Staff Report to the Planning Commission

Application Number: 99-0561

Applicant:	RMC Pacific Materials dba CEMEX	**Agenda Date:**	September 23, 2009
Owner:	RMC Pacific Materials dba CEMEX Coast Dairies and Land Company	**Agenda Item #:**	7
APN:	063-132-08 & -09; 063-251-03 (lease); 058-122-13 & -10 (lease)	**Time:**	After 9:00 a.m.

Project Description: Proposal by RMC Pacific Materials dba CEMEX to expand the current mining boundary of the Limestone Quarry within its vested, legal mining limit. The proposal also includes amending the revegetation plan concept within the Bonny Doon Quarries 1996 Reclamation Plan for both the Shale and Limestone Quarries.

Location: The Limestone Quarry is located on the east side of Bonny Doon Road and the Shale Quarry is located on the west side of Bonny Doon Road, approximately 2.3 miles northwest of its intersection with Highway 1 in the community of Bonny Doon.

Supervisoral District: Third District (District Supervisor: Neal Coonerty)

Permits Required: Use Permit 3236-U Amendment; Certificate of Compliance 89-0492 Amendment; Reclamation Plan Amendment; and Coastal Development Permit Amendment

Staff Recommendation:

- Certify the Final EIR prepared for the project under the California Environmental Quality Act, based on the CEQA Findings, the Conditions of Approval, and the Mitigation Monitoring and Reporting Program, in Exhibits B, C and D, respectively.
- Approve Application 99-0561, based on the attached Findings and Conditions.

Exhibits

A. Final EIR (on file with the Planning Department)
B. Findings (Mining, Coastal, CEQA)
C. New Conditions of Approval
D. Mitigation Monitoring and Reporting Program
E. Quarry Area Map
F. Limestone Quarry Map
G. Limestone Quarry Final Contours
H. Quarry Area Parcel Map
I. Zoning & General Plan Maps
J. Liddell Spring Compliance
K. Comments & Correspondence

Parcel Information

Parcel Size:	063-251-03 = 249 acres 063-132-08 = 254 acres 063-132-09 = 34 acres 058-122-10 = 535 acres 058-122-13 = 1,469 acres
Existing Land Use - Parcel:	063-251-03 = Mineral Quarry/Timber Production 063-132-08 = Mineral Quarry 063-132-09 = Mineral Quarry 058-122-10 = Mineral Quarry 058-122-13 = Mineral Quarry/Agricultural Preserve
Existing Land Use - Surrounding:	Rural Residential, Mountain Residential, Agriculture, Timber Production, and City of Santa Cruz (Liddell Spring)
Project Access:	Access off Bonny Doon Road for both the Limestone and Shale Quarries
Planning Area:	Bonny Doon
Land Use Designation:	Quarry, Mountain Residential, Agriculture, Mineral Resource
Zone District:	063-251-03 = TP (Timber Production) 063-132-08 = M-3 (Heavy Industrial) 063-132-09 = M-3 (Heavy Industrial) 058-122-10 = SU (Special Use) 058-122-13 = CA (Commercial Agriculture - Preserve)
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ Yes __ No

Environmental Information

Geology and Soils:	Mitigation proposed
Hydrology and Water Quality	Mitigation proposed
Fire Hazard:	Yes, fire hazard area
Air Quality	Mitigation proposed
Biological Resources	Mitigation proposed
Grading:	Yes; surface mining
Tree Removal:	Yes; 17.1 acres for expansion of mine
Scenic:	Yes; Portions of parcels 058-122-10, 063-132-08, 063-132-09, and 058-122-10 contain mapped resource
Noise	No mitigation required
Archeology:	No; No physical evidence within Boundary Expansion Area

Services Information

Urban/Rural Services Line:	__ Inside _X_ Outside
Water Supply:	Plant Spring (onsite)
Sewage Disposal:	No onsite sewage disposal
Fire District:	California Department of Forestry
Drainage District:	N/A

Introduction

The Bonny Doon Limestone and Shale Quarries are located off Bonny Doon Road approximately 2.3 miles northeast of its intersection with Highway 1 (Exhibit E). The Limestone Quarry is located east of the road and encompasses a total area of approximately 206 acres, including the quarry pit, waste dumps, ponds and operational areas. The Shale Quarry is located west of the road and encompasses a total area of approximately 94 acres. Materials from the Limestone and Shale quarries are transported solely by covered belt conveyor system a distance of approximately 2.5 miles to the Davenport Cement Mill (Cement Plant). CEMEX is pursuing an application with the County Planning Department to extend the active mining boundary of the Limestone Quarry by 17.1 acres (Exhibit F) and to amend the revegetation plan for the Limestone and Shale Quarries.

This report will refer to various entities as the mine owner and operator, including Pacific Cement and Aggregates, Lonestar California Inc., Lone Star Cement Corp., RMC Lonestar, RMC Pacific Materials, and CEMEX. CEMEX is the current owner and operator of the mine and is, therefore, responsible for reclamation of the site. In this report the generic term "quarry operator" may also be used to refer to these entities, past, present or future.

History

Use Permit 3236-U was approved in 1968. In approximately 1969, construction of the new conveyor line to the Bonny Doon Quarries was completed and mining in the Bonny Doon Limestone and Shale quarries began (Use Permit 3236U, Part III and IV). As required by the State Surface Mining and Reclamation Act of 1975 (SMARA) and the Santa Cruz County Mining Regulations, in 1989 RMC Lonestar submitted an application to the Planning Department for a Certificate of Compliance and Reclamation Plan Approval for the Bonny Doon Limestone and Shale Quarry. Approval of a Certificate of Compliance verifies compliance of the existing mine with the provisions of the County's Mining Regulations, General Plan/LCP, Zoning Ordinance, SMARA and other State or Federal laws and authorizes the continuation of mining. A Reclamation Plan Approval authorizes and requires the reclamation of mined lands.

In 1997 the Planning Commission certified an EIR and approved Certificate of Compliance and Reclamation Plan Approval 89-0492 (COC) for Use Permit 3236-U, Parts III and IV only. All provisions of Parts III and IV of Use Permit 3236-U remain in effect. The conditions of the COC augment, and supersede where in conflict with, the provisions of Use Permit 3236-U.

Mining operations in the Bonny Doon Limestone Quarry began with overburden removal in the early 1970's to expose the buried limestone deposit. See Exhibit F for a map of Limestone Quarry facilities. Overburden has been deposited in three waste disposal areas. Blasting is used to initially dislodge the limestone. Larger boulders are further broken down in the pit using a mobile rock breaker. The rock is loaded into dump trucks and hauled to the crusher where the rock is crushed and screened to separate usable ore from lower quality rock and fine-grained material. The ore is fed into a silo for storage and the conveyor system for transport to the Cement Plant while the "waste" is currently hauled by dump truck to Disposal Area C (Disposal Areas A and B are full). Currently the pit is a large closed depression with a floor elevation of

750 feet above sea level surrounded by high limestone walls with the pit entrance ramp on the south side. Most of the currently permitted limestone reserves have been mined and the pit is close to final slope configuration, which will consist of minimum 16-foot wide benches at approximately 40-foot vertical intervals. At current production rates the Limestone Quarry has approximately three to four years worth of further supply.

Mining operations in the Shale Quarry are of a much smaller scale than the Limestone Quarry because the shale is needed in smaller quantities, is closer to the surface, and is easier to mine using mobile ripping, loading and hauling equipment. In 2006, for example, shale production amounted to less than three percent of overall production. Blasting is not required. Mining has occurred in several different portions of the Shale Quarry to obtain rock with optimum composition. Reclamation has started in some areas while mining continues at others. It is likely that substantial portions of the 99-acre area, including the drainage area in the central portion of the site, will not be mined and will remain undisturbed.

Operations within the quarries take place on Mondays through Fridays only and do not commence before 7:30 a. m., nor extend beyond 5:00 p. m. However, the transport of shale and limestone on the conveyor from silos located at the quarries may take place between the hours of 7:30 a. m. and 11:30 p. m., on each day Monday through Friday. Not more than two (2) blasts are permitted per working week. Time for blasting is set at approximately 12:25 p. m. and 3:25 p. m.

A total of seven ponds, three at the Shale Quarry and four at the Limestone Quarry, capture all the rainfall runoff from the quarry sites. The ponds are designed to provide adequate storage time to settle sediment out of storm water runoff to protect downstream resources. In recent winters, storm water from Limestone Quarry settling ponds has been released downstream through valves between storms after adequate settling time. Water from an onsite spring (Liddell Spring #2) is used primarily for dust control and to cool the crusher bearings.

Reclamation generally consists of grading final slopes, erosion and drainage control, and revegetation to stabilize the mined lands, protect downstream resources and provide a native species vegetative cover similar to naturally occurring habitats in the surrounding area and capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer. Concurrent reclamation is in process on some areas of the site outside of active mining areas. Currently, the Reclamation Plan for the Bonny Doon Limestone and Shale Quarries designates the end use as open space. If uses other than open space are proposed, an amendment to the Reclamation Plan would be required, as well as other applicable permits and approvals. In addition, any future development proposal would be subject to Environmental Review according to provisions of the California Environmental Quality Act (CEQA) and County of Santa Cruz Environmental Review Guidelines.

The approved Mining Plan and Reclamation Plan, as well as a specific set of Conditions of Approval, address potential hazards and other adverse effects that may occur as a result of the mining operation. County staff inspects the mine for compliance on a quarterly basis. As required, the operator submits comprehensive annual reports, which are also used by the Planning Department to monitor permit compliance. Approximately every five years, the

Planning Commission performs a Permit Review for compliance with approval conditions. The last Permit Review occurred in 2008.

In accordance with SMARA and the County's Mining Regulations, a financial assurance made payable to the County, as lead agency, and the California Department of Conservation (DOC) has been submitted by the quarry operator to ensure that adequate reclamation is performed in accordance with the approved Reclamation Plan. The financial assurance is reviewed each year by the County and adjusted, as needed, to account for current conditions. When the County and DOC are satisfied that the Quarry has completed reclamation pursuant to the approved Reclamation Plan, the Financial Assurance will be released.

Project Description

CEMEX proposes to expand the mining plan boundary of the Limestone Quarry to include 17.1 acres of unmined land on the east side of the quarry pit (Exhibit F). This Boundary Expansion Area is within the Legal Mining Limit established for the quarry and is subject to vested rights. A discussion of vested rights is found below. The expanded mining area would open up approximately three years of additional resources, effectively extending the useful life of the Limestone Quarry from approximately 2012 to 2015 based on current production rates and reserve estimates (Robert Walker, CEMEX, pers. comm.). In order to meet product quality needs and to efficiently use the resource in the existing mining area, the extended mining area would be developed upon permit approval and would be mined in conjunction with the existing area.

The final mining configuration of the proposed project is shown in Exhibit G (Limestone Quarry Final Contours). No change to the mining depth limit is proposed by the proposed expansion. Under the proposed expansion, the bench configuration and pit development would continue in the same manner as presently occurring under the existing operation. No operational changes in mining methods, equipment used, production rates, or hours of operation are proposed. No changes in permit conditions are proposed. The proposed project does not require an increase in water use, or a change in the way water is used at the site. Existing levels of water use would continue for the life of the project.

The first step in mining the 17.1-acre Boundary Expansion Area would be land clearing. For proper utilization of natural resources, the California Department of Forestry (CDF) would require a Timberland Conversion Permit under Public Resources Code Section 4621-4628 and an approved Timber Harvest Plan (Rich Sampson, CDF, pers. Comm.). Marketable timber would then be trucked to a local mill.

Slash and other remaining vegetation would be blended with the topsoil that would be removed to add structure and possible nutrients to the topsoil. This topsoil would be stored at the top of Disposal Area C for use in reclamation/revegetation at the Limestone and Shale Quarries. Tree root wads are useful in stream bank restoration projects and this project would be a potential source of this material.

Based on exploratory drilling, the depth of overburden is estimated to range from 0 to 80 feet. The overburden is primarily mudstone and sandstone. Based on current data, CEMEX estimates

about 580,000 cubic yards of overburden material would need to be removed from the Boundary Expansion Area.

Overburden and off-spec rock from the Boundary Expansion Area would be disposed of in Disposal Area C until it reaches its final contours (estimated to occur by 2014). Overburden would also be placed in a new disposal area developed on the west side of the quarry pit. Overburden would be placed as construction fill in compacted lifts. Based on current practices, it is estimated that approximately 1,100,000 to 1,300,000 cubic yards would be placed in the new disposal area proposed on the west side of the quarry pit. It should be noted that Mitigation Measure HYD-1 would revise this aspect of the proposed project.

During the review and approval of the 1996 Reclamation Plan by the State Mining and Geology Board (SMGB), debate occurred between the County, the SMGB, and RMC over the best approach toward re-establishing plant cover on land disturbed by mining. Presently, the revegetation plan specifies planting vegetation communities that were pre-existent to the mining operation. The replacement of lost vegetation types as specified in the 1996 Reclamation Plan mitigated the significant environmental impact upon sensitive plant communities (County of Santa Cruz, 1996). However, the SMGB recognized that soils heavily disturbed from mining would not readily support climax vegetation communities such as redwood forest and maritime chaparral specified in the Bonny Doon Quarry 1996 Reclamation Plan. The SMGB reclamation standards are based on a more modest approach of using early successional vegetation such as grasslands to establish plant cover in areas where well-developed soil structure is lacking. During SMGB review of the Bonny Doon 1996 Reclamation Plan, a third party study of revegetation methods and materials was conducted for the Bonny Doon Quarries (Hart 1999). The study recommended a shift in revegetation strategy from a climactic to an early successional planting scheme. Since this change substantially alters the revegetation plan assessed in the Certificate of Compliance and 1996 Reclamation Plan, the proposed revisions to the 1996 Revegetation Program are subject to environmental review under CEQA.

Permit Requirements

The proposed project requires an Amendment to the current Certificate of Compliance and Reclamation Plan Approval 89-0492 (COC) for Use Permit 3236-U Parts III and IV only. The proposed project would also require the issuance of a Coastal Development Permit Amendment. The proposed Expansion Area is within the Quarry Legal Limit, which is protected under vested rights established by the County. Under vested rights, the quarry operator is entitled to continue mining within the established legal boundary as long as operations conform to the permit conditions and County mining regulations. However, it remains within the legal authority of the County to review the proposed expansion for conformance with relevant County regulations and ordinances, and to modify the project where non-conformance is found. The County determined that the mining plan expansion, while covered under vested rights, is subject to environmental review under CEQA.

The County's authority under vested rights, is described in a letter from County Counsel to the Board dated March 11, 2002.

