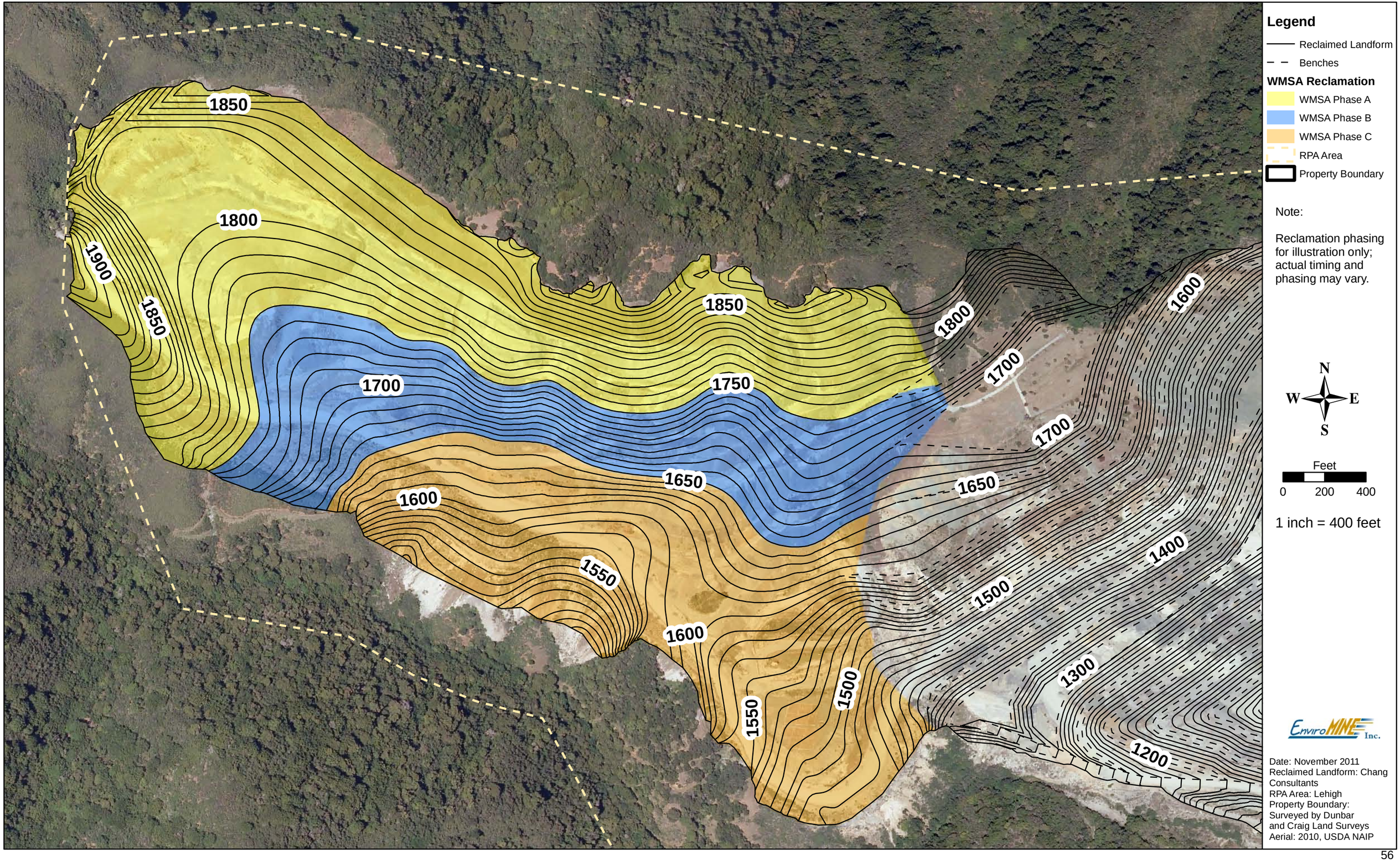


Figure 3.16-11 North Quarry Reclamation Subphases

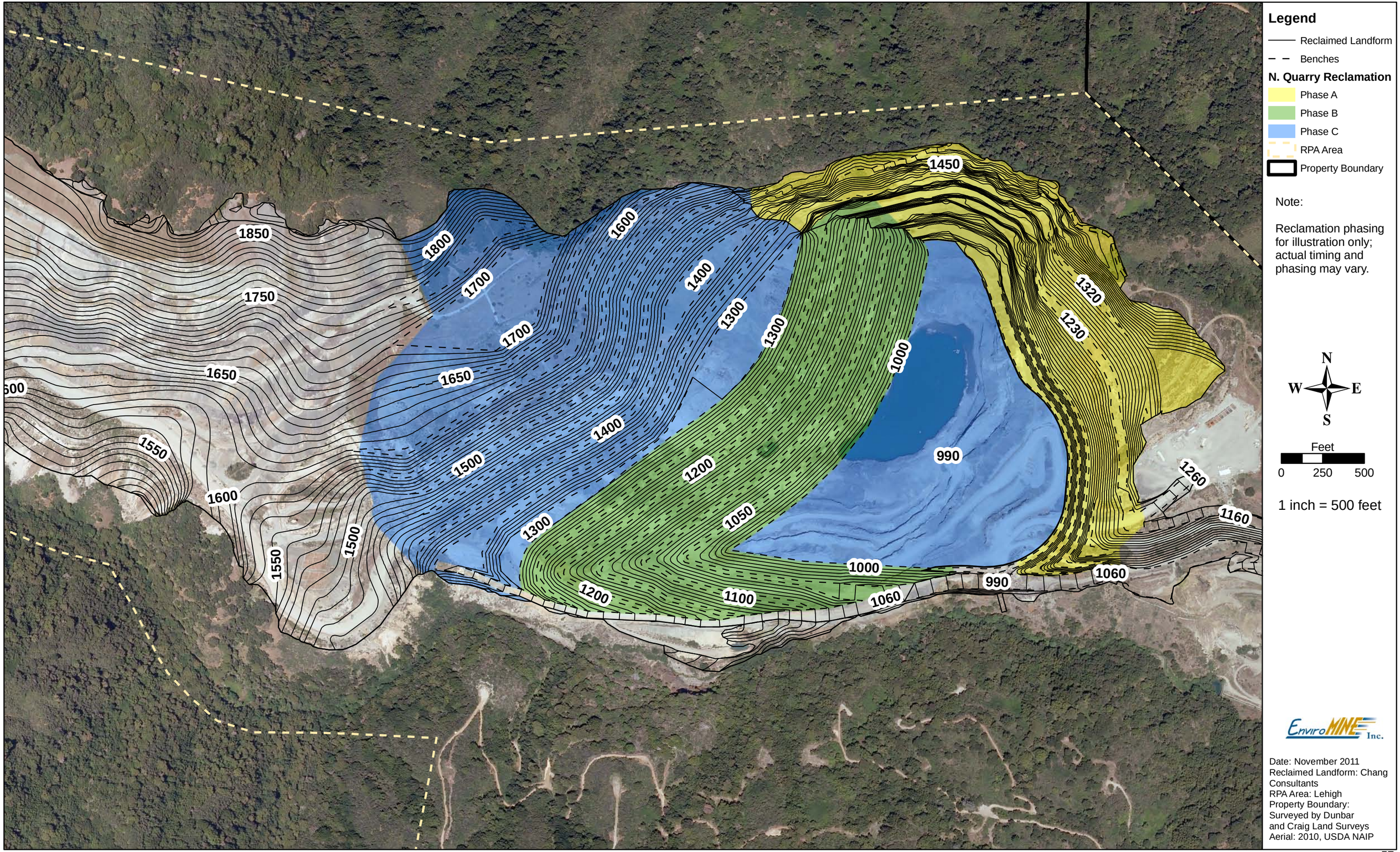


Figure 3.16-12 Final Reclamation: Crusher and Support Area, Surge Pile, and Rock Plant

Legend

- Reclaimed Landform
- Benches

Final Reclamation

- Crusher / Support
- Surge Pile
- Rock Plant
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

Feet
0 250 500

1 inch = 500 feet

EnviroMINE Inc.

Date: November 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-13 Final Reclamation: Exploration Areas

Legend

- Reclaimed Landform
- Benches

Final Reclamation

- Drill Pads and Roads
- RPA Area
- Property Boundary

Note:

Reclamation phasing for illustration only; actual timing and phasing may vary.

N
W E
S

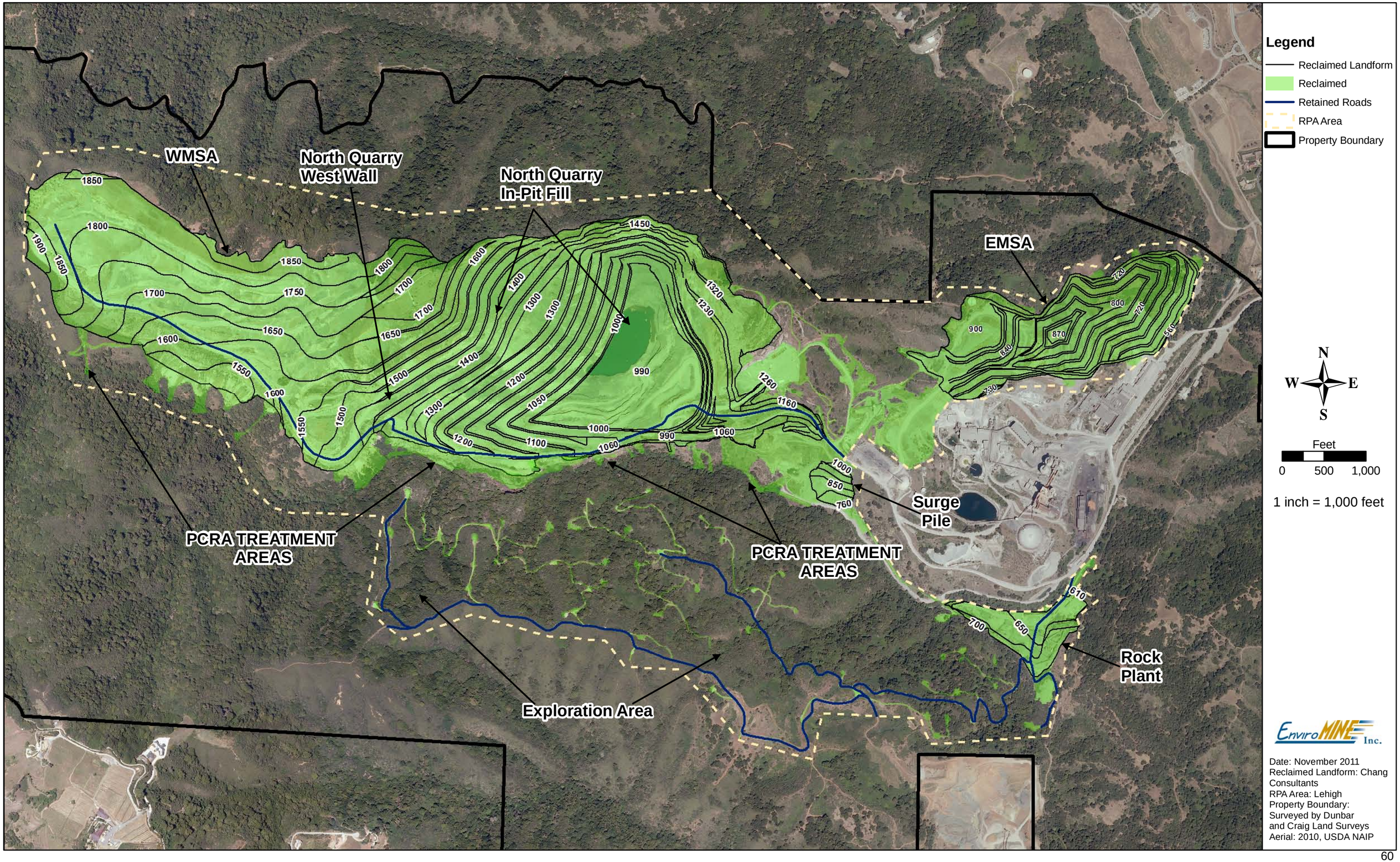
Feet
0 300 600

1 inch = 600 feet

EnviroMINE Inc.

Date: November 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

Figure 3.16-14 Ultimate Reclaimed Condition



Legend

- Reclaimed Landform
- Reclaimed
- Retained Roads
- RPA Area
- Property Boundary

N
W E
S

Feet
0 500 1,000

1 inch = 1,000 feet

EnviroMINE Inc.

Date: November 2011
Reclaimed Landform: Chang Consultants
RPA Area: Lehigh
Property Boundary: Surveyed by Dunbar and Craig Land Surveys
Aerial: 2010, USDA NAIP

3.17 Reclamation Standards

SMARA requires that reclamation plans incorporate verifiable standards to assure adequate completion of reclamation plan objectives. The verifiable reclamation standards have been adopted by the State Board of Mining and Geology as regulations to implement these requirements. (See Code of Regulations, Title 14, 3700 et seq.) The Amendment references these adopted reclamation standards and how they are addressed. Specific reclamation standards that are not relevant to the Amendment are not referenced.

