

CHAPTER 2 DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Statutory and Regulatory Requirements for Alternatives _____

2.1.1 NEPA Requirements

According to the Council of Environmental Quality's (CEQ) National Environmental Policy Act (NEPA) implementing regulations (40 CFR 1502.14), an Environmental Impact Statement (EIS) should present the environmental impacts of the Proposed Action and all reasonable alternatives in comparative form, defining the issues and providing a clear basis for choice by decision-makers and the public. The CEQ regulations state that "*reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant*".

The alternatives section shall: a) rigorously explore and objectively evaluate all reasonable alternatives, and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination; b) devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits; c) include reasonable alternatives not within the jurisdiction of the lead agency; d) include the alternative of no action; e) identify the agency's preferred alternative(s), if one or more exists, in the draft statement and identify such alternative(s) in the final statement unless another law prohibits the expression of such a preference; and f) include appropriate mitigation measures not already included in the proposed action or alternatives.

Unlike the California Environmental Quality Act (CEQA), which permits the evaluation of alternatives in less detail than required for the proposed action, the CEQ regulations for implementing NEPA require the analysis of alternatives at a substantially similar level of detail as that devoted to the proposed action (40 CFR 1502.14).

2.1.2 CEQA Requirements

CEQA requires that an Environmental Impact Report (EIR) consider a reasonable range of alternatives to a proposed project that can attain most of the basic project objectives, but has the potential to reduce or eliminate significant adverse impacts of the proposed project and may be feasibly accomplished in a successful manner, considering the economic, environmental, social, and technological factors involved. An EIR must evaluate the comparative merits of the alternatives (CEQA Guidelines Sections 15126.6(a), (d) and (e)). If certain alternatives are found to be infeasible, that conclusion must be supported by substantial evidence in the EIR or elsewhere in the administrative record.

Section 15126.6(d) also requires that, if an alternative would cause one or more significant effects in addition to those caused by the proposed project, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. One of the alternatives analyzed must be the No Project alternative (CEQA Guidelines Section 15126.6(e)). The EIR must also identify alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and should briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines Section 15126.6(c)).

2.2 Alternatives Development

As described previously in Section 1.4, Project Background, geologic sampling during 2009 and 2010 confirmed high-grade limestone in the location of the proposed South Quarry. The following considerations were taken into account when designing the proposed South Quarry and related components (Project):

- Recovery of the high- to medium-grade limestone to blend with West Pit lower grades at a ratio of 50/50;
- Avoid drainages to the extent feasible;
- Avoid sensitive bighorn sheep areas to the extent feasible;
- Avoid the inactive Mohawk Mine and its access;
- Develop the smallest footprint to recover high grade ore;
- Develop the quarry to deposit all overburden/waste rock permanently within the quarry itself to avoid additional land disturbance and additional visual impacts common to other mining methods; and
- Limit visual impacts to the San Bernardino National Forest (SBNF) and to Lucerne Valley.

2.3 Alternatives Carried Forward for Analysis

2.3.1 Features Common to All Alternatives, Including No Action/No Project

2.3.1.1 Timing

The amount of lower-grade limestone in the East and West Pits is sufficient to operate the existing cement plant for approximately 120 years with a source of higher-grade limestone for blending. Therefore, the existing cement plant is anticipated to be operated for 120 years under any alternative, including the No Action/No Project Alternative.

2.3.1.2 Ore Processing

Mineral processing would be conducted at the adjacent existing Mitsubishi Cement Corporation (MCC) Cushenbury Cement Plant north of the existing East Pit. There would be no change in existing operations or production at the plant for any alternative, including the No Action/No Project Alternative. Limestone would continue to be crushed, mixed with other materials, and heated the rotary kiln, then cooled and stored for shipping. Cement would continue to be shipped to various markets by bulk truck, train, and in sacks and this would not change as a result of any alternative.

2.3.2 Features Common to All Action Alternatives

2.3.2.1 Project-Specific Forest Plan Amendment

The forest-wide scenery inventory included in the Land Management Plan (LMP) (USDA Forest Service 2006) was developed as a coarse-scale overview, with the understanding that it would be

refined and expanded via project-level scenery analysis. Through the work produced on the project scale, sufficient detail has been added to the scenery inventory to more accurately establish Scenic Integrity Objectives that reflect and support the LMP's desired conditions for the Project area. The LMP Part 2 outlines the desired Project area landscape character as follows:

Desert Rim Place – is maintained as a modified to natural appearing landscape that functions as a sanctuary for a large number of federally listed native plants and a highly valued area for limestone production...

The Project area has a Scenic Integrity Objective (SIO) of High and an existing scenic integrity level ranging from High to Very High. LMP direction is to maintain the landscape as modified to natural appearing because of the site's long cultural history and the local and regional economic impacts associated with mining, particularly mining for high-quality limestone mineral deposits. Forest plans are expected to be revised every 10 to 15 years, and it would be expected that the SIOs would be further refined at that time.

According to LMP Aesthetic Management Standards S10, temporary drops of more than one SIO level may be made during and immediately following implementation of a project provided they do not exceed three years. With both action alternatives, the SIO level in the South Quarry Project Area would be reduced by more than one level, from High to Low during the first 10 years of implementation. Therefore, due to this deviation from the LMP Aesthetic Management Standard S10, a project-specific Forest Plan Amendment to the SIO is being considered. The proposed SIO would be Low (Figure 2.3-1). The analysis of the proposed amendment as it relates to the substantive requirements of 36 CFR 219.8 through 219.11 are provided in Section 3.11, Scenery.

2.3.2.2 Pre-Construction and Pre-Mining Activities

The following activities would be conducted prior to haul road construction and prior to commencing rock extraction in each new area of the new quarry to facilitate ongoing and future reclamation and revegetation:

- Construction and excavation limits would be surveyed and marked in the field;
- Specified plants that can withstand removal would be salvaged and stored in a nursery to ultimately be replanted on reclaimed land as areas become available for revegetation. MCC, in coordination with the Forest Service (and with the U.S. Fish & Wildlife Service [USFWS] for federally-listed species) would determine where and how the plants would be grown, propagated, and used in the interim;
- Seeds of specified plants would be collected and either used for revegetation or stored appropriately for maximum future viability. MCC, in coordination with the Forest Service (and with the USFWS for federally-listed species) would determine where and how the seeds would be propagated and plants used in the interim; and
- Any available soils would be placed in separate identified stockpiles near the edges of the excavations for use as a seed bank and seedbed during reclamation. Soil stockpiles would be clearly marked and seeded with an erosion control native seed mix and/or covered with larger material to limit wind and water erosion.

2.3.2.3 Haul Road Construction

Limestone ore excavated at the proposed South Quarry would be hauled by off-road haul trucks to the existing primary crusher located at the north end of the existing East Pit. The haul trucks currently in the MCC fleet have capacities of 77 to 105 tons. It is anticipated that 3 additional off-road haul trucks would be needed, and that these would be new, 105-ton capacity haul trucks. During the first two years of the project, the 9,585-foot or 1.8-mile long haul road would be constructed. The haul road would access the South Quarry at 5,950 feet above mean sea level and traverse down the north slope to an elevation of 5,050 feet at the southwest corner of the existing East Pit. The road's surface width would be 50 to 60 feet with a grade not to exceed 10 percent. It would have a surface of crushed limestone.

The preliminary road design has estimated the required cut of 450,000 cubic yards based on 1H:1V slopes required to develop the road. The cut rock would generally be trucked to the primary crusher and used for cement production; the surface material would be salvaged and stockpiled in the existing East Pit for reclamation and revegetation. In addition, to aid in the cutting of the access road, a temporary construction road approximately 755 feet in length and 25 feet wide (0.7 acre) would be cut from the end of an existing access road from the West Pit area. On completion of the main access road, this temporary road would be reclaimed and revegetated. The estimated disturbance area of the proposed haul road is 22.2 acres, of which 6.6 acres are on MCC fee land in the County of San Bernardino and 15.6 acres are within the SBNF boundary.

2.3.2.4 Excavation

There would be no increase in overall ore production. Higher grade limestone in the proposed South Quarry would be blended with lower grade limestone excavated from the East and West Pits at a ratio of approximately 50/50 to meet the limestone specifications to feed the adjacent Cushenbury Cement Plant, which requires a limestone feed of approximately 2.6 million tons per year (MTPY). The South Quarry would be mined at an average production rate of 1.3 MTPY of ore and 150,000 tons per year of waste rock for up to 120 years. Production from the East and West Pits would be reduced to an average of approximately 1.3 MTPY of ore and 150,000 tons per year of waste rock. Therefore, the overall average limestone production of 2.6 MTPY and 300,000 tons per year of waste rock at the mining complex would not change from the currently-approved production.

Limestone would be excavated by standard open pit practices. Once an area is stripped of vegetation and available soil is salvaged, controlled blasting would loosen the rock at a vertical benching interval of 45 feet. A dozer would push material and two to three loaders would load the shot or broken rock onto off-highway haul trucks. These trucks would transport material to the existing primary crusher located at the north end of the existing East Pit near the cement plant. Limestone that does not meet cement quality specifications and other rock types would be pushed or hauled directly to waste rock stockpiles located within the quarry. To limit additional land disturbance and to reduce potential visual and erosion impacts, no new waste stockpiles would be developed outside the perimeter of the proposed quarry. The excavations would be designed to develop a series of stable rock slopes up to 45 feet in height with horizontal benches 25 feet wide. Each bench would be sloped inward toward the vertical wall at 1 percent to capture any precipitation or runoff. The overall slope angle would be 60 degrees or a slope of 0.55 horizontal (H): 1 vertical (V). The site-specific geotechnical study (Golder Associates 2010) determined that the planned slopes would meet the stability criteria for sliding and earthquakes.

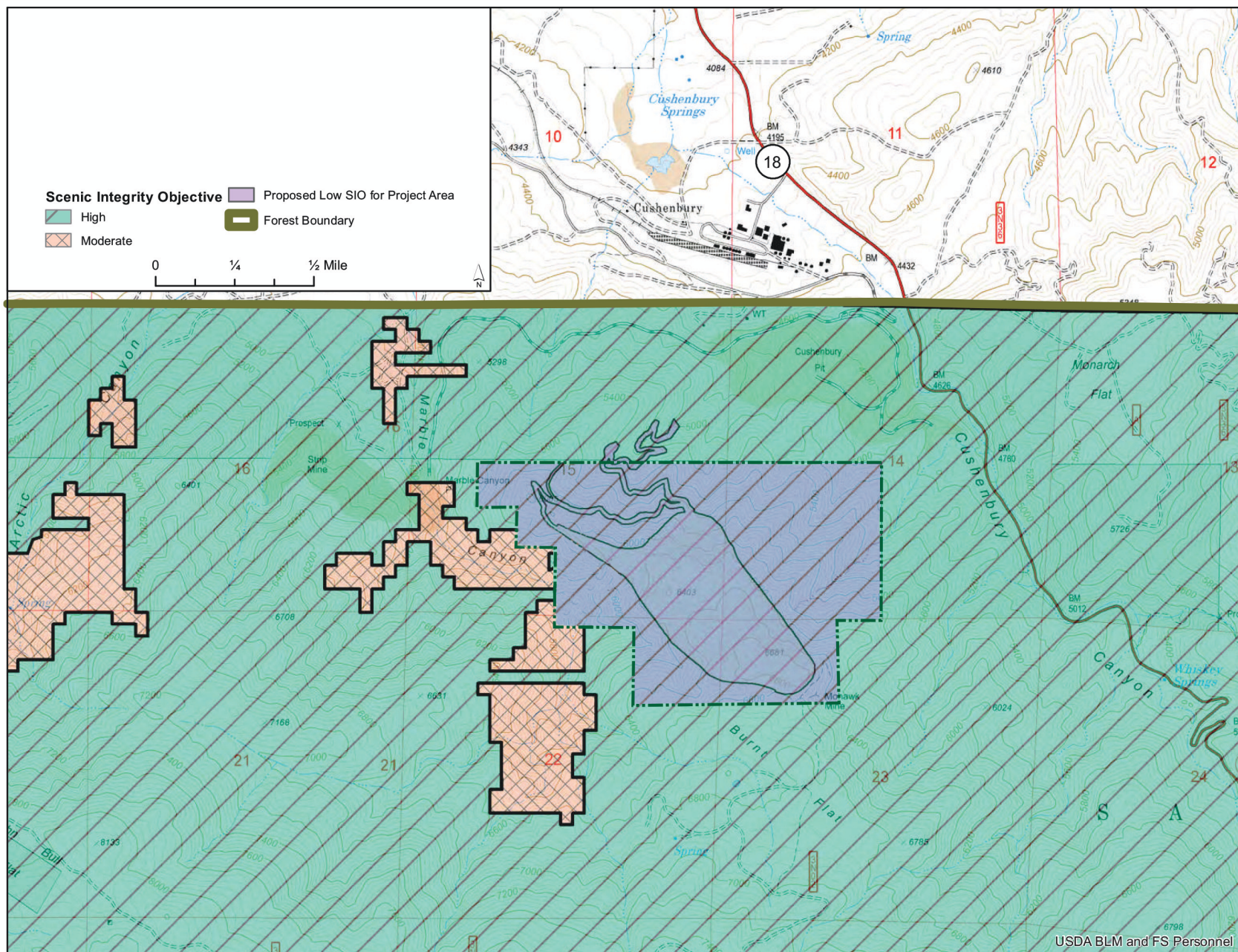


Figure 2.3-1 Proposed Scenic Quality Objectives for Project Area

2012-017 Mitcubishi Cement Corporation South Quarry Project

A geotechnical program of ongoing field mapping, drilling, geophysical surveys, and laboratory testing would be established and implemented as the quarry is excavated. This type of site investigation during the mining operation would provide information for detailed slope stability assessment on a continual basis and stabilization of slopes in areas where poor rock and/or adverse geologic structures are present. An annual report discussing the geotechnical program would be prepared for the Forest Service and the County of San Bernardino (County).

To reduce the possibility of boulder roll down or material erosion off-site on the down slopes to the north and east, specific excavation methods would be implemented. These include limiting the drilling and blasting when the outer quarry rim benches are being cut, designing blasting to undercut the outside wall, and excavating material by pulling into the quarry.

Operating Hours and Equipment

The new quarry would normally operate approximately 250 days per year, five days per week, and 10 hours per day. Factors such as market conditions and maintenance requirements may vary this schedule, occasionally requiring a second shift or weekend work. In addition, snow or other weather conditions may suspend quarry operations for one or two months during the winter. Approximately 11 employees would work at the new quarry; eight of these would be existing employees and three would be new employees.

The average daily ore production is estimated to be 5,200 tons, which would require approximately 50 to 55 off-road, on-site truck trips to the crusher per day. An average of 600 tons of waste rock would be extracted per day, requiring approximately six or seven internal truck trips per day. Table 2.3-1 lists the typical equipment that would be used for the mining activities conducted within the quarry. The number, makes, and sizes of the mobile equipment would vary depending on the required diesel emission standards, quarry needs, rock production, and normal replacement of old equipment. There would not be a net increase in most types of equipment from the amount currently used for the operation of the existing Cushenbury quarries because some existing equipment would be moved to the new quarry. The exception would be off-road haul trucks and employees to operate the haul trucks, both of which would increase with all action alternatives.

**Table 2.3-1
Typical Quarry Equipment**

Equipment	Typical Number	Net Increase of Equipment from Current Conditions	Purpose
Dozer	1-2	0	Removal of topsoil and waste rock. Construction and maintenance of the haul road.
Off Road Haul Trucks	2-9	0-5	Transportation of material to the primary crusher and onsite waste rock stockpiles. Two trucks would be dedicated to the South Quarry. Up to seven trucks would rotate with the West Pit operations, as required.
Drill Rig	1	0	Drill holes for placement of explosives
Water Trucks	1-2	0	Water haul roads, active excavation areas, stockpiles, and general dust suppression
Front End Loaders	2-3	0	Loading of materials into haul trucks at active mining area.

2.3.2.5 Blasting

To extract the limestone rock, blasting activities would be required to develop a series of benches and to break the rock into smaller pieces so that it can be removed. Blasting operations involve drilling along the mining face, placing charges, and detonating the charges. All blasting activities would be conducted by a licensed blaster under permit through the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for handling explosives. MCC currently has three licensed individuals on the staff. Blasting materials are currently, and would continue to be, secured in an appropriate magazine located at the cement plant facilities. All explosives and detonators would be transported, handled, and stored in accordance with all federal, state and local regulations, which includes permits issued by the San Bernardino County Sheriff's Department and San Bernardino County Fire Department pursuant to the Uniform Fire Code. Blasting would typically be conducted twice each week between the hours of 10:00 am and 6:00 pm Monday through Saturday. During the initial construction of the haul road, more frequent (up to once per day) smaller blasts would occur.

2.3.2.6 Production Water

Water would be used for road and mine dust control and would be obtained from existing water wells on MCC-owned land outside of the SBNF boundary. This water would be hauled in a water truck and sprayed on haul roads and active mine areas to minimize fugitive dust. The water truck would work continuously during active quarry operations as needed to control visible dust. Typically, the water truck would make up to eight trips per day, and the estimated water use would be approximately 104,000 gallons per day or approximately 79.2 acre-feet per year (af/yr). This water would infiltrate or evaporate and, therefore, not produce any wastewater or runoff. Approved chemical dust suppressants may also be used to control road dust and reduce water spraying frequency.

The total future water demand in acre-feet per year (af/yr) for plant operations (463.3 af/yr) and dust control for the West Pit (42.7 af/yr) and the proposed South Quarry (79.2 af/yr) is 585.3 af/yr. Current water use for the plant (463.3 af/yr) and East Pit (20.6 af/yr, to be closed in the future) has averaged 484 acre-feet per year. Therefore, the proposed South Quarry would require a net increase of approximately 58.6 acre-feet per year (79.2 af/yr minus 20.6 af/yr) or a 12.1 percent increase from existing conditions. The supply would be the existing MCC wells, which use groundwater pumped from the Este sub-area of the Mojave Basin. No new wells are proposed.

2.3.2.7 Public Access Restrictions

Forest Road 3N02 officially ends at a locked SBNF gate approximately 0.25 mile south of the site, which indicates the end of public access. The road north of the gate is a historic road that has never been part of the official SBNF road system. The road is not maintained north of the gate.

Although motorized public access is not allowed north of the gate, unauthorized access via off-highway vehicles (OHV) has been known to occur. To reduce unauthorized accessibility to the quarry from OHV riders and to provide for hiker safety, MCC would construct a 2,330-foot-long landscape and safety berm along the southern rim. This berm would tie into steeper slopes on the east and southwest to help restrict public access to the South Quarry. The berm would be

composed of waste rock and salvaged soil, approximately 6 feet in height with 1.5 Horizontal (H):1 Vertical (V) slopes, and would cover approximately 2.7 acres, including the adjacent setback and access road. The berm would include placement of warning signs and a mixture of large rocks to discourage vehicles trying to ride over it, and would be revegetated with native vegetation.

A 25-foot wide setback with safety berms 4 feet in height with 1H:1V slopes and oversized boulders would be constructed along any other quarry rim areas susceptible to public access. Warning signs would be installed and frequently maintained along all sides of the rim every 250 feet. Signs would measure at least 18 inches by 18 inches with contrasting background lettering and would include the warnings *Danger*, *Open Pit Mine* and/or *Steep Slope* in both English and Spanish.

2.3.2.8 Wastes/Waste Rock

There are no ponds or tailings-type wastes associated with limestone mining. All usable limestone would be transported to the existing cement plant to be used in the cement manufacturing process.

The production of limestone would generate approximately 10 percent waste rock or approximately 150,000 tons per year of rock unsuitable for cement processing depending on the quality of the limestone. The percentage of this amount may be higher for Alternative 2 – Partial Implementation than for Alternative 1 – Proposed Action. Minimal amounts of overburden are expected as the limestone is generally exposed across the quarry site. Instead of removing the waste rock from the site and creating separate waste stockpiles outside of the rim of the quarry, the waste rock would be stockpiled within the mining footprint.