> *"...as previously acknowledged by the County, and out of respect for the vested rights which RMC does possess, and consistent with the County Code, the County will impose additional conditions or restrictions only in the case that the stricter standards 'are necessary to mitigate a potentially significant environmental impact, and/or to protect public health or safety, and/or to respond to a public nuisance.' Should additional limitations be found to be necessary to prevent significant environmental impacts or threats to public health and safety, the risks associated with these impacts must be weighed against the effects of such restrictions on quarry operations to ensure that they do not unreasonably constrain the permit holder from exercising their vested rights."*

The Bonny Doon Quarries operate under various permits by regulatory agencies as shown in Table 1-1 below. The proposed mining expansion would facilitate a continuation of the existing operation; no other changes are proposed to the operation of the quarry that requires permitting by other regulatory agencies. The project does require approval of a Coastal Development Permit Amendment that can be appealed to the California Coastal Commission (CCC), and approval of a Reclamation Plan Amendment that can be appealed to the SMGB.

Table 1-1
Summary of Permit Requirements

Agency	Existing Permit	Limestone Quarry Boundary Expansion and Reclamation Plan Amendment
County of Santa Cruz	Use Permit 3262-U and Certificate of Compliance 89-0492	Amendment required
California Coastal Commission	County of Santa Cruz is lead agency for Coastal Development Permit, which is appealable to the CCC.	Application includes Coastal Development Permit Amendment
California Department of Fish & Game (Bay Delta Region)	Existing Stream Alteration Agreements for Disposal Area C and periodic Settlement Basin cleanout	No change
Regional Water Quality Control Board (Central Coast Region)	Existing General Storm Water Permit for Industrial Activities	No change
Monterey Bay Unified Air Pollution Control District[1]	Permits to operate existing emissions-producing equipment	No change
U. S. Fish & Wildlife Service (Ventura Office)	Incidental Take Permit for California red-legged frogs due to operation of settlement basins. Expires in 2014.	No change
U. S. Army Corps of Engineers (San Francisco District)	Authorization under Nationwide Permit 26 to fill wetlands in Disposal Area C	No change
State Mining and Geology Board	County is Lead Agency for Reclamation Plan Amendment approval, which is appealable to the State Mining and Geology Board	Application includes a Reclamation Plan Amendment
California Department of Forestry	Timber Harvest Plan and Timberland Conversion Permit	Required for proposed project

[1] Rule 440 was adopted in March of 2008 and is discussed in detail in Section 7.2.3 of the Final EIR.

Environmental Review

Environmental review has been required for the proposed project per the requirements of CEQA. An Initial Study was prepared for the proposed project and was reviewed by the County's Environmental Coordinator on November 19, 2001. Following review, it was determined that an EIR would be required due to potentially significant and unavoidable impacts. An appeal of this determination by the applicant was ultimately resolved resulting in the preparation of an EIR.

The environmental review process focused on the potential impacts of the project in the areas of geology and soils, hydrology and water quality, biological resources, air quality, noise, energy and natural resources, and cumulative impacts. A Draft EIR was completed in July 2007. A Final EIR (Exhibit A) has been prepared by the Planning Department to respond to public agency and general public comments received on the Draft EIR for the Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment, which was circulated for public review July 31 to October 1, 2007. A total of 593 comments were received from 33 different federal, state and local agencies, private organizations individuals. Many of the comments and responses are very technical in nature requiring significant time to prepare proper responses. In addition, the Planning Department has worked diligently to revise select mitigation measures for this EIR, and on further development of the Reclamation Plan prior to scheduling a public hearing on the project.

The EIR concludes that there are no significant unavoidable impacts associated with the project. The environmental review process generated mitigation measures that would reduce potential impacts from the proposed project and adequately address the issues of concern. The proposed expansion of an existing mine represents an irreversible environmental change, however, the site is designated for mining use and will be reclaimed in accordance with federal, state and local laws. The project itself does not include expansion of infrastructure and services that would enable new growth to occur in the project vicinity; therefore, the project would not directly result in growth inducing impacts. The analysis in the EIR of alternatives to the proposed project concludes that there are no reasonable project alternatives that can feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. A major factor in this conclusion is the special nature of a mining project that ties the project location to where the limestone (marble) occurs. Also, CEMEX does not have vested mining rights in other locations. Some of the more important issues evaluated during the environmental review process are discussed in the sections below.

Zoning & General Plan/Local Coastal Program Consistency

The proposed expansion of the existing mine and the amendment to the Reclamation Plan for the entire mine, and the conditions under which it would be operated would comply with the County's General Plan and the Local Coastal Program Land Use Element (GP/LCP) in that the site is designated as a Mineral Resource Area and the mining operation would be consistent with all General Plan and LCP Land Use Plan policies, including resource protection policies as described in the EIR for the project. The project meets the objective of the General Plan to allow the orderly economic extraction of minerals with a minimal adverse impact on environmental and scenic resources and surrounding residential land uses; to require reclamation of quarry sites concurrently with the extraction of the mineral resource and the completion of quarry operations

in any specific area to the greatest extent feasible; and to ensure that the rehabilitation and future use of quarry sites are in accordance with safety, conservation, habitat preservation, restoration and open space values and state mining laws.

The proposed expansion area is zoned Mineral Extraction (M-3); other areas of the limestone and shale quarries are zoned Special Use (SU), Timber Production (TP), and Commercial Agriculture(CA-P). See Exhibit H and I for Zoning, General Plan and Assessor's Parcel Maps. While the quarry operator owns the parcels zoned M-3 encompassing the limestone quarry pit, the quarry operator holds lease agreements with Coast Daires and Land to mine shale and deposit waste on the remaining parcels currently zoned SU (Shale Quarry), TP and CA-P (Disposal Areas A and C). The existing and proposed mining operation is an allowed use in the M-3, TP and SU zone districts consistent with theGP/LCP land use designations of Mountain Residential (R-M) and Industrial (Q) overlay. Disposal Area C, which appears to be located partially within the CA-P zone district, is an existing non-conforming use that may continue pursuant to Santa Cruz County Zoning Regulations Section 13.10.260(c)2.

Geology and Soils

The EIR identifies potentially significant impacts related to Boundary Expansion Area slopes and the levees for Sediment Basins 3 and 4, which would potentially receive runoff from the Boundary Expansion Area. A displacement analysis for seismic shaking shows basin levees would move under seismic shaking. Mining the Boundary Expansion Area may result in increased runoff volumes and sediment loads entering quarry settlement basins. The project may result in sedimentation of downstream areas if settlement basin levees receiving runoff from the quarry Boundary Expansion Area fail during a major seismic event. An updated slope stability analysis using current information and analysis techniques is necessary for validation of previous slope stability evaluations as they affect Sediment Basins 3 and 4, and the proposed Boundary Expansion Area slopes. Should the updated analysis indicate that there is a potential for failure of levees and release of impounded runoff to downstream areas, the levees shall be modified to satisfy stability concerns. Should the updated analysis indicate that the proposed finished slopes in the Boundary Expansion Area are unstable with respect to significant landsliding, the proposed finished slope design may have to be altered to provide a more stable profile.

The quarry operator is currently conducting the required slope stability investigations in anticipation of implementing remedial measures at sediment basin levees or redesigning proposed slopes in the Boundary Expansion Area, as needed, prior to commencement of mining in the Boundary Expansion Area, as required by Mitigation Measures GEO-1 and GEO-2.

Hydrology and Water Quality

The EIR concludes that considerable interconnectivity exists between water and sediment collected in the quarry, groundwater flow, and Liddell Spring discharge and turbidity. The EIR, therefore, concludes that mining in the Boundary Expansion Area would result in an increase in turbidity and sedimentation at Liddell Spring, which is a key source of municipal water for the City of Santa Cruz. Interception of ground water during mining would exacerbate these impacts by exposing ground water to surface contamination and sedimentation. In addition, implementation of the previously approved final drainage plan for the quarry would divert

Boundary Expansion Area runoff from percolation through the quarry floor and reduce ground water flow to Liddell Spring. These impacts can be reduced to a less than significant level through implementation of Mitigation Measures HYD-1, HYD-2 and HYD-3, which require an updated Drainage Plan for the Limestone Quarry, enhanced groundwater level monitoring and limitation on mining depth, if necessary, and a monetary contribution toward water treatment costs, respectively. An acceptable Drainage Plan has been submitted, which provides engineering design based on the filter performance standards described in Appendix G of the Final EIR. Based on the results of the required groundwater level monitoring limitations on mining depth would be imposed, if necessary.

Hydrogeologic (groundwater) conditions in the area of the quarry is a complex subject that has been studied with increasing sophistication over the past approximately 50 years. For a complete discussion of the subject see Technical Appendix F of the EIR, or Chapter 5 of the EIR for an abstract of Appendix F. In addition, see Exhibit J to this staff report for a discussion of compliance of the ongoing quarry operation with existing Conditions of Approval and the 1964 Agreement between the quarry operator and the City of Santa Cruz. While the impact of the existing quarry operation on the City of Santa Cruz water supply appears to be minimal, the available data indicate that the quarry does contribute a minor component of the total turbidity at Liddell Spring. Continuation of the same mining operation in the expansion area is not expected to change this conclusion. Section 5.3.3.4 of the Final EIR provides a discussion and conclusions regarding the nature of the impact of the existing operation on the quality of the City water supply source.

While Mitigation Measures HYD-1 and HYD-2 have been developed based on current site conditions, Mitigation Measure HYD-3 extends the 1964 Agreement between the quarry operator and the City of Santa Cruz to the proposed expansion area. Specific water quality standards are included in the Agreement for the purpose of calculating compensation under the terms of the Agreement. The Planning Department has developed an algorithm using an electronic spreadsheet to perform the calculation, as required by HYD-3. As described in Attachment K, based on a number of factors, the calculation actually overestimates any actual impact on the water supply, and therefore, calculates a generous amount of compensation. It should be further noted that while the City is entitled to compensation under the terms of the 1964 Agreement, there has been no loss of production and all of the water produced from Liddell Spring can be treated at the City's Graham Hill Water Treatment Plant. Any incremental increase in treatment cost attributable to poorer quality water from Liddell Spring has not been quantified. Therefore, based on the combination of the calculated amount of compensation pursuant to HYD-3 and the protective measures implemented pursuant to HYD-1 and HYD-2, the potential water quality impacts of the Boundary Expansion Project are reduced to a less than significant level.

Biological Resources

The proposed Boundary Expansion Area contains four natural upland communities (Draft EIR, Figure 35): coast live oak forest, northern coastal scrub, mixed evergreen forest, and upland redwood forest. Coast live oak forest and northern coastal scrub are Sensitive Habitats pursuant to the County's Sensitive Habitat Protection Ordinance. The removal of these sensitive habitats for mining would be mitigated to a less than significant level through implementation of Mitigation Measure BIO-3, which requires a revised Revegetation Plan that includes replacement

of these sensitive vegetation communities. The Revegetation Plan has been revised to incorporate the requirements of Mitigation Measures BIO-3 as well as BIO-5, which requires performance standards for revegetation, and BIO-6, which requires performance standards for topsoil salvage, maintenance and redistribution. In addition, the revised Revegetation Plan for the Limestone and Shale Quarries incorporates all other sensitive plant communities required pursuant to Conditions of Approval of the existing COC.

Based on field surveys for the EIR, the Boundary Expansion Area contains a total of 53 San Francisco dusky-footed woodrat (SFDW) houses. It was determined that 40 houses were occupied. The SFDW is listed as a California Species of Special Concern and areas where it occurs is Sensitive Habitat pursuant to the County's Sensitive Habitat Protection Ordinance. Therefore mining of the Boundary Expansion Area would displace and/or take approximately 40 SFDW individuals, which is considered a significant impact. With implementation of Measures BIO-1 and BIO-2, the project impacts to SFDW would be reduced to a less than significant level. These measures require the establishment of a conservation easement over suitable SFDW habitat at a ratio of one acre of habitat preserved for one acre of habitat removed, and relocation of SFDW individuals from the Boundary Expansion Area prior to land-clearing activities that will impact SFDW houses.

Land clearing in the Boundary Expansion Area that has an impact on nesting birds protected under state and federal law represents a potentially significant impact. Impacts to nesting birds, including raptors and nongame birds, can be reduced to a less than significant level through pre-construction surveys or by scheduling timber harvesting and overburden removal for late summer/early fall, outside of the breeding season. These steps are identified in Measure BIO-4. In addition, the preservation of habitat for SFDW would also protect nesting habitat for birds, and the revegetation of impacted areas of the quarry would restore native habitat that could be used by nesting birds. With the implementation of these measures, impacts on nesting birds would be less than significant.

Air Quality

The principal relevant air pollutants expected to be generated by the Bonny Doon Limestone Quarry Boundary Expansion Project include particulate matter 10 microns in diameter (PM10), ozone precursors, and toxic air contaminants (TACs). PM10 consists of "respirable" particulates (dust) smaller than or equal to 10 microns in diameter that can cause adverse health effects. Both ozone precursors and TACs are a result of diesel fuel use.

The existing Quarry operation has been found to be in conformance with existing Use Permit conditions and applicable County mining regulations, as described in the 2008 Permit Review. PM10 emissions from the quarry were concluded not to result in violation of an ambient air quality standard. Based on analysis of the emission inventory for the proposed Quarry operation, the EIR concludes that emissions of PM10, ozone precursors and TACs would represent a less than significant impact. In addition, Mitigation Measure AQ-1 limits overburden removal operations to no more than 8.2 acres of vegetation stripping and 2.2 acres of excavation at any point in time, as required by the Monterey Bay Unified Air Pollution Control District.

Noise

Property line noise levels may not exceed the limits in the Mining Regulations. Based on the noise monitoring reports and inspections, the existing Quarry operation is in compliance with the property line noise limit, as described in the 2008 Permit Review. However, during the initial phase of the overburden removal when equipment would be operating "at grade" without the shielding effects of the quarry rim, noise levels along the northern property line would exceed the limits in the Mining Regulations. Pursuant to Section 16.54.050(c)(1) of the Mining Regulations a higher noise level may be authorized by the Planning Commission if the increase in noise level is from construction related activity, the noise is generated only on a specified temporary basis and all neighbors, within 1,000 feet of the property, have been notified in writing of the increase in noise level by the operator. These conditions are met and CEMEX owns all the property within 1,000 feet, therefore, no neighbor notification is required. The EIR concludes that initial overburden removal noise at all residences would be in conformance with the Mining Regulation standard and would be consistent with GP/LCP Policy 6.9.1 which limits noise exposure of new residential development. Therefore it is recommended that the Planning Commission authorize the increased noise level only for land clearing and overburden removal operations, which would temorarily occur without the shielding effects of a Quarry rim.

Conclusion

As proposed and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. The environmental review process generated mitigation measures that would reduce potential impacts from the proposed project and adequately address the issues of concern. Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- Certify the Final EIR prepared for the project under the California Environmental Quality Act, based on the CEQA Findings, the Conditions of Approval, and the Mitigation Monitoring and Reporting Program, in Exhibits B, C and D, respectively.