3.17.1 Wildlife Habitat (§3703)

Reclamation is intended to establish wildlife habitat in the RPA Area in a condition that is equal or superior to current conditions. Reclamation will occur using native vegetation representative of oak woodland, riparian, chaparral and grassland communities similar to naturally occurring conditions in proximity to the RPA Area (see Section 2.9). For north-facing slopes, the objective of revegetation is to establish shrub and herbaceous species present in adjacent undisturbed communities, with "islands" of shrub and tree plantings on the benches that eventually will contribute to the regeneration of scrub, woodland, and forest. For south-facing slopes, the objective of revegetation is to mimic the scrub communities present on south-facing slopes in the adjacent open space areas by seeding with native shrubs and grasses that will eventually contribute to the establishment of scrub communities.

The Amendment incorporates protective measures to avoid impacts to special status avian species from mining and reclamation activities. These measures are summarized below and described in greater detail in the Biological Resources Assessment (Attachment D):

1. Non-breeding season: If nesting birds are encountered during mining or reclamation activities in the non-breeding season, defined as approximately 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.

2. Breeding season: During the breeding season (approximately 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.

The Amendment also incorporates protective measures to avoid impacts to roosting bats. These measures are described in greater detail in the Biological Resources Assessment:

1. Non-roosting season (approximately September 1 to October 31): Where evidence of roosting is observed within or immediately adjacent to the RPA Area, activities will be halted within an appropriately-sized exclusion buffer to be determined by a qualified bat biologist.

2. Hibernation season (approximately 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.

3. Maternity roosting season (approximately 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. 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.

The Amendment also incorporates protective measures to avoid impacts to the San Francisco Dusky-footed Woodrat. These measures are described in greater detail in the Biological Resources Assessment:

1. Active woodrat houses should be flagged and avoided when possible. 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.

3.17.2 Backfilling, Regrading, Slope Stability and Recontouring (§3704)

Reclaimed slopes will conform to the surrounding hillside topography. The topography in the RPA Area and surrounding area is variable but consistently rise in elevation in the east to west direction. Based on existing conditions, fill slopes in the final landform will be predominantly located within the EMSA and the North Quarry, with both cut and fill slopes in the WMSA. Current elevations within the RPA Area range from approximately 500 feet to 2,000 feet msl. Reclaimed slopes will be generally consistent with the natural contours. Figure 3.16-4 and Figures 3.16-8 through 3.16-13 show the reclaimed elevations.

SMARA's reclamation standards provide that reclaimed slopes shall not exceed 2.0H:1.0V except when based on a site-specific engineering and geologic analysis. A geotechnical analysis of the final landform to be created by mining and overburden storage activities described under this Amendment is included as Attachment C. As described in the attachment, final overall reclaimed slopes have been determined to be stable under static and seismic loading conditions and are suitable for the end use.

Final overall slope angles in the WMSA will not exceed 2.5(H):1.0(V). Fill slopes in the EMSA will be reclaimed at a maximum overall slope inclination of 2.6H:1V. The North Quarry will be reclaimed to maximum slope angles of 2.5(H):1.0(V) overall. Limited areas of steep high-wall will remain in the upper North Quarry with inter-bench slopes up to 70 degrees which are deemed stable in the current configuration (see Attachment C). All final reclaimed slopes will have a minimum factor of safety appropriate to the planned end use as described in the Geotechnical Report.

Reclaimed fill slopes will occur over an appropriate foundation pursuant to the recommendations within the Geotechnical Report. Backfill material would be placed in layers of lifts and compacted by the loading imposed by the heavy hauling equipment and heavy tracked vehicles during the contouring process. Any refuse in the RPA Area will be collected in approved trash bins and hauled to the nearest approved landfill for disposal. Equipment and materials will be dismantled, if necessary, and moved to an alternate onsite or offsite location.

To protect water quality in stormwater runoff and in the backfilled and reclaimed North Quarry, this Amendment incorporates two fundamental water management strategies. The first is to protect surface runoff quality in the North Quarry, WMSA and EMSA using a cover system; the second is to protect groundwater seepage from the backfilled North Quarry with the introduction of organic matter into the backfill material. These measures represent common approaches to managing water quality during mining operations and reclamation. They are summarized below and described in more detail the Water Quality Report (Attachment G).

The protection of surface water consists of isolating the runoff from limestone materials by applying a cover system in the North Quarry backfill, WMSA, and EMSA, and making certain surface drainage improvements. The cover would be installed during reclamation (but prior to resoiling or revegetation) by applying a one-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 run-of-mine non-limestone rock would be identified sequenced for delivery based 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.

The introduction of organic matter into the backfill material would assure that conditions in the saturated backfill of the North Quarry are sufficiently "reducing" (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 only be needed in the upper layer of the backfill that would be saturated (i.e., in a 25 or 50 foot layer). Mulched green waste has tentatively been selected for this material because of its availability at composting centers in the area. It is estimated that approximately 63,000 tons (approximately 170,000 cubic yards) of green waste would be required. The addition of the organic material would take approximately three years during the placement of the 25 to 50 feet of fill in the quarry area near the end of Phase 2.

3.17.3 Revegetation (§3705), Topsoil Salvage, Maintenance, and Redistribution (§3711)

The planned end use for the RPA Area is open space. As a result, the ultimate goal for revegetation efforts is restoration of self-sustaining native vegetation communities, and visual integration of reclaimed lands with surrounding open space areas. Revegetation will be sufficient to stabilize the surface against the effects of long-term erosion and is designed to meet the post-extractive land use goals of the RPA Area. Interim erosion control planting may be used to provide temporary protection for disturbed areas until such time that they may be reclaimed to the approved end use.

Revegetation efforts will emphasize plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments, or fertilizer in accordance with the Reclamation Standards. Hydroseeding of the finished slopes with a mixture of native grasses, herbaceous plants, and shrubs will provide surface cover and erosion control for the new slopes. Tree and shrub planting areas will 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 objective of revegetation for north-facing slopes is to establish shrub and herbaceous species present in adjacent undisturbed communities, with “islands” of shrub and tree plantings on the benches that eventually will contribute to the regeneration of scrub, woodland, and forest. Shrub cover on north-facing slopes should provide shade and appropriate growing conditions for natural recruitment of tree species in the future. Since oak tree establishment is difficult and oak trees are very slow growing, native grey pine will be planted in some more visible bench areas; these visible bench areas also favor grey pine as a hardier and faster-growing species due to solar exposure that is not optimal for oak tree establishment.

For south-facing slopes, the objective of revegetation is to mimic the scrub communities present on south-facing slopes in the adjacent open space areas by seeding with native shrubs and grasses that will eventually contribute to the establishment of scrub communities. Small portions of the RPA Area will include constructing channels that connect ephemeral drainages with receiving waters. These areas may be reclaimed using native riparian species where channel hydrology can support these species.

A complete discussion of these activities is contained in the attached Revegetation Plan (Attachment B). The Revegetation Plan also describes the test plot program,

which has been providing and continues to provide valuable information that will be used to inform revegetation efforts and performance standards for the maintenance and monitoring of revegetation. Sections 3.16.3.1 through 3.16.3.5 summarize the revegetation process.

3.17.3.1 Soil Development and Topsoil Salvage

Areas to be reclaimed in the RPA Area include cut slopes consisting primarily of bedrock and fill slopes consisting primarily of overburden rock, which do not provide an ideal substrate for vegetation growth. Topsoil blends and potentially other soil materials will be added to the overburden rock surface to improve the substrate's texture, structure, and nutrient availability and to promote faster soil development.

To provide information on soil conditions for the soil development program, several soil samples were collected. The soil samples included a representative sample of the overburden rock which will be the underlying substrate throughout the RPA Area, as well as samples from twenty-five undisturbed reference sites, three existing revegetation sites, and five potential supplemental material sources.

Soil development measures are based on soil samples collected from the RPA Area and other locations in the Quarry. Samples were subjected to laboratory analysis to assess the following characteristics: pH, Total Exchangeable Cations, salinity, Sodium content, Sulfate content, Sodium Adsorption Ratio (SAR) Value, Boron, macronutrients (Nitrogen, Phosphate, Potassium, Calcium, Magnesium, Sulfur), Micronutrients (Iron, Manganese, Copper, Zinc), United States Department of Agriculture (USDA) Soil Textural Classifications, and Organic Matter Content (Percent Dry Weight). The Amendment incorporates the recommendations made in the Revegetation Plan for achieving soil characteristics (soil texture, organic matter content, soil chemistry and nutrient levels) in the RPA Area likely to support native plant communities.

Because the location of ongoing mining operations is predominantly disturbed, only a small amount of topsoil is expected to be harvested from the RPA Area during ongoing mining. Such topsoil will be harvested and moved directly to an area of active revegetation whenever possible. If the harvested soils must be stored for some time prior to use in revegetation, those soils will be stockpiled and clearly labeled. While the margins of stockpiled soil may need to be compacted for stabilization, in general harvested topsoil will be compacted as little as possible and will only be moved or worked when it is dry. Stockpiles of topsoil or other growth medium intended for use in revegetation efforts will be protected from erosion and weed establishment through the use of hydroseeding with a native erosion control mix and tackifiers, mulches, erosion control blankets, wattles, silt fences, or other soil protection measures. Prior to topsoil harvest, the RPA Area will be cleared of woody vegetation and root balls using chainsaws and an excavator. Plant debris will be chipped in place and spread on the topsoil, so that this organic matter is blended with the topsoil during harvest.

Soil preparation will occur by mixing salvaged topsoil blended with overburden material and other materials available onsite as detailed in the Revegetation Plan. The ratio of salvaged topsoil, overburden material, and other materials in the blended

growth medium will be dependent on the area to be revegetated. Likewise, the depth to which growth medium is applied will be dependent on the area to be revegetated. Different soil treatments may be used for the various portions of the RPA Area, depending on the target plant community and solar exposures. A complete description of soil development, topsoil salvage methods, and revegetation soil depths can be found in the Revegetation Plan. Certain areas of the remaining upper North Quarry high-wall will not receive an application of growth medium due to the steepness of the slopes, but will receive a high-mulch hydroseeding.

Soil preparation also involves preparing the surface for revegetation activities. Where mining activities have resulted in compaction of the soil, ripping, discing, or other means will be used in revegetation areas to establish a suitable rooting zone in preparation for planting. Where access roads, haul roads, or other traffic routes are to be revegetated, all road-base materials shall be stripped from the road, the substrate shall be ripped or disced as needed to promote establishment of an appropriate root zone, a soil mix containing topsoil or compost will be spread to promote plant growth, and the area will be revegetated.

3.17.3.2 Replanting and Reseeding

This section describes plant installation planned for the RPA, with a future revegetation area of approximately 614 acres. Revegetation will focus on returning the RPA to a native plant-dominated habitat similar to surrounding natural areas. Revegetation efforts will be implemented in stages following completion of each stage of overburden placement and soil preparation. Planting and maintenance will be conducted using an adaptive management approach, based on revegetation test plots that were initiated in 2008. A preliminary erosion control stage may be incorporated prior to the revegetation tasks listed below, to allow for specific site revegetation plans to be developed based on the most current test plot results. The native seed mix shown in Table 3 includes species that have proven successful in other revegetation efforts on the Quarry property and is recommended to provide erosion control and initial establishment of native grasses and herbaceous species as needed in temporarily disturbed areas.

Table 3. Erosion Control Seed Mix

SCIENTIFIC NAME	COMMON NAME	PURE LIVE SEED (lb / acre)
Bromus carinatus	California brome	16.00
Elymus glaucus	blue wildrye	10.00
Lupinus nanus	sky lupine	5.00
Nassella pulchra	purple needlegrass	8.00
Plantago erecta	California plantain	3.00
Trifolium willdenovii	tomcat clover	3.00
Vulpia microstachys	three weeks fescue	8.00
TOTAL		**53.00**

Appendix B of the Revegetation Plan provides an extensive list of native species observed in undisturbed portions of the Quarry property, which may be or have previously been used in revegetation planting or seeding at the Quarry. Propagule availability, lead time needed for nursery production, and results of test plots will help to refine this list. The majority of seed and container plants used in the test plots and in the reclamation revegetation effort will come from on-site sources. To date seed has been collected on-site, contract grown by local seed growing facilities, and the resulting seeds used for revegetation efforts. When onsite seed or plants are not available, local sources are used with an attempt to obtain the most local stock possible. Onsite and local stock is adapted to the specific microclimates of the RPA and reduces genetic mixing with nearby natural vegetation. The general plan for revegetation is to establish grasses, forbs, and shrubs on slopes with tree and shrub container plantings installed in deeper soils on the benches (see Revegetation Plan Figure 4). The cooler north and east facing benches will support the most diverse tree plantings while some of the south facing benches will contain grey pine which can tolerate more extreme conditions.