The development of internal waste rock stockpiles would reduce the area of disturbance outside of the quarry rim, reduce potential visual impacts of the waste rock piles, and reduce internal slopes, thus aiding in revegetation. Based on 250 days of operations per year, an average of 600 tons of waste rock would be extracted per day, which would require six or seven internal off-road truck trips per day depending on the volume of the haul truck. Note that the amount of waste rock would be highly variable depending on the area being mined. Mining an area with high volumes of waste rock would require more trucks to haul the rock to the stockpiles, but a like number of trucks moving ore to the crusher would be reduced.

2.3.2.9 Drainage and Erosion Controls

Diverting Undisturbed Area Runoff

Drainage structures would be located and constructed to control flow velocities, provide for stability during their planned operating life, and minimize additional contributions of sediment to runoff flows. Based on area topography and the proposed development plans, it is anticipated that the need for diversions would be limited, with most runoff collecting in active quarry areas.

Disturbed Area Drainage Control

Runoff resulting from direct precipitation on active and unreclaimed disturbed areas and uncontrolled runoff from upgradient undisturbed areas has the potential to cause erosion and resulting sediment loss, transport, and deposition, in both the disturbed and downgradient areas. In active quarry areas, drainage control would generally not be a significant concern because all

disturbed area drainage is anticipated to be retained within the basin created by the quarry excavation.

For quarry development areas, roads, stockpile areas, and other disturbed areas, erosion and sediment loss and transport would be controlled through the use of localized drainage and sediment control measures. These measures would include construction of temporary diversion and collection ditches, berms, check dams or catchment basins; placement of erosion control materials, sediment fences, or straw bales; and other appropriate measures individually or in combination.

The objective of all drainage control measures would be to limit flow volumes and velocities to minimize or prevent erosion and to promote settling of suspended solids before the runoff leaves the disturbed area. It is anticipated that drainage control measures would be implemented as needed based on regular inspection of operating areas. If initial evidence of any significant erosion or siltation is observed downgradient of any disturbed area, appropriate and timely control measures would be identified and implemented. These control measures are identified in the previous paragraph.

Stabilization of Disturbed Areas

Disturbed areas would be stabilized to minimize both short- and long-term erosion and sediment loss. In the case of mine roads, short-term stabilization measures include proper road design and construction methods, including minimizing disturbed areas and the use of site-specific drainage and sediment control measures. These measures include, but are not limited to, placement of erosion control materials, sediment fences, or straw bales. Other measures include regular road maintenance and establishment of temporary vegetation where appropriate, and stabilization of cut slopes and fills. Growth media stockpiles would be stabilized through establishment of a temporary vegetative cover if they are designed for storage periods exceeding one year.

Long-term stabilization, or reclamation, would generally involve grading or reshaping disturbed areas, establishing effective drainage, placement of plant growth media, and revegetation. Due to both operational and economic limitations, surface stabilization of quarry areas would be limited to removal of loose rocks from high wall areas, and growth media replacement and revegetation of quarry bench surfaces. Following reclamation, the majority of surface runoff from quarry areas will be retained in the quarry limits where it will either infiltrate or evaporate.

2.3.2.10 Reclamation

As defined by the California Surface Mining and Reclamation Act (SMARA), reclamation is the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations. Specific reclamation activities would occur concurrent with excavations and throughout the life of mining operations, including slope reduction, stockpile management, erosion control, and revegetation. At the conclusion of excavations, five years of active reclamation and revegetation will be implemented followed by revegetation monitoring and remediation until revegetation performance standards are achieved.

The intent of SMARA is to “*maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that: (a) adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative uses; (b) the production and conservation of*

minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment; and (c) residual hazards to the public health and safety are eliminated.”

The SMARA regulations (14 CCR Section 3700) state the following: “Reclamation of mined lands shall be implemented in conformance with standards in this Article (Reclamation Standards). The standards shall apply to each surface mining operation to the extent that (1) they are consistent with required mitigation identified in conformance with CEQA; and (2) they are consistent with the planned or actual subsequent use or uses of the mining site.”

The site would be reclaimed to meet both the requirements of SMARA and the Forest Service Minerals Regulations (36 CFR 228 Subpart A). The objectives of the Reclamation Plan are to:

- Eliminate or reduce environmental impacts from mining operations;
- Reclaim the site in a usable condition for post-mining end uses that will include open space and wildlife habitat;
- Reshape mining features and revegetated disturbed areas to minimize aesthetic, biological, and hydrologic impacts; and
- Reclaim the site as necessary to eliminate hazards to public health and safety.

Reclamation procedures are incorporated with the mine plans and operations to optimize costs and maintain economic efficiency. With proper reclamation planning, early reclamation measures would be introduced while the quarry is being developed to minimize impacts.

The mining and reclamation plan are for an average rate of 1.3 MTPY of ore. Because market demand for the finished product determines the rate of extraction, it is difficult to precisely forecast future demand for limestone and to make exact long-term predictions for annual production. The time span of the total life of the operation is an estimate that may vary based on actual market conditions.

Another factor that may affect the time frame and phasing of the mining operation, and therefore the reclamation, is the quality of material encountered as mining progresses. The natural deposit at the site is not of uniform quality, so it is necessary to excavate selectively from different locations to achieve a suitable blend of raw materials. Until the ultimate exhaustion of the limestone deposit, reclamation would progress in the manner described below.

The permanent perimeter quarry slopes would be reclaimed from the rim downward as each phase is completed to meet slope design as specified in the ongoing slope stability assessments. Reclamation would consist of sloping excavated cuts and benches as necessary to meet the designed 0.55H:1V overall slope and to round the rims of the final benches. Each bench would be sloped inward toward the vertical wall to capture any precipitation or runoff. The individual benches would be approximately 45 feet high and 25 feet wide unless required to be flatter in specific areas, as determined by geological mapping during ongoing quarry operations.

General slope construction during excavation would depend on the nature of the slope material and would be in accordance with the geotechnical slope reports. During reclamation, the upper slopes that may be visible from Lucerne Valley or areas of the SBNF would be sculpted or roughened to reduce straight lines, create shadowing, and reduce visual impacts. In addition, at approximately every 500 feet, a ramp would be constructed to connect the benches to allow for wildlife movement within the reclaimed quarry.

Surface material salvaged for revegetation would be limited due to the surficial rock conditions on the site. Available material containing the native seed bank would be placed on the benches and would be augmented with additional growth media and mulch in islands to provide future sources of seeds. Revegetation would be accomplished by one or more of the following methods: by reseeding with native plant perennial species including seeds collected at or near the site, from plantings grown in a nursery, from plant cuttings, and from whole plants salvaged from new mining areas.

Reclamation Assurance

A reclamation financial assurance cost estimate, in an amount sufficient to pay for the cost of reclamation, would be prepared. The County and Forest Service would annually review and update, as needed, the cost estimate, as required by SMARA. The reclamation assurance would be reviewed and approved by the California Office of Mine Reclamation (OMR) to fulfill an additional SMARA requirement. MCC currently provides a financial assurance mechanism in the form of a letter of credit payable to the County and OMR for the approved amount to assure reclamation of its existing operations. An additional letter of credit or other acceptable financial assurance mechanism would be provided for the South Quarry, which would include the Forest Service as a payable party.

2.3.2.11 Revegetation Plan

Revegetation is the establishment of native vegetation on lands that have been disturbed. A Revegetation Plan has been prepared for the project as part of the Plan of Operations (Aspen Environmental Group 2010), which is summarized below.

The Revegetation Plan's objectives are to establish islands of shrubs and grasses on approximately 30 percent of bench and other disturbed areas; plant and seed pinyon pine, canyon live oak, Utah juniper, and salvaged yuccas onto these islands after initial establishment; establish cover on steeper cut slopes through hydroseeding; conduct concurrent revegetation; and monitor and implement remediation activities to achieve success criteria over the life of the plan.

The Revegetation Plan would:

- Establish islands of native shrubs and perennial grasses covering at least 30 percent of the site where access allows;
- Establish young pinyon pine and canyon oak seedlings and salvaged yuccas onto revegetated islands after initial shrub nurse plant establishment;
- Establish some cover of rabbitbrush and curl-leaf mountain mahogany on roll down and overburden sites; and
- Revegetate disturbed sites progressively as mining or related disturbance is completed to maximize the acreage of reclamation completed before completion of mining.

Three listed carbonate plant species, Parish's daisy (*Erigeron parishii*), Cushenbury buckwheat (*Eriogonum ovalifolium*), and Cushenbury puncturebract (formerly oxytheca) (*Acanthoscyphus parishii* var. *goodmaniana*) have been found at the site of the proposed quarry. Habitat on the site is suitable for several sensitive wildlife species, including Nelson's bighorn sheep. The Revegetation Plan is intended to enhance or restore suitable habitat for listed carbonate-endemic plants and enhance both foraging and cover habitat for Nelson's bighorn sheep. The

Revegetation Plan also includes measures to salvage yuccas and to include pinyon pines in the revegetation plant palette to comply with the County's Native Plant Protection Policy.

The Revegetation Plan would establish suitable conditions with pioneering species so that the climax species can be become established over time. This two-phased revegetation would be undertaken on selected islands with salvaged topsoil application, seeding with appropriate pioneer shrub species, and monitoring and maintenance activities until the site is favorable for planting and seeding of climax trees and shrubs. Nursery-grown trees and shrubs would be planted at that time. It is expected that the planting islands would trap windblown seeds and attract wildlife to aid in seed dispersal. Those areas with steeper slopes on road cuts would be hydroseeded with appropriate native seeds and mulch.

The Revegetation Plan would implement a series of activities to revegetate portions of the site including the quarry benches. Due to the very rocky existing conditions, only a limited amount of topsoil or growth media is expected to be available for salvage. In addition, the excavated slopes would be solid rock. Revegetation is planned to be undertaken on the 25-foot wide benches in planting islands with available soils, seeds, and salvaged and nursery-grown plants. Physical reclamation procedures would include re-grading, decompaction, deposition of stockpiled soil, seeding/planting with natives, protecting reclaimed areas from disturbance, irrigating, monitoring, and application of remedial/supplemental measures as needed.

Revegetation Goals

The primary goal for revegetation of the South Quarry is to revegetate approximately 30 percent of bench and other areas disturbed by mining with a self-sustaining vegetative cover of native species, including listed carbonate plant species. The Plan goals include minimizing visual effects; restoring biodiversity and ecological function; enhancing habitat for rare plants and animals; and mitigating losses of protected plants. The revegetation goals would conform to SMARA requirements and the guidelines in the Carbonate Habitat Management Strategy (CHMS). The details regarding the revegetation goals are found in the Revegetation Plan (Aspen Environmental Group 2010).

Success Criteria

Detailed descriptions of success criteria are included in the Revegetation Plan. The criteria specify minimum shrub cover, diversity and species richness thresholds in revegetated areas, and minimum numbers of young climax species plants so that overstory cover would develop over time. The success criteria are based on the revegetation guidelines and success criteria described in Carbonate Habitat Management Strategy and other vegetation data. Quantitative thresholds for vegetation cover and climax species densities may be adjusted if more precise data are available in the future.

The success criteria below are minimum thresholds for quantitative descriptive characteristics of vegetation on reclamation sites. These characteristics would be evaluated from data collected during monitoring (the monitoring plan is described later in this section). In general, completion would be at the close of a 10-year monitoring period, though revegetation sites may be evaluated for success earlier or later than the 10-year period depending on actual conditions. The success criteria are:

- Successfully revegetated islands (per this criteria) must make up at least 30 percent of the total area on any given revegetation site;
- Any successful or complete revegetation site would have had no management-related manipulation (such as weeding, irrigation, seeding, or planting) for at least three years immediately prior to evaluation for completion.
- Native shrub and tree cover will be at least 50 percent that of predisturbance cover in baseline data (summed native shrub and trees cover is estimated at 74 percent for woodlands). Thus, revegetated woodland cover must reach 37 percent to meet this criterion (summed shrub and tree cover).
- Native tree and shrub species richness will average at least 50 percent of the native tree and shrub species richness in undisturbed reference vegetation (baseline estimated as 10 species per 0.1 acre plot). Thus, revegetated woodlands must have at least 5 native tree and shrub species per 0.1 acre reference plot.
- Seedling and sapling tree density in revegetated woodlands will reach at least 50 percent of overstory tree density in undisturbed reference vegetation (baseline values estimated as 84 trees per acre in pinyon woodlands, mostly pinyon pines). Thus, revegetated woodlands must have at least 42 surviving seeding and sapling trees per acre.
- Non-native species cover will be no more than 15 percent absolute cover and annual monitoring data will show a downward trend documented by a declining regression coefficient.
- None of the plants identified as invasive exotics or invasive non-native plants in Appendix E of the CHMS will be present on the revegetation site as of the date of approval.
- At least 50 percent of the number of yucca plants salvaged during the project will be alive and stable as of the completion date. In the event that 50 percent of the salvaged plants do not survive, alternative sources of yucca can be used to meet this criterion.

Where the criteria for success are achieved, sites should be expected to continue on a trend toward eventual development as native shrubland or woodland, eventually dominated by characteristic native species of surrounding shrublands and woodlands. The details regarding the success criteria are found in the Revegetation Plan (Aspen Environmental Group 2010).

Test Plots

SMARA requires mine operators to test revegetation strategies on test plots prior to implementing revegetation more widely through the mine areas. Two types of test plots are planned: test plots to experiment with replacement soil composed mostly of crusher fines, and plots to test climax species establishment. The Revegetation Plan may be modified based on the results of these test plots. The details regarding the test plot methodology are found in the Revegetation Plan (Aspen Environmental Group 2010).

Revegetation Implementation

The details regarding the revegetation implementation are found in the Revegetation Plan (Aspen Environmental Group 2010); it is summarized below.

Timing

Revegetation tasks would begin on approval of the Plan of Operations. Reclamation and revegetation in any given part of the permit area would commence when mining would no longer affect the area. This would allow vegetation recovery within some parts of the project site before completion of mining.

Plant Salvage

The methods of salvaging plants prior to site clearing would include whole plant excavation, cuttings, and seed collection. The Revegetation Plan (Aspen Environmental Group 2010) contains a list of the important salvageable plants and preferred methodology for each.

Topsoil (Growth Media) Salvage and Conservation and Site Preparation

Any topsoil on the site would be in the form of smaller eroded limestone gravel that may contain organic material and seeds. This surface material would be salvaged and stored in separately marked stockpiles for future reclamation efforts. To minimize the storage period for salvaged topsoil, vegetation and topsoil would be collected in increments, removed only from the area to be disturbed during the next two years. Because there is a lack of surface material, the soil available for revegetation would be insufficient to cover the entire disturbed area of the mine. Therefore, soil would be used to create islands within the mined area that would be the focus of the initial revegetation efforts. The site would be graded to minimize erosion and maximize rainwater holding capacity. Compacted areas would be ripped to depth of 1 foot if feasible due to the rock material to relieve compaction and to create an uneven surface. This would aid in collecting windborne seeds and moisture and create more favorable microhabitats. The details regarding the soil salvage, conservation, and site preparation are found in the Revegetation Plan (Aspen Environmental Group 2010).

Irrigation

Temporary irrigation systems would be installed at each revegetation site. Revegetation sites would be irrigated as needed to ensure native plant establishment.

Seed Application and Species Mix

A seed mix would be developed for the site based on seed mixes used previously for nearby quarries. The seed mix would be adapted based on seeding and test plot experiments. The details regarding the seeding are found in the Revegetation Plan (Aspen Environmental Group 2010).

Out-Planting

Salvaged and container-grown plants would be placed in revegetation areas by hand or tree spade and identified for data keeping. Elevation and site physical characteristics would determine which species are suitable for the site. Plant spacing and arrangement would be determined by measurements taken in reference areas. Herbivore exclusion, weed control, and fungal inoculum may be used as necessary.

Monitoring

Monitoring is intended to (1) verify correct implementation of the revegetation plan; (2) evaluate the degree of success in terms of the specified objectives; and (3) determine if maintenance or remediation are needed. Specific monitoring methods are detailed in the Revegetation Plan (Aspen Environmental Group 2010) and summarized here. Beginning one year after initial seeding at any site (test plots, pre-closure revegetation areas, and final closure), and continuing

annually as needed until success criteria are achieved, a series of quadrats would be evaluated to estimate cover, diversity and density of each species. Monitoring would occur for at least five years, or until success criteria are achieved. Each year, recommendations would be made (if necessary) for remediation, which could include weeding, changes in irrigation, re-seeding or re-planting, etc. In the final year of monitoring, data would be compared to the baseline data to determine if the success criteria have been met.

Reporting

Annual monitoring reports describing revegetation progress and making recommendations, as needed, for appropriate reseeding, maintenance, or other action would be prepared. These reports would be provided to the Forest Service and the County.

2.3.2.12 Post-Reclamation Uses

The planned land use subsequent to mining, reclamation, and revegetation is open space and wildlife habitat managed by the Forest Service. The quarry excavation and reclamation would result in a series of revegetated benches 25 feet wide and 45 feet high. Portions of the quarry would be partially backfilled, aiding in the reclamation and revegetation of these quarry slopes.

2.3.2.13 Avoidance/Minimization and Environmental Protection Measures

Both NEPA and CEQA encourage project planning and approvals to incorporate measures to mitigate the adverse environmental effects of a project. The NEPA and CEQA definitions of mitigation are very similar (see 40 CFR Section 1508.20 and 14 CCR Section 15370). Mitigation can take many forms, including avoiding the effects to a resource, minimizing impacts to a resource, or compensating for effects to a resource. Where the project applicant incorporates such measures into the project as proposed (or other action alternatives under consideration), these measures are often referred to as project design features. The SBNF Land Management Plan includes standard design features that provide guidance for designing actions and activities during Project planning and are intended to be incorporated into proposed projects as applicable. Early incorporation of and commitment to project design features is encouraged because it facilitates sound and collaborative project development, and efficient environmental review.

CEQA also requires a lead agency to consider project impacts with and without proposed mitigation measures to evaluate whether other measures might be more effective than the measures proposed. Thus, some of the project design features incorporated into the Project action alternatives are also classified as mitigation measures for purposes of analysis under CEQA. For purposes of this CEQA classification, this EIR/EIS uses the following distinctions:

For CEQA purposes, project design features are measures that are integrated into the design of the project or project components, including but not limited to selection of building materials, selection of equipment to be installed, location, and site layout. These choices are integral to and usually cannot be physically separated from project implementation. Often, these measures are completed upon completion of project construction, and cannot subsequently be undone. For CEQA purposes, mitigation measures are work practices affecting the manner in which the project would be carried out; other on-site or off-site actions to avoid, reduce or compensate for the significant adverse effects of a project; measures requiring continuous commitment to implementation over the life of the project; and/or measures that will be taken at a future time remote from project approval and construction.

Design features for purposes of NEPA are listed below. The majority of these measures are also considered mitigation measures for purposes of CEQA and are identified and listed again in the relevant environmental resources subsections of Chapter 3.

Air Quality

AIR-1: Within three years after the commencement of mining in the South Quarry, or whenever the total quarry haul truck operating HP-hrs/year reach 6 million per year, whichever is later, the applicant shall:

- Add to its fleet no fewer than five quarry haul trucks meeting Tier 4 standards; and
- Retire all remaining Tier 0 quarry haul trucks.

“Tier 0” and “Tier 4” refer to those terms as defined by the CARB off-road diesel rule, CCR Title 13 Sections 2449-2449.3. For the purposes of this condition, “mining” shall not include the construction of the South Quarry Road.

AIR-2: Every day of active mining, the Project proponent shall apply water to unpaved roads and disturbed mine areas that are in active use on that day no less than once every 1.25 hours at a rate of no less than 0.11 gallons per square yard. Alternatively, the Project proponent shall apply chemical dust suppressants to unpaved road and disturbed mine areas in active use at a frequency and application rate in accordance with manufacturer specifications.