- Approve Application 99-0561, based on the attached Findings and Conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

Report Prepared By: _____

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Findings for Certificate of Compliance and Reclamation Plan Amendment Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment

1. **That the proposed location of the mining site and access thereto and the conditions under which it would be operated are not detrimental to the public health, safety, or welfare, or significantly injurious to the environment.**

   The proposed location of the project site, which consists of an expansion of an existing mine and an amendment to the Reclamation Plan for the entire mine, and the conditions under which it would be operated will not be detrimental to the public health, safety, or welfare in that mining operations and reclamation would be conducted in compliance with all applicable federal, state and local regulations. These regulations are designed to protect public health, safety and welfare while recognizing that extraction of minerals is important to the economic well-being of the County and the needs of society. The project, as conditioned, would comply with standards to limit excessive emissions of dust, noise and vibration; protect water resources and sensitive habitats; and prevent unauthorized access. Reclamation of the site will involve combined processes of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from mining operations so that mined lands are reclaimed to a usable conditon which is readily adaptable for alternate land uses, and which create no danger to public health or safety. In this case the proposed end use is "open space" consisting of a native species vegetative cover capable of self regeneration without continued dependence on irrigation, soil amendments or fertilizer. Vegetative cover and species diversity will be sufficient to stabilize soils surfaces from long-term efffects of erosion and will be similar to naturally occurring habitats in the surronding area.

   The Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment Draft Environmental Impact Report (EIR) identifies potentially significant impacts related to planning policies, geology, hydrology and water quality, biology and air quality. These impacts can be reduced to a less than significant level by implementing the identified mitigation measures. A summary of project impacts and mitigation measures is provided in Table S-1 of the EIR. A complete discussion of project impacts and mitigation measures is provided in the EIR sections pertaining to each environmental discipline (see Sections 3.0 through 9.0 of the EIR).

2. **That the proposed mining operation complies with each of the applicable provisions of the Santa Cruz County Mining Regulations and all applicable State and/or Federal law.**

   The proposed mining operation would comply with each of the applicable provisions of the Santa Cruz County Mining Regulations and all applicable State and Federal law. The County Mining Regulations have been certified by the State as complying with the requirements of the State Surface Mining and Reclamation Act (SMARA), therefore, the County is designated as the SMARA lead agency. The proposed expansion of the existing mine and the amendment to the Reclamation Plan for the entire mine, and the conditions under which it would be operated would comply with SMARA and the County Mining Regulations in terms of noise and vibration, air pollution, water, drainage and erosion control, setbacks, sensitive habitat protection, days and hours of operation, off-street parking, screening, haul routes, posting of signs and contruction of fencing, construction of buildings and processing plants, timing of mining operation and reclamation, and reclamation access. Inspections, quarterly,

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annual or as needed, by County Planning Department staff will verify compliance with performance standards described in the SMARA and County Mining Regulations. In addition, the existing Financial Assurance payable to both the County of Santa Cruz and the State Department of Conservation will be updated so that the amount is adequate to conduct and complete reclamation on the mined lands in accordance with the approved reclamation plan. In the event that the operator is financially incapable of performing reclamation in accordance with the approved Reclamation Plan or has abandoned the mining operation without commencing reclamation, either the Planning Director or the Director, Department of Conservation, would use the proceeds from the forfeited financial assurances to conduct and complete reclamation in accordance with the approved Reclamation Plan.

The existing mine operates pursuant to permits from other state and federal agencies as follows: Stream Alteration Agreement with California Department of Fish and Game for Disposal Area C and periodic Settlement Basin cleanout; Central Coast Regional Water Quality Control Board General Storm Water Permit for Industrial Activities; Monterey Bay Unified Air Pollution Control District Permits to Operate existing emissions-producing equipment; U. S. Fish & Wildlife Service Incidental Take Permit for California red-legged frogs due to operation of settlement basins; U. S. Army Corps of Eningeers Authorization under Nationwide Permit 26 to fill wetlands in Disposal Area C. Timber harvest activities in the proposed expansion area will require a Timber Harvest Plan and Timberland Conversion permit from the California Department of Forestry. In addition, the mine is periodically inspected by the federal Mine Safety Administration (MSHA) and the Occupational Health and Safety Administration (OSHA) for compliance with worker health and safety regulations. Blasting activities at the mine, including onsite storage, transport and use of blasting agents, are tightly regulated by a number of agencies, including the Federal Bureau of Alcohol, Tabacco, Firearms and Explosives, MSHA and OSHA.

3. **That the proposed mining operation complies with any applicable specific plan, the County's General Plan and the Local Coastal Plan Land Use Element (if applicable).**

The proposed expansion of the existing mine and the amendment to the Reclamation Plan for the entire mine, and the conditions under which it would be operated will comply with the County's General Plan and the Local Coastal Plan Land Use Element (GP/LCP) in that the site is designated as a Mineral Resource Area and the mining operation, as conditioned, will be consistent with all General Plan and LCP Land Use Plan policies, including resource protection policies as described in the EIR for the project. The project meets the objective of the General Plan to allow the orderly economic extraction of minerals with a minimal adverse impact on environmental and scenic resources and surrounding residential land uses; to require reclamation of quarry sites concurrently with the extraction of the mineral resource and the completion of quarry operations in any specific area to the greatest extent feasible; and to ensure that the rehabilitation and future use of quarry sites are in accordance with safety, conservation, habitat preservation, restoration and open space values and state mining laws.

The project is in conformance with the GP/LCP Biotic Resources Policies in that impacts to sensitive habitats and species will be mitigated to a less than significant level and these impacts are unavoidable because of the site-specific nature of the mining operation. The project is in conformance with GP/LCP Water Resources Policies, including surface waters,

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groundwater, and stream flows, in that potential impacts to water resources will be mitigated to a less than significant level through implementation of drainage and erosion control measures to protect quality and quantity of surface and groundwater resources, additional monitoring to ensure protection of groundwater resources and implementation of an existing agreement between the quarry operator and the City of Santa Cruz regarding compensation based on variations of existing groundwater quality from mutually acceptable standards outlined in the agreement. The project is in conformance with GP/LCP Air Quality Policies in that continuation of existing fugitive dust and diesel engine emission control measures and limitations on the size of the overburden removal phases will reduce project effects on air quality to a less than significant level, and the project will comply with the Monterey Bay Unified Air Pollution Control District's Air Quality Management Plan. The project is in conformance with GP/LCP Noise Policies in that continuation of the mining operation is not expected to significantly increase noise levels along property lines. Monitoring has shown that the current operation meets County Mining Regulations noise standards. Predicted temporary increases in sound levels along the northern property line are acceptable because the mining operator owns the adjacent property. The project is in conformance with GP/LCP Slope Stability and Erosion Policies in that the EIR has identified the need for additional slope studies prior to commencement of the project as necessary to ensure that final quarry slopes meet minimum standards for long-term stability; and erosion will be minimized through implementation of erosion and drainage control measures during mining and revegetation to achieve long-term soil stability.

4. **That the proposed mining operation is consistent with all applicable County Ordinances, including without limitations Chapter 16.44, the Paleontological Resource Protection Ordinance.**

The proposed project would be in compliance with all applicable County Ordinances, including the Paleontological Resource Protection Ordinance. The existing permit contains a Condition of Approval that addresses this issue, which will remain a Condition of Approval of the proposed project. If a significant paleontological find is made, all mining operations will be halted within a 200-foot radius of the location of the find and the quarry operator is required to notify the County immediately. A qualified paleontologist, as approve by the Planning Department, would then be retained to assess the significance of the find and implement mitigation measures recommended as a result of such assessment, consistent with the Paleontological Resource Protection Ordinance.

5. **That significant surface and groundwater resources including springs and aquifers shall not be adversely affected as a result of the proposed mining operation.**

Significant surface and groundwater resources including springs and aquifers will not be adversely affected as a result of the proposed mining operation in that proposed mitigation measures will reduce potential significant impacts to a less than significant level.

Regarding on-site drainage, according to the previously approved Final Drainage Plan for the quarry (RMC Lonestar, 1996), drainage from the quarry floor is to be directed to Settlement Basin 3. This drainage is to be established by excavating a channel from the southern end of the quarry pit to an intake for Settlement Basin 3. This change in drainage may result in decreased springflow quantities by removing water that would be percolating to groundwater

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from the quarry, which may impact a public water supply at Liddell Spring, and thus constitute a potentially significant impact. Therefore, the EIR recommends modifying the existing approved drainage plan so as to maintain internal, subsurface drainage within the quarry area. This mitigation is specified in Measure HYD-1

Regarding off-site drainage, the continued diversion by CEMEX of water from Plant Spring for use in quarry operations represents a relatively minor loss of downstream flow and is not considered significant. Mining of the Boundary Expansion Area would continue the existing impact of sediment from quarry activity entering Liddell Spring through percolating runoff (described above). Mitigation Measure HYD-1 includes partially backfilling the quarry pit according to certain specifications that would filter water percolating to groundwater from the quarry. This measure would reduce sedimentation impacts and protect the water quality of Liddell Spring and downstream drainages of Liddell Creek. With this measure, the project impacts to off-site drainages, including steelhead habitat, are less than significant.

Regarding intercepted groundwater, County mining regulations stipulate that the lowest elevation of any mining operation at any time shall be 20 feet above the peak groundwater elevation. Past mining activities have not intercepted the groundwater table and it appears that the 20-foot separation has been maintained. However, improved groundwater level monitoring is needed in areas proposed for new and ongoing quarrying (e.g. the northeast corner of the Boundary Expansion Area) to prevent mining from intercepting the groundwater table. This mitigation is specified in Measure HYD-2. Furthermore, the proposed quarrying of marble would not be expected to affect groundwater levels, or relatively shallow wells, in the sandstone aquifer upgradient of the quarry.

Regarding groundwater quantity, as described above, Mitigation Measure HYD-1 recommends modifying the drainage plan to maintain internal, subsurface drainage within the quarry area, which would prevent potential reductions in spring flow quantity at Liddell Spring.

Regarding groundwater quality, the proposed quarry expansion could potentially have a significant impact on turbidity at Liddell Spring. The proposed expansion therefore has the potential to impact the City of Santa Cruz's water supply by affecting water quality at the spring. While the impact of the existing quarry operation on the City of Santa Cruz water supply appears to be minimal, the available data indicate that the quarry does contribute a component of the total turbidity at Liddell Spring. Continuation of the same mining operation in the expansion area is not expected to change this conclusion. As an expansion of mining operations there are aspects of the proposed project where additional measures could be incorporated to reduce the component of Liddell Spring turbidity contributed by the expanded quarry operation. There are reasonable, targeted measures that can be implemented to reduce and avoid impacts on spring water quality. Measures HYD-1 and HYD-2 would reduce or avoid water quality impacts on Liddell Spring from increased turbidity during quarry operations and following closure and reclamation. Existing turbidity in Liddell Spring discharge, whether naturally occurring or due to quarry operations is presently being mitigated by the City with their own treatment system, without any demonstrated loss of production. Potential impacts of the quarry operation on turbidity at Liddell Spring can be mitigated by requiring the quarry operator to reimburse the City of Santa Cruz for the reasonably determined cost of treating water exceeding the standards

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identified in the 1964 agreement. Measure HYD-3 would reduce water quality impacts on the City Water Department based on mutually agreed upon water quality standards, and a predetermined compensation formula. These measures reduce the water quality impact on Liddell Spring and the City Water Department to a less than significant level.

6. **That the Reclamation Plan has been reviewed pursuant to CEQA and the County's environmental review guidelines, and all significant adverse impacts from reclamation of the surface mining operations are mitigated to the maximum extent feasible.**

The Reclamation Plan has been reviewed in the EIR prepared for the project by TRA Environmental Sciences and the County Planning Department, and certified by the Planning Commission as part of the approval for the project. The proposed reclamation of the mined land will effectively prevent or minimize any deterioration of the environment if the mitigations identified in the EIR are implemented and the Conditions of Approval are followed including the implementation of the approved Reclamation Plan. With the implementation of mitigation measures and project conditions all environmental impacts will be reduced to a less than significant level.

7. **The project is compatible with available service infrastructure and surrounding uses.**

The project as conditioned will be compatible with the service infrastructure, surrounding uses, and the local economy. The EIR concludes that the surrounding land use (agricultural, timber production and rural residential) will not be affected significantly by noise, aesthetics, traffic, air quality and slope stability if all recommended mitigations are followed. Furthermore, the Quarry has been in operation for forty years and the associated employment is beneficial to the local economy.

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Findings for Coastal Development Permit
Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment

1. **That the project is a use allowed in one of the basic zone districts, other than the Special Use (SU) district, listed in Section 13.10.170(d) as consistent with the General Plan and Local Coastal Program LUP designation.**

   The proposed expansion area is zoned Mineral Extraction (M-3); other areas of the limestone and shale quarries are zoned Special Use (SU), Timber Production (TP), and Commercial Agriculture (CA-P). See Exhibit H and I for Zoning, General Plan and Assessor's Parcel Maps. While the Quarry operator owns the parcels zoned M-3 encompassing the limestone quarry pit, the Quarry operator holds lease agreements with Coast Daires and Land to mine shale and deposit waste on the remaining parcels currently zoned SU (Shale Quarry), TP and CA-P (Disposal Areas A and C). The existing and proposed mining operation is an allowed use in the M-3, TP and SU zone districts consistent with the General Plan and Local Coastal Plan (GP/LCP) land use designations of Mountain Residential (R-M) and Industrial (Q) overlay. Disposal Area C, which appears to be located partially within the CA-P zone district is an existing non-conforming use that may continue pursuant to Santa Cruz County Zoning Regulations Section 13.10.260 (c) 2.

2. **That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.**

   The project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

3. **That the project is consistent with the Design Criteria and special use standards and conditions of County of Santa Cruz Coastal Zone Regulations pursuant to Section 13.20.130 et seq.**

   The project is consistent with the Design Criteria and special use standards and conditions of Section 13.20.130 et seq. in that the proposed expansion of the mine and reclamation of the mine is an allowed use consistent with the GP/LCP and, if all Mitigation Measures and Conditions of Approval are followed, would comply with SMARA and the Mining Regulations. The project does not involve any new structures or create any new disturbance in designated rural scenic resource areas. The proposed expansion area is not visible from surrounding neighborhoods or areas. Reclamation of the site will involve a combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from mining operations so that mined lands are reclaimed to a usable conditon which is readily adaptable for alternate land uses, and which create no danger to public health or safety. In this case the proposed end use is "open space" consisting of a native species vegetative cover capable of self regeneration without continued dependence on irrigation, soil amendments or fertilizer. Vegetative cover and species diversity would be sufficient to stabilize soils surfaces from long-term effects of erosion and would be similar to naturally occurring habitats in the surronding area.