Hydroseeding

In the RPA, contoured surfaces will be covered with native grass, herb, and shrub species via hydroseeding a homogenous slurry of mulch, fertilizer, seed, and a binding agent over the areas to be revegetated. Drainage ditches and access roads will be left bare until the completion of the contouring and slope hydroseeding, at which time unneeded roads will be revegetated. Local seed suppliers have developed appropriate native seed mixes for reclamation and are testing several mixes in the test plots (see Revegetation Plan Section 5.0). A preliminary hydroseed mix of shrubs and grasses is shown in Table 4, which includes species known to thrive in undisturbed adjacent habitats or observed to perform well in previous revegetation areas and preliminary test plot results. These species should be used, pending availability, for the earliest stages of the proposed reclamation project. Test plot results will be used to further refine and expand the species selection. The hydroseed mix will be applied as necessary over the entire revegetation area, which is approximately 614 acres.

Table 4. Preliminary Species for General Hydroseeding

SCIENTIFIC NAME	COMMON NAME	PURE LIVE SEED (lb / acre)	BULK SEED (lb/acre)
SHRUBS			
Artemisia californica	California sagebrush	1.4	16
Baccharis pilularis	coyote brush	0.2	20
Eriogonum fasciculatum	California buckwheat	1.0	20
Salvia leucophylla	purple sage	0.7	2
Salvia mellifera	black sage	1.1	3
GRASSES AND HERBS			
Achillea millefolium	yarrow	1.7	2
Artemisia douglasiana	mugwort	0.1	1
Bromus carinatus	California brome	4.6	6
Elymus glaucus	blue wildrye	4.6	6
Eschscholzia californica	California poppy	1.2	2
Heterotheca grandiflora	telegraph weed	0.2	1
Lotus purshianus	Spanish clover	0.7	1
Lotus scoparius	deerweed	1.5	2
Lupinus nanus	sky lupine	0.8	1
Melica californica	California melic	1.3	2
Nassella pulchra	purple needlegrass	2.9	4
Poa secunda	one-sided bluegrass	1.3	2
Trifolium willdenovii	tomcat clover	1.4	2
Total		**26.7**	**93**

Tree and Shrub Plantings

Trees and shrubs will be planted as container plants or seeds in the revegetation areas. Tree and shrub container plantings will occur on the benches where a deeper layer of topsoil and/or soil-building materials is applied to ensure adequate space for root development. To the extent feasible, trees and shrubs to be planted will be obtained from seeds collected from the Quarry property or from local sources. Approximately 50 acres of the total revegetation area will be planted as tree and/or shrub container planting areas (see Revegetation Plan Figure 4). Shrubs will be planted at approximately 4.5-foot spacing and trees at 9-foot spacing in the designated planting areas. The remaining slopes and benches will be covered with shallower topsoil and/or soil-building materials and hydroseeded with a grass/herb/shrub seed mix, without containerized tree and shrub plantings.

The north-facing benches can support a wider variety of tree and shrub species since they have less solar radiation and higher soil moisture (see Revegetation Plan Figure 2). These north-facing benches will be revegetated with approximately 6.5 acres of oak-dominated plantings along with hydroseed. A target quantity of approximately 1,745 oak trees is scheduled to be planted in these areas, in addition to other native tree species. The oaks will be a mixture of acorn and container plantings. East-facing benches normally support some oak woodland habitat but given the existing conditions with no shade and intense solar radiation, planted oaks would likely have high mortality in these areas. Therefore approximately 21.5 acres of more visible east-facing benches will be planted with 75 percent (approximately 8,660) grey pine (*Pinus sabiniana*), a native tree species that is tolerant of drier conditions, along with 25 percent other native tree and shrub plantings common to oak woodland habitats. The grey pines will establish more readily than oak seedlings in the sunnier and harsher conditions on the south-facing benches. As the pines develop they will provide a protected microclimate that will support oak woodland establishment and development that should occur over time through natural recruitment. This successional approach will facilitate more rapid woodland revegetation in more highly visible areas while allowing eventual oak woodland establishment.

The need for herbivory protection for specific species will be evaluated based on the results of test plots and early stages of the proposed reclamation project. Weed mats or several inches of mulch may be placed around planted trees and shrubs to reduce competition and retain moisture. The benefit of mulch applications are currently being tested in the test plot program.

The Revegetation Plan is designed to provide appropriate conditions for native species so that they are not dependent upon irrigation. The need for irrigation during initial establishment will be assessed during the test plot monitoring and adaptive management reclamation efforts. DriWater gel Pac irrigation systems are currently being tested in the test plots. DriWater is a biodegradable silica-based product that is buried next to the plants and slowly releases stored water into the soil. By planting a large number of acorns without irrigation, a more drought-tolerant stand of oaks may be established, increasing the chances of their survival. However, if monitoring during the first five 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 will be re-evaluated.

As with hydroseeding, adaptive management will be used to determine which tree and shrub species will be planted, the most effective spacing and location, and species to use in replacement plantings if necessary. A preliminary list of trees and shrubs to be planted on benches of the RPA is provided in Table 5. Species selection and numbers will depend on propagule collection and availability, as well as on test plot results.

Table 5. Preliminary Trees and Shrubs for Planting on RPA Benches

SCIENTIFIC NAME	COMMON NAME
TREES (may use acorns instead of container planting for some oaks)	
Arbutus menziesii	Pacific madrone
Pinus sabiniana	grey pine
Quercus agrifolia	coast live oak
Quercus chrysolepis	canyon live oak
Quercus douglasii	blue oak
Quercus lobata	Valley oak
Quercus wislizenii	interior live oak
SHRUBS*	
Cercocarpus betuloides	mountain mahogany
Heteromeles arbutifolia	Toyon
Quercus berberidifolia	scrub oak
Rhamnus californica	California coffeeberry
Rhamnus crocea	Redberry
Ribes californicum	hillside gooseberry
Ribes malvaceum	chaparral currant
* Shrub species selection may change based on the success of seeded shrubs in test plots. If seed germination and establishment success of some shrub species is poor in the test plots, these shrub species may be tested as container plants.	

Riparian Revegetation

The RPA reclamation design includes created drainage channels and detention ponds to carry and temporarily store stormwater runoff. Some of these features may have sufficient hydrology to support wetland or riparian vegetation. Those areas will be revegetated primarily with willows (as poles or container stock). The narrow riparian corridors along the drainages will also support many of the same species utilized in tree and shrub plantings, particularly the oaks, toyon, and coffeeberry, in addition to California buckeye. As the drainages approach Permanente Creek, there may be opportunities to plant flatter wetland benches as well. Table 6 lists species that may be appropriate for planting or seeding along the drainages.

The riparian areas with sufficient hydrology to support riparian habitat will most likely be along the reclaimed North Quarry floor. The total area that may support riparian species is dependent on the hydrology of the reclaimed areas which will be determined once final contours have been constructed.

Table 6. Preliminary Species for Planting Along Ephemeral Drainages and Detention Basins

SCIENTIFIC NAME	COMMON NAME
TREES	
Aesculus californica	California buckeye
Quercus agrifolia	coast live oak
Quercus chrysolepis	canyon live oak
Quercus lobata	Valley oak
Quercus wislizenii	interior live oak
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SHRUBS	
Heteromeles arbutifolia	Toyon
Rhamnus californica	California coffeeberry
Rosa californica	California rose
Sambucus mexicana	blue elderberry
GRASSES AND HERBS	
Artemisia douglasiana	mugwort
Carex barbarae	valley sedge
Carex praegracilis	field sedge
Cyperus eragrostis	tall flatsedge
Hordeum brachyantherum	meadow barley
Juncus effusus	bog rush
Juncus patens	common rush
Leymus triticoides	creeping wildrye

Timing

All hydroseeding should be performed and completed between September 1 and December 1 to take advantage of warm soil temperatures and winter rains for successful germination and establishment. Container planting should be performed during the winter season and completed by approximately the end of January to improve plant establishment.

3.17.3.3 Test Plot Program

A test Plot program has been established in different locations of the RPA Area to determine appropriate materials and techniques to improve revegetation success throughout areas to be reclaimed. A summary of the test Plot program is contained in the Revegetation Plan. The specific objectives of the test plots are to assess the response of native seed mixes and container tree and shrub plantings to various soil blends and depths.

Sixteen test plots were constructed on top of bare graded overburden rock at two locations in the fall of 2008. Plots 1-12 and 16 were constructed at the relatively flat "Yeager Yard" site, and plots 13-15 were constructed at a sloped location within the EMSA (See Revegetation Plan Figure 5). To test the response of the seed mixes and plantings to various soil treatments, the test plots each differ by soil composition and depth of soil. The soil treatments consisted of a combination of materials, including overburden rock, North Quarry fine greenstone material, rock plant fines, and imported compost. Each test plot was divided into four equal quadrants upon which four different native seed mixes were applied, followed by straw mulch and a hydroslurry of fertilizers and a tackifier. In addition, container plantings were installed in the 24-inch depth test plots (11, 12, and 16) in November 2009.

Test plots 13, 14, and 15 are located within the EMSA and are temporary by design. They will provide useful results on germination and productivity on the north facing slopes of the EMSA. They will be dismantled after collecting one to two years of data as they are in within the EMSA. The thirteen remaining test 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. Results of the test plot monitoring will be used to further guide the phased reclamation efforts.

3.17.3.4 Maintenance

Maintenance of revegetation areas shall consist of reseeding or replanting unsuccessful revegetation efforts, weed control to limit the extent of noxious weeds, and repair of erosion damage. If any significant rills or gullies are identified in the RPA, remedial actions will include reseeding of the area with an approved erosion control seed mix, and if necessary, slope stabilization measures will be undertaken.

If revegetation efforts are not successful with regard to the performance standards identified in the Revegetation Plan within five years following initial seeding, the under-performing areas will be reevaluated to determine the measures necessary to improve performance. If necessary, these areas will be reseeded and/or replanted with methods modified as needed. This may include the use of container stock and irrigation or simply additional seeding during a wet winter season. Prior to reseeding, the operator shall evaluate previous revegetation practices to identify cultural methods to benefit the overall revegetation effort. If, after a site is reseeded, revegetation efforts still do not yield satisfactory results, additional reseeding or other intervention methods may be required.

Weed control is necessary to reduce the occurrence of undesirable non-native species of plants that may invade the RPA where disturbance has removed the native plant cover and where active and natural revegetation is taking place. Weeds (non-native, and usually invasive, species) can compete with native plant species for available moisture and nutrients and consequently interfere with revegetation efforts. However, many weeds are common in both the surrounding active Quarry and adjacent natural open space lands.

As described in the Revegetation Plan, species listed by Cal-IPC (2006) as highly invasive will be considered problematic and will be targeted during maintenance of this revegetation effort if they exceed the designated threshold of ten percent cover. Invasive plant species typically found in the RPA and in surrounding lands include 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).

Weed control methods may include chemical and mechanical removal techniques depending on the species and number of individuals encountered. Priorities in weed abatement should focus on those species listed as highly invasive, in addition to other weeds that directly threaten the successful establishment and survival of native species. The percent cover of weeds, abatement measures recommended and undertaken, and other observations on weed control will be included in vegetation monitoring reports. Weed abatement responsibilities may cease once performance standards have been met for each phase of revegetation efforts, unless invasive species in completed revegetation areas are deemed a threat to nearby efforts still in progress.

3.17.3.5 Monitoring

Installation Monitoring

To ensure adherence to the guidelines of this revegetation plan, all implementation activities will be monitored by a qualified individual. Records will be kept of soil-building treatments applied, addition of soil amendments as determined to be necessary, and all plant and seed installation. Hydroseed records will include identification of the date of application and a description and map of the location where various seed mixes are applied. Additionally, installation of tree and shrub plantings will be documented to identify the location and approximate area planted, and the number of trees or shrubs planted or seeded.

Vegetation Monitoring

Monitoring must be performed to document revegetation success. Following installation, each revegetation area will be monitored at least three times during the following five year period. Contouring and revegetation will be conducted in stages; therefore, monitoring of each stage will be stratified, commencing in a particular revegetation area upon completion of installation. Each stage will be monitored at least three times during the following five year period after installation, and until the area meets performance standards for two consecutive years without intervention. Revegetation sites shall be identified on a map and monitored to assure that

standards are adequately achieved to within a minimum 80 percent confidence level as required by Reclamation Standards.

Tree and Shrub Planting Areas – Randomly selected plots will be monitored in planting areas, with the number of plots sampled suitable to attain 80 percent confidence in data results. In addition, both north- and south-facing areas should be represented in sampling. All container planting areas will be sampled using a nested approach as utilized in reference site data collection; other sampling methods may be used but will require appropriate conversion of native species richness standards. The nested approach means that once a plot center is randomly selected, trees are assessed within a ten meter radius, shrubs within a five meter radius, and herbs within a one meter radius from the plot center. Monitors will identify and count all trees and shrubs surviving in their respective plots. Cover of all tree, shrub, and herb species within each layer will be estimated within each respective plot, and all species will be identified to the extent possible.