Biological Resources

General Biological Resources

GEN-1: MCC shall minimize disturbance or hazards to surrounding vegetation, habitat, and wildlife, such as toxic substances, dust, noise, and lighting, as follows:

- a. New lighting shall be established at the minimum necessary to meet safety requirements, and shall be shielded to avoid lighting the surrounding habitat and the night sky;
- b. Except as necessary to survey or maintain the safety of the mine site, the Project’s disturbance footprint shall be limited to areas designated for mining and related activities;
- c. Equipment staging areas and other construction or related habitat disturbance shall be limited to areas within the new or existing quarry footprint(s) and shall be designed and operated to the goal of minimizing impacts to adjacent habitat and sensitive biological resources;
- d. Any rock stain for scenic mitigation or soil bonding or wetting agents to be used for dust control on unpaved surfaces shall be non-toxic to wildlife and plants and non-attractants for wildlife. If staining, wetting or soil bonding agents appear to be attracting wildlife to the roadways (e.g., by pooling or creating mineral licks), the mining operator will work with the Forest Service to develop remedies;

- e. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for spill of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Spills will be cleaned up as quickly as possible;
- f. All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site;
- g. Only authorized agency or security personnel (including the California Department of Fish and Wildlife [CDFW], USFWS, and Forest Service) shall bring firearms or weapons to the site.
- h. No recreational target shooting will occur on Forest Service lands within the permit area.
- i. Standard erosion control measures commensurate with those typically required in an Industrial Stormwater Pollution Prevention Plan for a limestone surface mining operation shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes may enter native soils or habitat or jurisdictional streambeds;
- j. Disturbed soils and roads within the project site shall be stabilized to reduce erosion potential; and
- k. For drainages that cannot be avoided, MCC shall obtain a Streambed Alteration Agreement in compliance with Section 1602 of the California Fish and Game Code and an application for waste discharge requirements (WDRs) or a waiver of WDRs in compliance with Section 13260 of the California Water Code, as applicable prior to the issuance of a grading permit. Impacts to waters of the State shall be mitigated by replacement on an in-kind basis. Compensatory mitigation will be commensurate with impacts and may consist of establishing restoring, and preserving similar on-site habitat, and/or purchasing off-site credits from an approved mitigation bank.

GEN-2: Employee Training: MCC shall conduct wildlife/plant awareness programs for employees (including new employee orientation and annual refresher trainings). The program will address bighorn sheep, desert tortoise, golden eagles, rare reptiles/amphibians, other animals of the area, and rare plants. This will include the importance of avoiding harassment/disturbance, adherence to speed limits, adherence to defined project boundaries, reporting guidelines, discouraging ravens and other scavengers, etc. Specific items as described in the employee education component of the North Slope Bighorn Conservation Strategy, Raptor Conservation Strategy, and the desert tortoise design features below will be included in the training. MCC will solicit input from CDFW and USFS in developing the training program.

GEN-3: *Fencing*: MCC shall identify likely or potential wildlife movement routes across or around the site and then avoid or minimize potential impediments to wildlife movement by fencing only those areas where access must be restricted for safety or security reasons.

In the event fencing is necessary during construction and/or extraction activities, project personnel shall ensure that any such fence meets existing specifications that have been developed to preclude accidental entanglement of bighorn sheep, deer, and other animals. Biologists from the USFS and CDFW will be consulted for appropriate fence guidelines. Where this Design Feature conflicts with Mine Safety and Health Administration guidelines, attempts will be made to meet the intention of both. Where that is not possible, Mine Safety and Health Administration guidelines will be applied.

- GEN-4: *Reclamation:* Reclamation of the South Quarry shall include the creation of angled pathways and interlacing reclaimed benches in order to facilitate the movement of bighorn sheep and other wildlife through the quarries. These benches will be created as the mining sequence is completed and prior to restoration. The design of the benches shall be coordinated with Forest Service and/or CDFW biologists. Forest Service and CDFW biologists shall have 60 days to comment on the proposed bench design.
- GEN-5: *Haul Road Crossings:* The final design and construction of the haul road shall ensure movement pathways for wildlife, including bighorn sheep, deer, and small mammals, between the existing East and West Pits and the proposed South Quarry. This will include terracing or stair-stepping or micro-benches of steep and vertical cuts, especially at strategic crossing locations. Design and construction of the haul road shall be completed in coordination with CDFW and Forest Service biologists. A study to analyze the efficacy of long-term mammal usage of the haul roads shall be designed in consultation with CDFW and Forest Service biologists and shall be implemented by MCC within one year of construction of the haul road. The objective of the study will be to analyze the efficacy of the measures intended to prevent a movement barrier and address corrective measures through adaptive management, if needed.
- GEN-6: *Pets and Domestic Animals:* MCC employees shall not bring pets or domestic animals to the work site. MCC will not authorize the housing or grazing of domestic animals on the project site.
- GEN-7: *Feeding Animals:* Feeding of animals will be prohibited to discourage the spread of non-native birds, to discourage the spread of disease and pathogens, etc.
- GEN-8: Mine operators will maintain facilities and grounds in a manner that minimizes any potential impacts to hunting or scavenging raptors and other predators/scavengers (e.g., minimize storage of equipment near active quarries that may attract prey, remove trash/garbage daily, etc.). All trash and food-related waste shall be secured in self-closing animal-proof containers and removed daily from the site. MCC shall avoid practices that attract/enhance prey populations and opportunities for raptor hunting or scavenging near active quarries, haul roads, and processing areas. This would also help discourage the spread of non-native birds and discourage the spread of disease and pathogens, etc.
- GEN-9: To reduce vehicle collision risk to raptors and other scavengers, intact animal carcasses (with the exception of bighorn sheep and deer) will be removed

immediately from mine roads and mining areas. Carcasses will be removed far enough away from roads and active mining areas that scavengers would not be in danger of vehicle collision or other mining-related hazards. Bighorn sheep and deer carcasses shall be covered with a tarp and left in place until the CDFW or Forest Service biologist is notified and provides direction. As much as is feasible, care will be taken to avoid disturbing the area around the carcass to preserve predator tracks, parasites, etc.

GEN-10: *Disturbance Avoidance:* MCC employees and contractors will not use MCC roads in order to access National Forest lands for recreation or hunting. Access for personal use will be through National Forest system roads and trails that are open to the general public.

GEN-11: *Blasting:* Prior to blasting activities within the project area, designated mine employees trained by CDFW and/or Forest Service biologists shall conduct a visual inspection (both naked eye and with binoculars or spotting scope) for a minimum of five minutes to ascertain the presence or absence of bighorn sheep, deer, golden eagles, peregrine falcons, or other large animals. If animals are located within the blast area, mine employees shall wait until animals have moved from the area before initiating the blast procedures. The designated mine employee may use noise deterrents (e.g., shouts, vehicle, or air horns) to move them out of the blast area prior to detonation of any blasting materials. The blasting log will be available upon request by CDFW and Forest Service personnel.

GEN-12: *Biomass Disposal:* All woody vegetation to be cleared from the surface (quarry site, haul road, etc.) will be disposed of as follows:

- a. Small size vegetation and organic material (stems less than 6 inches in diameter) will be applied to inactive quarry benches, overburden piles, and on sidecast areas along roads and quarries. Material may be chipped and/or stockpiled prior to use. Stockpiling and use should be done as part of phased reclamation to minimize stockpile duration and associated weed risk.
- b. All wood greater than 6 inches in diameter will be either reduced to less than 6 inches and applied as described in GEN-12a or removed from the site and decked by MCC at a location to be determined by the Forest Service. The decked wood will be sold to the public by the Forest Service.

GEN-13: The BLM's withdrawal of approximately 540.4 acres of land from mineral entry and MCC's quit-claim of specified unpatented mining claims (discussed in EIR/EIS Section 1.6 and Section 3.3.4.2) is also designed to mitigate for the loss of pinyon-juniper woodland and desert transition habitats as wildlife habitat.

GEN-14: The current regular groundwater monitoring program within the general MCC Cushenbury operating area will continue through the life of the project (South Quarry Operating Plan and Reclamation Plan). MCC will continue to submit a report regarding the monitoring to the Forest Service and the County at least annually. If this regular report indicates a change in groundwater levels, use, or

recharge rates that may pose a substantial threat to surface water and wetland vegetation at Cushenbury Springs, or if unusual vegetation mortality is observed at the wetlands, a pump test will be performed for all wells supplying the Cushenbury Cement Plant and associated monitoring wells to determine if there has been a change in the groundwater basin between the subject wells and Cushenbury Springs. If there are future adverse changes to water quantity, seasonal duration of surface flow, or extent of wetland vegetation related to the project, MCC will respond to minimize these effects. Future minimization actions may include, but are not limited to, water conservation programs and shifts in the usage of various available water sources.

- GEN-15: Due to the long life of the proposed Project (40 or 120 years plus reclamation), monitoring of effects to wildlife, plants, and water resources, including at Cushenbury Springs, shall be conducted as described in Design Features/Mitigation Measures GEN-2, GEN-4, GEN-5, GEN-11, GEN-14, BHS-2, BHS-4, BHS-6, BIRD-1, BIRD-2, RAPTOR-1, RAPTOR-2, RAPTOR-3, DETO-1, NNS-1, NNS-3, CARB-1, and the Raptor Conservation Strategy, Carbonate Habitat Conservation Strategy, and Bighorn Sheep Conservation Strategy. At a minimum of every 10 years for the life of the project, the Forest Service and CDFW will review the monitoring efforts to address changes in the scale and scope of predicted effects. The objective is to use adaptive management to adjust Design Features/Mitigation Measures and strategy plans in the light of new information, new species of concern, and/or new mining technology. If effects to federal or state protected species are determined to be different than the predicted effects, appropriate steps shall be taken, which may include but are not limited to development of new or adjusted Design Features/Mitigation Measures or best management practices to ensure avoidance of "take".

Bighorn Sheep

- BHS-1: *Foraging Habitat:* When trucks spray water on haul roads to control fugitive dust, some overspray occurs on road berms for a short distance beyond. Those watered areas sometimes support vegetation that bighorn sheep consume. MCC will not make an effort to eliminate the overspray. The Revegetation Plan will focus on using native species that will help enhance bighorn sheep habitat.
- BHS-2: *Water Developments:* In the event that bighorn sheep abandon the use of one or more water developments as a result of disturbance associated with the development of the South Quarry, MCC shall create additional water development(s) after consulting with appropriate agency personnel (Forest Service and CDFW) to select location(s) for additional water development(s). MCC shall ensure that any existing water development(s), as well as any created as part of the Design Features/Mitigation Measures, are maintained in good operating condition for the duration of the project.
- BHS-3: *Reporting of Mortality:* MCC shall immediately report any bighorn sheep mortalities, whatever the cause, to the CDFW and Forest Service as soon as possible after the observation. The bighorn sheep carcass shall be covered and left in place until the CDFW or Forest Service biologist can examine it and determine

the proper disposal method. In the event that mountain lion predation is occurring at levels that compromise the viability of the population, MCC shall cooperate fully by ensuring access to MCC properties for Forest Service and/or CDFW personnel for the purpose of determining the predator involved or, in the event that an individual predator has been identified, to remove the predator.

- BHS-4: *Monitoring/Adaptive Management:* MCC shall monitor bighorn sheep use in and near their operations and at water sources in and adjacent to their operations. Monitoring shall consist of installation and maintenance of cameras stationed at CDFW- and Forest Service-identified water sources and recording of data from cameras in a database developed by CDFW, as well as collection of observations by MCC employees. The North Slope Bighorn Sheep Management Strategy may identify other monitoring methodologies to be developed over time. An annual monitoring report will be provided to the Forest Service and CDFW.
- BHS-5: *Highway Crossing:* Upon obtaining the necessary approvals from Caltrans, MCC shall fund, purchase, and install highway warning signs on State Route 18. MCC shall use best efforts to obtain the Caltrans approvals necessary to install the highway warning signs on State Route 18. The intent of the signs is to avoid vehicle-strike mortality or “take” of bighorn sheep crossing the highway.
- BHS-6: *Conservation Strategy:* A Draft North Slope Bighorn Sheep Conservation Strategy will be developed by CDFW and the Forest Service. The management plan will cover the North Slope of the San Bernardino Mountains from White Mountain to Terrace Springs. The management plan shall include guidelines/thresholds for population status that would trigger augmentation of the herd; a strategy/guidelines for developing water sources to respond to drought years; and herd monitoring methodology and objectives. MCC will be a partner in the North Slope Bighorn Conservation Strategy and will help support the long-term management goals of maintaining a sustainable population of bighorn sheep on the North Slope, as described in BHS-7.
- BHS-7: *Future Conservation and Management:* Within one year after approval of the South Quarry Plan of Operations and the Reclamation Plan by the County and the Forest Service, MCC shall begin contributing to a non-wasting endowment, designated as the North Slope Bighorn Sheep Conservation Fund (Fund). The amount of MCC’s contributions shall be determined by CDFW in coordination with MCC prior to final approval of the South Quarry project. The Fund shall be administered by an entity approved by the CDFW and the Forest Service, such as the National Fish and Wildlife Foundation as a sub-account of the California Department of Fish and [Game] Master Mitigation Account. The Fund shall be managed as a long-term endowment dedicated to activities that aid in conservation and monitoring of bighorn sheep both within the Cushenbury herd and on proximate habitats, occupied or unoccupied, including the Bighorn Mountains and San Gorgonio Wilderness where immigration and emigration may connect groups into a functional metapopulation.

- BHS-8: *Employee Awareness Training:* MCC will consult with the CDFW to incorporate bighorn sheep education and awareness into their training for employees and contractors. Training will include how to minimize impacts to bighorn sheep and include guidelines for driving, operation of heavy equipment, general quarry operation, and blasting in bighorn sheep habitat.
- BHS-9: *Trained Mine Employee:* Prior to blasting activities within the Project area, one to two mine employees shall be trained by the CDFW's or the Forest Service's biologist to ensure a minimum skill level in detection of target animals (bighorn sheep, golden eagles, etc.). The trained mine employee(s) shall be responsible for the completion of visual inspections for bighorn sheep and other species specified in GEN-11, within the Project area prior to the commencement of all blasting activities. The trained mine employee(s) shall maintain a logbook detailing the location, date, time, and species observations of each visual inspection for each blasting activity. The logbook will be available upon request by CDFW or Forest Service personnel.
- BHS-10: *Work Boot Decontamination.* As part of the worker training required under Design Feature/Mitigation Measure BHS-8 and BHS-9, all quarry workers will be trained on the importance of and procedures for decontaminating boots to prevent transmission of disease from domesticated sheep and goats to bighorn sheep. In addition, all quarry workers who have potential contact with domesticated sheep and/or goats (for example at farms, fairs, etc.) will be identified and shall decontaminate work boots prior to entering the Project area. Decontamination shall involve scrubbing the soles of work boots with a 10-percent bleach solution to remove all organic matter and kill pathogens. Alternatively, footwear may be changed to ensure that potentially contaminated footwear does not enter any quarry area.

Nesting Birds

- BIRD-1: *Migratory Bird Treaty Act Compliance:* During the development of the quarry, haul roads, and associated facilities, all initial ground clearing (vegetation removal, grading, etc.) shall occur outside the avian breeding season (i.e., do not remove potential nesting habitat from February 1 through August 31, or appropriate dates based on on-site nesting phenology determined by a qualified biologist).

For initial ground clearing (vegetation removal, grading, etc.) that is not feasible to be conducted outside the nesting season, surveys will be conducted to locate active nests within 10 days of the initiation of ground-disturbing activities. Any active nest sites that are located will be buffered and no work will be conducted within those buffered areas until the nests are no longer active. The buffer distances would be determined by a qualified biologist referencing current species-specific standards, and taking into account the conservation status of the species (e.g., larger buffers may be appropriate for Sensitive species, etc.), species-specific biology, and the nature of the planned disturbance (e.g., driving past a nest versus extensive grading).

- BIRD-2: Nesting bird surveys for passerine birds, as outlined in BIRD-1, shall be conducted by a qualified biologist experienced and familiar with robust nest-locating techniques or comparable to those described by Martin and Guepel (1993). Surveys shall be conducted in accordance with the following guidelines:
- a. Surveys shall cover all potential nesting habitat to be disturbed and a 500 foot buffer surrounding areas to be disturbed;
 - b. At least two pre-construction surveys, separated by a minimum 10 day interval, shall be completed prior to initial grading or grubbing activity; the later survey shall be completed no more than 10 days preceding initiation of initial grading or grubbing activity. Additional follow-up surveys shall be required if periods of construction inactivity exceed one week in any given area, in interval during which birds may establish a nesting territory and initiate egg laying and incubation. Copies of the bird survey reports shall be provided to the County and the Forest Service.

Conservation of Special Status Raptors

- RAPTOR-1 A Raptor Conservation Strategy (RCS) will be developed in coordination with the Forest Service, USFWS, and CDFW. MCC shall provide input to the development/finalization of the RCS and shall follow the guidelines put forth in the effort. The RCS will be tailored for activities associated with mining activities and effects. Upon approval of the Plan of Operations and the Reclamation Plan by the County and the Forest Service, MCC will participate in the implementation of the RCS by contributing to specified survey and monitoring efforts, and by following applicable operational guidelines.

The RCS will cover the North Slope of the San Bernardino Mountains from White Mountain to Terrace Springs, and will address special status raptors (currently, golden eagle, California condor, and peregrine falcons). The RCS may be updated to include other raptors in the future if concerns develop over their local population status.

The RCS will be a dynamic document and will be updated as new data and scientific understanding of the aforementioned species become available. It will include monitoring and information gathering, and measures to avoid, minimize, rectify, and reduce (or eliminate over time) effects to raptors nesting on the North Slope. The intent is to use systematic monitoring of raptor nesting chronology and observed behavior to develop site- and activity-specific measures to ensure successful nesting and provide for adaptive management opportunities.

- RAPTOR-2: If an occupied nest for a federally-protected species, a California-listed species, or a California fully-protected species is found within 1.5 miles of an active quarry operation, the Forest Service will determine if additional monitoring is needed and undertake the appropriate coordination/consultation with the appropriate agencies. If required, the appropriate authorization(s) will be requested from USFWS or CDFW, under the applicable law (federal or state Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act). MCC will cooperate in such efforts and implement the resulting measures designed to minimize or avoid “take”.

RAPTOR-3: If monitoring detects that blasting or other mine activities are resulting in disturbance of nesting raptors that could lead to mortality or nest abandonment, the Forest Service, MCC, and USFWS and CDFW, as appropriate, will evaluate the feasibility of implementing measures to avoid or reduce effects. The RCS will contain potential methods, such as establishment of buffers and parameters for work stoppage, for reducing or avoiding effects.

Desert Tortoise

DETO-1: MCC will consult with the Forest Service to incorporate desert tortoise education and awareness into their training for employees, customers, and contractors. This will include how to minimize impacts to desert tortoise and their habitats. Information about penalties will also be included. These briefings will include guidelines about driving in desert tortoise habitat, handling prohibitions, etc. MCC will solicit input from the Forest Service to develop other protective measures if a need is identified through reporting from Design Feature DETO-2 or other CDFW or Forest Service requirements.

DETO-2: Any sightings of desert tortoises, including dead tortoises, in the Project Area must be reported to the Forest Service biologist. The report will include photos if possible, location, date, time, cause of death (if obvious), and any other pertinent information.

Non-Native Species – Plants, Animals, and Pathogens

NNS-1: MCC shall monitor the occurrence of non-native invasive plants in the Project Area by visual inspection. The goal is to prevent non-native invasive plants from becoming established and depositing seeds in areas to be re-vegetated at a later date. If inspections reveal that weeds are becoming established in the Project Area, then removal would be initiated by MCC in coordination with the Forest Service botanist. Inspections shall be made in conjunction with revegetation monitoring.

NNS-2: To reduce the risk of introducing non-native invasive plants, insects, and pathogens from off-site, all heavy mining equipment (e.g., drill rigs, haul trucks, loaders) must be thoroughly washed of all soil and vegetation debris prior to being brought into the company's operating area (i.e., the MCC Cushenbury Cement Plant and associated local quarries).

NNS-3: If any new non-native invasive plants, animals, or pathogens are identified as having a potential for establishment in the Project Area, MCC will consult with the Forest Service to develop measures for detection, control, and eradication as necessary. MCC shall be responsible for funding detection, control, and eradication efforts in the Project Area.

NNS-4: MCC personnel will be trained on the need to report sightings of feral or domestic sheep, goats, dogs, or cats on, in, and near the Project Area to the Forest Service and CDFW within two hours of the observation. In the event of domestic or feral animals being found, MCC shall employ a trained trapper to catch and remove the

animals following County regulations. CDFW may assist in capture/removal efforts, if available.

Salvage and Recovery of Plants

PLANT-1: MCC shall inventory all accessible yucca species (Joshua trees, Mojave yucca, and chaparral yucca) within the proposed project disturbance areas, and identify yuccas (all species) likely to survive transplantation.