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4. ***That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the General Plan and Local Coastal Program Land Use Plan, specifically Chapter 2: Figure 2.5 and Chapter 7.***

   The site is not designated as a priority site in GP/LCP Chapter 2: Figure 2-5. The site is not designated for the provision of public service infrastructure in GP/LCP Chapter 7 Parks, Recration and Public Facilities.

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Findings for California Environmental Quality Act
Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment

The California Environmental Quality Act (CEQA), (Public Resources Code § 21081) and the CEQA Guidelines ("the Guidelines"), (14 Cal. Code of Regs. § 15901) require that no public agency approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings, which must be supported by substantial evidence in the record, are:

1) Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.

3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

For those significant effects that cannot be mitigated to below a level of significance, the public agency is required to find that specific overriding economic, legal, social, technological, or other benefits of the project outweigh the significant effects on the environment.

In addition, CEQA requires a public agency to make a finding that the EIR reflects the public agency's independenet review and judgement. In accordance with the provisions of CEQA and the Guidelines, the County of Santa Cruz expressly finds that the Final Environmental Impact Report, (SCH No. 2001112115), for the Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment reflects the County's independent review and judgement.

The CEQA Findings for the Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment are presented below.

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1. COUNTY PLANS AND POLICIES

Impact: *Loss of habitat for the San Francisco dusky-footed woodrat (SFDW), a California Species of Special Concern, conflicts with GP/LCP Biotic Resources Protection policies 5.1.7 and 5.1.10, Mining Regulation 16.54.050 Sensitive Habitat Protection Standards, and Mining Regulations 16.54.055 Performance Standards for Wildlife Habitat.*

Mitigation Measures BIO-1 and BIO-2: Based on a series of steps to assess habitat requirements for SFDW, a conservation easement over suitable SFDW habitat will be established at a ratio of 1:1 based on the acreage of habitat loss in the Boundary Expansion Area. Up to 40 SFDW nests will be relocated to an appropriate area(s) identified through the habitat assessment required in BIO-1.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Loss of three sensitive habitat plant communities (needlegrass grassland, maritime chaparral, diverse native grassland) conflicts with GP/LCP Biotic Resources Protection policies 5.1.7 and 5.1.10, Mining Regulation 16.54.050 Sensitive Habitat Protection Standards, Mining Regulations 16.54.055 Performance Standards for Revegetation, and COC Condition III.D.6.*

Mitigation Measures BIO-3 and BIO-5: The proposed 1996 Reclamation Plan Amendment shall be revised to incorporate sensitive habitats, a test plot system and to update the vegetation maps. The updated Reclamation Plan Amendment shall comply with the revegetation standards in the Santa Cruz County Mining Regulations.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Increased sedimentation of Liddell Spring, a municipal water supply for the City of Santa Cruz, conflicts with GP/LCP policies on Water Resources, Surface Water Quality, and Erosion, Mining Regulations 16.54.050 Drainage and Erosion Standards, Mining Regulations16.54.055 Performance Standards for Surface Drainage Control, and Use Permit 3236-U Conditions 7 and 25 regarding protection of Liddell Spring and diminution of water supply.*

Mitigation Measures HYD-1, HYD-2 and HYD-3: HYD-1 requires the preparation of an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal. HYD-2 requires improved groundwater level monitoring in areas proposed for new and ongoing quarrying to prevent mining from intercepting the groundwater table. HYD-3 requires the quarry operator to compensate the City of Santa Cruz for the costs of treating the water for the purpose of

reducing project-generated turbidity at Liddell Spring, as previously provided for, and agreed to in the 1964 Agreement.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator, Planning Department and the City of Santa Cruz Water Department and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Increased volume of storm water runoff drained to the quarry floor and subsequently removed from the Liddell Spring recharge zone by the approved Final Drainage Plan conflicts with GP/LCP policies on Overdrafted Groundwater Basins, Mining Regulations 16.54.050 Water Standards, and Use Permit 3236-U Conditions 7 and 25 regarding protection of Liddell Spring and diminution of water supply.*

Mitigation Measures HYD-1 and HYD-2: HYD-1 requires the preparation of an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal. HYD-2 requires improved groundwater level monitoring in areas proposed for new and ongoing quarrying to prevent mining from intercepting the groundwater table.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Overburden removal from the 17.1-acre Boundary Expansion Area could result in excessive fugitive dust emissions if areas larger than 2.1 acres (significance threshold of the MBAPCD) are stripped at any one time. This impact would conflict with GP/LCP Air Quality Policy 5.18.1 and Mining Regulations 16.54.050 Air Pollution standards.*

Mitigation Measure AQ-1: Consistent with Monterey Bay Unified Air Pollution Control District significance thresholds, the quarry operator shall limit active work areas for site preparation to less than 8.2 acres for vegetation clearing or 2.2 acres for overburden stripping at any point in time.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Dust emissions could be blown across the northern property line, which would conflict with Use Permit 3236-U Condition 25.*

Mitigation Measure AQ-1: Consistent with Monterey Bay Unified Air Pollution Control District significance thresholds, the quarry operator shall limit active work areas for site

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preparation to less than 8.2 acres for vegetation clearing or 2.2 acres for overburden stripping at any point in time.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The proposed Reclamation Plan Amendment does not provide required detail governing the management or use of the stockpile resource in conflict with Mining Regulations 16.54.055 Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.*

Mitigation Measure BIO-6: The 1996 Reclamation Plan Amendment shall be revised in conformance with Mining Regulations 16.54.055(h) Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Settlement basin levees may fail in a seismic event resulting in the release of increased storm runoff and sediment loads from the Boundary Expansion Area into downstream areas in conflict with GP/LCP Policies on Maintaining Surface Water Quality and Erosion, Mining Regulations 16.54.050 Drainage and Erosion Standard, Mining Regulation 16.54.055 Performance Standards for Surface Drainage Control, and Use Permit Conditions III.26 and III.27.*

Mitigation Measure GEO-1: The quarry operator shall update seismic stability evaluations and prepare liquefaction hazard evaluations for settlement basins that would be receiving runoff from the proposed Boundary Expansion Area, based on the current state of knowledge and standards of practice. A completed liquefaction and stability analysis for the levees shall be provided to the County of Santa Cruz Planning Department for peer review. If the results of the stability evaluation indicate that there is a potential for failure of the levees and release of impounded runoff to downstream areas, the levees shall be modified by the quarry operator to satisfy stability concerns prior to commencement of mining in the Boundary Expansion Area.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Final cut slopes do not meet the minimum width requirement of 30 feet as specified in Use Permit Condition III.8. Final cut slopes in the Boundary Expansion Area may not meet the minimum required stability factor of safety of 1.2 required by COC Condition III.A.7(2). This conflicts with Mining Regulations 16.54.055 Performance Standards for Backfilling, Regrading, Slope Stability, and Recontouring.*

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Mitigation Measure GEO-2: The quarry operator shall prepare an updated slope stability evaluation for proposed slopes in the Boundary Expansion Area. The completed stability evaluation shall be provided to County of Santa Cruz Planning Department for peer review. If the stability analysis indicates a potential for significant landsliding, the configuration of the working or finished Boundary Expansion Area slopes shall be redesigned by the quarry operator to mitigate the landsliding hazard. All documentation related to slope redesign shall be provided to the County of Santa Cruz Planning Department for review and approval prior to the inception of mining of the Boundary Expansion Area.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

2. GEOLOGY AND SOILS

Impact: *A displacement analysis for seismic shaking shows basin levees would move under seismic shaking. Mining the Boundary Expansion Area may result in increased runoff volumes and sediment loads entering quarry settlement basins. The project may result in sedimentation of downstream areas if settlement basin levees receiving runoff from the quarry Boundary Expansion Area fail during a major seismic event.*

Mitigation Measure GEO-1: The quarry operator shall update seismic stability evaluations and prepare liquefaction hazard evaluations for settlement basins that would be receiving runoff from the proposed Boundary Expansion Area, based on the current state of knowledge and standards of practice. A completed liquefaction and stability analysis for the levees shall be provided to the County of Santa Cruz Planning Department for peer review. If the results of the stability evaluation indicate that there is a potential for failure of the levees and release of impounded runoff to downstream areas, the levees shall be modified by the quarry operator to satisfy stability concerns prior to commencement of mining in the Boundary Expansion Area.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The project may result in landsliding of proposed Boundary Expansion Area slopes, either during quarrying or after closure of the quarry, potentially resulting in accelerated erosion, water quality impacts, and/or encroachment of landsliding onto lands adjacent to the proposed Boundary Expansion Area.*

Mitigation Measure GEO-2: The quarry operator shall prepare an updated slope stability evaluation for proposed slopes in the Boundary Expansion Area. The completed stability evaluation shall be provided to County of Santa Cruz Planning Department for peer review. If the stability analysis indicates a potential for significant landsliding, the configuration of the working or finished Boundary Expansion Area slopes shall be redesigned by the quarry

operator to mitigate the landsliding hazard. All documentation related to slope redesign shall be provided to the County of Santa Cruz Planning Department for review and approval prior to the inception of mining of the Boundary Expansion Area.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Renewed movement of the Liddell Spring landslide could be caused if drainage is diverted towards the landslide or dumping of overburden, off-spec rock or other waste occurs on the slopes above the spring.*

Mitigation Measure GEO-3: No quarry waste (e.g., overburden and off-spec rock) or other soil or rock shall be placed on the slopes above Liddell Spring. All concentrated runoff from the quarry or road crossing the slope above the spring shall be carefully controlled and shall not be permitted to flow across the landslide area or across older quarry spoils above Liddell Spring.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The project may result in accelerated erosion within the Boundary Expansion Area, potentially impacting water quality or quantity flowing to Liddell Spring.*

Mitigation Measure HYD-1: The quarry operator shall prepare an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

3. HYDROLOGY AND WATER QUALITY

Impact: *Stripping of overburden material and mining the Boundary Expansion Area would result in an increase in turbidity and sedimentation at Liddell Spring. Any increase in turbidity and sediment load in the flow at Liddell Spring would also increase sedimentation and turbidity in downstream drainages. Implementation of the previously approved Final Drainage Plan would divert Boundary Expansion Area runoff from percolating through the quarry floor and reduce ground water flow to Liddell Spring. Mining in the Boundary Expansion Area may also intercept perched ground water zones, potentially affecting water quantity or quality at Liddell Spring. Liddell Spring is a municipal water source for the City of Santa Cruz. The Project would cause water quality or water quantity impacts to Liddell Spring resulting in the loss of*

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water production levels for the City of Santa Cruz. Any loss of water production is a significant impact.

Mitigation Measure HYD-1: The quarry operator shall prepare and implement an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Because existing data is inadequate to define maximum ground water levels in the Boundary Expansion Area, there is a potential for mining to intercept ground water. Exposing significant perched ground water zones, mining to within 20 feet or less of maximum ground water elevations, and flushing additional water through the quarry floor would potentially impact water quality and cause turbidity at Liddell Spring by exposing ground water to surface contamination and by introducing additional natural and quarry-generated sediment into ground water. This opportunity for contamination of the water would affect both surface and ground water quality downstream and is therefore a potentially significant impact according to the thresholds of significance. Draining the quarry to Settlement Basin 3, as envisioned by the Final Drainage Plan, would lessen the potential water quality impact at Liddell Spring, but this plan would also increase the potential for the quarry to affect flow quantities at the spring, also a potentially significant impact.*

Mitigation Measure HYD-2: The quarry operator shall augment the existing and proposed groundwater level monitoring program in areas proposed for new and ongoing quarrying (e.g. the northeast corner of the Boundary Expansion Area) to prevent mining from intercepting the groundwater table.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Even with implementation of mitigation measures HYD-1 and HYD-2, impacts to water quality and/or water quantity at Liddell Spring by continued quarrying may be significant. Based on the results of the analysis contained in the Geology and Hydrology Technical Appendix (Appendix F), some impacts on Liddell Spring water quality are attributable to the quarrying operation, either due to the ponding and recharge of turbid water in the quarry pit or due to blasting. To the extent the proposed quarry expansion would extend the life of the quarry operation in time, it would prolong the impacts of the current quarry operation.*

Mitigation Measure HYD-3: The quarry operator shall compensate the City of Santa Cruz for water treatment costs associated with turbidity at Liddell Spring, as previously provided for, and agreed to in the 1964 Agreement (see Appendix J of the Final EIR).

Exhibit B

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator, County Planning Department and the City of Santa Cruz Water Department, and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

4. BIOLOGICAL RESOURCES

Impact: *The Limestone Quarry Boundary Expansion Project would impact SFDW populations within the Boundary Expansion Area through the loss of 17.1 acres of habitat and displacement/take of approximately 40 individual woodrats.*

Mitigation Measure BIO-1: The quarry operator shall complete a series of studies to assess habitat requirements for SFDW and establish a conservation easement over suitable SFDW habitat at a ratio of 1:1 based on the acreage of habitat loss in the boundary expansion area.

Mitigation Measure BIO-2: The quarry operator shall relocate up to 40 SFDW nests to an appropriate area(s) identified through the habitat assessments required in BIO-1.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The 1996 Reclamation Plan Amendment would eliminate the 1:1 replacement requirement of all habitat types previously impacted in favor of vegetation communities that can be more easily re-established in reclaimed quarry areas. Replacement of maritime chaparral, needlegrass grassland, and diverse native grassland would not occur, and test plots would not be continued. This does not reflect current knowledge and would result in the permanent loss of sensitive habitats. The 1996 Reclamation Plan Amendment does not replace the 0.9 acres of coast live oak forest occurring in the Boundary Expansion Area that would be removed by the project.*

Mitigation Measure BIO-3: The quarry operator shall revise the proposed 1996 Reclamation Plan Amendment to incorporate sensitive habitats, a test plot system and to update the vegetation maps.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The removal of 17.1 acres of forest and shrub-dominated upland habitat has the potential to impact or disturb nesting raptor and migratory bird species that may establish nests within the Boundary Expansion Area, resulting in a violation of state code and the Migratory Bird Treaty Act.*

Mitigation Measure BIO-4: Tree removal or land clearing that removes nesting habitat shall be conducted outside of the breeding season (February 15 to August 15) for raptors and migratory birds. Alternatively, the mining Boundary Expansion Area shall be surveyed for nesting birds by a qualified biologist using established California Department of Fish and Game (CDFG) protocols no more than 30 days prior to tree removal or land clearing, if these activities are to occur during the breeding season. If active nests are found, CDFG shall be consulted to establish an appropriate buffer around the nest(s), and the nest(s) shall be avoided until the young fledge.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *Overburden removal and mining in the Boundary Expansion Area could increase sediment levels entering Liddell Spring and discharged downstream to Liddell Creek. The project could also reduce the quantity of water in Liddell Spring. Central coast steelhead habitat could be impacted by increased sediment loads in lower reaches of Liddell Creek, and decreased flows.*

Mitigation Measure HYD-1: The quarry operator shall prepare an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The Revegetation Plan component of the proposed 1996 Reclamation Plan Amendment does not provide adequate performance standards that meet the standards provided in Section 16.54.055 of the County Code.*

Mitigation Measure BIO-5: The updated Reclamation Plan Amendment shall comply with the revegetation standards in Section 16.54.055 of the Santa Cruz County Mining Regulations.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Impact: *The proposed 1996 Reclamation Plan Amendment does not provide required detail governing the management or use of the stockpile resource in conflict with Mining Regulations 16.54.055 Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.*

Exhibit B

Mitigation Measure BIO-6: The 1996 Reclamation Plan Amendment shall be revised in conformance with Mining Regulations 16.54.055(h) Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

5. AIR QUALITY

Impact: *Site preparation including vegetation clearing and overburden removal would occur in several stages over the initial 2-year period. These activities would result in increased emissions of fugitive dust in addition to existing mining operations.*

Measure AQ-1: The quarry operator shall limit active work areas for site preparation to less than 8.2 acres for vegetation clearing or 2.2 acres for overburden stripping at any point in time.