Hydroseed areas – Sampling plots will be selected randomly throughout the areas hydroseeded with grasses, herbs, and shrubs to determine native species richness and percent cover of each species. As with the planting areas, sampling will occur in nested plots, with shrubs assessed within five meter radius and herbs within a one meter radius from the plot center. The number of plots for each installation stage will be selected in order to achieve an 80 percent confidence level in the performance results. Stratification of sampling areas may be necessary if the mix of shrubs and herbs varies greatly in different areas either due to variation in hydroseed applications or soil or other site conditions. For example, areas strongly dominated by herbs and grasses may instead be monitored using smaller sampling plots appropriate to grasslands.

Revegetated areas will be monitored in late spring or early summer to ensure that most plants will be identifiable to the species level. Monitoring will be conducted by a qualified biologist with experience in plant identification. After monitoring data has been collected, a report summarizing the success of revegetation efforts, comparison of data to Year 5 performance standards, any observed obstacles to achieving performance standards, and any remedial actions recommended will be prepared and submitted to Lehigh by October 15 of that year. This will allow for proper timing of remedial plantings and/or seeding if determined to be necessary.

Performance Standards

Performance standards describe the minimum targets for species richness and percent cover for hydroseed and planting areas. Performance standards represent anticipated conditions five years after installation, based on a study of reference sites in the vicinity conducted by WRA and preliminary test plot results. SMARA requirements state that performance standards must be met for two consecutive years without significant human intervention prior to release of financial assurances. Revegetation of approximately 614 acres in the RPA is intended to create approximately 40 percent coverage of native tree and shrub habitat interspersed among grasses within five years of installation. Planting areas on south-facing benches of the RPA would be dominated by shrubs while planting areas on north- and east-facing benches will eventually be dominated by trees and shrubs.

Reference site data were used to create a science-based and achievable set of performance standards (Table 7). Native species richness targets have been chosen to reflect data collected from the reference sites and preliminary test plot results. These densities and percent cover values reflect the expected growth of trees and shrubs in the first five years of the revegetation areas.

Reference data values for percent cover and density of trees and shrubs describe mature woody communities that have not seen significant disturbance in decades. While the target plant communities of the revegetation areas should eventually blend with these mature communities, they cannot be expected to achieve similar characteristics over only five years of growth. Instead, shrub and tree planting areas are designed to mimic pioneering plant communities that will continue to develop and dominate the benches and slopes over several decades through tree growth and natural regeneration.

Table 7. Five-Year Performance Standards for RPA Revegetation

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

* 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. Significant adjustments to revegetation performance standards will be provided to the County in advance for approval.

** Richness standards are based on plot sizes used in reference data collection and described in this Plan: 10m-radius plots for trees, 5m-radius plots for shrubs, and 1m-radius plots for herbs/grasses.

Performance Standards for Weed Control

In addition to vegetation monitoring to assess the success of revegetation efforts, the density of weeds (non-native invasive plants) will be assessed as part of vegetation sampling described in the Revegetation Plan.

Reference plots were surveyed in undisturbed natural grassland habitat in and adjacent to the Quarry property to assess native and non-native species richness and cover. The reference plots contained 28 species, 13 of which were non-native, and an additional 8 are listed invasive species in the California Invasive Plant Council's (Cal-IPC) Inventory (Cal-IPC 2006). Although two of the seven native species recorded had the highest cover, the next ten species with the highest cover were non-native or invasive species. Non-native and invasive species accounted for over 50 percent of the vegetative cover. Therefore performance standards were developed that took this information into account.

For the purposes of RPA maintenance and monitoring, non-native non-grained plants listed in the Cal-IPC Inventory (2006) as highly invasive will be considered invasive weeds subject to control and performance standards. If invasive weeds are found to exceed a combined 5 percent relative cover over all sampled quadrants, 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). Some of these species are only listed as moderately invasive by Cal-IPC, but they should be managed promptly because they are currently present in large numbers in the RPA and will impede establishment of native cover.

Adaptive Management

The operators responsible for revegetation efforts to date in the RPA have experienced success with adaptive strategies. The strategy described above may prove to be less efficient than other strategies developed at a later date. Therefore, if a different planting strategy is implemented in the RPA in which the above performance standards and monitoring guidelines cannot be followed, a revision to this revegetation plan will be submitted as a substitute for this document or portions thereof.

3.18 Drainage, Diversion Structures, Waterways and Erosion Control (§3706), and Stream Protection, Including Surface and Groundwater (§3710)

Activities described in this Amendment are 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. These goals are achieved through a series of Best Management Practices (BMPs) pursuant to Drainage Report (Attachment F) and Storm Water Pollution Prevention Plan (SWPPP). Drainage and erosion controls are designed to exceed the 20-year storm event. The SWPPP covers existing operations on the Quarry Property. Sediment basins (known as "ponds") provide stormwater detention and sediment control over the property. Basins are maintained according to the site's SWPPP and applicable NPDES permits. The table below lists all existing and planned sedimentation basins.

Table 8. Sedimentation Basins

Basin	Description/Location
Existing Basins	
4A	Southern portion of the site, near former rock crusher adjacent to creek access road
4B	Southern portion of site, east of Pond 4A
4C	Southern portion of site, east of Pond 4B
5	Located in North Quarry
Basin E (formerly Pond 6)	Adjacent to Primary Crusher
9	North of Screen Tower 4 (Rock Plant)
11	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	Southeast portion of site, northeast of Screen Tower 4 (Rock Plant)
18	East of cement plant, near rail spur
19	East of cement plant, near rail spur
20	East of cement plant, near rail spur
21	East of cement plant, near rail spur
22	Northeast corner of site, south of Pond 14
30A	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	Northeast of Rock Plant and Southeast of haul road.
Planned Future Basins	
40A	North Quarry final floor
40B	West Materials Storage Area south slope
40C	West Materials Storage Area south slope
40I	South of Surge Pile

An additional basin will be built on the floor of the North Quarry once the floor is raised to its final elevation, to collect storm flows from the North Quarry and portions of the WMSA and allow sediment to settle out before stormwater discharges to Permanente Creek. Drainage channels in the North Quarry west wall backfill area

will direct storm flows the North Quarry floor, and stormwater will be delivered to Permanente Creek via an engineered drainage channel.

In the WMSA, two additional basins will be built, together with swales and downdrains on the WMSA's south slopes for stormwater and erosion control purposes. Best Management Practices (BMPs) will collect and deliver runoff along the primary haul road and into the North Quarry. As Phase 2 progresses and the WMSA haul road is incorporated into the ultimate design, additional BMPs will be implemented as needed to control stormwater and erosion within the WMSA. Stormwater management in the North Quarry is described above.

In the EMSA, runoff will be directed longitudinally by intra-bench ditches to a perimeter series of ditches and routed through swales and downdrains to the series of seven down gradient basins serving the EMSA. Sedimentation basins and silt fencing will be installed as detailed in the Drainage Report (Attachment F). These controls will route flows to a final basin located at the toe of the EMSA, where flows are delivered to an existing drainage to Permanente Creek. Because portions of the ditches within the perimeter road and the downdrains will have a steep gradient, they will be lined with riprap or other erosion-resistant material to prevent erosion. Permanent erosion control measures include the drainage ditches and downdrains described above, and long-term revegetation as described in Section 3.16.3.2.

In addition to the measures described above, other temporary erosion control measures will be used in the RPA Area during the course of mining and reclamation activities and immediately following reclamation. These measures will focus on control of sediment and include desiltation basins, drainage ditches, down drains, silt fencing, and hydroseeding. Other temporary erosion control measures may be used if determined to be effective. Temporary erosion control measures will be removed, recontoured, and/or revegetated when no longer needed for sediment control due to the establishment of vegetative cover. These temporary erosion control measures will be installed within the RPA Area as described in the Drainage Report, the SWPPP, and the Revegetation Plan.

Prior to the release of financial assurances, disturbed slopes in the RPA Area also must meet revegetation and erosion control performance standards. These standards have been designed to minimize the potential for stormwater runoff and erosion. Erosion controls consist of interim hydroseeding, where needed, according to the native seed mix shown above and the Revegetation Plan, and by long-term revegetation with native grasses, herbaceous plants, and shrubs.

Maintenance and monitoring will include identification and repair of erosion damage. Sedimentation basins and other erosion control measures will receive annual erosion control monitoring. Monitoring will occur during the wet season by field investigation and visual observations. Soil and slope conditions will be inspected to identify significant new erosion, including rills and soil loss, and the need for maintenance. The conditions and any need for maintenance will be recorded, and the appropriate remedial measure identified, as part of an annual monitoring report.

Sedimentation basins will 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 (see Section 3.17.3.5). Basins will then be allowed to naturally reclaim over a period of years by allowing basins to accumulate sediment and vegetation. After maintenance ceases, basins will continue to be monitored annual for a period of at least three wet seasons to ensure that the discharge from the spillway is functioning properly and are not causing downhill erosion. Basin 40A will be actively revegetated with wetlands vegetation to serve as eventual wetland habitat as described in Sections 3.14 through 3.16 of this Amendment and the Revegetation Plan.

Remedial measures will be applied as identified below and in the Drainage Report. Performance criteria and slope treatment for erosion control are based on the qualitative descriptions and remedial measures described in Tables 9 and 10 below. Field investigation will determine the need for remedial measures based on visual observations. In general, areas receiving an average score of Class 3, 4 or 5 will receive slope treatment. Any observable reason for failure will be noted and the appropriate remedial measure stated as part of the annual monitoring report.

Table 9. 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.

Table 10. 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, regrade and compact with equipment.
CLASS 5:	Replant and cover with straw mulch and install silt fences. If necessary, regrade and compact with equipment.

3.19 Permanente Creek Reclamation Area

Introduction

This section describes the reclamation treatment of historic mining disturbance adjacent to Permanente Creek, described as the Permanente Creek Reclamation Area ("PCRA") (Figure 3.19-0). The PCRA includes approximately 49.2 acres of mining-related disturbance to be reclaimed as set forth in this section. For mapping and illustrative purposes, the PCRA is divided into seven different subareas (numbered one through seven) with customized reclamation treatments for each subarea as set forth below.

The PCRA contains mining disturbance that occurred prior to SMARA's effective date on January 1, 1976, as well as disturbance from later periods. Based on a review of historic aerial photographs, an estimated 38.17 acres in the PCRA were disturbed by 1975. Up to 15.35 acres in the PCRA represents redisturbed lands or new disturbance due mainly to erosion of pre-SMARA slopes in limited areas together with efforts undertaken by the operator to stabilize and control erosion, rather than new mining operations. The 49.2 acres to be reclaimed encompass all newly-disturbed or redisturbed lands in the PCRA, and surrounding historically disturbed areas as needed to implement the reclamation treatments described in this section.

The County has requested that Lehigh amend its reclamation plan to include newly disturbed land and redisturbed land in the PCRA to ensure that appropriate erosion controls are in place to protect water quality in Permanente Creek. Where pre-1976 mining areas continue to be disturbed, SMARA provides that reclamation shall be "proportional" to post-1975 disturbance. (Cal. Code of Regulations, tit. 14, § 3505(b).) The reclamation standards in this section of the Amendment, accordingly, reflect SMARA's proportional reclamation requirement in the PCRA.

The standards below, which are based on a careful review of historical photographs and topography, emphasize erosion control and revegetation in response to the County's identification of surface erosion in portions of the PCRA. These standards also have been designed to protect areas where soil disturbance has stabilized over time. Accordingly, the reclamation treatments in this section exhibit a general preference for light vehicles and foot crews to avoid the damage and destabilization to the channel and slopes that would result from the entry of heavy earth-moving

equipment on the slopes adjacent to the creek. The Revegetation Plan (Attachment B) includes a detailed discussion of these areas together with representative site photographs.

The standards in this section have been designed to be consistent with the Permanente Creek Long-Term Restoration Plan ("Restoration Plan") that is currently in development with the Regional Water Quality Control Board - San Francisco Bay Region ("RWQCB") for the Permanente Creek watershed. This section also adopts certain restoration concepts contained in the Restoration Plan. For Subareas 3, 4 and 5, this section adopts the preferred restoration measures identified for the areas known as Reach 17 and 18 of the Restoration Plan, which propose the removal of historic overburden fills from the creek channel, channel widening and the restoration of a more natural creek alignment. For Subarea 7, this section adopts 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 this Amendment.