Prior to grading, accessible yucca plants suitable for translocation shall be transported to off-site reclamation or restoration areas. The suitability for salvage and transplantation shall be determined by a qualified botanist or horticulturalist, based on their size, stability, and location. A qualified horticulturalist shall direct the removal, transport, and replanting, and follow-up maintenance including irrigation and physical support as needed until transplantation is successful. Relocation sites shall be within the same general area. Suitable reclamation/restoration sites will be identified in coordination with the Forest Service botanist.

PLANT-2: MCC will solicit input from the Forest Service and will provide for salvage of rare native plants within the Project Area to be propagated and/or transplanted to protected habitat reserve areas at the discretion of the Forest Service.

Carbonate Endemic Plant Species

CARB-1: As specified under the CHMS, and within the Project Area, MCC or the Forest Service may at their discretion salvage carbonate endemic plant species (whole plants, cuttings, or seed), and propagules of associated species, to aid in carbonate habitat revegetation efforts on or off-site.

CARB-2: MCC shall, upon BLM's withdrawal of approximately 540.4 acres of land from mineral entry, quit-claim specified unpatented mining claims held within the SBNF, and convey specified patented lands, which have been verified by the Forest Service to contain occupied endangered species habitat on an approximately 3 to 1 ratio (species-acres and CHMS conservation value) as mitigation for impacts of the South Quarry project on Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*), Cushenbury puncturebract (formerly oxytheca) (*Acanthoscyphus parishii* var. *goodmaniana*), and Parish's daisy (*Erigeron parishii*) pursuant to the guidance provided by the CHMS as follows: MCC shall determine total project disturbance acreage, to include the South Quarry and haul road as well as rock and debris roll-down areas below them. MCC shall evaluate the Conservation Value of the acreage proposed for disturbance according to the CHMS.

Geology and Soils

GEO-1: Control of surface drainage, erosion, and sedimentation of the proposed haul road and quarry operations will involve the following primary components currently being implemented for existing operations:

- a. Limiting surface disturbance to the minimum area required for active operations.
- b. Diverting runoff, where operationally feasible, such that runoff from undisturbed areas does not enter the area of active operations.
- c. Using ditches, sediment basins, and localized control and maintenance measures to intercept and control runoff along the haul road.
- d. Stabilizing disturbance areas through re-grading, revegetation, and other restoration practices.

GEO-2: A geotechnical program of ongoing field mapping, drilling, and geophysical surveys and laboratory testing will be established and implemented as the quarry is excavated. This type of site investigation during the mining operation will provide information for detailed slope stability assessment on a continual basis and stabilization of slopes in areas where poor rock and/or adverse geologic structures are present. An annual report discussing the geotechnical program will be prepared for the Forest Service and the County.

GEO - 3: Areas mapped as underlain by landslides shall be further evaluated. Should landslides be found present within the quarry, appropriate mitigating engineering measures shall be employed to stabilize cuts into quarry walls. Such measures may include removal of landslide debris, construction of buttresses, or other stabilization measures. Monitoring of cut slopes by an Engineering Geologist shall also be performed during excavation of the quarry so that further recommendations for slope stabilization can be provided as appropriate.

GEO-4: There is a high potential for ground shaking at the Project during a nearby seismic event, and this would include the proposed quarry and haul road. Engineering measures designed by a geotechnical engineer to mitigate the effects of ground shaking shall be included in slope design and construction.

Scenery

SCEN-1: The haul road shall be designed with minimal fill slopes to reduce the contrast of the lighter-colored fill on the natural slopes and boulder roll-down.

SCEN-2: Approved color-staining product(s) shall be used to darken the access road cuts and visible southern quarry slopes where shown to be successful. Prior to commencement of construction of the access road, MCC shall submit information to the Forest Service summarizing available staining products and whether they are appropriate for application to the South Quarry road cuts and visible quarry slopes, considering color, effectiveness, and durability. If appropriate products are not available at the commencement of construction, MCC shall update the information no less than once every five years thereafter until an appropriate product is identified. MCC may use an alternative method to reduce visual contrast as approved by the Forest Supervisor.

SCEN-3: Adequate erosion control features shall be designed along the haul road to limit erosion downslope.

- SCEN-4: Onsite structures shall be painted a color with low contrast and reflectivity.
- SCEN-5: A berm shall be constructed along the south rim of the quarry and planted with native vegetation.
- SCEN-6: The footprint of the quarry shall be designed to minimize impacts to any streams and riparian habitat to the extent feasible.
- SCEN-7: Surface disturbances shall be limited to those areas identified in the Mine Reclamation Plan. Disturbances outside of these areas shall be prohibited.
- SCEN-8: The quarry shall be designed to limit views of the quarry site from the east and southeast.
- SCEN-9: Upper slopes that may be visible from Lucerne Valley shall be cut or roughened to reduce straight lines and visual impacts as benches are completed (not applicable to Alternative 2 – Partial Implementation).
- SCEN-10: The quarry shall be designed to limit views of the lower half of the quarry by not removing the north slope through approximately Phase 3, allowing reclamation and revegetation (including tree growth) to occur to reduce contrast (not applicable to Alternative 2 – Partial Implementation).
- SCEN-11: A 20- to 25-foot high natural perimeter berm (half of a vertical bench height) shall be left in place on the outside ridge of each excavated bench until the interior area of the next lower excavation level is completed to limit views of active mining and equipment from Lucerne Valley (not applicable to Alternative 2 – Partial Implementation).
- SCEN-12: Waste rock shall be deposited into waste rock stockpiles within the quarry footprint to reduce the area of disturbance and visual impact outside the quarry rim and to reduce internal slopes and aid in revegetation.
- SCEN-13: Reclamation and revegetation shall be implemented per the approved Reclamation Plan on completed benches concurrent with mining.
- SCEN-14: MDAQMD dust controls shall be implemented to reduce visible dust plumes.

2.3.3 Alternative 1 – South Quarry Development (Proposed Action)

Elements common to all alternatives are described in Section 2.3.2. This section describes elements specific to Alternative 1 – Proposed Action, which is the project proposed in the Plan of Operations. Figure 2.3-2 is an overview of Alternative 1 – Proposed Action.

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Location: N:\2012\2012-017 Mitsubishi Cement Corporation South Quarry\MAPS\Borders\MCCSouthQuarry_ExistingAndPlannedOperations.mxd 0-aagurre 9/6/2013

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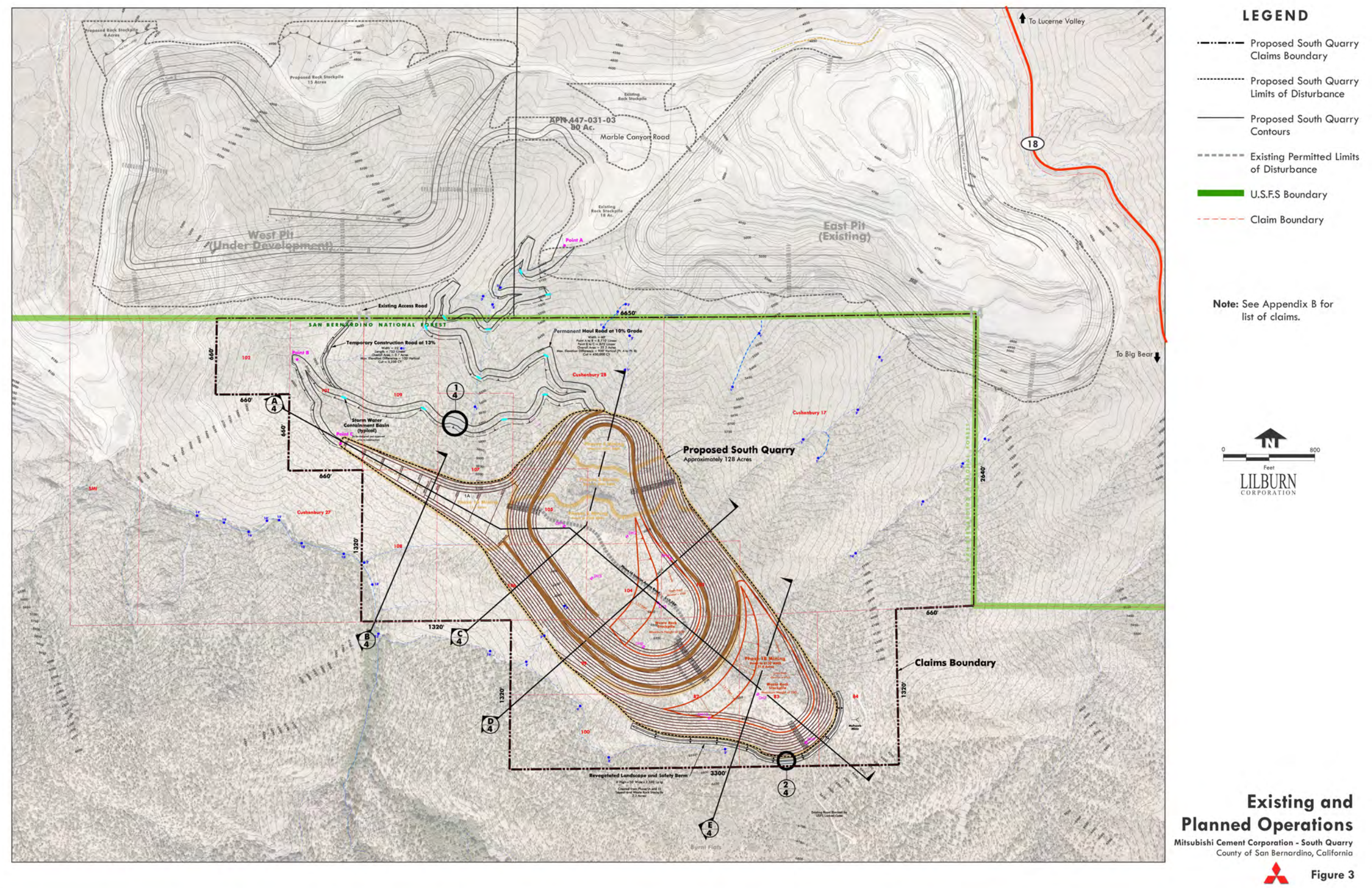


Figure 2.3-2 Existing and Planned Operations

2012-017 Mitsubishi Cement Corporation South Quarry Project

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2.3.3.1 Quarry Phasing

The excavation plan for the South Quarry is divided into four phases based on operational, engineering, and environmental concerns (Figures 2.3-3 and 2.3-4). Figure 2.3-5 shows the phasing in a cross section from the northwest to the southeast portions of the quarry. Table 2.3-2 summarizes relevant data by mining phase.

Table 2.3-2
Planned Quarry Phasing and Production
Alternative 1 (Proposed Action) – South Quarry Development

Phase	Area ¹ (acres)	Cumulative Area ¹ (acres)	Total Material Excavated (millions of tons) ^{2,3,4}	Ore Reserves (millions of tons) ^{2,3}	Waste Rock (millions of tons) ^{2,3}	Max. Depth (feet amsl)	Years of Operation ⁵
1A	11	11	5.1	4.5	0.5	5,860 ⁶	3.5
1B	32	43	32.1	28.8	3.2	6,130 ⁶	22.0
2	65	108	21.0	18.8	2.2	6,220 ⁶	14.5
3	12 ⁵	120	58.0	52.0	6.0	5,905	40
4	8 ⁵	128	58.0	52.0	6.0	5,365	40
Total	128	128	174.0	156.0	18.0	5,365	120

Notes:

¹Area has been rounded to the nearest whole acre. Totals may be slightly different due to rounding.

²Millions of tons rounded to the nearest tenth.

³Waste rock estimated at 0.15 million tons per year or approximately 10 percent, which would vary depending on area being excavated.

⁴Years of operation based on average ore production of 1.3 million tons per year.

⁵Phases 3 and 4 areas are generally deeper excavations within the previously disturbed Phase 2 area, except for the north slope area.

⁶Phases 1A, 1B and 2 are distinct separate areas with varied excavation depths.

The South Quarry is proposed to be excavated according to this phasing plan. However, mining operations may experience unscheduled interruptions and/or phasing changes due to various market/economic demands and variation in slopes and material quality beyond the operator's control, because the natural deposit is not of uniform quality. It may be necessary, therefore, to excavate selectively from different locations within the quarry to achieve a suitable blend of raw materials. The Forest Service and the County would be updated on the status of the operational phases in the annual monitoring report. The following is a summary of the planned mining operations by phase.

Phase 1A

Phase 1A would be initiated after construction of the haul road (see Section 2.3.4.1). The expected length of Phase 1A is approximately 3.5 years, based on an estimated reserve of approximately 4.5 million tons and an ore production rate of 1.3 MTPY. Approximately 500,000 tons of waste rock or less would be produced that would be used for the southern berm, stored in temporary stockpiles in Phase 1A, and deposited into permanent stockpiles in Phase 1B as it is developed. Note that Phase 1A would not be completely excavated prior to initiating mining in Phase 1B. Based on the borehole data obtained in 2009 and 2010, minimal waste rock is expected in this area. This phase is an extension of the haul road, of which approximately 1,600 feet would be excavated up to 300 feet deep into the quarry area as the quarry is excavated (Figure 2.3-4). The phase and extended haul road were designed to depress this portion of the haul road below the remaining cut on its north-facing slope and to reduce the road's grade as it

extends across the quarry to Phases 1B and 2. This would reduce the exposure of this area from view from Lucerne Valley (Figure 2.3-6).

Phase 1B

Phase 1B would excavate the southeast 32 acres of the quarry (Figure 2.3-4 and 2.3-7). Mining would create a horseshoe-shaped quarry that would extend from the southern quarry rim of 6,580 feet to a floor elevation of approximately 6,130 feet amsl, a maximum depth of approximately 450 feet. Slopes would be constructed at 0.55H:1V with 45-foot vertical cuts and 25-foot horizontal benches in the hard rock formations. Reserves are estimated at 29 million tons of ore. At an ore production rate of 1.3 MTPY, Phase 1B would continue for approximately 22 years. Mining and the transport of ore to the primary crusher would be the same as described for Phase 1A. Approximately 3.2 million tons of waste rock may be produced in Phase 1B, which would be used for the southern berm and deposited into permanent stockpiles in this phase.

Phase 1B was designed to (1) avoid the former Mohawk Mine and the access road to the Mohawk Mine; (2) avoid the drainage along its southwest rim that drains into Marble Canyon; (3) create at least one bench along the northeast quarry to reduce open views of the quarry from the northeast and east (as compared to daylighting the cut into the downslope); (4) recover the high grade limestone to a depth of 6,130 feet as indicated by exploratory drilling log data; and (5) provide an internal area within the quarry to permanently stockpile waste rock from Phases 1A, 1B, and 2. The development of internal waste rock stockpiles would reduce the area of disturbance outside the quarry rim, eliminate potential visual impacts of the waste rock piles, and reduce internal slopes in Phase 1B to 1.5H:1V to aid in revegetation.

Phase 2

Phase 2 would excavate the central 65 acres of the quarry (Figures 2.3-4 and 2.3-5). Mining during this phase would level the quarry and create an oval-shaped quarry generally between Phases 1A and 1B. The quarry depth in this location would be slightly higher than Phase 1B with an average base elevation of 6,220 feet amsl. Slopes would be constructed at a 0.55H:1V with 45-foot vertical cuts and 25-foot horizontal benches in the hard rock formations. Reserves are estimated at 19 million tons of ore. At an ore production rate of 1.3 MTPY, Phase 2 would last approximately 14.5 years, for a cumulative total of 40 years from the commencement of mining. Approximately 2 million tons of waste rock may be produced in Phase 2, which would be deposited into permanent stockpiles to fill a portion of the southern slopes in Phase 1B.

Phase 3

Phase 3 would be a 40-year excavation phase on approximately 77 acres mostly within the footprint of Phase 2; approximately 12 of the 77 acres would be new disturbance to the north of the footprint of Phase 2. Mining would excavate to a floor elevation of approximately 5,905 feet amsl, a depth of approximately 315 feet amsl below the Phase 2 floor elevation of 6,220 feet (Figures 2.3-4, 2.3-5, and 2.3-8). Slopes would be constructed at a 0.55H:1V with 45-foot vertical cuts and 25-foot horizontal benches in the hard rock formations. Reserves are estimated at over 52 million tons of ore. Approximately 6 million tons of waste rock would be produced in Phase 3, which would be deposited into the permanent stockpiles in Phase 1B. Phase 3 was designed to maximize the recovery of the limestone resource with depth while staying within the planned 128-acre site limits and to create benches on the northeast side of the quarry to reduce open views of the quarry.