Finding: Mitigation measures have been adopted which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. Adopted mitigation measures can be fully implemented by the quarry operator and have been incorporated into the Conditions of Approval and the Mitigation Monitoring and Reporting Program.

Conditions of Approval
Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment

Note: The following new conditions will be incorporated into the existing conditions of approval to clarify the conditions of approval applicable to the quarry if the Amendment is approved.

General

1. These conditions for the Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment shall augment and supercede, where in conflict with, the conditions of Use Permit 3236-U Parts III and IV, and Certificate of Compliance and Reclamation Plan Approval 89-0492, as amended.

2. Prior to commencement of mining in the Boundary Expansion Area a review of an update to the amount and type of financial assurance shall be presented to the Planning Commission in a public hearing to ensure that the updated financial assurance is adequate to ensure reclamation and substantially meets the applicable requirements of Public Resources Code Sections 2772, 2773 and 2773.1 and County Mining Regulations. Prior to County approval of an updated financial assurance, the updated financial assurance shall be submitted to the State Office of Mine Reclamation for a forty-five (45) day review and preparation of written comments if the Director so chooses, which submittal shall be made and processed in a manner consistent with Public Resources Code Section 2774(c) and (d).

3. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

   a. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

   b. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

      i. COUNTY bears its own attorney's fees and costs; and

      ii. COUNTY defends the action in good faith.

   c. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into

Exhibit C

any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

d. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Geology and Soils

1. The Quarry operator shall update seismic stability evaluations and prepare liquefaction hazard evaluations for settlement basins that would be receiving runoff from the proposed Boundary Expansion Area, based on the current state of knowledge and standards of practice and in accordance with the requirements outlined in Mitigation Measure GEO-1. A completed liquefaction and stability analysis for the levees shall be provided to the County of Santa Cruz Planning Department for peer review. If the results of the stability evaluation indicate that there is a potential for failure of the levees and release of impounded runoff to downstream areas, the levees shall be modified by the Quarry operator to satisfy stability concerns. Any modifications of the levee shall be based on sound engineering design. All design documents and evidence of satisfactory completion of the levee modifications must be provided for approval to the County of Santa Cruz Planning Department prior to inception of mining in the Boundary Expansion Area.

2. The Applicant shall prepare an updated slope stability evaluation for proposed slopes in the Boundary Expansion Area in accordance with the requirements outlined in Mitigation Measure GEO-2. The completed stability evaluation shall be provided to County of Santa Cruz Planning Department for peer review. If the stability analysis indicates a potential for significant landsliding, the configuration of the working or finished Boundary Expansion Area slopes shall be redesigned by the Quarry operator to mitigate the landsliding hazard. All documentation related to slope redesign shall be provided to the County of Santa Cruz Planning Department for review and approval prior to the inception of mining of the Boundary Expansion Area.

3. The validity of the slope stability model shall be evaluated as mining progresses based on periodic surveys of rock types, fracture orientations, and faulting. These surveys shall be documented and provided to the County of Santa Cruz at least once annually. If any changes in earth material lithology or structure occur that might affect the conclusions of the slope stability analysis, the analysis shall be revised. Any indication of significant landslide hazard based on the revised stability analysis shall be mitigated by design.

4. No Quarry waste (e.g., overburden and off-spec rock) or other soil or rock shall be placed on the slopes above Liddell Spring. All concentrated runoff from the Quarry or road crossing the slope above the spring shall be carefully controlled and shall not be permitted to flow across the landslide area or across older Quarry spoils above Liddell Spring. (Mitigation Measure GEO-3)

Hydrology and Water Quality

1. The Quarry operator shall prepare an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area in accordance with the requirements outlined in Mitigation Measure HYD-1. The intent of the redesigned drainage plan is to retain surface water in the Quarry pit for groundwater recharge and sediment removal. The design shall be peer reviewed by the County Planning Department prior to public hearing of the project proposal.

2. The Quarry operator shall augment the existing and proposed water level monitoring program in areas proposed for new and ongoing Quarrying (e.g. the northeast corner of the Boundary Expansion Area) to prevent mining from intercepting the groundwater table in accordance with the requirements outlined in Mitigation Measure HYD-2.

3. The Quarry operator shall compensate the City of Santa Cruz for the costs of treating the water for the purpose of reducing project-generated turbidity at Liddell Spring, as previously provided for, and agreed to in the 1964 Agreement. The methodology developed by the Planning Department and outlined in HYD-3 shall be used to determine compensation annually.

Biological Resources

4. The Quarry operator shall complete a series of studies to assess habitat requirements for San Francisco Dusky-footed Woodrat (SFDW) as outlined in Mitigation Measure BIO-1. Based on the results of the habitat assessments the Quarry operator shall establish a conservation easement over suitable SFDW habitat at a ratio of 1:1 based on the acreage of habitat loss in the boundary expansion area. The results of the surveys shall be submitted to County Planning Department for review and approval and coordinated with the California Department of Fish and Game (CDFG) prior to the start of land clearing, and the selected conservation easement shall be established.

5. The Quarry operator shall prepare a SFDW Mitigation Plan in accordance with the requirements outlined in Mitigation Measure BIO-2. The Quarry operator shall actively and passively relocate up to 40 SFDW nests to areas identified as a result of the habitat assessments required in BIO-1. The Mitigation Plan shall be submitted to the County Planning Department for review and approval and coordinated with CDFG prior to the start of land clearing.

6. The Quarry shall revise the proposed Revegetation Plan to incorporate sensitive habitats, a test plot system and to update the vegetation maps, as described in Mitigation Measure BIO-3.

7. Tree removal or land clearing that removes bird nesting habitat shall be conducted outside of the breeding season (February 15 to August 15) for raptors and migratory birds. Alternatively, the mining Boundary Expansion Area shall be surveyed for nesting birds by a qualified biologist using established CDFG protocols no more than 30 days prior to tree

removal or land clearing, if these activities are to occur during the breeding season. If nesting birds are detected within the construction zone, methods of avoiding active nest sites (e.g., establishment of a buffer area around the active nest until hatchlings have fledged) shall be developed in coordination with CDFG. Surveys shall be completed between February 15 and August 15 of any given year. (Mitigation Measure BIO-4)

8. The revised Revegetation Plan shall comply with the revegetation standards in Section 16.54.055 of the Santa Cruz County Mining Regulations and Mitigation Measure BIO-5.

9. The 1996 Reclamation Plan Amendment shall be revised in conformance with Mining Regulations 16.54.055(h) Performance Standards for Topsoil Salvage, Maintenance, and Redistribution and Mitigation Measure BIO-6.

Air Quality

10. The Quarry operator shall limit active work areas for site preparation to less than 8.2 acres for vegetation clearing or 2.2 acres for overburden stripping at any point in time. (Mitigation Measure AQ-1).

County of Santa Cruz

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TOM BURNS, *PLANNING DIRECTOR*

July 2009

MITIGATION MONITORING AND REPORTING PROGRAM for the Bonny Doon Limestone Quarry Boundary Expansion Project and Reclamation Plan Amendment

This document represents the Mitigation Monitoring and Reporting Program (MMRP) prepared by Santa Cruz County for the Bonny Doon Limestone Quarry Boundary Expansion and Reclamation Plan Amendment Project (project). When a lead agency makes findings on significant effects identified in the environmental impact report (EIR), it must also adopt a program for reporting or monitoring mitigation measures that were adopted or made conditions of project approval (Pub. Res. Code §21081.6[a]; CEQA Guidelines §15091[d], 15097). The MMRP describes in detail the mitigation measure identifies in the EIR for the project, identifies the timing (before or during mining), identifies who is responsible for implementing and monitoring the measure, and the impact being mitigated.

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
County Plans and Policies				
Impact: Loss of habitat for the San Francisco dusky-footed woodrat, a California Species of Special Concern, conflicts with General Plan/Local Coastal Program (GP/LCP) Biotic Resources Protection policies 5.1.7 and 5.1.10, Mining Regulation 16.54.050 Sensitive Habitat Protection standards, and Mining Regulations 16.54.055 Performance Standards for Wildlife Habitat.	**Measure BIO-1 and BIO-2** (see Biology below or Section 6.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	Prior to commencement of mining in the Boundary Expansion Area
Impact: The proposed 1996 Reclamation Plan Amendment would remove three sensitive habitat plant communities (needlegrass grassland, maritime chaparral, diverse native grassland) from the revegetation component of the 1996 Reclamation Plan tha were required as COC Conditions of Approval. Loss of these vegetation communities conflicts with GP/LCP Biotic Resources Protection policies 5.1.7 and 5.1.10, Mining Regulation 16.54.050 Sensitive Habitat Protection Standards, Mining Regulations 16.54.055 Performance Standards for Revegetation, and Certificate of Compliance (COC) Condition III.D.6.	**Measure BIO-3 and BIO-5** (see Biology below or Section 6.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	The revised revegetation plan shall be submitted to the Planning Department prior to public hearing on the project.
Impact: Project mining of the Boundary Expansion Area would result in increased sedimentation of storm water runoff entering Liddell Spring either as surface water drainage or through ground water recharge. Liddell Spring is a municipal water supply for the City of Santa Cruz. This impact conflicts with GP/LCP policies on Water Resources, Surface Water Quality, and Erosion, Mining Regulations 16.54.050 Drainage and Erosion standards, Mining Regulations16.54.055 Performance Standards for Surface Drainage Control, and Use Permit 3236-U Conditions 7 and 25 regarding protection of Liddell Spring and diminution of water supply.	**Measure HYD-1, HYD-2, and HYD-3** (see Hydrology and Water Quality below or Section 5.4 of the Draft EIR for a complete description).	Quarry Operator and City of Santa Cruz Water Department	County Planning Department	HYD-1: The design shall be submitted for review by the Planning Department prior to public hearing on the project and implemented during mining. HYD-2: During mining with further restrictions prior to mining below a depth of 800 feet (msl). HYD-3: Annually

Exhibit D

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
				during mining.
Impact: Project mining of the Boundary Expansion area would increase the volume of storm water runoff drained to the quarry floor and subsequently removed from the Liddell Spring recharge zone by the approved Final Drainage Plan for the Quarry. This impact would reduce the water supply available as recharge to Liddell Spring and conflicts with GP/LCP policies on Overdrafted Groundwater Basins, Mining Regulations 16.54.050 Water standards, and Use Permit 3236-U Conditions 7 and 25 regarding protection of Liddell Spring and diminution of water supply.	**Measure HYD-1 and 2** (see Hydrology and Water Quality below or Section 5.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	See Hydrology and Water Quality below or Section 5.4 of the Draft EIR for a complete description
Impact: Overburden removal from the 17.1-acre Expansion Area could result in excessive fugitive dust emissions if areas larger than 2.1 acres (significance threshold of the Monterey Bay Unified Air Pollution Control District) are stripped at any one time. This impact would conflict with GP/LCP Air Quality Policy 5.18.1 and Mining Regulations 16.54.050 Air Pollution standards.	**Measure AQ-1** (see Air Quality below or Section 7.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	During mining
Impact: Overburden removal and initial mining in the Boundary Expansion Area would occur in close proximity to the northern property line as permitted by the 25 foot setback limit. This would result in dust emissions that could be blown across the property line in conflict with Use Permit 3236-U Condition 25.	**MeasureAQ-1** (see Air Quality below or Section 7.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	During mining
Impact: The proposed 1996 Reclamation Plan Amendment does not provide required detail governing the management or use of the stockpile resource in conflict with Mining Regulations 16.54.055 Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.	**Measure BIO-6** (see Biology below or Section 6.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	Topsoil Plan shall be submitted prior to commence-ment of mining and implemented during mining and reclamation
Impact: Mining the Boundary Expansion Area would result in increased runoff volumes and sediment loads entering quarry settlement basins. A liquefaction assessment of the basin levees has not been performed. The project may result in sedimentation of downstream areas if settlement basin levees receiving runoff from the quarry Boundary Expansion Area fail during a major seismic event. This potential impact conflicts with GP/LCP	**Measure GEO-1** (see Geology below or Section 4.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	Remedial measures shall be implemented prior to commencement of mining in

Exhibit D

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
Policies on Maintaining Surface Water Quality and Erosion, Mining Regulations 16.54.050 Drainage and Erosion standard, Mining Regulation 16.54.055 Performance Standards for Surface Drainage Control, and Use Permit Conditions III.26 and III.27.				the Boundary Expansion Area
Impact: The final cut slopes have equivalent bench widths of 24 feet, which do not meet the minimum width requirement of 30 feet as specified in Use Permit Condition III.8. The final cut slopes in the Boundary Expansion Area may not meet the minimum required stability factor of safety of 1.2 required by COC Condition III.A.7(2) when stability analyses are conducted using appropriate methodology. The overburden fill slopes may not be stable when analyzed using current seismic coefficients and laboratory strength data. This potential for slope instability conflicts with Mining Regulations 16.54.055 Performance Standards for Backfilling, Regrading, Slope Stability, and Recontouring.	**Measure GEO-2** (see Geology below or Section 4.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	Slope redesign shall be approved prior to commencement of mining in the Boundary Expansion Area.
Geology and Soils				
Impact: A liquefaction assessment of the quarry settlement basin levees has not been performed. A displacement analysis for seismic shaking shows basin levees would move under seismic shaking. Mining the Boundary Expansion Area may result in increased runoff volumes and sediment loads entering quarry settlement basins. The project may result in sedimentation of downstream areas if settlement basin levees receiving runoff from the quarry Boundary Expansion Area fail during a major seismic event.	**Measure GEO-1:** The Applicant shall update seismic stability evaluations and prepare liquefaction hazard evaluations for settlement basins that would be receiving runoff from the proposed Boundary Expansion Area, based on the current state of knowledge and standards of practice. The seismic stability and liquefaction hazard evaluations shall be completed and submitted to the County Planning Department as a condition of approval. The evaluations shall examine levee stability whether due to embankment deformation or liquefaction within or under the levee and shall consider the potential for piping to accompany deformation. Methodologies discussed in Blake, et al. (2002) for seismic slope stability evaluation and Seed et al. (2003) for liquefaction analysis are currently employed in Santa Cruz County, but more current analytical methods may be used. Given the proximity and 400-year recurrence interval on the San Gregorio fault, a deterministically derived maximum earthquake acceleration, magnitude, and distance based on the expected event on the San Gregorio fault may be more appropriate for analysis at this site than the probabilistic acceleration and de-aggregated magnitude and distance. The stability and liquefaction susceptibility evaluations shall include sufficient field investigation to document the foundation condition and relative density of both levees, that is, the field investigation shall be	Quarry Operator	County Planning Department	Remedial measures shall be implemented prior to commence-ment of mining in the Boundary Expansion Area