The design of the restoration measures for Subareas 3,4,5 and 7 are described below, and in additional detail in the Revegetation Plan (Attachment B) and the engineering drawings and details. These designs still retain a conceptual nature due to the fact that these reclamation activities will take place concurrent with and in a manner consistent with the Restoration Plan under the jurisdiction of the RWQCB. This reclamation plan treatment will also be refined during any necessary permitting processes of all jurisdictional agencies including the RWQCB, the U.S Army Corps of Engineers and the California Department of Fish and Game. In no event shall the treatments be less stringent than those required under SMARA. To the extent that any future changes are required in such treatment areas as a result of future regulatory review, and such changes involve potential significant new environmental impacts, subsequent CEQA review could be required

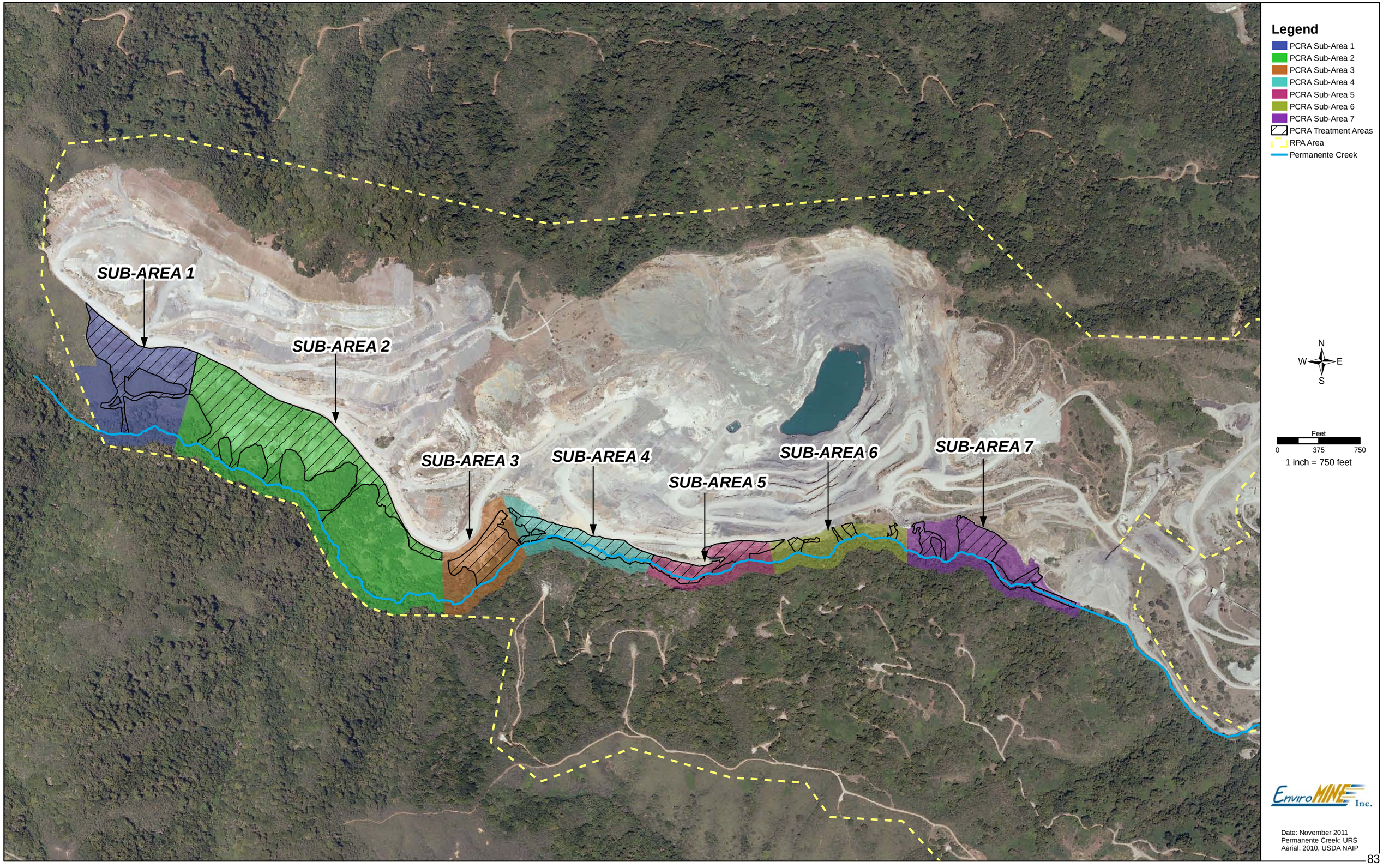
Background

Historic mining disturbance in the PCRA began with early quarrying operations on the property under the Santa Clara Holding Company and Henry J. Kaiser in the early to middle of the 1900s. Disturbance adjacent to the North Quarry is associated with the quarrying program in the early 1940s, including the development of the "lower quarry" in 1943 which included the installation of a crusher and conveyor. Disturbance adjacent to the WMSA is associated with overburden storage operations beginning in the 1950s. Historic aerial photographs indicate that the full extent of the storage-related disturbance on the WMSA's southern edge was reached by 1975.

Portions of the PCRA (Subareas 1 and 2) also have been subject to erosion control measures installed by the operator pursuant to a cleanup and abatement order issued in July 1999 by the RWQCB. In response to the order, the operator installed sediment and erosion controls (i.e., slope armoring, rip-rap, and other "best management practices"). The order also directed the operator to prepare a long-term creek restoration plan for areas in the creek affected by historic quarrying activities. The restoration plan has been submitted to the RWQCB, but has not been finalized.

In September 2011, County staff conducted a review of historical aerial photographs of areas along Permanente Creek, and identified areas where localized erosion and slope movement may be present on slopes composed of historic earthen fills. Subsequent field visits in October 2011 demonstrated that many areas of potential erosion had stabilized, and in other areas, that revegetation and additional erosion controls would be beneficial.

Figure 3.19-0 Permanente Creek Reclamation Area (PCRA)



Reclamation Phasing

Reclamation in all areas of the PCRA (Subareas 1 – 7) will commence upon approval of the Amendment in Phase 1. Completion of reclamation for each sub-area will be completed in either Phase 2 or 3 of reclamation, see Table 11 for details. The staggered completion dates are a function of site access and the overall site reclamation and mining phasing.

A description of the timing of the reclamation activities scheduled in Subareas 1 through 7 is contained in the table below.

Table 11. Reclamation Phasing for PCRA

AREA	ACRES	TIMING
1	8.68	Phase 1, 2
2	21.81	Phase 1, 2
3	4.26	Phase 1, 3
4	4.44	Phase 1, 3
5	3.85	Phase 1, 3
6	1.05	Phase 1, 2
7	5.09	Phase 1, 2, 3

Treatment of PCRA Subareas

Lehigh has in consultation with County staff identified specific, customized reclamation treatments for each subarea to address the conditions and features that exist in the PCRA. In general, these reclamation treatments emphasize erosion control but avoid major earth-moving activities that would be detrimental to the Permanente Creek channel and watershed. Drainage and erosion control protections are designed to complement efforts in other areas of the Quarry to protect the land and water resources in accordance with the Porter-Cologne Water Quality Control Act, Federal Clean Water Act, and applicable local, state and federal requirements. These goals are achieved through best management practices (BMPs) that have been specifically selected for these areas to control erosion and sedimentation. The reclamation treatments for each subarea are described below. These treatments are based on the technical study and analyses performed by Golder Associates (Attachment C and Chang Consultants (Attachment F).

Subarea 1

Subarea 1 describes the westernmost portion of the PCRA (Figure 3.19-0). 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. The lower portion of the subarea is mostly undisturbed but includes a post-SMARA erosion feature and a

portion of an access road cut by the operator after 1999 to install erosion control measures on the lower slope.

In Phase 1, this subarea will be subject to revegetation and erosion controls listed in Table 12 below. Hydroseeding and installation of fiber rolls will 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 occurs, which will excavate the upper fill slope, and leave the lower slope intact. The removal of the upper fill slope will remove potential sources of erosion that may affect the lower slopes, and redirect overland flows to Basin 40C. The upper slopes will be recontoured, resoiled and revegetated as described in Section 3.16 of the Amendment.

Table 12. Subarea 1 Reclamation Treatments

ACTIVITY	DESCRIPTION
Basin Improvements	The existing catch basins located along the access road (previously installed for erosion control) will 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 will be removed. Silt fencing will 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 (see Attachment C, Geotechnical Report).
Revegetation	Disturbed areas (8.68 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix for additional erosion control. Riparian vegetation will be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Road Treatment	The existing road will be regraded (in-sloped) to collect drainage on the interior of the road as shown on the engineering plans, then ripped or disced prior to hydroseeding.
Slope BMPs	Fiber rolls will 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 will be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas will be monitored and maintained according to the standards set forth below.

Subarea 2

Subarea 2 is located directly east of Subarea 1 (Figure 3.19-0). The upper portion of this subarea is similarly composed of fill slopes constructed prior to 1976 in connection with the development of the WMSA. Erosion in this subarea may be attributed to the sparsely vegetated hillsides and also to the construction of an access road that cuts across pre-SMARA fills. The lower portion includes the toe of the fill slopes and is mostly undisturbed.

In Phase 2, this subarea will be subject to revegetation and erosion controls listed in Table 13 below (with the exception of the installation of Basins 40B and 40C). Hydroseeding and installation of fiber rolls will 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 occurs, which will excavate the upper fill slope, and leave the lower slope intact. The removal of the upper fill slope will remove potential sources of erosion that may affect the lower slopes, and redirect overland flows to Basins 40B and 40C. The upper slopes will be recontoured, resoiled and revegetated as described in Section 3.16 of the Amendment.

Table 13. Subarea 2 Reclamation Treatments

ACTIVITY	DESCRIPTION
Basin Outlets and Flow Controls	At the end of Phase 2, two new sedimentation basins (numbered 40B, 40C) will 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, as shown on the engineering plans. The basins will release flows to existing drainages located in the PCRA. The outlets will extend to the bottom of the slope and the outfall pipes will release to engineered flow dissipaters (grouted rip-rap pads) to be installed within the existing drainages. The grouted riprap will 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) will be lowered from above and tracked across disturbed portions of the slope. This will create a textured surface that resists erosion and better holds hydroseeded material. Disturbed areas located down slope of where the sheepsfoot will traverse will be protected by silt fencing (see engineering plans detail).
Revegetation	Disturbed areas (21.81acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix. Riparian vegetation will be hand-planted at the toe of the slope in areas where sufficient hydrology exists.

Slope BMPs	Fiber rolls will 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 will be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas will be monitored and maintained according to the standards set forth below.

Subarea 3

Subarea 3 is located directly east of Subarea 2 (Figure 3.19-0). The uppermost portion of this subarea is composed of fill slopes constructed prior to 1976 in connection with the development of the WMSA access road. Portions of the middle slope are covered with fill material, while the lower slope areas are largely undisturbed with evidence of infrequent erosion flows.

The uppermost portion of this subarea (consisting of the haul road and immediately adjacent slope) will be reclaimed during Phase 2 as described in Section 3.16 of the Amendment. This activity will part remove the uppermost fills and any sources of erosion for the reclaimed lower slopes. Reclamation of the middle and lower slope identified on Figure 3.19-3 will occur in Phase 1 following the approval of this Amendment. On the extreme eastern portion of subarea 3, creek restoration will occur utilizing the same recommendations as subareas 4 and 5. Creek restoration measures identified in further detail in the Revegetation Plan (Attachment B) will occur in Phase 3. These areas will be reclaimed with the treatments listed in the table below.

Table 14. Subarea 3 Reclamation Treatments

ACTIVITY	DESCRIPTION
Soil Treatment	To prepare the steep slopes for revegetation, a winched sheepsfoot (tethered to a bulldozer) will be lowered from above and tracked across disturbed portions of the slope. This will create a textured slope that resist erosion and better hold hydroseeded material. Disturbed areas located down slope of where the sheepsfoot will traverse will be prepared with silt fencing to be installed at the toe of the slope (see engineering plans detail).
Revegetation	Disturbed areas (4.25 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix for additional erosion control. Riparian vegetation will be hand-planted at the toe of the slope in areas where sufficient hydrology likely exists.

Slope BMPs	BMPs in the form of fiber rolls will 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 will be removed by hand by work crews where possible.
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas will be monitored and maintained according to the standards set forth below.

Subarea 4

Subarea 4 is located directly east of Subarea 3 (Figure 3.19-0). This subarea is composed primarily of fill slopes constructed prior to 1976, with potential areas of post-1976 erosion. Reclamation will occur in Phase 1 following the approval of this Amendment, with the exception that the creek restoration measures identified below and in additional detail in the Revegetation Plan (Attachment B) will occur in Phase 3. The portions of this subarea identified on Figure 3.19-4 will be reclaimed with the treatments listed in the table below.

Table 15. Subarea 4 Reclamation Treatments

ACTIVITY	DESCRIPTION
Revegetation	Disturbed areas (2.93 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix. Riparian vegetation will 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 in this subarea will be seeded using a broadcast seeder or by hand-seeding in areas above the ordinary high water mark.

Slope BMPs	Erosion blankets will be placed across the slope for erosion control (see details in Revegetation Plan). Fiber rolls will 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 will 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 will be monitored and maintained according to the standards set forth below.
Creek Restoration	In Phase 3, creek restoration will occur to remove historic overburden and silts. The removal of historic overburden and silts will involve the following restoration measures: ● Removal of overburden material and sediment deposits. ● Creation of a stable channel, subject to geotechnical and groundwater investigations as needed to determine the location of bedrock and other constraints on channel design. ● Establishment of a new bankfull bench and floodplain. ● Install step pools, drop structures and other stream control devices as needed for a stable channel. ● Revegetate riparian areas.