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Source: Lilburn Corporation

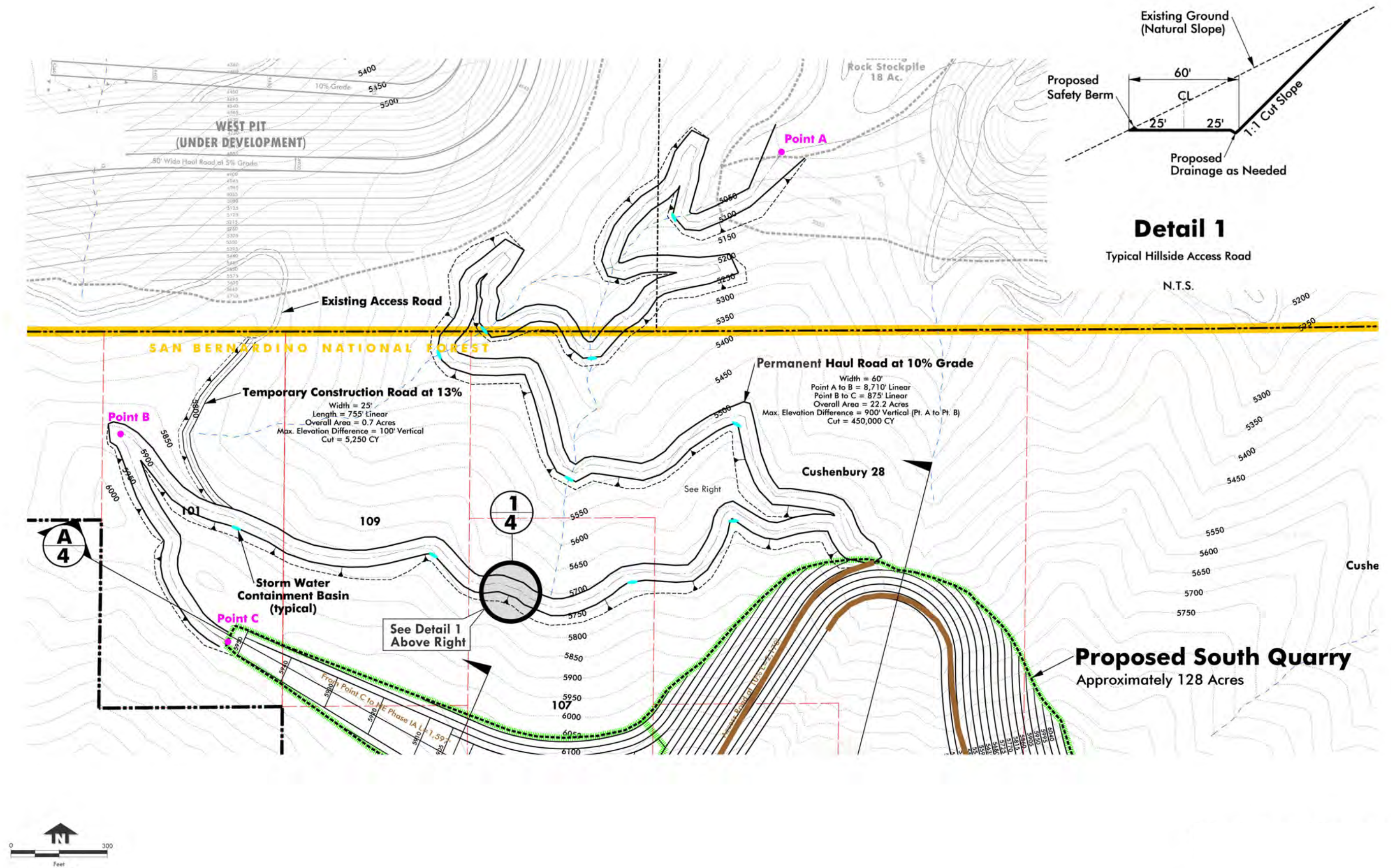
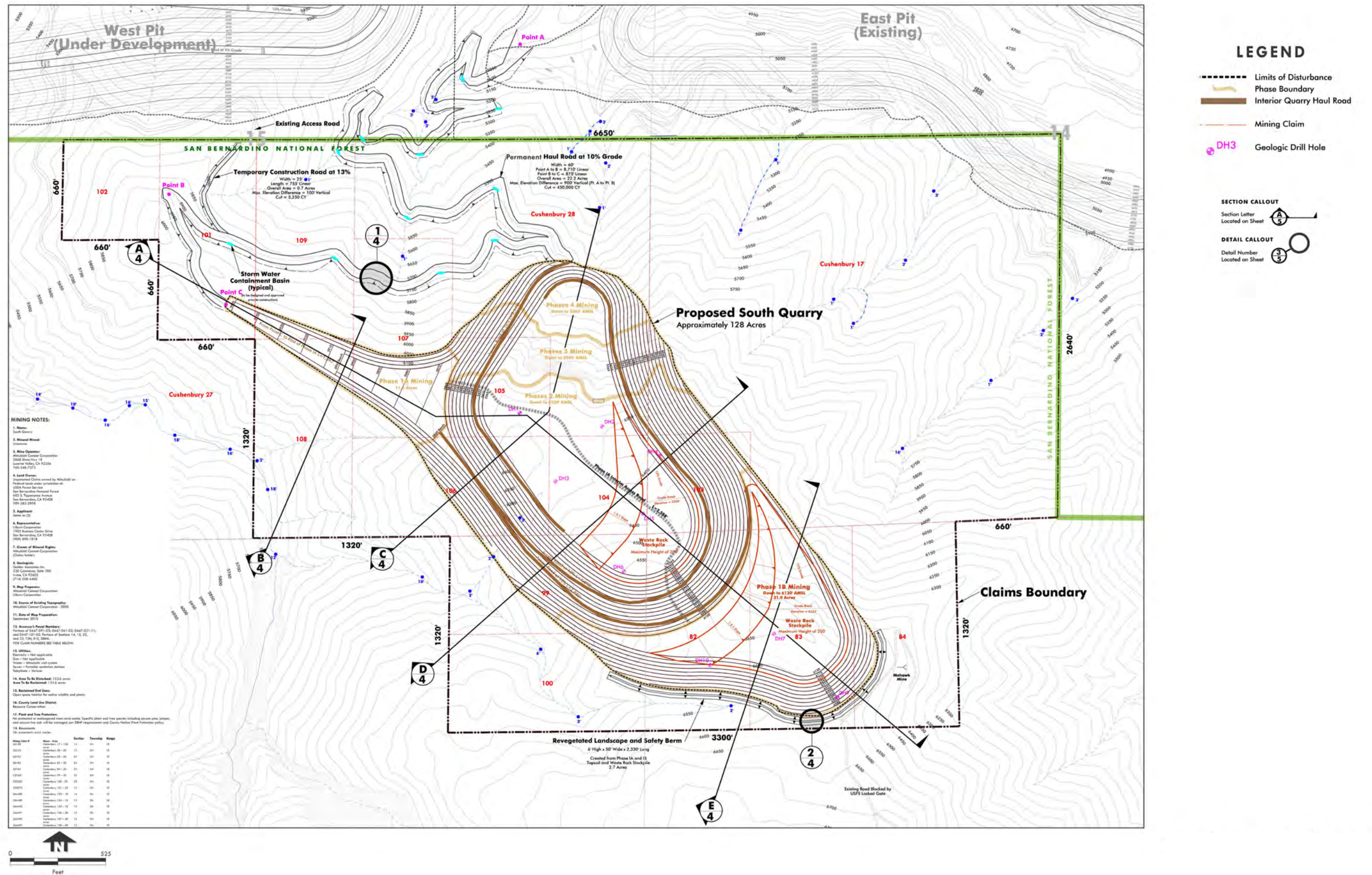


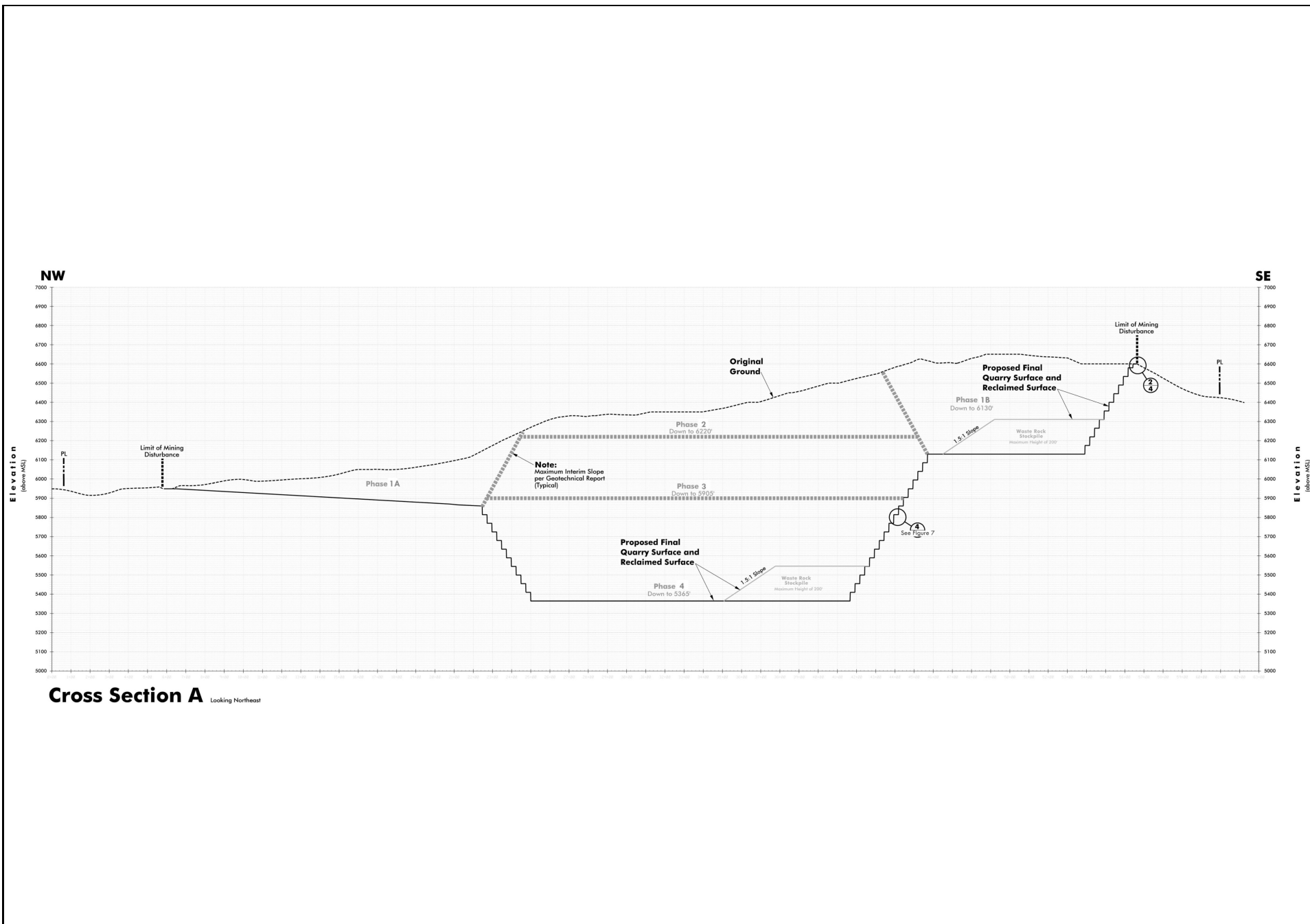
Figure 2.3-3 Haul Road Alignment

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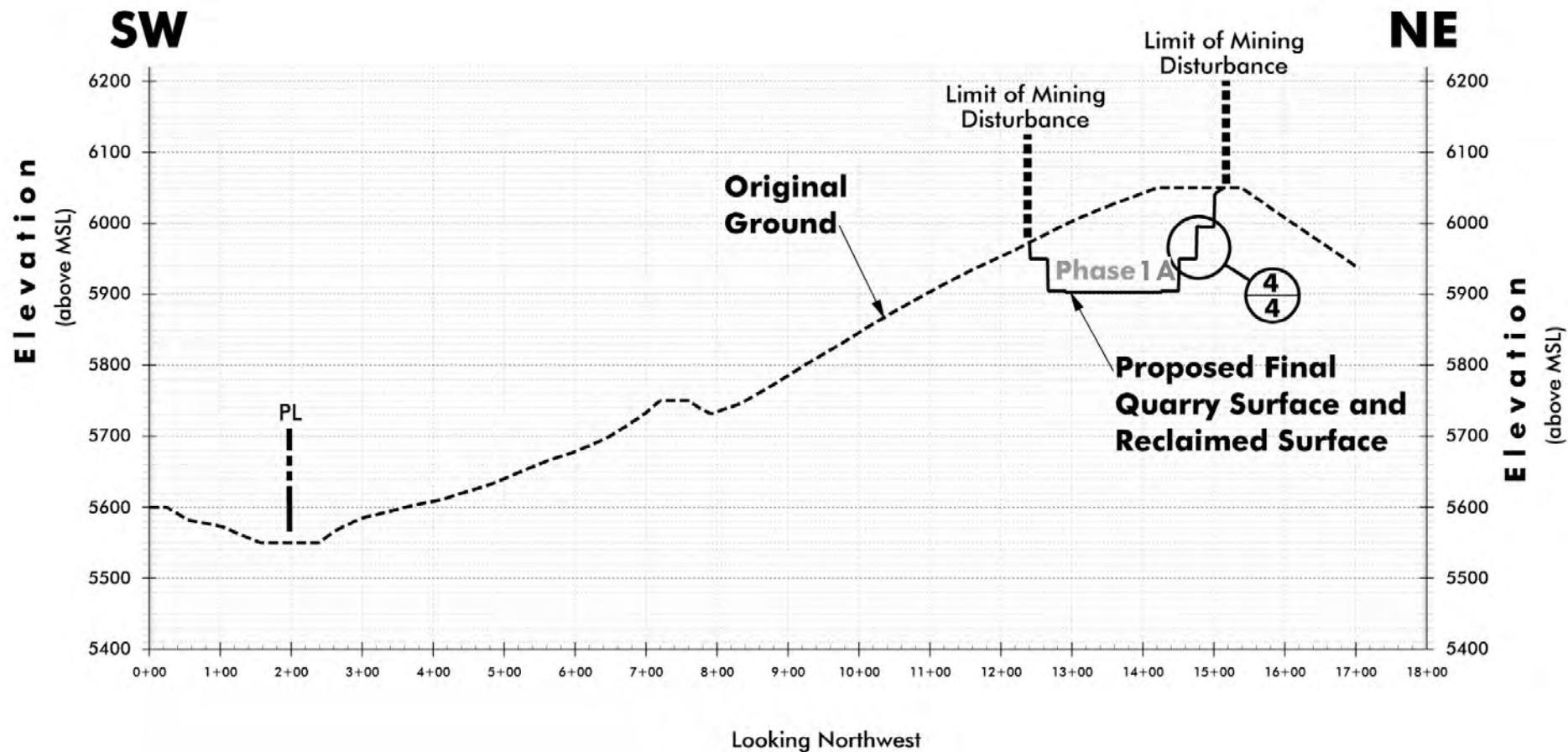


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ENVIRONMENTAL CONSULTANTS

Figure 2.3-5 Quarry Cross Section A

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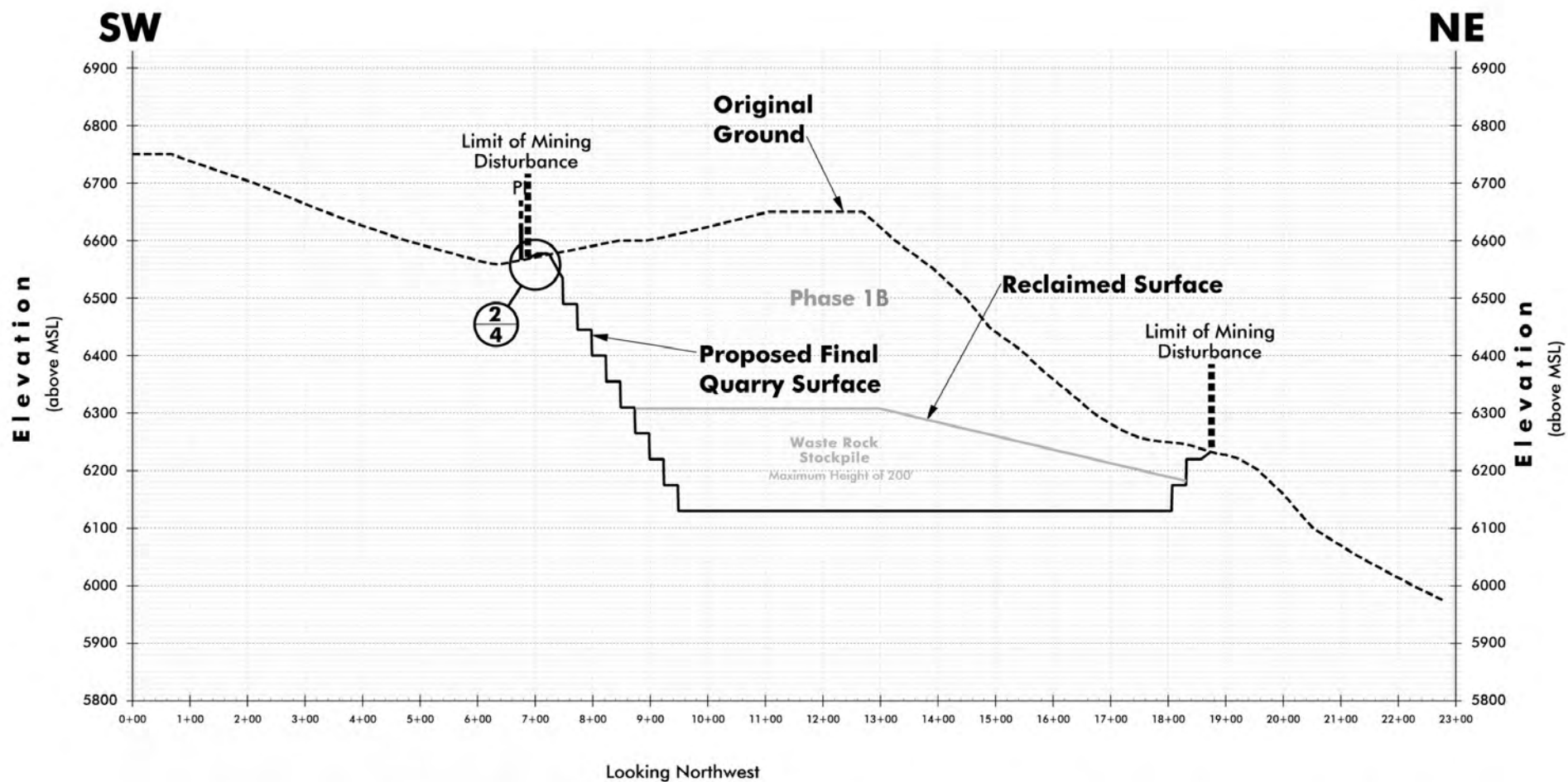


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Figure 2.3-6 Phase 1A Quarry Cross Section B

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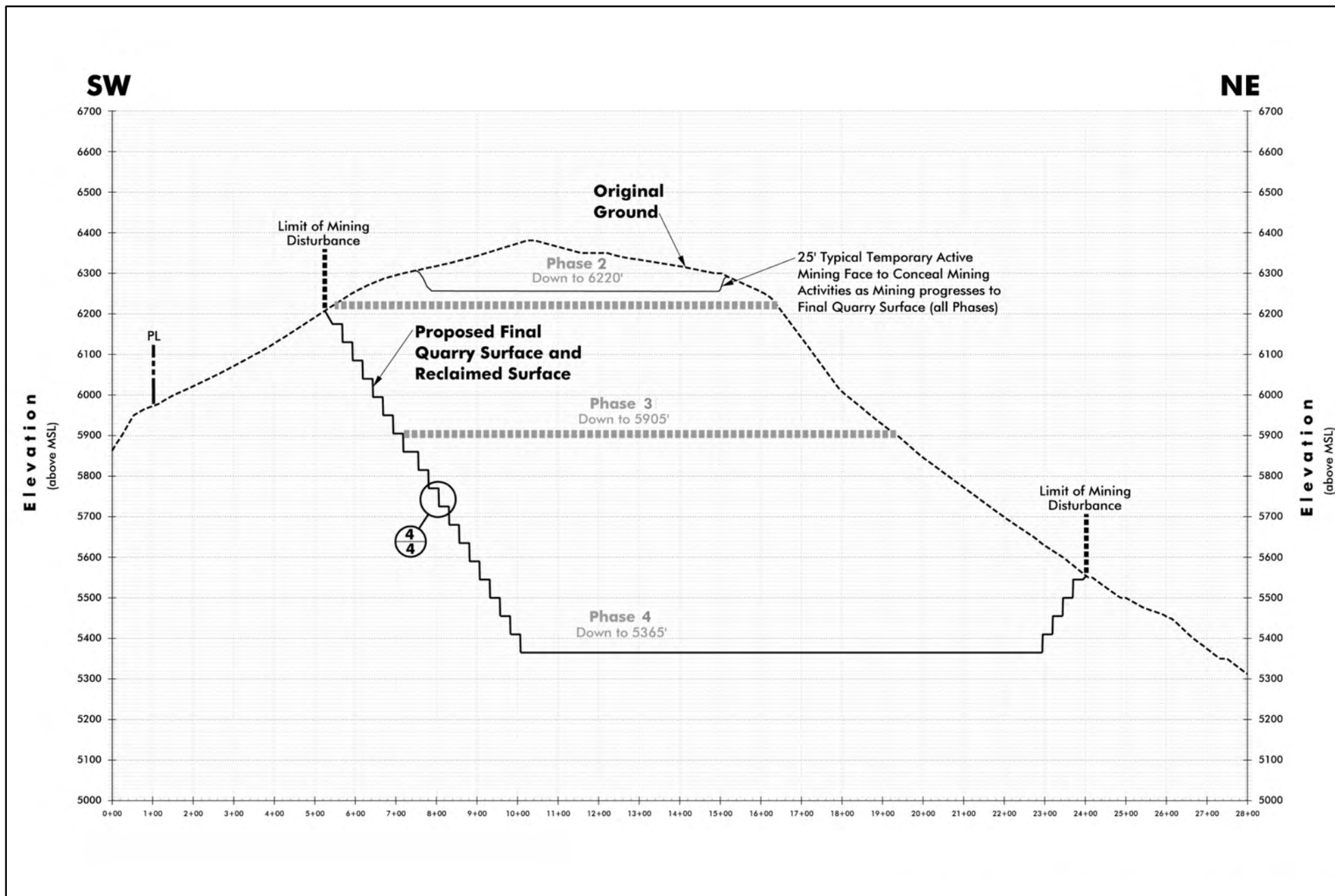


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Figure 2.3-7 Phase 1B Quarry Cross Section E

2012-017 Mitsubishi Cement Corporation South Quarry Project



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Source: Lilburn Corporation

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Figure 2.3-8 Phases 2, 3, and 4 Cross Section C

2012-017 Mitsubishi Cement Corporation South Quarry Project

Phase 4

Phase 4 would be the final excavation phase on approximately 85 acres mostly within the footprint of Phase 2. Approximately 8 of the 85 acres would be new disturbance to the north of the footprint of Phase 2. Mining would excavate to the floor elevation of approximately 5,365 feet amsl, a maximum depth of approximately 550 feet amsl below the Phase 3 floor elevation of 5,905 feet (Figures 2.3-4, 2.3-5, 2.3-8, and 2.3-9). Slopes would be constructed at 0.55H:1V with 45-foot vertical cuts and 25-foot horizontal benches in the hard rock formations. Reserves are estimated at 52 million tons of ore. At an ore production rate of 1.3 MTPY, Phase 4 would continue for approximately 40 years. Approximately 6 million tons of waste rock would be produced in Phase 4, which would be deposited into the permanent stockpiles on the southeast side of Phase 4.