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	sufficiently detailed to develop an as-built plan for the levees, upon which the analysis can be based. If the analysis predicts permanent seismically induced deformation of the levee, the consequences of that deformation with respect to the overall stability of the levee shall be clearly stated. In general, permanent deformations greater than 6 inches (15 cm) shall be considered unacceptable, but any predicted deformation shall be evaluated within the context of the levee material properties and design. A completed liquefaction and stability analysis for the levees shall be provided to the County of Santa Cruz Planning Department for peer review. If the results of the stability evaluation indicate that there is a potential for failure of the levees and release of impounded runoff to downstream areas, the levees shall be modified by the quarry operator to satisfy stability concerns. Any modifications of the levee shall be based on sound engineering design. All design documents and evidence of satisfactory completion of the levee modifications must be provided for approval to the County of Santa Cruz Planning Department prior to inception of mining in the Boundary Expansion Area.			
Impact: The project may result in unstable proposed Boundary Expansion Area slopes, either during quarrying or after closure of the quarry, potentially resulting in accelerated erosion, water quality impacts, or encroachment of unstable areas onto lands adjacent to the proposed Boundary Expansion Area.	**Measure GEO-2:** The Applicant shall prepare an updated slope stability evaluation for proposed slopes in the Boundary Expansion Area. Local (bench) scale and the overall quarry wall stability shall be evaluated based on methodology appropriate for jointed/blocky rock masses. For overburden materials, such as the Santa Margarita Sandstone and overlying soils, traditional soil mechanics limit equilibrium analysis methods are considered appropriate. **Procedures for Stability Analysis of Jointed Rock Slopes** The stability of jointed hard rock excavations (such as the subject quarry) is generally controlled by the system of rock mass discontinuities (joints, fractures, faults etc.) that intersect to potentially form adversely oriented blocks in the excavation face. In such cases, discontinuity characterization (e.g. orientation, spacing, persistence, shear strength) therefore represents a key slope stability consideration. To obtain representative stability analysis input parameters, it is recommended that systematic discontinuity surveys be performed, for example using scan line and/or window mapping approaches. The discontinuity data should be filtered in such a manner that statistically homogenous sub-domains can be identified, as the geologic reconnaissance revealed three distinct fault-bounded structural sub-domains in the quarry (Geology and Hydrology Technical Appendix	Quarry Operator	County Planning Department	Slope redesign shall be approved prior to commencement of mining in the Boundary Expansion Area

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	F). Once structural domains have been established and discontinuity data collected, statistical methods (using stereographic density contouring or specialized software) should be applied to determine the most likely parameter values and their associated ranges. This implies that a statistically significant number of field measurements must be collected. Based on discontinuity orientation data, kinematic analyses should be performed to identify domains of the quarry slope, at the bench to overall scale, that may be susceptible to block sliding (along a single plane), wedge sliding (simultaneous slip along two planes), and toppling (overturning). For those areas of the quarry meeting kinematic conditions for block instability, supplemental limit equilibrium-based stability analyses should be performed, using stereonet-based approaches or classical closed form solutions. In the stability analyses, appropriate water pressures and seismic loading conditions should be included. The selected pseudostatic seismic coefficient should account for topographic effects of steep slopes (Ashford and Sitar, 1994; 2002). Finally, the stability analyses should consider the potential for rupturing through the marble rock mass in developing failure modes. The results of rock slope stability analyses should be used in conjunction with a systematic and documented assessment of past quarry slope behavior, in order to develop prognoses for future slope performance. **Procedures for Stability Analysis of Soft Rock or Soil Slopes** Overburden, sandstone, and fill slopes associated with Boundary Expansion Area mining are adequately treated as classic soil slope stability problems, without specific reference to discontinuities. Typical rotational slope failure models, such as the Bishops, Janbu, or other commonly used analytical method may be employed. Rock or soil densities and strengths used in the analysis shall be based on laboratory testing of field samples of each material constituting the slope model. The seismic coefficient used in the analysis shall be based on current methods for coefficient selection (Blake et al. (2002) or more current) and shall account for topographic amplification. Soil strengths used in the analysis shall be selected to take into account potential dynamic and strain (displacement) related reductions in strength. If a displacement rather than limit equilibrium approach is taken to evaluating slope stability in this			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	context, displacements of 4 to 12 inches (10 to 30 cm) shall be considered potentially significant. Displacements greater than 12 inches (30cm) shall be considered unacceptable. The results of both the jointed rock slope and soft rock or soil slope stability evaluations shall be used to define the type of slope failures expected in the proposed Boundary Expansion Area, whether deep-seated or shallow, and the degree of instability associated with the potential failures. "Significant" landsliding has been defined above as: • landslides of substantial size, such that they may encroach on adjacent properties (on the north side of the proposed Boundary Expansion Area) or have the potential to result in serious erosion and sedimentation; or • a determination that the proposed Boundary Expansion Area slopes are so unstable with respect to smaller scale landsliding that the occurrence of numerous landslides could interfere with the quarry reclamation plan. Evidence for significant landslide hazard would include stability analysis results that predict large block or deep-seated circular failures with factors of safety less than 1.2 or widespread smaller failures with factors of safety less than 1.0. A factor of safety against large-scale failures of 1.2 is indicated in the 1997 Conditions of Approval. The 1997 Conditions of Approval, Part 1, III.A.7.(2) (Santa Cruz County, 1997) state that "all final cut slopes completed after September 12, 1996, shall have a stability factor of safety not less than 1.2 ..." The completed stability evaluation shall be provided to the County of Santa Cruz Planning Department for peer review. If the stability analysis indicates a potential for significant landsliding, the configuration of the working or finished Boundary Expansion Area slopes shall be redesigned by the quarry operator to mitigate the landsliding hazard. All documentation related to slope redesign shall be provided to the County of Santa Cruz Planning Department for review and approval prior to the inception of mining of the Boundary Expansion Area. The validity of the slope stability model shall be evaluated as mining progresses based on periodic surveys of rock types, fracture orientations, and faulting. These surveys shall be documented and provided to the			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	County of Santa Cruz Planning Department at least once annually. If any changes in earth material lithology or structure occur that might affect the conclusions of the slope stability analysis, the analysis shall be revised. Any indication of significant landslide hazard based on the revised stability analysis shall be mitigated by design.			
Impact: Renewed movement of the Liddell Spring landslide could be caused if drainage is diverted towards the landslide or dumping of overburden, off-spec rock or other waste occurs on the slopes above the spring.	**Measure GEO-3:** No quarry waste (e.g., overburden and off-spec rock) or other soil or rock shall be placed on the slopes above Liddell Spring. All concentrated runoff from the quarry or road crossing the slope above the spring shall be carefully controlled and shall not be permitted to flow across the landslide area or across older quarry spoils above Liddell Spring.	Quarry Operator	County Planning Department	During mining
Impact: The project may result in accelerated erosion within the Boundary Expansion Area, potentially impacting water quality or quantity flowing to Liddell Spring.	**Measure HYD-1:** (see Hydrology and Water Quality below or Section 5.4 of the Draft EIR for a complete discussion.	Quarry Operator	County Planning Department	The design shall be submitted for review by the Planning Department prior to the public hearing on the project and implemented during mining
Hydrology and Water Quality				
Impact: Stripping of overburden material and mining the Boundary Expansion Area would result in an increase in turbidity and sedimentation at Liddell Spring. Any increase in turbidity and sediment load in the flow at Liddell Spring would also increase sedimentation and turbidity in downstream drainages. Implementation of the previously approved Final Drainage Plan would divert Boundary Expansion Area runoff from percolating through the quarry floor and reduce ground water flow to Liddell Spring. Mining in the Boundary Expansion Area may also intercept perched ground water zones, potentially affecting water quantity or quality at Liddell Spring. Liddell Spring is a municipal	**Measure HYD-1:** CEMEX shall prepare an engineered drainage plan for use during removal of overburden and mining of the Boundary Expansion Area. This plan shall be integrated with the Final Drainage Plan for the quarry. The plan shall specify disposal of no more than 4.6 million cubic yards of quarry overburden and spoils across the entire floor of the quarry pit (rather than only the western half as proposed) and construction of a filter for percolating surface water. Overburden and spoils shall be placed in the western portion of the quarry pit to a depth of approximately 15 feet and extend eastward across the quarry floor as mining proceeds. The entire quarry floor area shall be filled with overburden and spoils to a depth of approximately 15 feet. A detailed design shall be developed by	Quarry Operator	County Planning Department	The design shall be submitted for review by the Planning Department prior to the public hearing on the project and implemented

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
water source for the City of Santa Cruz. The Project would cause water quality or water quantity impacts to Liddell Spring resulting in the loss of water production levels for the City of Santa Cruz. Any loss of water production is a significant impact.	CEMEX for approval by County Planning. The design shall be peer reviewed by a representative of the County and approved prior to public hearing of the project proposal. Appendix G is an engineering feasibility study for the proposed quarry bottom filter. The following basic design features shall be considered and addressed: 1. A revised drainage plan shall be prepared that will supersede the 1996 Drainage Plan (Use Permit No. 3236-U). The intent of the redesigned drainage plan is to retain surface water in the quarry pit for groundwater recharge and sediment removal. 2. An engineered graded bed or other sediment barrier shall be placed beneath any overburden and spoil material placed within the quarry pit to prevent sediment from collapsing into the karst aquifer through fractures and other pathways. A filter shall be designed to remove suspended sediment from quarry runoff and to percolate the runoff into the underlying karst aquifer. Appendix G contains preliminary design recommendations for filter construction. This provision shall be combined with sloping of the working floor of the quarry towards the filter-lined portion of the quarry floor and /or capture of runoff in closed pipe or lined ditches to carry runoff directly to the filter and to prevent ponding in areas with no filter. Ponding of water above a specified design depth shall be prevented by pumping or by providing external drainage from the quarry. (Note: this measure will be necessary regardless of the design of overburden and spoil disposal. 3. The filter and associated settlement ponds shall be designed to minimize water depths, and settlement pond depths shall be minimized to avoid retaining standing water except for short periods following rainstorms. The filter and ponds shall be regularly maintained during operation of the quarry. 4. After the end of active quarrying, an overflow pipe or pumping system shall be constructed to direct any overflow of the filter system to settlement basins. Alternatively, if monitoring of the filter system for a period of five years following cessation of mining indicates that it has the capacity to recharge expected runoff without further maintenance, a overflow spillway system will not be required. Should it be required, development of the spillway shall include design and construction of a fail-safe drainage system in the crusher			during mining.

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	area to prevent any runoff from flowing down slopes above Liddell Spring or onto the Liddell Spring landslide, during quarrying or after quarry closure. The drainage system shall be designed so that plugging of ditches or inlets for the settlement basins does not result in water being diverted towards the spring. 5. Drainage provisions shall be developed to reduce erosion and runoff during removal of overburden in the Boundary Expansion Area. Drainage design shall incorporate the following elements during removal of overburden: • Capture or divert runoff flowing towards the quarry from upland areas. This measure should take the form of a cut-off ditch around the perimeter of the working area, to prevent runoff from adjacent uplands from adding to direct runoff from the Boundary Expansion Area. Runoff from upland areas shall be collected and dispersed away from the quarry. • Stage the overburden removal during the dry season to allow drainage provisions to be instituted in working areas prior to the onset of winter rains. No overburden stripping shall take place between October 15 and April 15 of any year. A representative of Santa Cruz County Planning Department shall inspect and approve all erosion control measures prior to October 15 each year • Temporary berms shall be constructed at the contact between overburden and any exposed marble to prevent runoff carrying sediment from flowing across exposed marble. These berms shall be in place from October 15 to April 15 each year. Runoff from these areas shall be collected and carried by pipe and/or lined impermeable ditch to the filtration system constructed in the quarry bottom. • All areas of exposed marble shall be positively sloped to flow to runoff collection points. Benches shall cut with inboard collection ditches that are sloped to runoff collection points. Infiltration of runoff in the ditches shall be prevented by impermeable linings where open fractures exist. On working			

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	benches, use of movable plastic membranes can be used to provide temporary lined drains. If it is not feasible to cut the marble surface to the required slopes, it is permissible to develop the required slopes with compacted soil, provided that the soil surface is protected from erosion. Alternatively, benches may be outboard sloped, provided that infiltration of runoff is prevented by impermeable membranes. Runoff from all marble areas shall be collected in pipes and/or lined ditches and conducted to the filtration system constructed in the quarry bottom • Identify any prominent fissures or sinks exposed within the quarry as mining progresses and install drainage provisions to prevent runoff from entering the fissures. Runoff in disturbed areas shall be directed away from surface drainages leading to Liddell Spring as well as any subsurface drains such as sinkholes and open fractures. Sinkholes, fractures, and dissolution cavities shall be identified, mapped, and maintained in such a way as to prevent any precipitation or runoff capture. • A representative of Santa Cruz County Planning Department shall review the sinkhole/fissure/dissolution cavity mapping data and inspect the quarry drainage system at least once per month between October 15 and April 15 each year. 6. The revegetation plan specified in the 1996 Reclamation Plan Amendment shall include hydrophytic native plant species that can tolerate wet conditions for areas on the quarry floor receiving additional retention due to the modified drainage plan. The revised revegetation plan shall be developed by CEMEX in cooperation with a qualified revegetation specialist for approval by County Planning prior to public hearing of the project proposal.			
Impact: Because existing data is inadequate to define maximum water levels in the Boundary Expansion Area, there is a potential for mining to intercept ground water. Exposing significant perched ground water zones, mining to within 20 feet or less of maximum ground water elevations, and flushing additional water through the quarry floor would potentially impact water quality and cause turbidity at Liddell Spring by exposing ground water to surface	**Measure HYD-2:** Improved groundwater level monitoring is needed in areas proposed for new and ongoing quarrying (e.g. the northeast corner of the Boundary Expansion Area) to prevent mining from intercepting the groundwater table. . It is important that groundwater level information be obtained within the Boundary Expansion Area itself, and that groundwater data be recorded through several annual cycles, so that seasonal water level changes can be assessed. CEMEX shall therefore augment the	Quarry Operator	County Planning Department	During mining with further restrictions prior to mining below a depth of 800 feet (msl).