Subarea 5

Subarea 5 is located directly east of Subarea 4 (Figure 3.19-0). This subarea is composed partially of fill slopes constructed prior to 1976. Reclamation will occur in Phase 1 following the approval of this Amendment, with the exception that the creek restoration measures identified below and in additional detail in the Revegetation Plan (Attachment B) will occur in Phase 3. The portions of this subarea identified on Figure 3.19-5 will be reclaimed with the treatments listed in the table below.

Table 16. Subarea 5 Reclamation Treatments

ACTIVITY	DESCRIPTION
Slide Removal	Slide material near the foundation of the historic crusher will be removed using an excavator. The excavator arm will reach down from the main access road and remove slide material. Areas down slope of this activity will be prepared with silt fencing (see engineering plans detail) to prevent material rollback.

Revegetation	Disturbed areas (3.22 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix. Riparian vegetation will 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 in this subarea will be seeded using a broadcast seeder or by hand-seeding in areas above the ordinary high water mark.
Slope BMPs	Fiber rolls will 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 will 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 will be monitored and maintained according to the standards set forth below.
Creek Restoration	In Phase 3, creek restoration will occur to remove an old crusher foundation next to the creek and historic overburden fills. The removal of the crusher foundation will 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 will involve the following restoration measures: ● Removal of overburden material and sediment deposits. ● Creation of a stable channel, subject to geotechnical and groundwater investigations as needed to determine the location of bedrock and other constraints on channel design. ● Establishment of a new bankfull bench and floodplain. ● Install step pools, drop structures and other stream control devices as needed for a stable channel. ● Revegetate riparian areas.

Subarea 6

Subarea 6 is located directly east of Subarea 5 (Figure 3.19-0). This subarea is composed of areas of historic fill interspersed with other areas that are undisturbed or that have naturally reclaimed. Reclamation will occur in Phase 1 following the approval of this Amendment, with the exception that at the end of Phase 2 one ravine will be armored during Phase 2 to accept flows from Basin 40A. The portions of this subarea identified on Figure 3.19-6 will be reclaimed with the treatments listed in the table below.

Table 17. Subarea 6 Reclamation Treatments

ACTIVITY	DESCRIPTION
Sheet Pile Installation	Sheet piles will 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 will be driven into the mid-slope using an excavator arm in the location shown on the engineering plans.
Revegetation	Disturbed areas (1.05 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix. Riparian vegetation will be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Slope BMPs	Fiber rolls will 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 will 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 will be monitored and maintained according to the standards set forth below.
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 will be armored during Phase 2 to accept flows from Basin 40A on the reclaimed floor of the North Quarry. The basin will deliver flows to the drainage via pipes installed under the access road. The outfall pipe will release to engineered flow dissipaters (grouted rip-rap pads). The grouted riprap will dissipate the outflow energy and provide an armored blanket that protects the ravine against erosion.

Subarea 7

Subarea 7 represents the easternmost section of the PCRA (Figure 3.19-0). This subarea is composed of areas of historic mining disturbance and more recent erosion control activities, interspersed with undisturbed areas. Reclamation will occur in Phase 1 following the approval of this Amendment, with the exception that the creek restoration measures identified below and in additional detail in the Revegetation Plan (Attachment B) will occur in Phase 3. The portions of this subarea identified on Figure 3.19-7 will be reclaimed with the treatments listed in the table below (existing ponds will remain for sediment control to protect Permanente Creek).

Table 18. Subarea 7 Reclamation Treatments

ACTIVITY	DESCRIPTION
Revegetation	Disturbed areas (4.06 acres) will be hydroseeded with the seed mix listed below. The hydroseed slurry will include a bonded fiber matrix. Riparian vegetation will be hand-planted at the toe of the slope in areas where sufficient hydrology exists.
Slope BMPs	Fiber rolls will 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 will be removed by hand by work crews where possible. Silt fencing will be installed at the toe of the slope (see engineering plans detail).
Monitoring and Maintenance	Revegetation and erosion controls added to PCRA treatment areas on the northern side of the creek will be monitored and maintained according to the standards set forth below.
Creek Restoration	In Phase 3, creek restoration will 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 will involve the following restoration measures: ● Recontouring of the pond floor and sides to establish a new bankfull bench and stable channel. ● Removal of pond infrastructure and any accumulated sediment. ● Install step pools, drop structures and other stream control devices as needed for a stable channel. ● Revegetate riparian areas. The replacement of the downstream half-culvert will involve the following restoration measures: ● Removal of 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 channel. ● Revegetate riparian areas.

Figure 3.19-1 Permanente Creek Reclamation Area (PCRA) Sub-Area 1

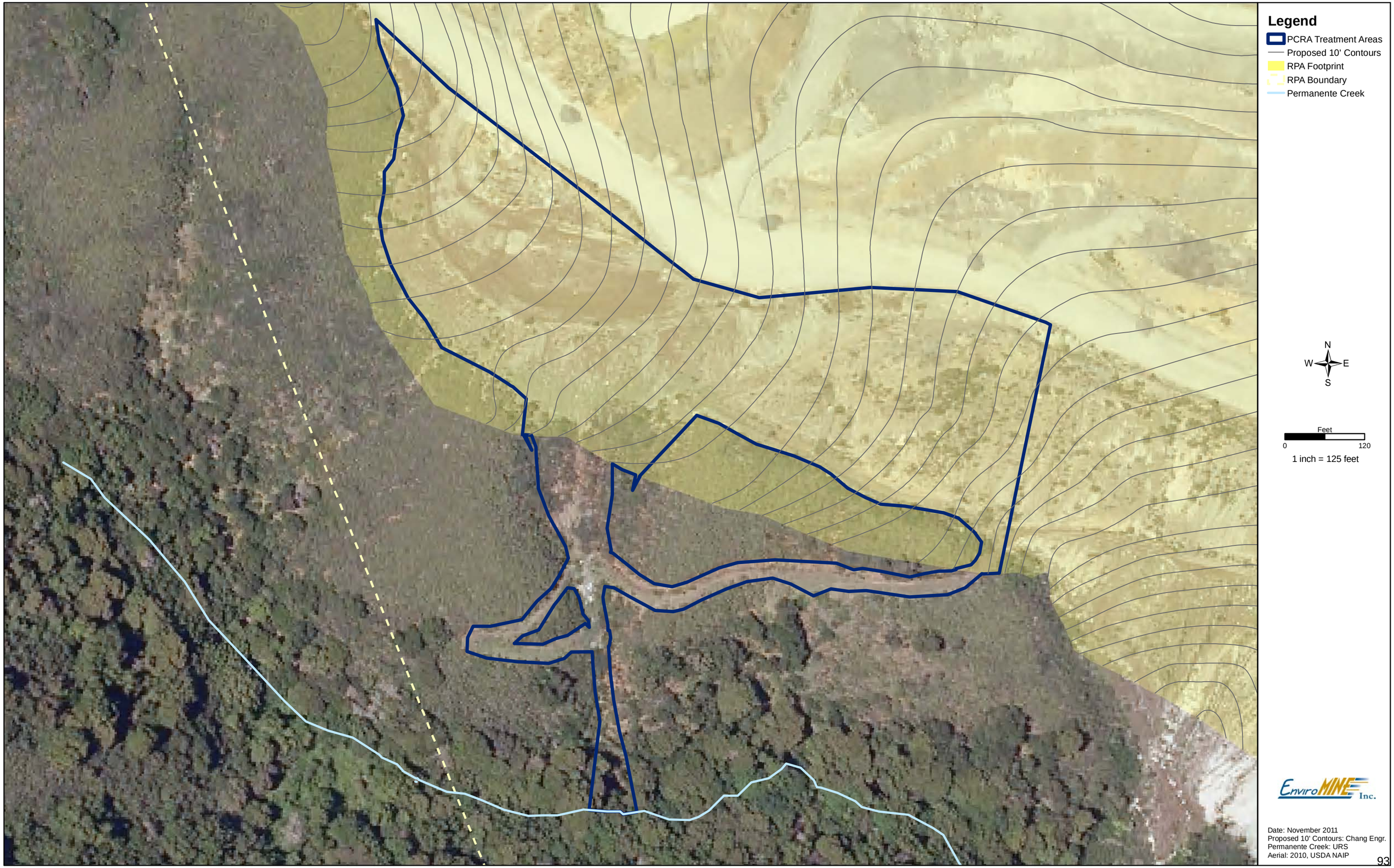
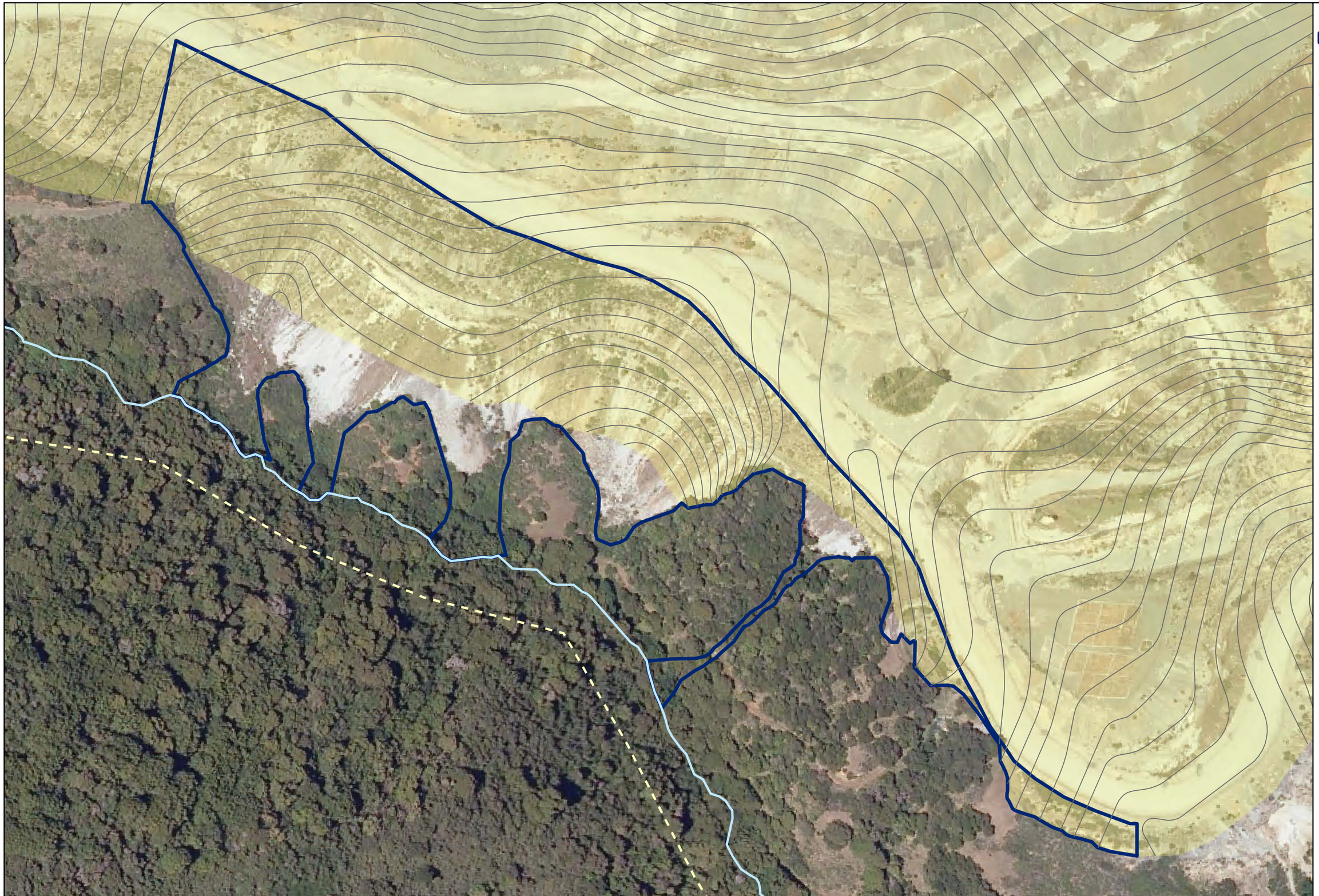


Figure 3.19-2 Permanente Creek Reclamation Area (PCRA) Sub-Area 2



EnviroMINE Inc.