2.3.3.2 Reclamation and Revegetation

General reclamation methods common to all alternatives are described in Sections 2.3.1.10 and 2.3.1.11. This section describes reclamation and revegetation methods specific to Alternative 1 – Proposed Action. A summary of the planned reclamation for Alternative 1 – Proposed Action is provided in Table 2.3-3 and shown in Figure 2.3-10.

Table 2.3-3
Summary of Reclamation and Revegetation Phasing
Alternative 1-Proposed Action

Phase	Estimated Years of Operation*	Planned Activities
1A	1-5	Sloping, erosion control, and revegetation of haul road cuts and fills and south and north slopes of Phase 1A excavations. Reclamation of the temporary access road of 0.7 acre.
1B	6-82	Sloping, erosion control, and revegetation of upper slopes and benches as they are completed in the southern area to about the 6,400-foot amsl bench. Construction and vegetation of the landscape berm. Stockpiling of waste rock to reduce slopes to occur throughout phase.
2	26-42	Erosion control and stockpiling of waste rock in Phase 1B area. The Phase 2 area would be mined to greater depth in Phases 3 and 4; therefore, no additional reclamation is proposed in this Phase.
3	43-82	Sloping, erosion control and revegetation of upper benches as completed on the southwest and northeast sides of the site to about the 5,950 feet amsl bench. Stockpiling of waste rock in Phase 1B. Reclamation and revegetation of completed sections of Phase 1B waste rock stockpile.
4	83-120	Sloping, erosion control, and revegetation of upper benches as completed in the central portion of the site. Stockpiling of waste rock in Phase 4 area. Reclamation of Phase 1B waste rock stockpiles.
Final Reclamation	121-126	Removal of equipment, stockpiles, and internal roads not needed for site access during revegetation and site monitoring. Sloping, erosion control, and revegetation of any remaining unreclaimed benches and waste stockpiles in Phase 4 and quarry floor.

Note: The estimated life of each quarry phase is dependent on the slope stability and slopes, extraction rate, and product demand. These estimates assume an ore and waste rock extraction rate of 1.45 MTPY and a five-year period to conduct final reclamation at the estimated completion of Phase 4 to be followed by revegetation monitoring until success criteria are achieved.

Phase 1A

The initial development of the site includes the construction of the temporary construction road, permanent haul road, and the 11 acres in the northwest. The slopes along the haul road and the north and south slopes of Phase 1A would require sloping, erosion control, and revegetation. Because the haul road itself is required for future phases, the road itself would not be revegetated until after completion of mining. The temporary access road that would be used during the construction of the access road would be stripped of any road base material, ripped, covered with growth media, and revegetated per the revegetation plan after approximately 2 years.

Phase 1B

The upper slopes of the southeastern portion of the quarry would be reclaimed upon completion of Phase 1B. Most of this phase would consist of depositing and contouring waste rock to fill portions of the benches and slopes on the southeast slopes to 1.5H:1V (Figure 2.3-7). The landscaped berm would be completed early in this phase using waste rock and soil material.

Phase 2

Most of Phase 2 would remove the upper hills within the central part of the quarry perimeter. This area would be mined to greater depth in Phases 3 and 4. Therefore, the outside quarry walls would be developed in later phases and no specific reclamation besides salvaging of the growth media and plants prior to disturbance would occur during this phase.

Phase 3

The upper benches of the northeast and southwest sides of the site are scheduled to be reclaimed as completed during Phase 3. As slopes are completed to greater depths, final sloping, erosion control, and revegetation on the benches would be implemented to about the 5,950-foot amsl bench. The waste rock stockpile in Phase 1B would be finished with 1.5H:1V slopes, ripped as necessary, covered with available topsoil and growth media in an islands pattern, and revegetated.

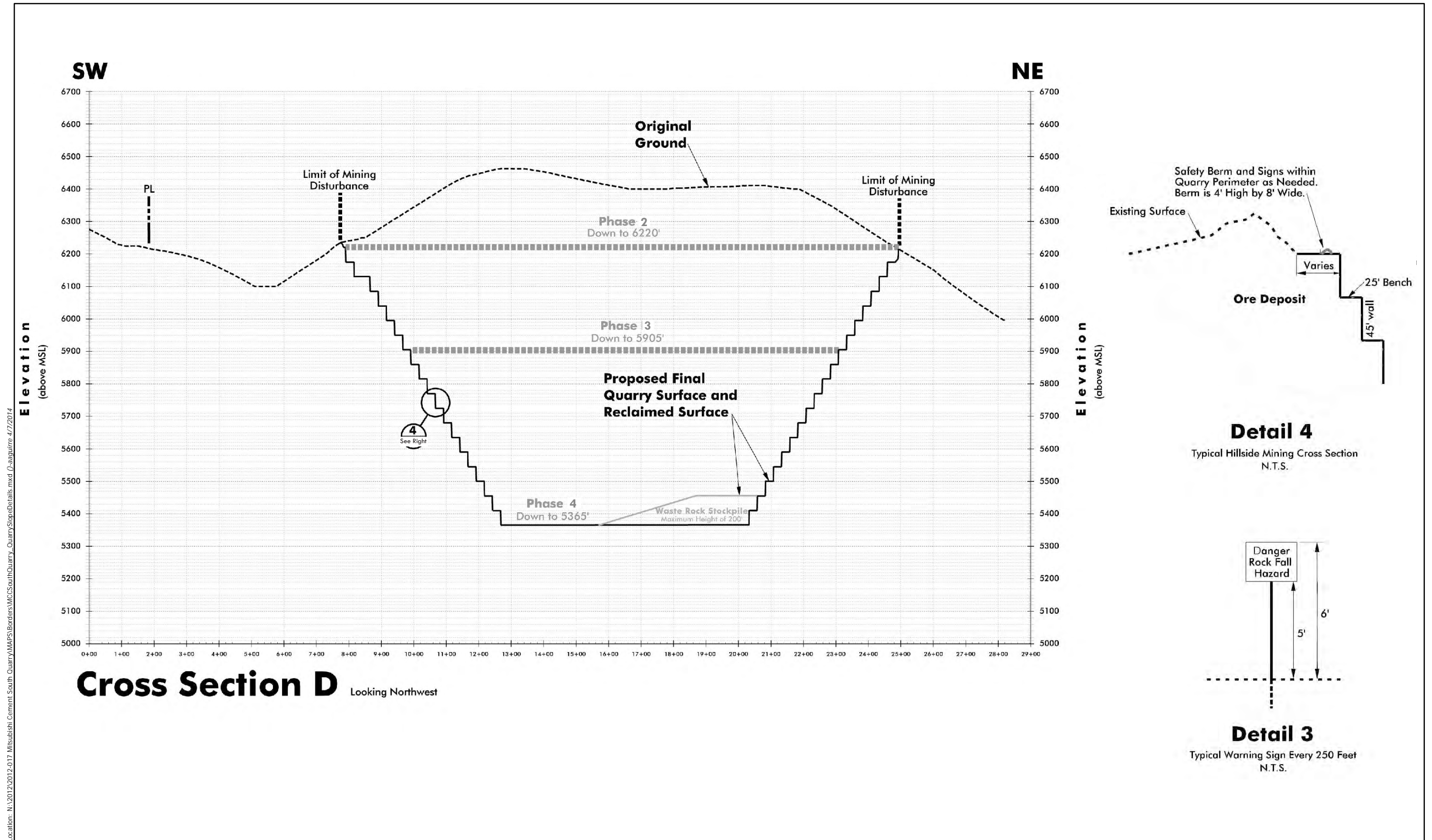
Phase 4

Quarry activities would be completed during Phase 4 and the site would be excavated to a floor elevation of approximately 5,365 feet. Final sloping, erosion control, and revegetation would be completed on the quarry benches as they are completed in the central portion of the site and on the Phase 1B waste rock stockpiles. The waste rock stockpile in Phase 4 would be finished with 2H:1V slopes, ripped as necessary, covered with available topsoil and growth media in an islands pattern, and revegetated.

Final Reclamation/Revegetation

Final reclamation and revegetation would take place within 5 years after the termination of mining. All remaining equipment, stockpiles, and internal roads not needed for site access, revegetation, and general site monitoring would be removed. Final sloping, erosion control, and revegetation of any remaining unreclaimed benches, waste rock stockpiles, the landscaped berm and the quarry floor would be conducted. Some haul roads may be left on the site but reduced in width for use in the revegetation and monitoring activities and for overall site maintenance of fencing, signs, and erosion control. Roads not needed for site and quarry access would be stripped of any road base material, ripped, covered with available growth media, and revegetated according to the revegetation plan.

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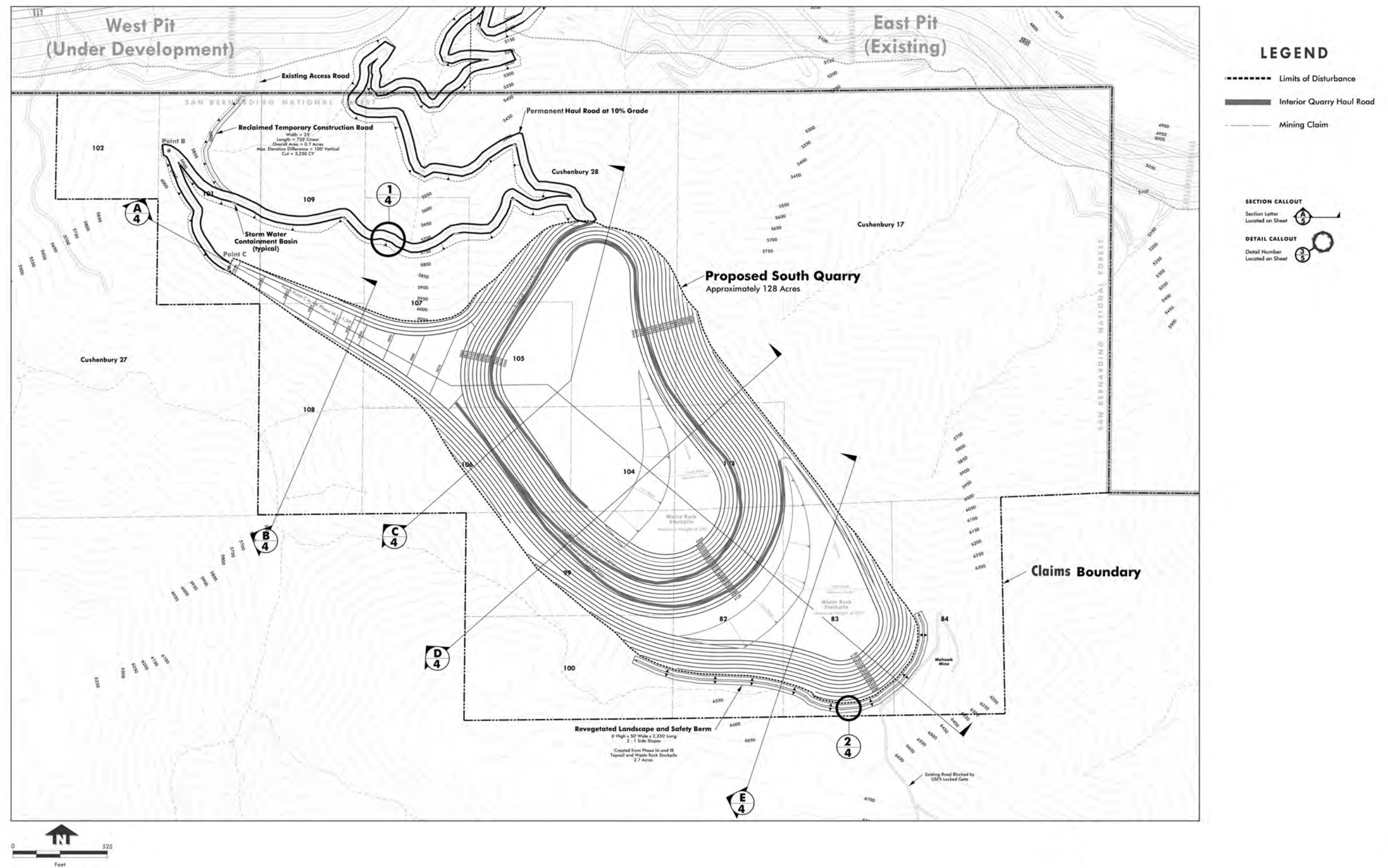
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Figure 2.3-9 Quarry Slope Details

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Figure 2.3-10 South Quarry Reclamation Plan

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2.3.4 Alternative 2 – Partial Implementation

Alternative 2 – Partial Implementation, would only implement Phases 1A, 1B, and 2 of the Plan of Operations (Figure 2.3-11). The sequence of mining in these phases would be the same as described in Alternative 1 – Proposed Action. This alternative was developed in response to public comments requesting an alternative with a shorter duration and/or smaller footprint. Mining of the north slope, which is proposed in Phases 3 and 4 of Alternative 1 – Proposed Action, would not occur; therefore, the footprint of the quarry would be approximately 20 acres smaller. With this alternative, the final quarry would also not be as deep as with Alternative 1 – Proposed Action. Mining in the quarry would last 40 years rather than 120 years. As with Alternative 1 – Proposed Action, reclamation activities would be initiated as mining is completed in each part of the quarry. Reclamation of Phases 1A, 1B, and 2 is expected to occur on the same schedule as Alternative 1 – Proposed Action; however, final reclamation activities for the South Quarry would be concluded in year 46, unless a separate extension for further mining activities, including associated NEPA documentation, was sought and approved after year 40.

With this alternative, the higher grade limestone would still be required for cement plant operations. This limestone would be obtained from elsewhere in the region and trucked to the cement plant after Phase 2 is completed (approximately year 41 through year 120). Three off-site locations for high grade limestone have been identified, two in California and one in Nevada. These locations were selected based on the estimated quality and quantity of limestone reserves and the potential to obtain approvals to further develop these resources. These potential off-site sources for high grade limestone are shown in Figure 2.3-12 through 2.3-15 and summarized in Table 2.3-3A.

Trucks would likely access the cement plant from these sites using SH-247, I-40, National Trails Highway, SH-62, and local roads through Lucerne Valley, depending on which alternative high grade limestone source is selected. Starting with year 41, approximately 52,000 haul truck trips per year would be required, assuming import of 1.3 million tons per year of high-grade limestone using 25-ton on-road trucks (approximately 150 truck trips per day assuming deliveries 350 days per year). The number of off-site, on road haul truck trips would be much greater during the last 80 years of Alternative 2 – Partial Implementation than the number of on-site off-road haul truck trips required for mining Phases 3 and 4 of the South Quarry with Alternative 1 – Proposed Action. On-road haul trucks are much smaller than on-site, off-road haul trucks, and a greater number of trucks would be required to haul limestone from an off-site source. Elements common to all alternatives are described in Sections 2.3.1 and 2.3.2. This section describes elements specific to Alternative 2 – Partial Implementation.

2.3.4.1 Quarry Phasing

The excavation plan for Alternative 2 – Partial Implementation is divided into two phases based on operational, engineering, and environmental concerns (Figure 2.3-11). The excavation plan for this alternative is similar to the first two phases of Alternative 1 – Proposed Action. However, the footprint of Alternative 2 – Partial Implementation would be approximately 20 acres smaller than Alternative 1 – Proposed Action, because excavation along the north slope, which would be part of Phases 3 and 4 of Alternative 1 – Proposed Action, would not occur with this alternative. Table 2.3-4 summarizes relevant data by mining phase.

Table 2.3-3A
Summary of Potential Off-site Sources of High Grade Limestone

Mine/Deposit Location	Land Ownership Status	Resource Estimate	Distance to Cushenbury Cement Plant/Route¹	Potential Constraints
Moapa Band of Paiutes (owner) Moapa Limestone Deposit	700 acres of land owned by Tribe	160 million tons – Average grade: 90% CaCO ₃	248 miles, via I-15 and Hwy 247	No current permit for the resource.
Omya Amboy Limestone Quarry (6 miles NE of Amboy)	48 acres owned in fee by Omya plus 2 acres of federal land managed by BLM	Current permit for 55 years covers 50 acres (300 feet thick, 1,500-foot surface exposure of high purity, high brightness limestone)	128 miles via Route 66, I-40, and Hwy 247	Omya is currently developing this resource of high purity limestone deposit for pharmaceutical and food grade limestone.
Big Maria Mountains Limestone Deposits (former Pfizer and Levy Quarries)	720 acres of 18 active placer mining claims held by the Levy family, adjacent to Big Maria Mountains Wilderness on land managed by BLM.	120 feet thick white limestone exposed over approximately 4500 feet, CaO ₃ – 55%	210 miles via Midland Rd., I-10, Hwy 62, and Hwy 247	No current permit.

Notes: ¹Distances calculated using Google Maps.
CaCO₃ = calcium carbonate. CaCO₃ is the primary component of limestone.

Sources: Brown 2003, BIA n.d., California Geological Survey 1994

Table 2.3-4
Planned Quarry Phasing and Production
Alternative 2 – Partial Implementation

Phase	Area¹ (acres)	Cumulative Area¹ (acres)	Material Excavated (millions of tons)^{2,3,4}	Ore Reserves (millions of tons)³	Waste Rock (millions of tons)^{2,3}	Max. Depth (feet amsl)	Years of Operation⁴
1A	11	11	5.1	4.5	0.5	5,860 ⁵	3.5
1B	32	43	32.1	28.8	3.2	6,130 ⁵	22.0
2	65	108	21.0	18.8	2.2	6,220 ⁵	14.5
Total	108	108	58.2	52.1	5.9	5,860	40

Notes:

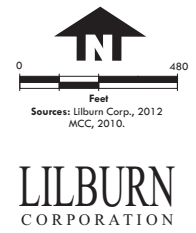
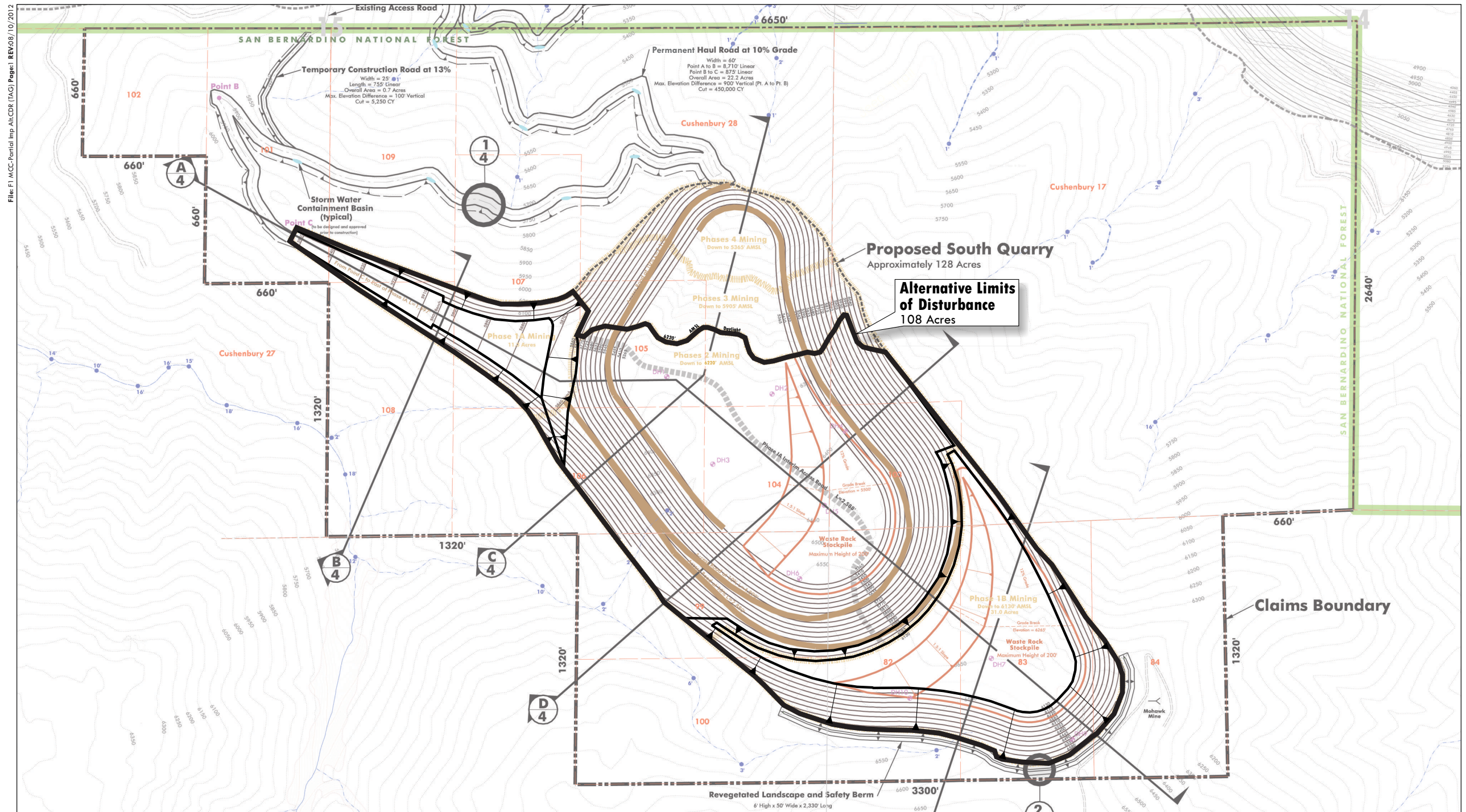
¹Area has been rounded to the nearest whole acre. Totals may be slightly different due to rounding.