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Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
contamination and by introducing additional natural and quarry-generated sediment into ground water. This opportunity for contamination of the water would affect both surface and ground water quality downstream and is therefore a potentially significant impact according to the thresholds of significance. Draining the quarry to Settlement Basin 3, as envisioned by the Final Drainage Plan, would lessen the potential water quality impact at Liddell Spring, but this plan would also increase the potential for the quarry to affect flow quantities at the spring, also a potentially significant impact.	existing and proposed water level monitoring program with at least two additional wells drilled to coincide with the planned northeast corner of the floor of the Boundary Expansion Area and the western side of the Boundary Expansion Area (approximate California Coordinate System coordinates N198,000 E1,519,350 and N197,700, E1,518,850, per the project Final Development Plan). It may be necessary to re-drill or re-develop the well in the northeast quarry corner during quarrying, or the hole may be drilled at an angle from a location outside the area to be mined. The actual well location shall be reviewed and approved by a representative of Santa Cruz County Planning Department prior to drilling. These wells can be substituted for two of the three additional monitoring wells proposed by the quarry operator (as described in the "Application for Approval of Amendments to Surface Mining and Reclamation Plans", August 1999, page 7). Continuously reading water level data loggers shall be installed in all wells selected for water level monitoring, to include the proposed new wells, and wells M1B, M2B, M5A, and M6A. The data loggers should be programmed to record water levels at least four times daily. The monitoring at these wells shall continue through the mining period, or at least until water levels during two average or higher than average rainfall seasons are recorded. Mining shall be restricted to a level no deeper than 800 feet (msl) until water levels in the proposed wells have been recorded through at least two average or higher than average rainfall years. Once mining approaches elevation 800 feet (msl), the water level data shall be reviewed by a representative of Santa Cruz County Planning Department, who shall have the authority to determine the appropriate final depth of mining. The determination of final mining depth shall take into account the results of the groundwater monitoring proposed above, historic water level data, rainfall amounts during the monitoring period, and any new information regarding the karst aquifer that is revealed during the initial mining phase. In addition to the monitoring proposed above, precaution shall be taken during mining to protect perched water zones uncovered by mining. The quarry operator shall cease quarrying within 50 feet of any flowing water observed exiting the walls or floor of the quarry. If the water flow persists for more than 96 hours and exceeds a discharge rate of 20 gallons per minute, a permanent means of protecting the water source shall be provided. Santa Cruz County Planning Department shall be informed of any discharge meeting these criteria and a Planning Department			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	representative shall approve any proposed mitigation measure. In general, appropriate mitigation will include capturing the discharge in such a way as to protect it from contamination and recharge of the runoff to the karst system.			
Impact: Even with implementation of mitigation measures HYD-1 and HYD-2, impacts to water quality and/or water quantity at Liddell Spring by continued quarrying may be significant. Based on the results of the analysis contained in the Geology and Hydrology Technical Appendix (Appendix F), some impacts on Liddell Spring water quality are attributable to the quarrying operation, either due to the ponding and recharge of turbid water in the quarry pit or due to blasting. To the extent the proposed quarry expansion would extend the life of the quarry operation in time, it would prolong the impacts of the current quarry operation.	**Measure HYD-3:** Existing turbidity in Liddell Spring discharge, whether naturally occurring or due to quarry operations is presently being mitigated by the City with their own treatment system, without any demonstrated loss of production. The potential impacts of the quarry operation on turbidity at Liddell Spring shall be mitigated by requiring the quarry operator to reimburse the City of Santa Cruz for the reasonably determined cost of treating water exceeding the standards proposed by the 1964 agreement. CEMEX shall therefore compensate the City of Santa Cruz for the costs of treating the water for the purpose of reducing project-generated turbidity at Liddell Spring, as previously provided for, and agreed to in the 1964 agreement. SCCWD shall furnish information to CEMEX documenting reasonably determined treatment costs, which shall, in combination with the terms of the 1964 agreement, serve as the basis for the compensation. EMEX and SCCWD shall conduct a joint monitoring program at Liddell Spring during the early phases of mining in the Boundary Expansion Area (at least through overburden removal) to monitor implementation of this mitigation measure and to facilitate communication and response to any turbidity or sedimentation issues that arise. The quarry operator shall also provide SCCWD with the blasting schedule, so that blast related turbidity events can be anticipated and precisely mitigated.	Quarry Operator and City of Santa Cruz Water Department	County Planning Department	Annually during mining
Biological Resources				
Impact: The Limestone Quarry Boundary Expansion Project would impact San Francisco dusky-footed woodrat (SFDW) populations within the Boundary Expansion Area through the loss of 17.1 acres of habitat and displacement/take of approximately 40 individual woodrats.	**Measure BIO-1:** To mitigate the loss of SFDW habitat, a conservation easement shall be placed over suitable SFDW habitat at a ratio of 1:1 (one acre habitat preserved for one acre of habitat removed). The following steps shall be taken: 1. Prepare an assessment of SFDW habitat on three sites and identify the preferred site for the conservation easement. The three sites recommended for assessment are shown in Figures 36 and 37 and include: 1) APN 063-132-08, mixed evergreen forest and redwood	Quarry Operator	County Planning Department and California Department of Fish and Game (CDFG).	Prior to commencement of mining in the Boundary Expansion Area.

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Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	forest in the buffer zone adjacent to the east side of the Boundary Expansion Area; 2) APN 063-121-07, coyote brush scrub located immediately north of the Boundary Expansion Area; and 3) APN 058-011-01, chaparral and knobcone pine vegetation near the San Vicente Quarry. The assessment shall include: • A map and description of vegetation communities, based on Holland 1986, Preliminary Description of the Terrestrial Natural Communities of California; • A map of the locations of SFDW houses, with GPS coordinates; • The number of houses per acre by mapped vegetation community; • An assessment of each house to determine if it is active or inactive, using observation techniques (unless trapping is required by CDFG); • A description of the tree and shrub species found within 25 feet of each house; • A description of the percent and type of ground cover immediately around each house; • A description of the building materials used for the house and an assessment as to whether similar materials remain in the area or the supply has been depleted; • A description of what the house is built on (e.g., ground, crotch of tree); • A description of enhancement measures that could be implemented to improve the quality of habitat for SFDW on the parcel; and • An assessment of connectivity of the SFDW habitat on the parcel to other similar habitat. 2. Collect additional data on habitat conditions and use in the Boundary Expansion Area. The purpose is two-fold: a) to determine whether the atypical redwood forest habitat is suitable for long-term use by SFDW and thus redwood forest can be used for the conservation easement; and b) to determine how many acres of SFDW habitat will require replacement at the 1:1 ratio (this is currently estimated to be 17.1 acres). Data shall include: • Collection and analysis of fecal samples from all SFDW houses in the proposed Boundary Expansion Area and from a random sample of SFDW houses in the northern portion of the 1,000 foot buffer area to the east of the project area. The purpose is to determine whether the			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	redwood forest vegetation community provides suitable foraging habitat in addition to other habitat requirements (e.g., breeding). • If lab results from fecal analysis are ambiguous or inconclusive, the use of telemetry and tracking of selected animals shall be conducted for a period of 30 days to determine where SFDWs in the Boundary Expansion Area are foraging (i.e., what vegetation communities). • If the data collected under No. 2 indicate that the redwood forest vegetation community provides suitable nesting and foraging habitat for SFDW, then preservation of redwood forest habitat in the adjacent buffer zone east of the Boundary Expansion Area (APN 063-132-08), or an alternate parcel with suitable habitat, is an acceptable measure to reduce the impacts to below a level of significance. • If the data collected under No. 2 indicate that the redwood forest vegetation community does not provide suitable breeding and foraging habitat for SFDW, then a site containing coyote brush scrub, and/or northern coastal scrub, and/or coast live oak forest, and/or chaparral shall be used. **Measure BIO-2:** In addition to Measure BIO-1, up to 40 SFDW shall be actively and passively relocated from the Boundary Expansion Area prior to land-clearing activities that will impact SFDW houses. Two potential relocation sites have been identified. The first relocation site is located immediately north of the Boundary Expansion Area on parcel 063-122-05. A second site is located northeast of the Boundary Expansion Area near the San Vicente Quarry (APN 058-011-01); a habitat evaluation of these sites will be provided under Measure BIO-1. Any remaining houses/animals shall be passively relocated. The specific implementation methods for this mitigation measure shall be described in a SFDW Mitigation Plan. All relocation and tracking data collected under the SFDW Mitigation Plan shall be compiled into a report for submittal to CDFG and the County Planning Department. The SFDW Mitigation Plan shall at least include: • Safety measures to avoid transmittal of Hantavirus and Arenavirus. Both the Hantavirus and Arenavirus are typically found in rodent populations and are shed in their saliva, urine, and feces. Humans can become infected after inhaling aerosolized droplets of urine or particulates contaminated with rodent excreta. Appropriate safety measures shall be taken including protection against inhalation of			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	contaminated particulates, protection against particulates coming into contact with conjunctiva (eyes), and protection against fleabites. Those handling house materials shall use appropriate respiratory, eye and skin protection (e.g., use of a hazardous materials suit). • Data collection at each house to be dismantled (under either passive or active relocation) to identify house-building materials, contents of house cavities (particularly stored food plants), the percent and type of ground cover immediately around each house, the tree and shrub species surrounding the house, and what the house is built on (e.g., ground, crotch of tree). • Trapping method and length of time an animal can be held during house relocation • New house design: for example, a wine barrel or similar receptacle staked into the ground, upside down and at an angle in appropriate microhabitat (based on data collected above and in Measure BIO-1), with materials from the nest chamber of the dismantled house placed inside, and other house materials placed over and around the barrel, including a long tunnel-shaped entrance that leads only into the receptacle so that when released the SFDW can only enter the house and cannot exit except through the tunnel. Food and house building materials shall be provided. Slash generated during land clearing activities within the Boundary Expansion Area could be spread throughout the mitigation site to provide additional house building materials. • Releasing method (how the trapped SFDW is released into the new house) • Tracking of the relocated animals with radio telemetry for a period of 30 days following their release to determine the success of the relocation effort. • Methods of passive relocation, including whether animals are to be trapped and released locally prior to house dismantling, and what time of day passive relocation shall occur.			
Impact: The 1996 Reclamation Plan Amendment would eliminate the 1:1 replacement requirement of all habitat types previously impacted in favor of vegetation communities that can be more easily re-established in reclaimed quarry areas. Replacement of maritime chaparral, needlegrass grassland, and diverse native grassland would not occur, and test plots would not be continued. This does not reflect current knowledge and would result in the	**Measure BIO-3**: Revise the proposed 1996 Reclamation Plan Amendment to incorporate sensitive habitats, a test plot system and to update the vegetation maps. This can be accomplished by incorporating the approach provided in the "2005 Alternative Revegetation Plan", referenced as Appendix D. The "Mitigated 1996 Reclamation Plan Amendment" shall also include 0.9 acre of coast live oak forest, and a suitable mix of hydrophytic (growing wholly or partially in water) vegetation species to	Quarry Operator	County Planning Department	The revised revegetation plan shall be submitted to the Planning Department prior to public

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
permanent loss of sensitive habitats. The 1996 Reclamation Plan Amendment does not replace the 0.9 acres of coast live oak forest occurring in the Boundary Expansion Area that would be removed by the project.	revegetate a portion of the quarry floor in accordance with Part 7 of Measure HYD-1. A suitable mix of hydrophytic species for a seasonal wetland may include such species as rush (*Juncus* spp.), bulrush (*Scirpus* spp.), sedge (*Carex* spp.), etc. The revised revegetation plan shall be developed by CEMEX in cooperation with a qualified revegetation specialist for approval by County Planning prior to public hearing of the project proposal.			hearing on the project.
Impact: The removal of 17.1 acres of forest and shrub-dominated upland habitat has the potential to impact or disturb nesting raptor and migratory bird species that may establish nests within the Boundary Expansion Area, resulting in a violation of state code and the MBTA	**Measure BIO-4:** Tree removal or land clearing that removes nesting habitat shall be conducted outside of the breeding season (February 15 to August 15) for raptors and migratory birds. Alternatively, the mining Boundary Expansion Area shall be surveyed for nesting birds by a qualified biologist using established CDFG protocols no more than 30 days prior to tree removal or land clearing, if these activities are to occur during the breeding season. If nesting birds are detected within the construction zone, methods of avoiding active nest sites (e.g., establishment of a buffer area around the active nest until hatchlings have fledged) shall be developed in coordination with CDFG. Surveys shall be completed between February 15 and August 15 of any given year.	Quarry Operator	County Planning Department and California Department of Fish and Game	Prior to commencement of mining in the Boundary Expansion Area.
Impact: Overburden removal and mining in the Boundary Expansion Area could increase sediment levels entering Liddell Spring and discharged downstream to Liddell Creek. The project could also reduce the quantity of water in Liddell Spring. Central coast steelhead habitat could be impacted by increased sediment loads in lower reaches of Liddell Creek, and decreased flows.	**Measure HYD-1** (see Hydrology above or Section 4.4 of the Draft EIR for a complete description).	Quarry Operator	County Planning Department	The design shall be submitted for review by the Planning Department prior to the public hearing and implemented during mining.
Impact: The Revegetation Plan component of the proposed 1996 Reclamation Plan Amendment does not provide adequate performance standards that meet the standards provided in Section 16.54.055 of the County Code.	**Measure BIO-5: Performance Standards for Revegetation** 1. Revegetation shall be part of the approved Reclamation Plan, unless it is not consistent with the approved end use. A native species vegetative cover suitable for the proposed end use and capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer shall be established on disturbed land (including roads, ponds, streambeds, and other areas used in the mining operation) unless introduced species are consistent with the approved Reclamation Plan or unless native species prove infeasible.	Quarry Operator	County Planning Department	The revised revegetation plan shall be submitted to the Planning Department prior to public hearing on the project.