Date: November 2011
Proposed 10' Countours: Chang Engr.
Permanente Creek: URS
Aerial: 2010, USDA NAIP

Figure 3.19-3 Permenente Creek Reclamation Area (PCRA) Sub-Area 3

Figure 3.19-4 Permanente Creek Reclamation Area (PCRA) Sub-Area 4

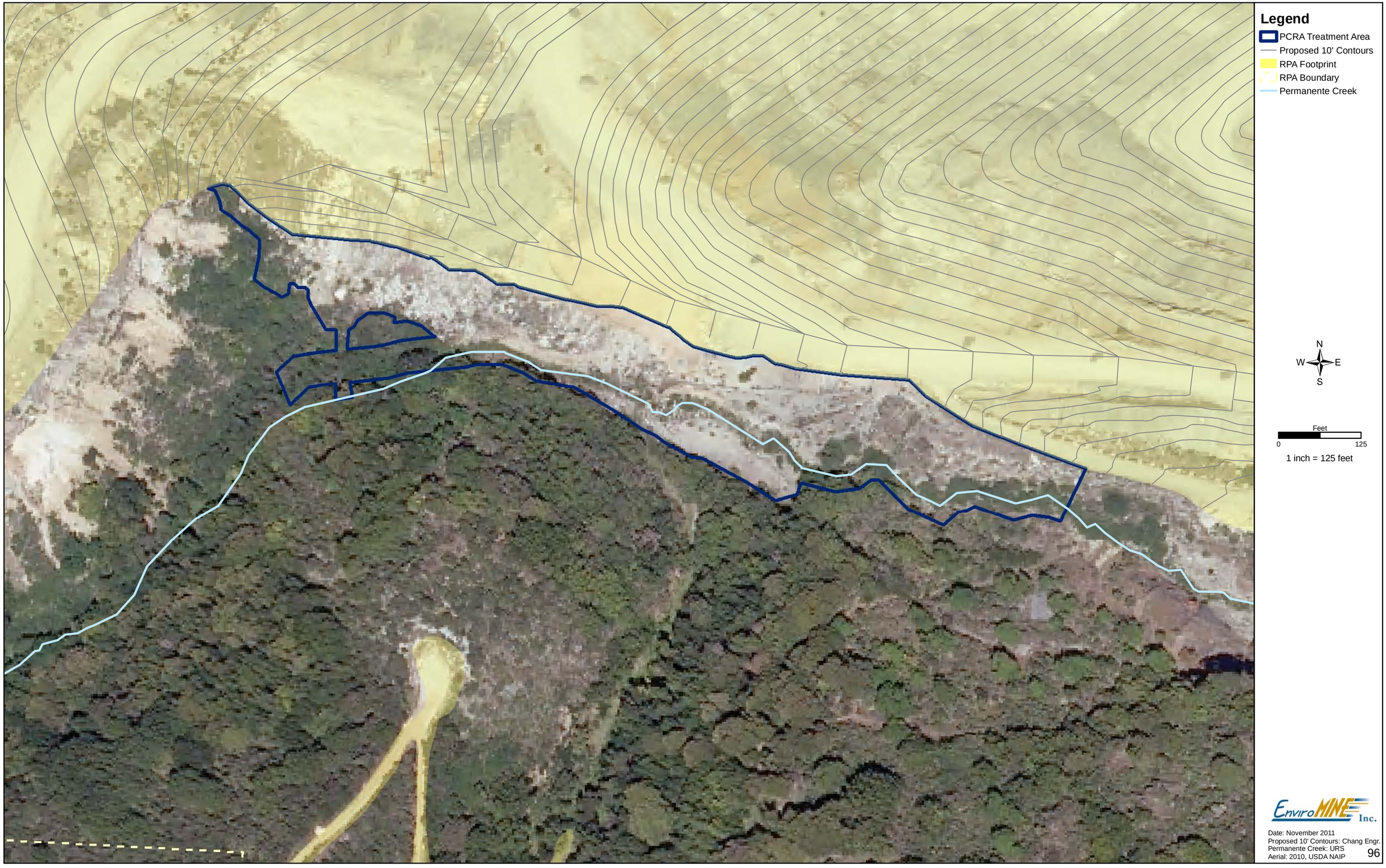


Figure 3.19-5 Permanente Creek Reclamation (PCRA) Sub-Area 5

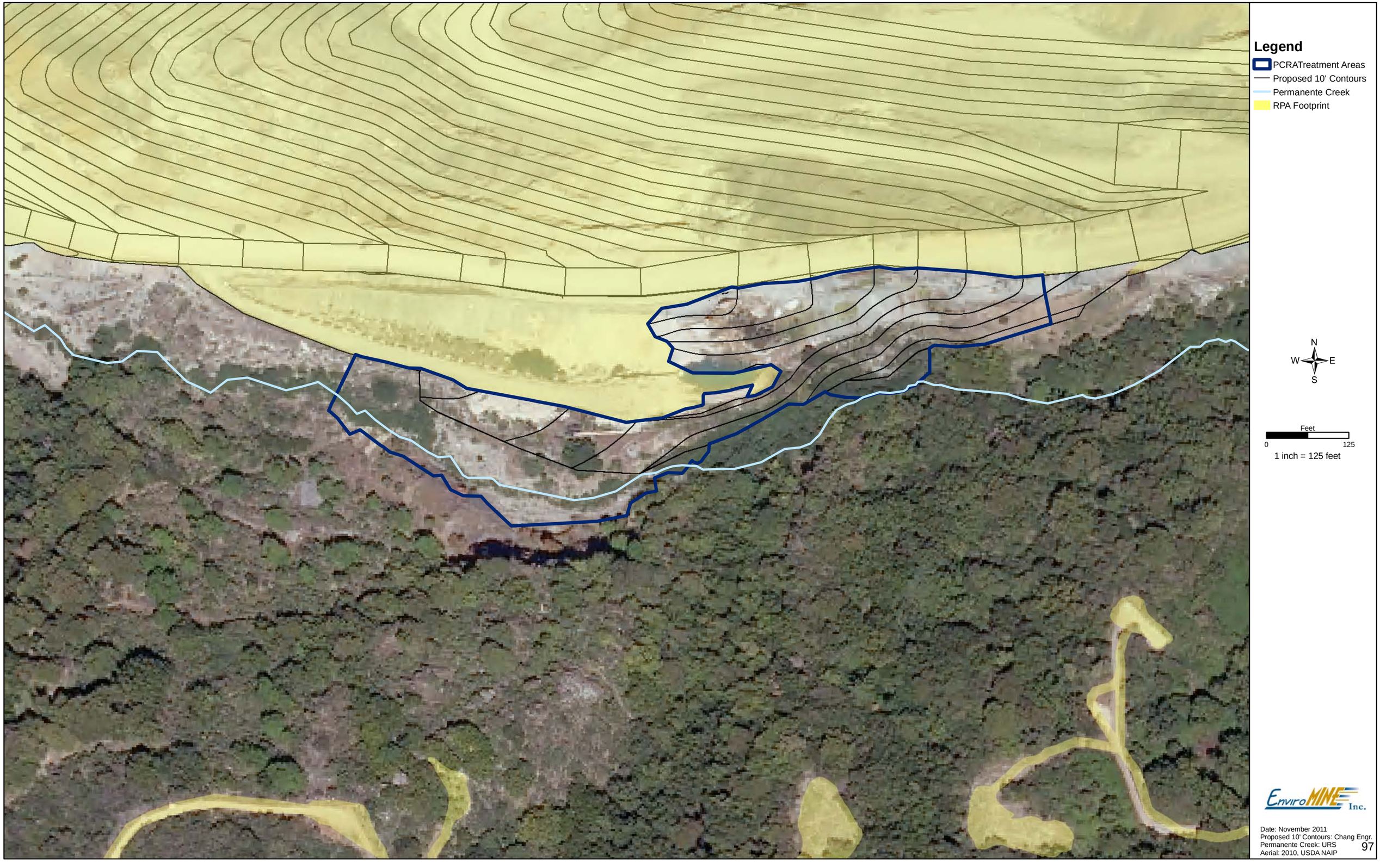


Figure 3.19-6 Permanente Creek Reclamation (PCRA) Sub-Area 6

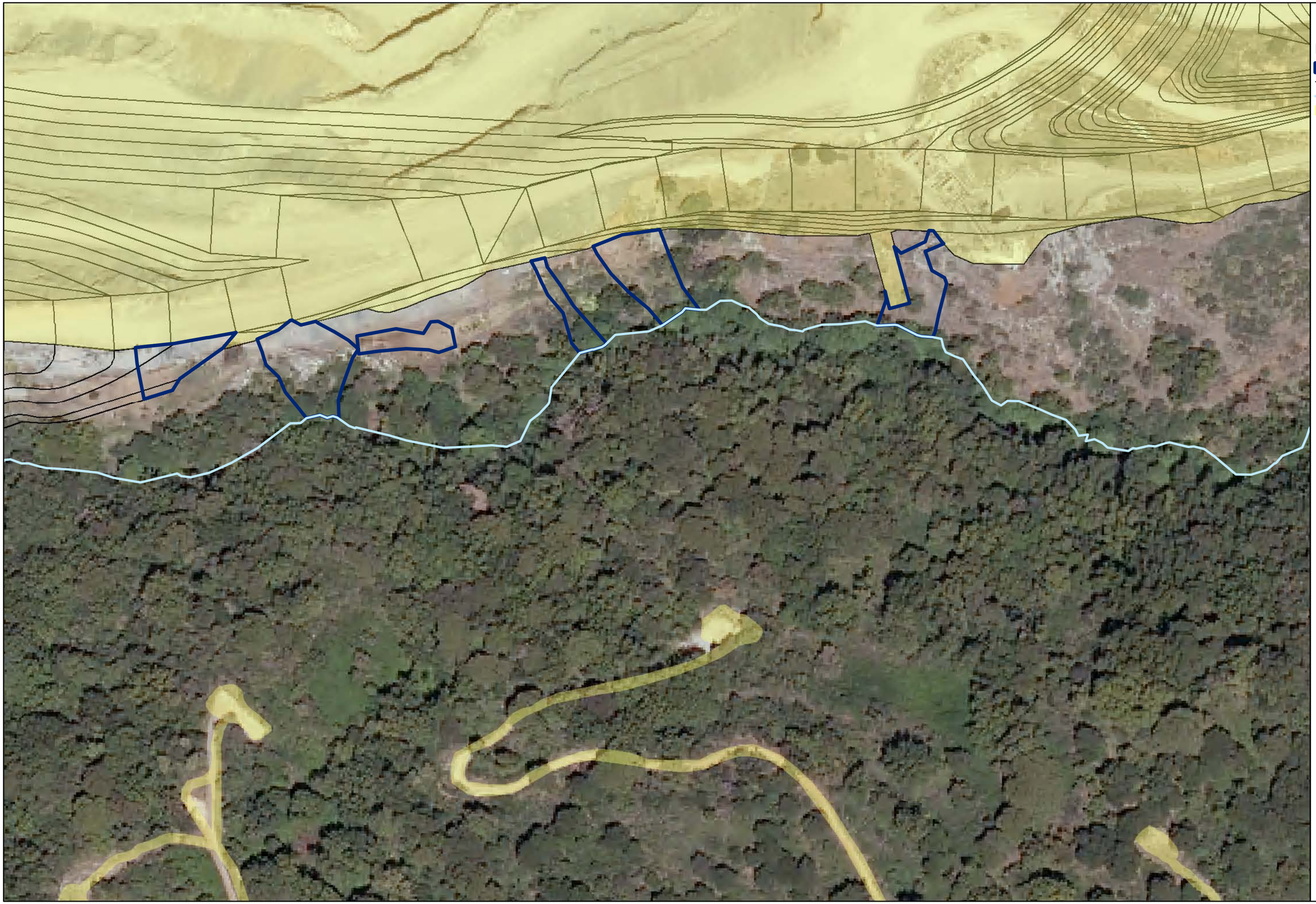
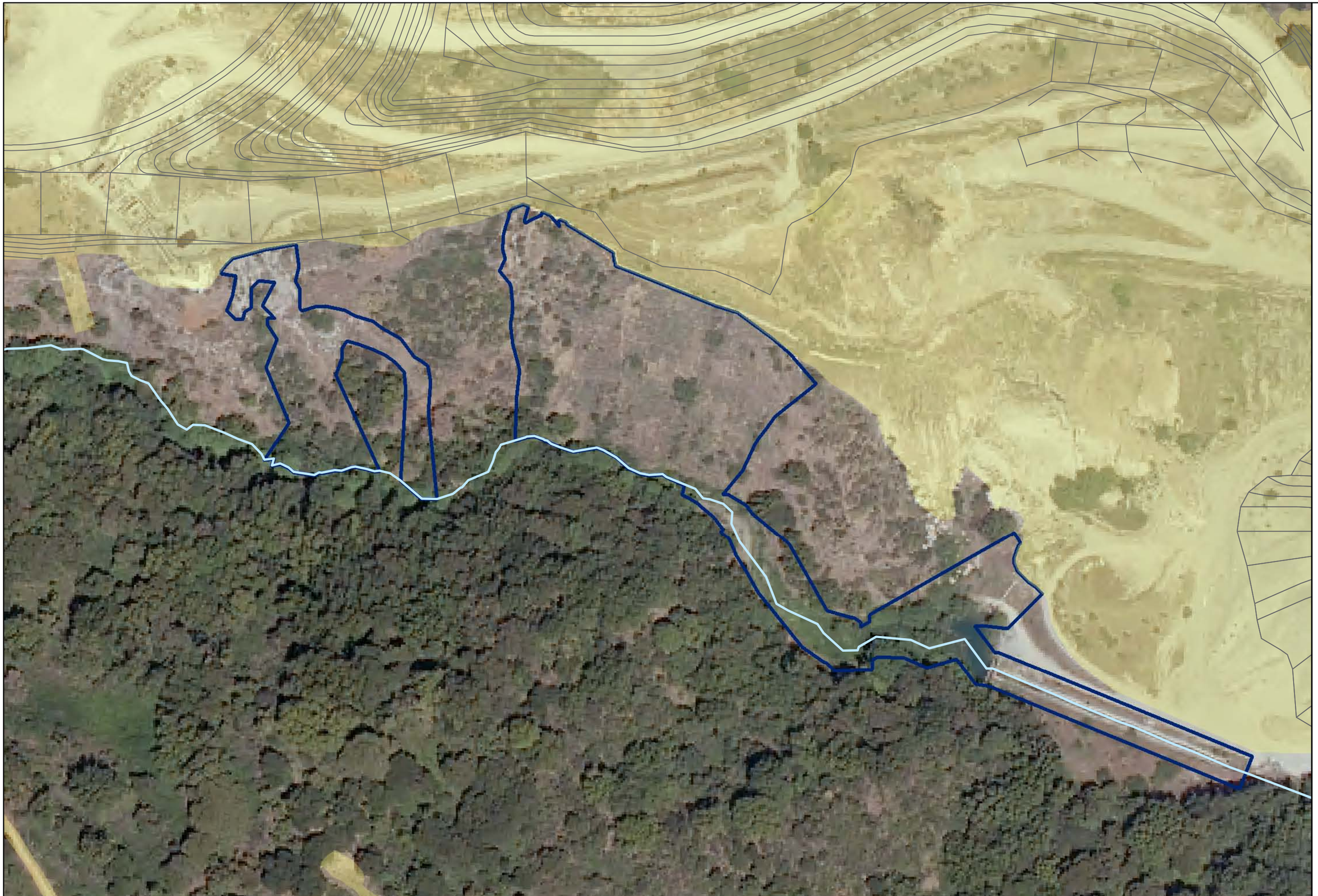