²Millions of tons rounded to the nearest tenth.

³Waste rock estimated at 0.15 million tons per year or approximately 10 percent, which would vary depending on area being excavated.

⁴Years of operation based on average production of 1.3 million tons per year.

⁵ Phases 1A, 1B, and 2 are distinct, separate areas with varied excavation depths.



LEGEND

- Proj Site Boundary
- Limits of Quarry Disturbance
- Phase Boundary
- Interior Quarry Haul Road
- Mining Claim
- Geologic Drill Hole
- Jurisdictional Delineation Non-Corps/RWCQB/CDFG Jurisdiction
- Width of Jurisdiction in Feet

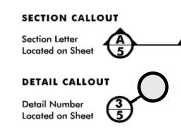


Figure 2.3-11 Partial Implementation Alternative
2012-017 Mitsubishi Cement Corporation South Quarry Project

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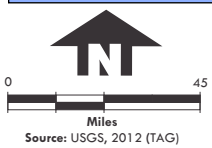
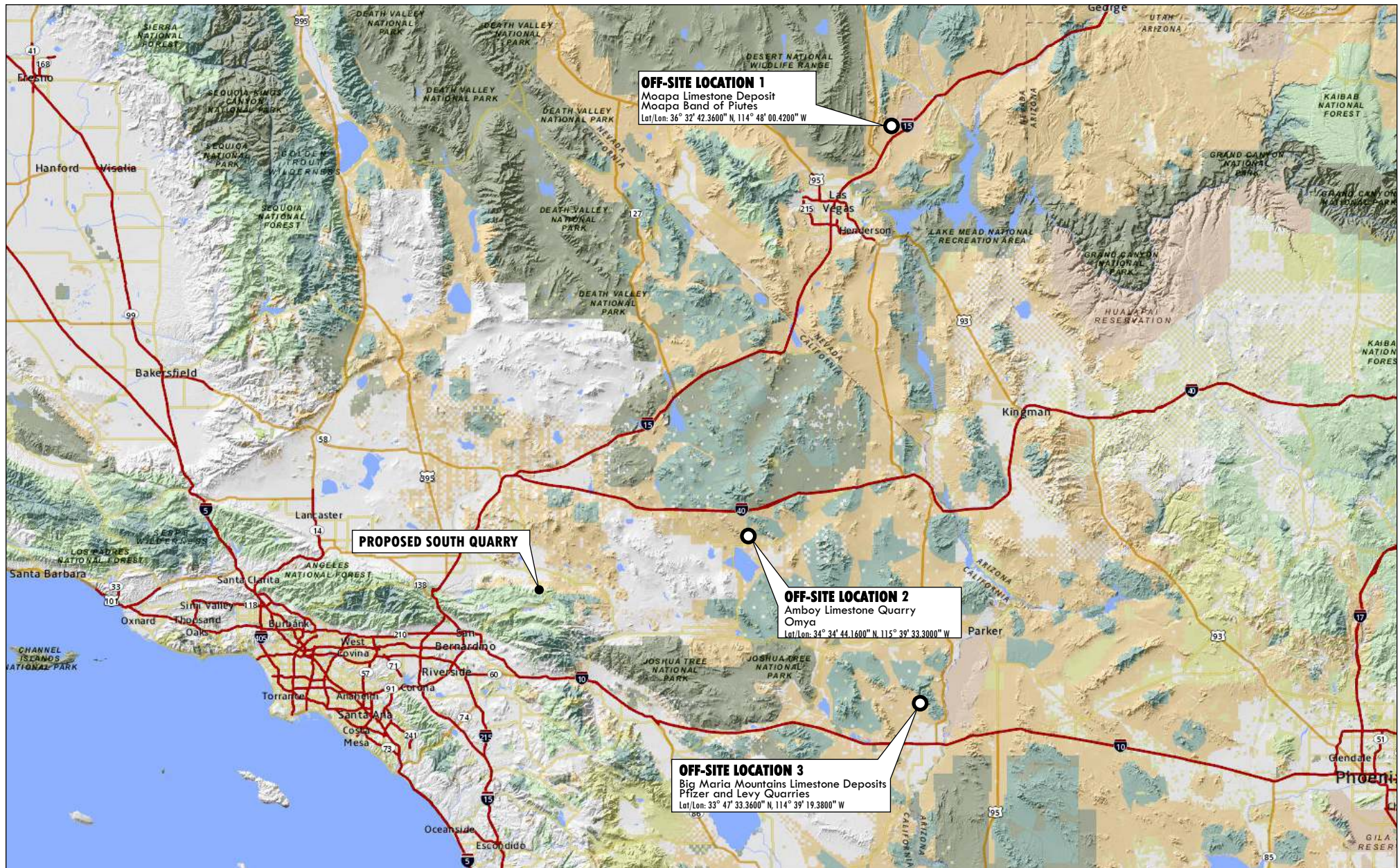
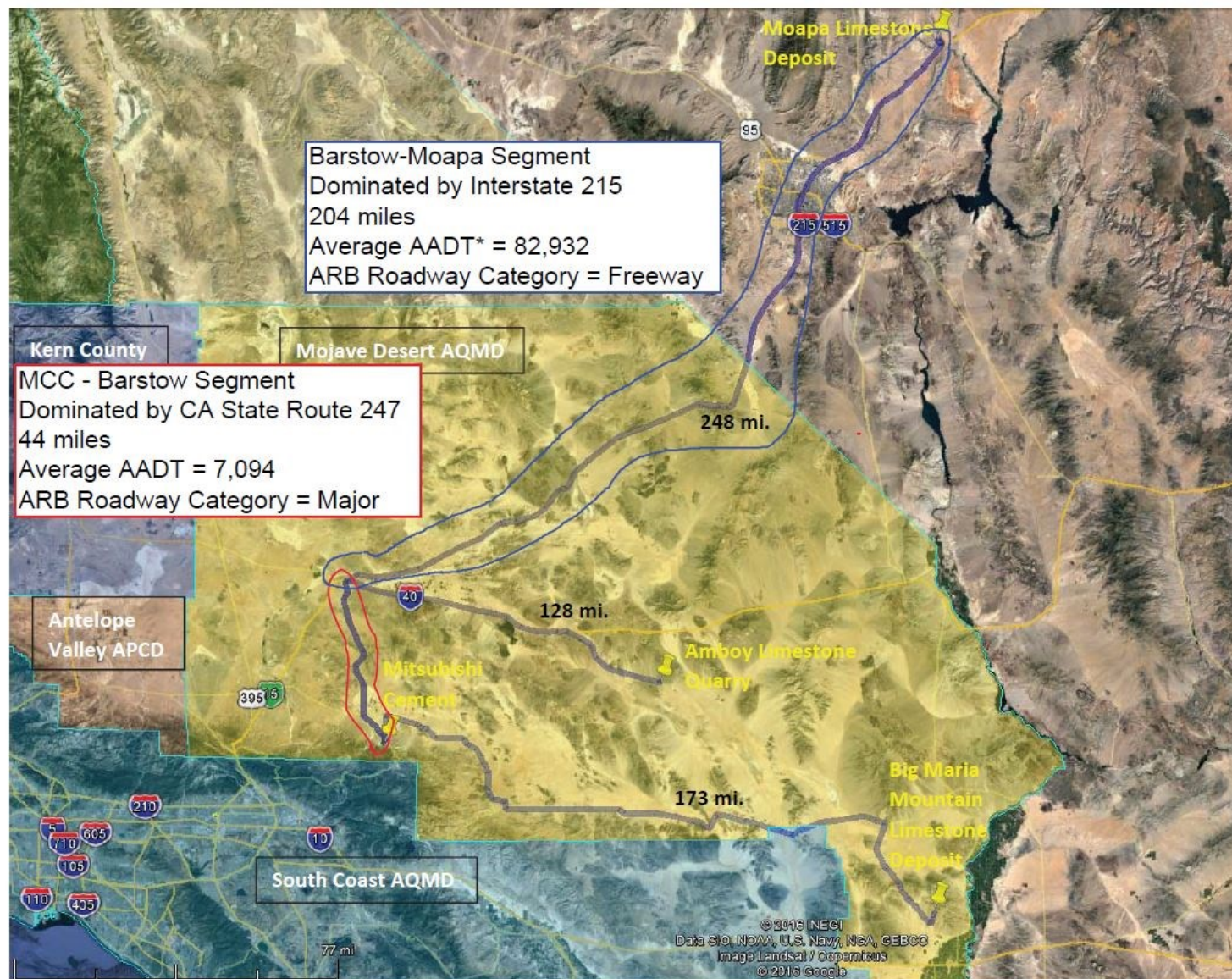


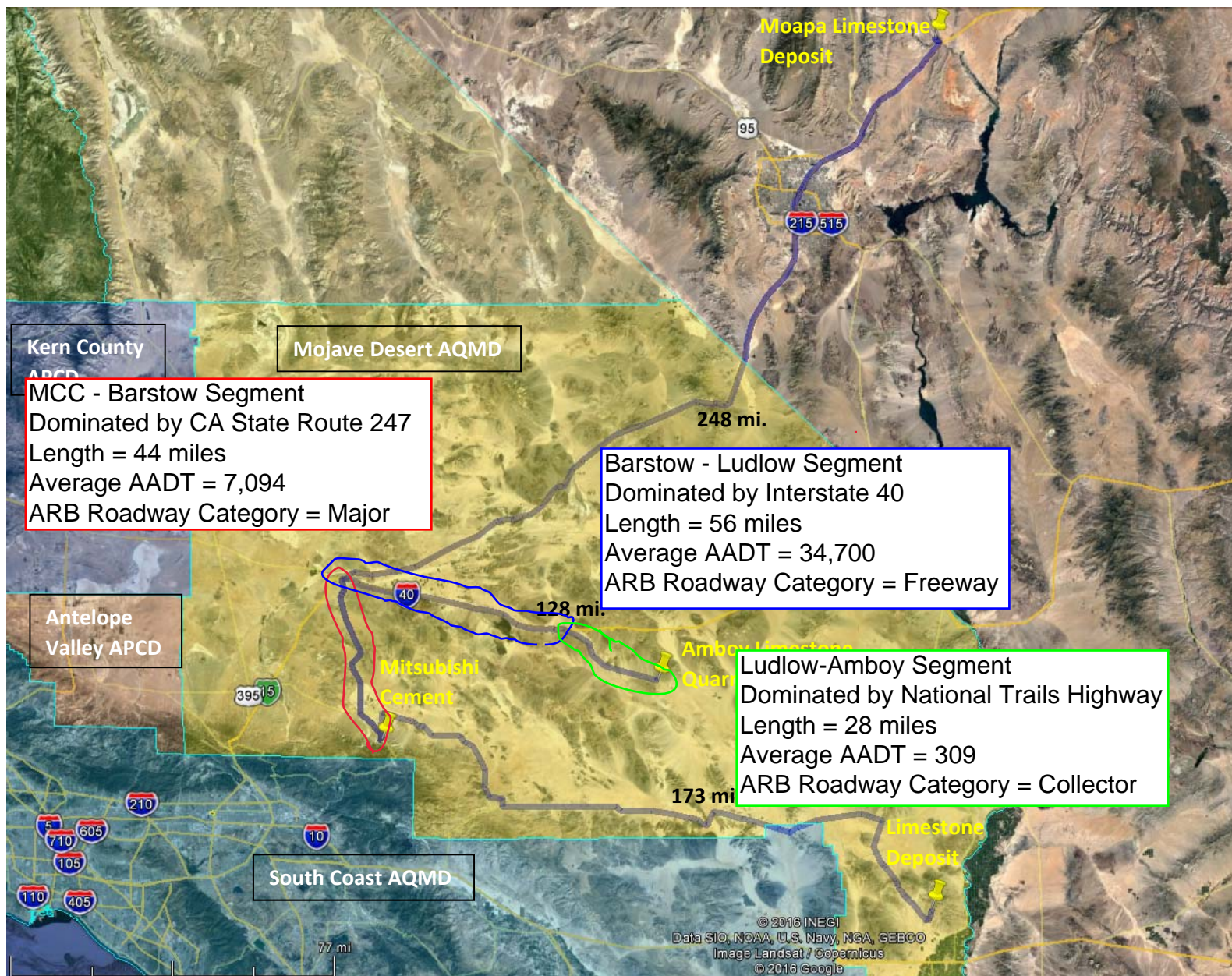
Figure 2.3-12 Off-Site High Grade Limestone Locations



*Caltrans AADT data only available for roads within California. The AADT value used for the portion of road within California was assumed to apply to the portion of road outside California. Similarly, the average baseline (non-project) vehicle weight of 2.4 tons was assumed for the non-California portion of road.



Figure 2.3-13 Potential Offsite Source 1—Moapa Limestone Deposit

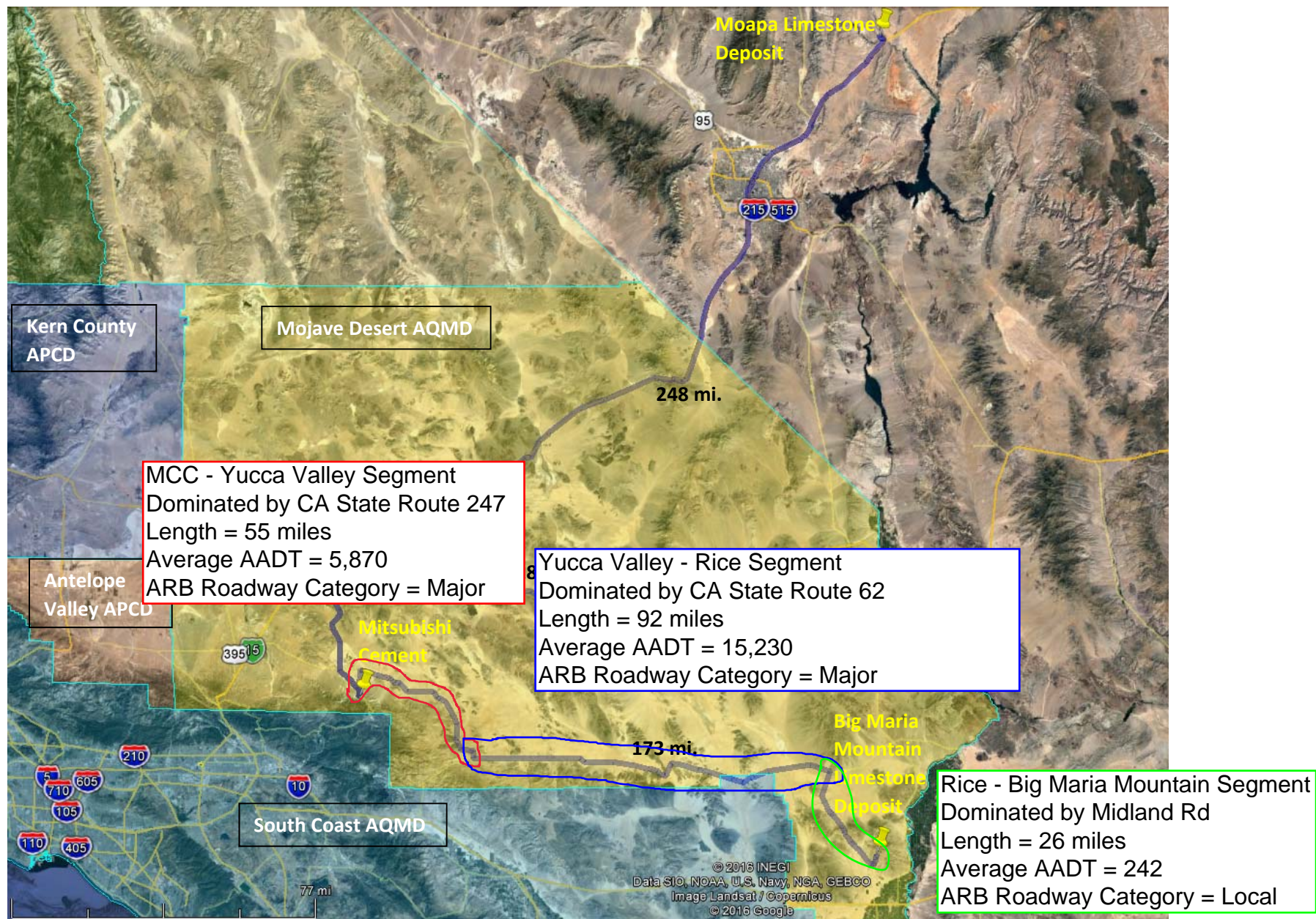


Map Date: 2/7/2019

Location: N:\2012\2012-017 Mitsubishi Cement South Quarry\MAPS\Borders\MCCSouthQuarry_Potential_Offsite_Source_2.mxd (AA, 2/7/2019) - mapping_guest

Figure 2.3-14 Potential Offsite Source 2 - Omya Amboy Limestone Quarry

2012-017 Mitsubishi Cement Corporation South Quarry Project



Map Date: 2/7/2019

Location: N:\2012\2012-017 Mitsubishi Cement South Quarry\MAPS\Borders\MCCSouthQuarry_Potential_Offsite_Source_3.mxd (AA, 2/7/2019) - mapping_guest

Figure 2.3-15 Potential Offsite Source 3 - Big Maria Mountains Limestone Deposits

2012-017 Mitsubishi Cement Corporation South Quarry Project

The South Quarry is proposed to be excavated according to this phasing plan. However, mining operations may experience unscheduled interruptions and/or phasing changes due to various market/economic demands and variation in slopes and material quality beyond the operator's control, because the natural deposit is not of uniform quality. It may be necessary, therefore, to excavate selectively from different locations within the quarry to achieve a suitable blend of raw materials. The Forest Service and the County would be updated on the status of the operational phases in the annual monitoring report.

Because the excavation plan details of Alternative 2 – Partial Implementation would be substantially similar to Phases 1A, 1B, and 2 of Alternative 1 – Proposed Action, they are not repeated in this Section. The reader is referred to Section 2.3.4.2, above.

2.3.4.2 Reclamation and Revegetation

General reclamation methods would be similar to those described for Alternative 1 – Proposed Action (see Sections 2.3.3.10 and 2.3.3.11, above). A summary of the planned reclamation specific to Alternative 2 – Partial Implementation is provided in Table 2.3-5. The planned reclamation and revegetation for this alternative is the same as Alternative 1 – Proposed Action without Phases 3 and 4.

Table 2.3-5
Summary of Reclamation and Revegetation Phasing
Alternative 2-Partial Implementation

Phase	Estimated Years of Operation*	Planned Activities
1A	1-5	Sloping, erosion control, and revegetation of haul road cuts and fills and south and north slopes of Phase 1A excavations. Reclamation of the temporary access road of 0.7 acre.
1B	6-40	Sloping, erosion control, and revegetation of upper slopes and benches as they are completed in the southern area to about the 6,400-foot amsl bench. Construction and vegetation of the landscape berm. Stockpiling of waste rock to reduce slopes to occur throughout phase.
2	26-40	Erosion control and stockpiling of waste rock in Phase 1B area. Sloping, erosion control, and revegetation of upper benches as they are completed. Reclamation of the Phase 1B waste stockpiles.
Final Reclamation	41-46	Removal of equipment, stockpiles, and internal roads not needed for site access during revegetation and site monitoring. Sloping, erosion control, and revegetation of any remaining unreclaimed benches and waste stockpiles in Phase 1B and quarry floor.

Note: The estimated life of each quarry phase is dependent on the slope stability and slopes, extraction rate, and product demand. These estimates assume an ore and waste rock extraction rate of 1.45 MTPY and a five-year period to conduct final reclamation at the estimated completion of Phase 2 to be followed by revegetation monitoring until success criteria are achieved.

2.3.5 Alternative 3 – No Action/No Project

CEQA requires that the No Project Alternative be analyzed in an EIR. In accordance with Section 15126.6(e)(3)(B), the No Project Alternative consists of an analysis of the circumstance under which the project does not proceed. With the CEQA No Project Alternative, the County would not approve Reclamation Plan under SMARA.

NEPA also requires consideration of a No Action Alternative. As described in Section 1.4.1.1, Purpose, pursuant to Federal mining laws and Forest Service regulations, the Forest Service is required to respond to a Plan of Operations for conducting mining operations submitted by an applicant. Under 36 Code of Federal Regulations (CFR) 228.5, the Forest Service must decide whether to approve the Plan of Operations as submitted by MCC or to require changes or additions that are necessary for the Plan of Operations to meet the requirements of the regulations for environmental protection in 36 CFR 228.8.

Neither the CEQA No Project nor the NEPA No Action alternative imply that the limestone resource would never be developed, only that the resource would not be developed under the submitted Plan of Operations. Because MCC owns the rights to mine the limestone deposits, another Plan of Operations could be submitted in the future.

With Alternative 3 – No Action/No Project, MCC would not develop the limestone deposit in the South Quarry under the current Plan of Operations. However, the existing Cushenbury Cement Plant would continue to operate. The ore reserves in the West Pit, when blended with high grade ore, are sufficient to feed the cement plant for approximately 120 years. Therefore, it is assumed that higher-grade limestone for blending would be trucked to the plant from elsewhere in the region during that 120-year period. Trucks would likely access the cement plant using local roads through Lucerne Valley. Approximately 52,000 haul truck trips per year would be required, assuming import of 1.3 million tons per year of high-grade limestone using 25-ton on-road trucks (approximately 150 truck trips per day assuming deliveries 350 days per year). The number of off-site, on road haul truck trips would be much greater for Alternative 3 – No Action than the number of on-site off-road haul truck trips required for mining the South Quarry with Alternative 1 – Proposed Action. On-road haul trucks are much smaller than on-site, off-road haul trucks, and a greater number of trucks would be required to haul limestone from an off-site source.

2.3.6 Comparison of Alternatives Carried Forward for Analysis

Table 2.3-6 provides a comparison of the components of all alternatives that were carried forward for analysis.

Table 2.3-6
Comparison of Alternatives Carried Forward for Analysis

Project Element	Alternative 1 – Proposed Action	Alternative 2 – Partial Implementation¹	Alternative 3 – No Action/No Project²
Quarry Area (acres)	128	108	Not Applicable
Haul Road (acres)	22.2	22.2	Not Applicable
Landscape Berm (acres)	2.7	2.7	Not Applicable
Temporary Construction Road (acres)	0.7	0.7	Not Applicable
Total Disturbed Area (acres)	153.6	133.6	Not Applicable
Total Material Excavated (ore reserves/waste rock) (millions of tons)	174.0 (156.0/18.0)	58.2 (52.1/5.9)	Not Applicable
Maximum Depth (feet amsl)	5,365	5,860	Not Applicable
Number of Phases	4	2	Not Applicable
Years of Operation	120	40	Not Applicable
Quarry Equipment	1-2 Dozers 2-9 Off Road Haul Trucks 1 Drill Rig 1-2 Water Trucks 2-3 Front End Loaders	1-2 Dozers 2-9 Off Road Haul Trucks 1 Drill Rig 1-2 Water Trucks 2-3 Front End Loaders After year 40, on-road haul trucks would be used to truck material to the Cushenbury Cement Plant from elsewhere in the region. Approximately 52,000 haul truck trips per year or approximately 150 haul truck trips per day for 350 days each year would be required.	There would be no new equipment on the site, but a similar equipment mix would likely be operated at a site elsewhere in the region. In addition, on-road trucks would be used to transport high-grade limestone from elsewhere in the region to the Cushenbury Cement Plant. Approximately 52,000 haul truck trips per year or approximately 150 haul truck trips per day for 350 days each year would be required.
Final Reclamation Year	Year 125/monitoring to continue until success criteria are achieved	Year 46/monitoring to continue until success criteria have been achieved	Not Applicable
Project-Specific LMP Amendment to Scenic Integrity Objectives	Required	Required	Not Required

Notes: ¹With Alternative 2 – Partial Implementation, only Phases 1A, 1B, and 2 would be implemented and the quarry would be operated for 40 years rather than 120 years. Higher-grade limestone for blending would be trucked to the cement plant from elsewhere in the region (or could be mined locally under a different future project) from approximately year 41 through year 120. Although a scenario has been provided for alternatives comparison purposes, the exact location and environmental conditions at a future source are unknown and would be subject to separate permitting and CEQA and/or NEPA review.

²With the No Action/No Project Alternative, MCC would not develop the limestone deposit in the South Quarry under the proposed Plan of Operations. The existing Cushenbury Cement Plant would continue to operate for the length of the West Pit's current estimated life of 120 years. Higher-grade limestone for blending could be trucked to the plant from elsewhere in the region or could be mined locally under a different future project. Although a scenario has been provided for alternatives comparison purposes, the exact location and environmental conditions at a future source are unknown and would be subject to separate permitting and CEQA and/or NEPA review.

2.4 Preferred Alternative (NEPA)

NEPA requires that the Lead Agency identify the preferred alternative, if one exists (40 CFR 1502.14). A preferred alternative need not be identified in the Draft EIS if the responsible official does not have one at that stage. The preferred alternative must, however, be identified in a final EIS (FSH 1909.15 Sec. 16). The Forest Service did not identify a preferred alternative at the Draft EIS stage. For this Final EIS, the Forest Service has identified approving Phases 1 and 2 as evaluated under Alternative 1 – Proposed Action as the preferred alternative.

2.5 Environmentally Superior Alternative (CEQA)

CEQA Guidelines Section 15126.6(e)(2) requires that the EIR identify the environmentally superior alternative. If that alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Although on-site impacts resulting from development and operation of the Project would not occur with Alternative 3 – No Action/No Project, this alternative would require trucking higher-grade limestone from elsewhere in the region. Approximately 52,000 haul truck trips per year would be required, assuming import of 1.3 million tons per year of high-grade limestone using 25-ton on-road trucks (approximately 150 truck trips per day assuming deliveries 350 days per year) resulting in environmental effects to air quality, greenhouse gas emissions, and noise related to increased haul truck use of local roads and State Highway 18. The environmentally superior alternative of the two build alternatives is Alternative 2 – Partial Implementation, because this alternative would end mining approximately 80 years sooner and would have a slightly smaller footprint. It should be noted that Alternative 2 – Partial Implementation would also have environmental effects to air quality, greenhouse gas emissions, and noise related to increased haul truck use of local roads and State Highway 18, including significant and unmitigable greenhouse gas emissions. Approximately 52,000 haul truck trips per year would be required, assuming import of 1.3 million tons per year of high-grade limestone using 25-ton on-road trucks (approximately 150 truck trips per day assuming deliveries 350 days per year).

2.6 Alternatives Not Carried Forward For Analysis

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Likewise, the County is required by CEQA to evaluate a range of reasonable alternative to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. The EIR should identify alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and

should briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines Section 15126.6).

Public comments received during the scoping period provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the South Quarry project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

2.6.1 Alternative Design

This alternative would continue mining south from the East Pit to reach the high grade ore in the South Quarry area. Ore would be hauled on roads within the quarry footprint as the quarry is expanded southward. Even though the new haul road would not be constructed and Phases 1A and 1B would not be mined, the overall footprint of the mine would be increased. Impacts related to ground disturbance and removal of public access to the property (such as air emissions, impacts to biological resources from removal of vegetation, erosion impacts, recreation impacts, etc.) would all be greater than with either action alternative. With this alternative, the ridgeline between the East Pit and the South Quarry area would be removed, and there would be a greater visual impact from viewpoints in the Lucerne Valley. Impacts to other environmental resources would be similar to Alternative 1 – Proposed Action. Therefore, this alternative design was not selected for detailed environmental review.

2.6.2 Alternative Mining Methods

Alternative mining methods for transporting ore to the cement plant were considered to reduce the footprint of disturbance at the South Quarry site. These alternative mining methods included: 1) the use of a conveyor to move rock down to the cement plant instead of using haul trucks, and 2) the use of the shaft and tunnel mining method, where most of the excavation would take place under the ground, minimizing disturbance at the surface. With these methods, there would still be a surface mine with the same surface area disturbance if the conveyor or shaft and tunnel methods were used and, instead of the haul road, only a small access road for workers and equipment would be constructed. Portions of the haul road would not be needed, and impacts associated with constructing the haul road would be avoided. No haul trucks would be required to move rock to the cement plant, and air emissions impacts associated with these vehicles would be avoided. However, haul trucks would still be needed within the South Quarry to transport rock to the alternative transport method (e.g., conveyor, shaft); therefore, air emissions from haul trucks would not be completely eliminated. These alternative mining methods were rejected because site conditions make them infeasible to implement. The conveyor would require a primary crusher in the quarry at the conveyor and associated power lines and cables. The very steep terrain at the site would make the installation and maintenance of such a system infeasible. The shaft and tunnel mining method was rejected because the limestone at the project site does not have sufficient strength/integrity to safely implement this method.

2.6.3 Alternative Haul Road Routes

Two alternative haul road routes were considered and rejected because they would be infeasible, would not reduce environmental impacts. In some cases, environmental effects would be more severe.

2.6.3.1 East Side Haul Road Route

A haul road route on the east side of the proposed South Quarry was evaluated. The terrain in this location is steeper than the haul road proposed for Alternative 1 – Proposed Action and Alternative 2 – Partial Implementation, resulting in a longer road with more switchbacks. Construction of such a long road in steep terrain would substantially increase ground-disturbing impacts. These more severe effects include greater air emissions during both construction and operation. The longer road would also be in an area that would be more visible to the Lucerne Valley community, resulting in more severe effects to scenery resources. Impacts to biological resources from habitat removal, noise, and roadway conflicts would also be increased. This alternative haul road route was rejected because it would not lessen or reduce environmental impacts and would actually result in more severe environmental effects than the alternatives that were selected for evaluation.

2.6.3.2 Marble Canyon Haul Road Route

A second alternative haul road route that would access the South Quarry from the west, through Marble Canyon, was evaluated. This route would begin at approximately the midpoint of the southwest edge of the South Quarry and would extend approximately 10,300 linear feet southwest through Marble Canyon before joining with the approved West Pit perimeter road at the southwest corner of the West Pit. The approved West Pit perimeter road would be used to travel the remaining 8,530 linear feet to the existing crusher. This haul road alignment from the South Quarry to the approved West Pit perimeter road would be approximately 700 linear feet longer than the haul road route proposed for Alternative 1 – Proposed Action and Alternative 2 – Partial Implementation. Additionally, because the haul route would use the West Pit perimeter road to access the crusher instead of the East Pit haul road, the total distance from the South Quarry to the crusher would be approximately 1.25 miles longer one way than with Alternative 1- Proposed Action or Alternative 2 – Partial Implementation.

Although the route would be longer, because a portion of this route would be within the canyon, it was initially thought that it would have a less severe impact to scenery resources. Therefore, this alternative was examined more closely to determine its feasibility and to determine its potential for reducing impacts to scenery resources. A slope stability analysis, scenery analysis, and air emissions analysis were conducted for the alternative, the results of which are summarized below.

A slope stability report was prepared for the Marble Canyon haul road alternative. This report found that, due to the steep terrain in Marble Canyon, road construction would need either fill slopes no steeper than 2H:1V, or reinforced fill slopes/retaining structures. On the steep terrain in Marble Canyon, 2H:1V fill slopes would reach considerable heights and would potentially obstruct the existing natural drainage of Marble Canyon. There is insufficient space for such fill slopes for considerable lengths of the alternative route. At 2H:1V slopes, the fill would extend so far horizontally into the canyon that the fill for the higher switchbacks would bury the lower switchbacks, making this approach infeasible. The use of reinforced slopes or retaining structures

is another construction option. However, these options would be costly and difficult to construct and maintain for the significant lengths of road required for this alternative alignment. During road operation, there would be risk of continual erosion and road failure due to the angle of the dip slopes.

A scenery analysis of the proposed haul road alignment determined that effects to scenery resources would be slightly less with this alternative, but would remain adverse and significant. From key viewpoints in the SBNF, the direct effects would be the same. Although the alternative haul road route would cause less disturbance in Phases 1 and 2 by eliminating the straight line disturbance caused by the Alternative 1 – Proposed Action and Alternative 2 – Partial Implementation haul road as observed by some Lucerne Valley viewpoints, overall direct effects would nonetheless cause the scenic integrity level of the area to fall to Low during Phases 1 and 2 and to Very Low during Phases 3 and 4 until completion of reclamation.

Air emissions would be greater with this alternative for some pollutants. In particular, the MDAQMD CEQA significance thresholds for PM₁₀ would be exceeded with this haul road alternative, but it would not be exceeded with the Alternative 1 – Proposed Action or Alternative 2 – Partial Implementation haul road alternative. Greenhouse gas emissions would be 31 percent higher for this alternative, but would remain below the CEQA greenhouse gas emissions threshold.

The Marble Canyon haul road alternative would disturb a larger area than the haul road proposed for Alternative 1 – Proposed Action or Alternative 2 – Partial Implementation. To maintain safe grades, the road or overburden would be in the bottom of the Marble Canyon drainage. This would result in substantial impacts to occupied and suitable habitat for rare plants, including threatened, endangered, and sensitive species and the designated critical habitat for threatened and endangered plants; substantial barriers to movement of large terrestrial animals including deer, mountain lions, and Nelson's bighorn sheep; substantial loss/disturbance to unique canyon bottom/drainage habitat found in Marble Canyon that is likely important to a number of Forest Service Sensitive and Watchlist animals; and greater acreage of loss/disturbance to cliff nesting raptor habitat. All of these effects would be more adverse than with the haul road alignment proposed for Alternative 1 – Proposed Action and Alternative 2 – Partial Implementation.

The Marble Canyon haul road alternative was initially examined for its potential to reduce scenery impacts. With additional analysis, it was determined that, while scenery impact would be slightly reduced, significant adverse effects to viewpoints in Lucerne Valley would remain until reclamation is fully implemented. This alternative would have more severe effects to air quality and biological resources. Additionally, construction of the 2H:1V slopes required for slope stability would be infeasible in the steep terrain and limited space available in Marble Canyon. Therefore, this alternative is not examined further in this EIR/EIS.

2.6.4 Alternative Reclamation Methods

Alternative reclamation methods, including an alternative bench construction method and phasing the mining based on achieving reclamation goals, were considered. An alternative bench construction method, such as microbenching, was rejected because this type of construction would require a larger mine footprint to result in the same amount of ore. This method also depends on thick vegetative cover to cover the microbenching, and would not work well in the sparser habitat at the Project site; therefore, this method would not significantly reduce scenery

effects. Additionally, the reclamation plans for all of the alternatives include sculpting of upper visible benches for shadowing to reduce scenery effects.

2.6.5 Congressional Withdrawal Instead of Administrative Withdrawal

The Project includes a mineral withdrawal of National Forest System lands from mineral location and entry under the General Mining Laws of the U.S., subject to valid existing rights, and achieving the requirement to maintain and conserve habitat for four listed threatened and endangered plant species. A withdrawal is a formal action that sets aside Federal land for public purposes. There are two ways to achieve this withdrawal, an administrative withdrawal and a Congressional withdrawal. Congressional withdrawals are legislative actions by Congress in the form of public laws (Acts of Congress). Administrative withdrawals are withdrawals made by the President, the Secretary of the Interior, or other authorized officers of the executive branch of the Federal Government. The Project would use an administrative withdrawal by the Secretary of the Interior.

An alternative was considered to withdraw the land for conservation of biological resources using a Congressional withdrawal instead of an administrative withdrawal. There are no established rules requiring one process over the other that apply in this instance. Furthermore, the protections provided under an administrative withdrawal are identical to those provided if a Congressional withdrawal is issued, with one minor exception, administrative withdrawals are subject to renewal every 20 years, while Congressional withdrawals do not have a renewal period. The Secretary of the Interior delegated to the Bureau of Land Management (BLM) the authority to process all administrative withdrawal actions, regardless of what Federal agency or Federal lands are at issue. This delegation decision was made primarily because the Secretary of the Interior determined that the BLM's jurisdiction over the mineral estate on Federal lands rendered it the most appropriate agency to deal with administrative withdrawal requests. The Forest Service has no mechanism for asking Congress for a withdrawal. On the other hand, there is an established process for pursuing administrative withdrawals with the BLM, which has already been initiated by the Forest Service, and which exists to ensure that the agency charged with managing the mineral estate on Federal lands is involved in the withdrawal process and adequately informed of withdrawal decisions. This alternative was rejected because there is no procedural mechanism for getting Congress to act on a withdrawal in this instance.

2.6.6 Full Restoration Alternative

A Full Restoration Alternative was considered that would include filling in the mine with rock to re-create the pre-project condition. This type of alternative would not be feasible with this type of mining. For example, mines for other commodities, such as gold or copper generate substantial quantities of waste rock stored in waste rock piles that can be returned to the pits at the conclusion of mining. In contrast, in limestone mining for cement production, particularly at the South Quarry location, there is very little overburden/waste rock. An estimated 10 percent of waste rock is produced as compared to the ore volumes removed and this waste rock is proposed be deposited within the excavated quarry with both action alternatives. MCC currently purchases waste rock from other mining operations for road base and other uses in its existing operation at the East Pit. Therefore, this alternative would require purchasing rock from other areas to have sufficient rock to completely backfill the South Quarry. This alternative would result in a greater environmental impact, because there would be environmental effects at the off-site location in addition to the environmental effects at the Project site. Additionally, the potential environmental

effects of importing rock are discussed in Alternative 2 – Partial Implementation and Alternative 3 – No Action/No Project.

2.6.7 Off-Site Alternative

As stated in CEQA Guidelines (Section 15126.6[f][2][A]), an environmental document shall determine “...whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.” Three off-site alternatives for high grade limestone in the region were evaluated in Alternative 2 – Partial Implementation and Alternative 3 – No Action/No Project, two in southern California and one in Nevada (see Figures 2.3-12 through 2.3-15 and Table 2.3-A in Section 2.4). Additional off-site alternative locations would have similar environmental effects from increased vehicle trips and associated air quality and greenhouse gas emissions. Therefore, additional alternative high grade limestone resources beyond the three analyzed for Alternative 2 – Partial Implementation and Alternative 3 – No Action/No Project were not carried forward for detailed analysis.

A scenario under which MCC would acquire the necessary high grade limestone from the existing mines in the Desert Rim Place (mines operated by Specialty Minerals, Inc. and Omya) was also not selected for evaluation. These mines are located closer to the proposed South Quarry site and the existing Cushenbury Cement Plant and would have fewer impacts related to truck trips than Alternative 2 – Partial Implementation or Alternative 3 – No Action/No Project. However, given the shared geology, topography, and meteorology, similar habitat, sensitive receptors and environmental setting of those existing mining operations as compared to those of the South Quarry site, the potential environmental impacts of further developing the adjacent SMI and Omya limestone resources would largely be the same as the impacts resulting from the Alternative 1 – Proposed Action, for all of the environmental resource areas except traffic, air quality, greenhouse gases, and noise. Impacts to traffic, air quality, greenhouse gases, and noise would be greater than Alternative 1 – Proposed Action. Therefore, these sites would not “avoid or substantially lessen any of the significant effects of the project” (CEQA Guidelines Section 15126.6). For those reasons, further analysis of the potential impacts related to the potential development of high grade limestone resources from existing mines in the Desert Rim Place was not pursued.

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