Figure 3.19-7 Permanente Creek Reclamation Area (PCRA) Sub-Area 7



Date: November 2011
Proposed 10' Contours: Chang Engr.
Permanente Creek: URS
Aerial: 2010, USDA NAIP

Boulder Removal For All Subareas

The County has identified limestone boulders that may have entered the creek channel as a result of past surface mining operations or related activities, and asked that the Amendment contain provisions for removing the boulders as necessary to alleviate water quality concerns. Attached as Attachment J is 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.

Reclamation Standards

SMARA requires verifiable standards to assure that reclamation plan objectives are achieved. (Code of Regulations, Title 14, 3700 *et seq*.) The following sections describe reclamation standards for revegetation and erosion control with respect to the PCRA sites referenced in Subareas 1 through 7 above, and summarize the information in the Revegetation Plan.

Revegetation

The revegetation objective for the PCRA is to further stabilize hillside soils against long-term erosion by expanding and enhancing shrub and grassland communities. Vegetation species have been selected for their erosion control characteristics, and because they are either already present (indicating that they are well suited to the climate and soil conditions) or have been demonstrated to be suitable through the test Plot program. Revegetation will, as in other areas subject to the Amendment, emphasize plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer.

Site preparation considers the unique conditions in the PCRA. Because these soils have in many areas had decades to stabilize since they were disturbed by surface mining operations, and to avoid the use of heavy equipment, the application of topsoil blends is not proposed in contrast to other areas that have been more recently disturbed. Disturbance in the PCRA will receive hydroseeding directly using a specifically tailored high-mulch mix. Roads (in Subarea 1) will be ripped or disced prior to seeding to promote establishment of an appropriate root zone prior to revegetation.

Hydroseeding is the primary revegetation method, which will cover slopes with a homogenous slurry of mulch, seed and a binding agent. Hydroseeding will be combined with a bonded fiber matrix and other erosion controls such as erosion-control blankets or fiber rolls to minimize erosion and to enhance revegetation success. The hydroseed mix is shown in Table 19 below. The mix will be applied to disturbed lands in Subareas 1 through 7, with the exception that areas of dense vegetation and rock outcrops or boulders may be excluded from treatment. Hydroseeding will be performed between September 1 and December 1 to take advantage of warm soil temperatures and winter rains for successful germination and establishment.

Table 19. Hydroseeding List for PCRA

SCIENTIFIC NAME	COMMON NAME	PURE LIVE SEED (lb / acre)	BULK SEED (lb / acre)
SHRUBS			
Artemisia californica	coastal sagebrush	1	10
Baccharis pilularis	coyotebrush	.1	6
Eriogonum fasciculatum	Eastern Mojave buckwheat	1.5	16
Lotus scoparius	deer weed	1.5	2
Salvia mellifera	black sage	1.5	4.3
GRASSES AND HERBS			
Achillea millefolium	common yarrow	.75	2
Artemisia douglasiana	Douglas' sagewort	.15	1.9
Bromus carinatus	California brome	8	10
Clarkia purpurea ssp. quadrivulnera	winecup clarkia	1	1
Elymus glaucus	blue wildrye	4.6	6
Heterotheca grandiflora	telegraph weed	0.2	1
Lotus purshianus	bird's foot trefoil	3	3.6
Plantago erecta	dotseed plantain	2.5	3
Sisyrinchium bellum	western blue-eyed grass	1	1.4
Vulpia microstachys	small fescue	8	10

Some subareas may contain ephemeral drainages or other areas adjacent to Permanente Creek with sufficient hydrology to support riparian vegetation such as willows (as poles or container stock). Willows will add long-term structural support to the drainages. Other areas may be planted with riparian trees or shrubs as seeds or container stocks, as determined by Lehigh's biologists. Table 20 below lists species that may be appropriate for planting or seeding along the drainages. Details for willow plantings are contained in the Revegetation Plan. For creek restoration areas in Subareas 3, 4, 5 and 7, the Revegetation Plan sets forth a conceptual revegetation design.

Table 20. Riparian Species for PCRA

SCIENTIFIC NAME	COMMON NAME
TREES	
Aesculus californica	California buckeye
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
Acer macrophyllum	big leaf maple
SHRUBS	
Heteromeles arbutifolia	Toyon
Rhamnus californica	California coffeeberry
Rosa californica	California rose
Sambucus mexicana	blue elderberry

Revegetation Monitoring, Maintenance and Performance Standards

Information regarding the initial hydroseeding in all subareas will be recorded for future reference and to track the success of vegetation against the performance standards. Hydroseeding records will include the date of the application and a description and map showing where seed mixes were applied. Monitoring will occur at least three times in the five-year period following initial hydroseeding. Monitoring will be conducted by a qualified biologist in late spring or early summer to ensure that plants are identifiable.

The progress of hydroseeding will be tracked using randomly-selected sampling plots to determine native species richness and percent cover of each species. Sampling will occur in nested plots, with shrubs assessed within a five meter radius and herbs within a one meter radius from the plot center. The number of plots for each installation stage will be selected in order to achieve an 80 percent confidence level in the performance results.

Monitoring data collected during field inspection will be compiled in a post-monitoring report to the operator. The report will summarize the success of revegetation efforts, including a comparison of data to "Year 5" performance standards, and any observed obstacles to achieving performance standards together with corrective recommendations. The report will be submitted by October 15 of that year to allow for any remedial seeding.

Monitoring will cease when the performance standards listed below are met for two consecutive years without intervention. Maintenance will consist of reseeding areas that do not meet performance standards within five years after initial seeding. Underperforming areas will be reevaluated to determine the measures necessary to improve performance, and reseeded as needed.

Specific performance standards have been developed for the PCRA. These standards describe the minimum targets for species richness and percent cover for hydroseeded areas. Performance standards represent anticipated conditions five years after installation. The standards for species, cover and density reflect what is reasonably achievable in these areas in light of the past disturbance, current vegetation conditions, and avoidance of significant earth-moving activities.

Table 21. Five-Year Performance Standards for PCRA

Proposed five-year performance standards for RPA Permanente Creek Reclamation Area revegetation			
	Hydroseed Areas		Riparian Area
	Shrub	Herb	Trees/Shrubs
Richness (avg. species per plot)	2	2	2
Canopy Cover	45%	45%	45%
Density (avg. individuals per acre)	200	NA	200
Percent Survival of planted individuals	NA	NA	60%

Erosion Control Monitoring, Maintenance and Performance Standards

Details for silt fencing, fiber rolls and erosion control blankets for use in the PCRA are contained in the Revegetation Plan. All areas (Subareas 1 through 7) will receive annual erosion control monitoring. Monitoring for erosion control will occur during the wet season by field investigation and visual observations. Soil and slope conditions will be inspected to identify significant new erosion, including rills and soil loss, and the need for maintenance. The conditions and any need for maintenance will be recorded, and the appropriate remedial measure identified, as part of an annual monitoring report.

The degree of erosion control maintenance depends on the conditions observed during field monitoring. All areas will receive hydroseeding, as indicated above, to improve the stability of surface soils over time. Where monitoring indicates that additional erosion controls are needed for maintenance purposes, the operator will apply a range of maintenance BMPs consisting of silt fencing, hay bales, straw cover and other methods as needed and deemed suitable for the conditions observed. These BMPs are described in more detail in the Drainage Report, SWPPP and Revegetation Plan. For ephemeral drainages that exhibit excessive erosion, BMPs will include lining with riprap or other erosion-resistant material.

3.20 Building, Structure and Equipment Removal (§3709)

With the exception of equipment required for reclamation purposes, all equipment and structures will be removed from the RPA Area during final reclamation. This includes all rolling stock such as loaders, dozers, excavators, haul trucks, storage vans and water trucks. This also includes all buildings and facilities such as conveyors, crushers, trailers, maintenance buildings, storage sheds and other types of structures. All surplus equipment and supplies stored within the Quarry limits will be transported off-site. Any junk equipment left on-site will be cut up, if necessary, and disposed of for salvage value. All trash and miscellaneous debris will be collected and hauled to an appropriate waste disposal facility pursuant to the state and local health and safety ordinances. Suitable access roads will remain to allow for proper monitoring and maintenance of the reclamation effort.

3.21 Public Health and Safety (§2712(c))

Post-extraction public health and safety will be protected in accordance with County standards for undeveloped land. During operations in the RPA Area, public access will be controlled in the following manner:

- Access restricted to the Quarry 24 hours per day through a gated entrance manned by security guards.
- Prior to encountering the guard gate on Permanente Road, there are two roads leading toward the RPA Area. Access provided by these roads is controlled through locked gates.
- Steep slopes and dense vegetation prevent access to the RPA Area from offsite lands.
- Maintenance of fencing installed on portions of the property boundary where unauthorized access may be a problem

Following final reclamation of the RPA Area, public access will be controlled in the following manner:

- Access roads will be blocked with a gate, large rocks or other control mechanism that will prohibit vehicular entry.
- Signs will be posted at key locations around the perimeter of the RPA Area adjacent to undeveloped lands. These signs will warn “Private Property”, “No Trespassing”, and “Danger: Steep Slopes”.
- All final slopes will be certified by a geotechnical engineer to be suitable for the planned end use.

3.22 Effect of Reclamation on Future Recovery of Mineral Resources

There are known mineral resources within Lehigh's property other than those which will be accessed under this Amendment. Lehigh may develop these resources at a later date according to future applications filed with the lead agency. This Amendment does not preclude future extraction or overburden placement activities within the RPA Area, other areas of the Quarry, or on surrounding lands.

3.23 Financial Assurances (§3702)

Financial assurances will be required to ensure that reclamation is performed in accordance with this Amendment. The financial assurance may be in the form of surety bonds, irrevocable letter of credit, trust funds, or other forms of financial assurances approved by the Lead Agency. The financial assurance is reviewed annually by the operator, the lead agency and the Office of Mine Reclamation to determine if adjustments to the estimate are necessary.

The County approved the financial assurance estimate dated August 2010 totaling $11,439,992. This estimate covers existing disturbed lands within the Permanente ownership as well as activities scheduled under the Permanente Quarry Reclamation Plan Amendment dated March 2007 and the 2009 EMSA Amendment. An updated estimate, totaling $13,438,624 was provided to the County in April 2011. Upon approval of this Amendment, the financial assurances will be adjusted as necessary.

3.24 Administrative Requirements

Lead Agency Information:

Lead Agency:	County of Santa Clara Planning Office
Staff Contact:	Gary Rudholm, Senior Planner
Telephone:	(408) 299-5770
Address:	70 West Hedding Street East Wing 7th Floor San Jose, CA 95110

3.25 Statement of Responsibility

Lehigh Southwest Cement Company accepts responsibility for reclamation as set forth in this Amendment.

Marvin E. Howell, Director of Land Use and Planning

Dated: December 7th, 2011