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	Vegetative cover or density, and species-richness shall be, where appropriate, sufficient to stabilize the surface against effects of long-term erosion and shall be similar to naturally occurring habitats in the surrounding area. The vegetative density, cover and species richness of naturally occurring habitats shall be documented in baseline studies carried out prior to the initiation of mining activities. However, for areas that will not be reclaimed to prior conditions, the use of data from reference areas in lieu of baseline site data is permissible. 2. Test plots conducted simultaneously with mining shall be required to determine the most appropriate planting procedures to be followed to ensure successful implementation of the proposed revegetation plan. The Planning Director may waive the requirement to conduct test plots when the success of the proposed revegetation can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be planted. 3. Where surface mining activities result in compaction of the soil, ripping, disking, or other means shall be used in areas to be revegetated to eliminate compaction and to establish a suitable root zone in preparation for planting. When it is not necessary to remove road base materials for revegetative purposes, the Planning Director may set a different standard pursuant to Subsection 16.54.055(b)(3). 4. Prior to closure, all access roads, haul roads, and other traffic routes to be reclaimed shall be stripped of any remaining road base materials, prepared in accordance with Subsection 16.54.055(f)(7), covered with suitable growth media or top soil, and revegetated. 5. Soil analysis shall be required to determine the presence or absence of elements essential for plant growth and to determine those soluble elements that may be toxic to plants, if the soil has been chemically altered or if the growth media consists of other than the native topsoil. If soil analysis suggests that fertility levels or soil constituents are inadequate to successfully implement the revegetation program, fertilizer or other soil amendments may be incorporated into the soil. When native plant materials are used, preference shall be given to slow-release fertilizers, including mineral and organic materials that mimic natural sources, and shall be added in amounts similar to those			

Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	found in reference soils under natural vegetation of the type being reclaimed. 6. Temporary access for exploration or other short-term uses on arid lands shall not disrupt the soil surface except where necessary to gain safe access. Barriers shall be installed when necessary to prevent unauthorized vehicular traffic from interfering with the reclamation of temporary access routes. 7. Native species shall be used for revegetation, except when introduced species are consistent with the approved Reclamation Plan or native species prove infeasible. Areas to be developed for industrial, commercial, or residential use shall be revegetated for the interim period, as necessary, to control erosion. In this circumstance, non-native plant species may be used if they are not noxious weeds and if they are species known not to displace native species in the area. 8. Planting shall be conducted during the most favorable period of the year for plant establishment. 9. Soil stabilizing practices shall be used where necessary to control erosion and for successful plant establishment. Irrigation may be used when necessary to establish vegetation. 10. If irrigation is used, the operator must demonstrate that the vegetation has been self-sustaining without irrigation for a minimum of two years prior to release of the financial assurances by the Planning Director, unless an artificially maintained landscape is consistent with the end use. 11. Noxious weeds shall be managed: (i) When they threaten the success of the proposed revegetation; (ii) To prevent spreading to nearby areas; and (iii) To eliminate fire hazard. 12. If recommended by the botanist, horticulturist or plant ecologist, plants and seed shall be propagated from sources on the site. If purchased, seed should be from a local source. A local source is defined as being as close as possible to the same geographic location or watershed, elevation, aspect, and soil type as the project.			

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	13. The revegetation plan shall provide for re-establishing or enhancing any rare and endangered, or locally unique plant communities disturbed by any mining operation. 14. Success of revegetation shall be judged based upon the effectiveness of the vegetation for the approved end use, and by comparing the quantified measures of vegetative cover, density, and species-richness of the reclaimed mined lands to similar parameters of naturally occurring vegetation in the area. Either baseline data or data from nearby reference areas may be used as the standard for comparison. Quantitative standards for success and the location(s) of the reference area(s) shall be set forth in the approved Reclamation Plan. Comparisons shall be made until performance standards are met provided that, during the last two years, there has been no human intervention, including, for example, irrigation, fertilization, or weeding. Standards for success shall be based on expected local recovery rates. Valid sampling techniques for measuring success shall be specified in the approved reclamation plan. Sample sizes must be sufficient to produce at least an 80 percent confidence level. Standard statistical methods in commonly available literature may be utilized for determining an 80 percent confidence level on a site-by-site basis. Examples of such literature include (without limitation) D. Mueller-Dombois and H. Ellenberg, 1978 "Aims and Methods of Vegetation Ecology," John Wiley & Sons, Inc., or D.D. Bonham 1988 "Measurement for Terrestrial Vegetation." Protection measures, such as fencing of revegetated areas and/or the placement of cages over individual plants shall be used in areas where grazing, trampling, herbivory, or other causes threaten the success of the proposed revegetation. Fencing shall be maintained until revegetation efforts are successfully completed.			
Impact: The proposed 1996 Reclamation Plan Amendment does not provide required detail governing the management or use of the stockpile resource in conflict with Mining Regulations 16.54.055 Performance Standards for Topsoil Salvage, Maintenance, and Redistribution.	**Measure BIO-6:** The 1996 Reclamation Plan Amendment shall be revised in conformance with Mining Regulations 16.54.055(h) Performance Standards for Topsoil Salvage, Maintenance, and Redistribution. 1. All salvageable topsoil suitable for revegetation shall be removed as a separate layer from areas to be disturbed by mining operations. Topsoil and vegetation removal shall not precede surface mining	Quarry Operator	County Planning Department	Topsoil Plan shall be submitted prior to commence-ment of mining and implemented during mining and

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Environmental Impacts	Mitigation Measures	Party Responsible for Implementing	Party Responsible for Verifying Compliance	Timing of Compliance
	activities by more than one year, unless a longer time period is approved by the Planning Director. 2. Topsoil resources shall be mapped prior to stripping and the location of topsoil stockpiles shall be shown on a map in the Reclamation Plan. If the amount of topsoil needed to cover all surfaces to be revegetated is not available on site, other suitable material capable of sustaining vegetation (such as subsoil) shall be removed as a separate layer for use as a suitable growth media. Topsoil and suitable growth media shall be maintained in separate stockpiles. Test plots may be required to determine the suitability of growth media for revegetation purposes. 3. Soil salvage operations and phases of reclamation shall be carried out in accordance with a schedule that: (i) is set forth in the approved Reclamation Plan; (ii) minimizes the area disturbed; and (iii) is designed to achieve maximum revegetation success allowable under the mining plan. 4. Topsoil and suitable growth media shall be used to phase reclamation as soon as can be accommodated by the mining schedule presented in the approved reclamation plan following the mining of an area. Topsoil and suitable growth media that cannot be utilized immediately for reclamation shall be stockpiled in an area where it will not be disturbed until needed for reclamation. Topsoil and suitable growth media stockpiles shall be clearly identified to distinguish them from mine waste dumps. Topsoil and suitable growth media stockpiles shall be planted with a vegetative cover or shall be protected by other equally effective measures to prevent water and wind erosion and to discourage weeds. Relocation of topsoil or suitable growth media stockpiles for purposes other than reclamation shall require prior written approval from the Planning Director. 5. Topsoil and suitable growth media shall be redistributed in a manner that results in a stable, uniform thickness consistent with the approved end use, site configuration, and drainage patterns.			reclamation

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Air Quality				
Impact: Site preparation including vegetation clearing and overburden removal would occur in several stages over the initial 2-year period. These activities would result in increased emissions of fugitive dust in addition to existing mining operations.	**Measure AQ-1:** CEMEX shall limit active work areas for site preparation to less than 8.2 acres for vegetation clearing or 2.2 acres for overburden stripping at any point in time.	Quarry Operator	County Planning Department	During mining

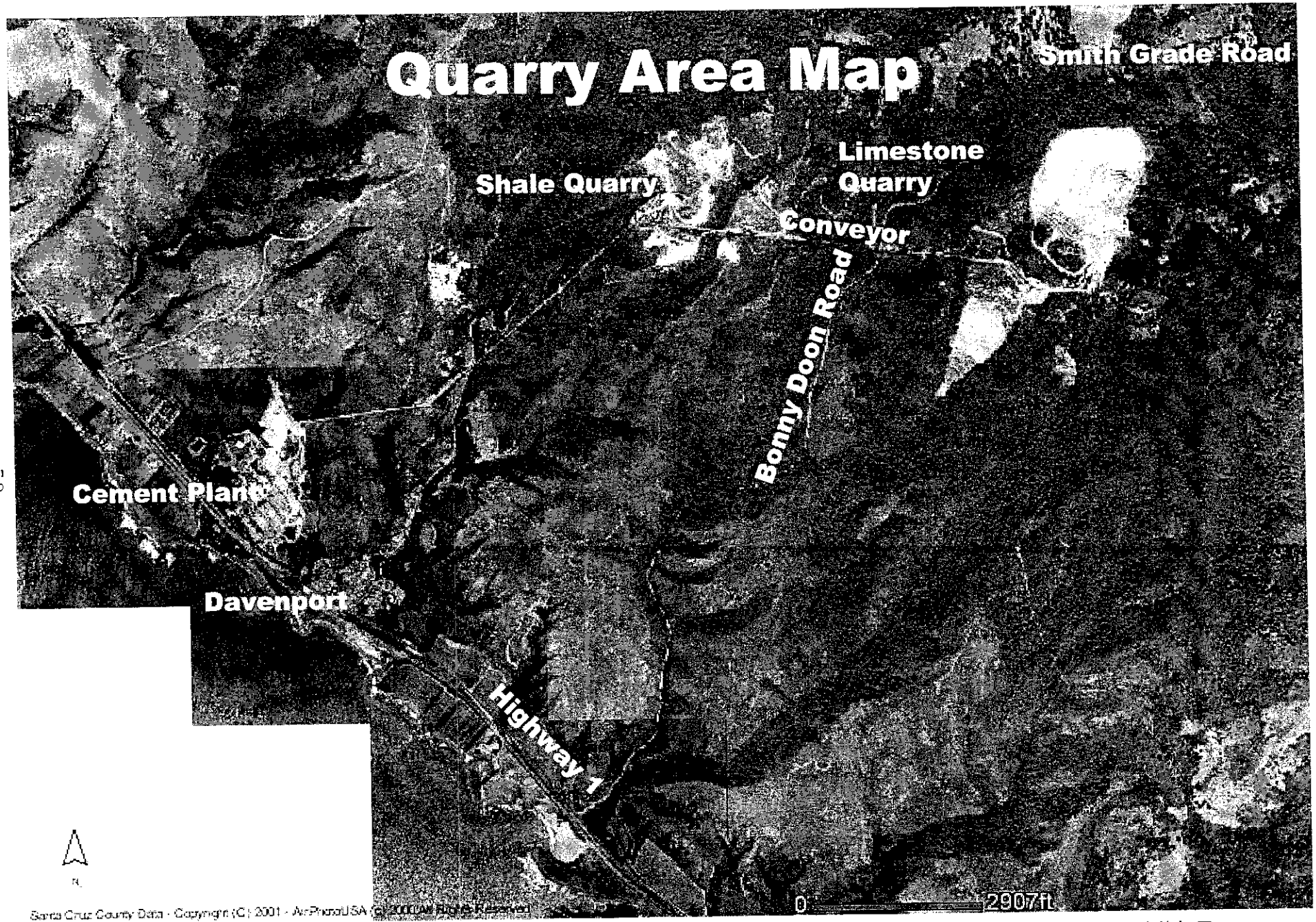

Quarry Area Map
Smith Grade Road
Limestone Quarry
Shale Quarry
Conveyor
Bonny Doon Road
Cement Plant
Davenport
Highway 1
N
0
2907ft
Santa Cruz County Data - Copyright (C) 2001 - AirPhotoUSA - (C) 2001 All Rights Reserved

Exhibit E

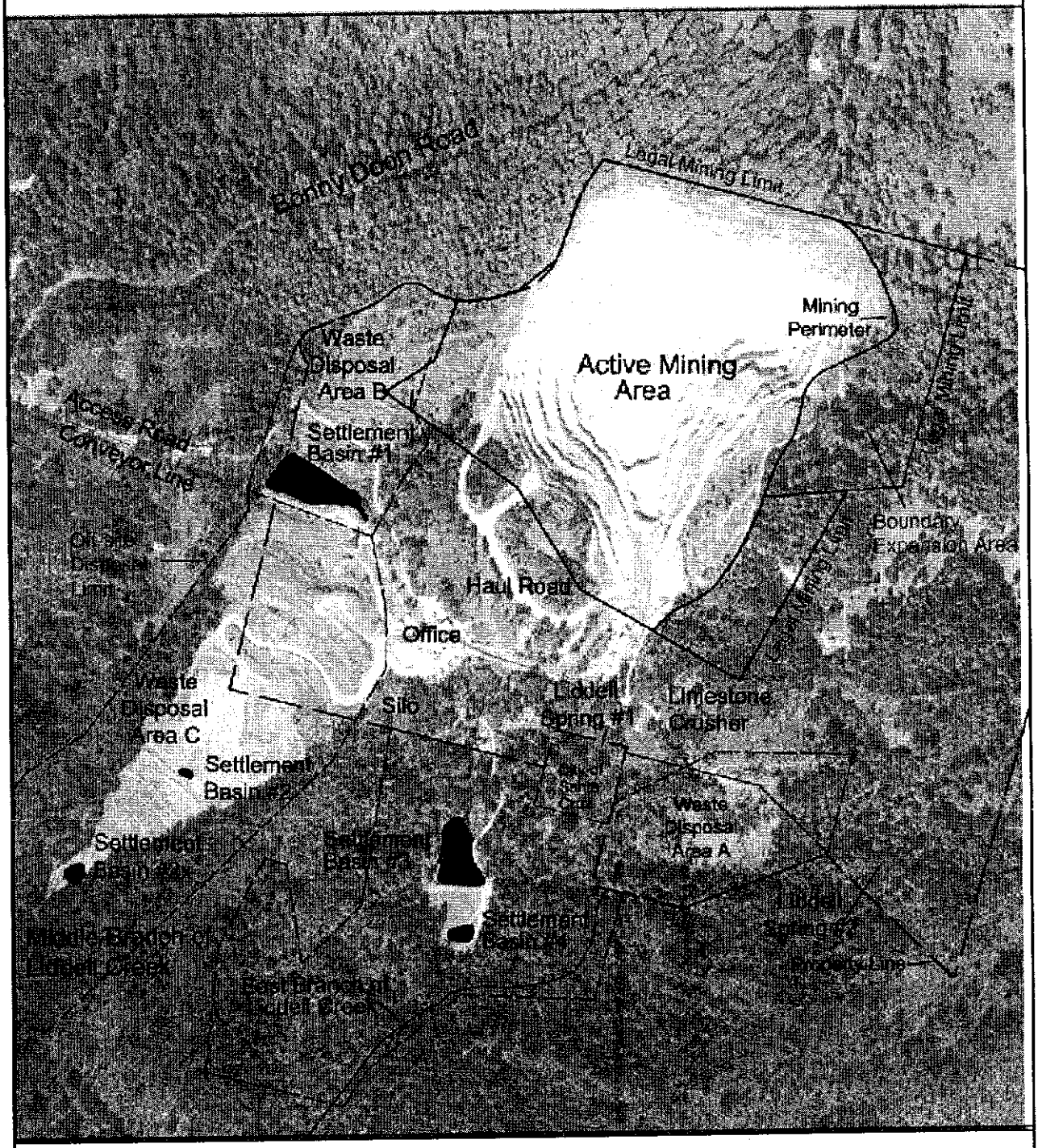
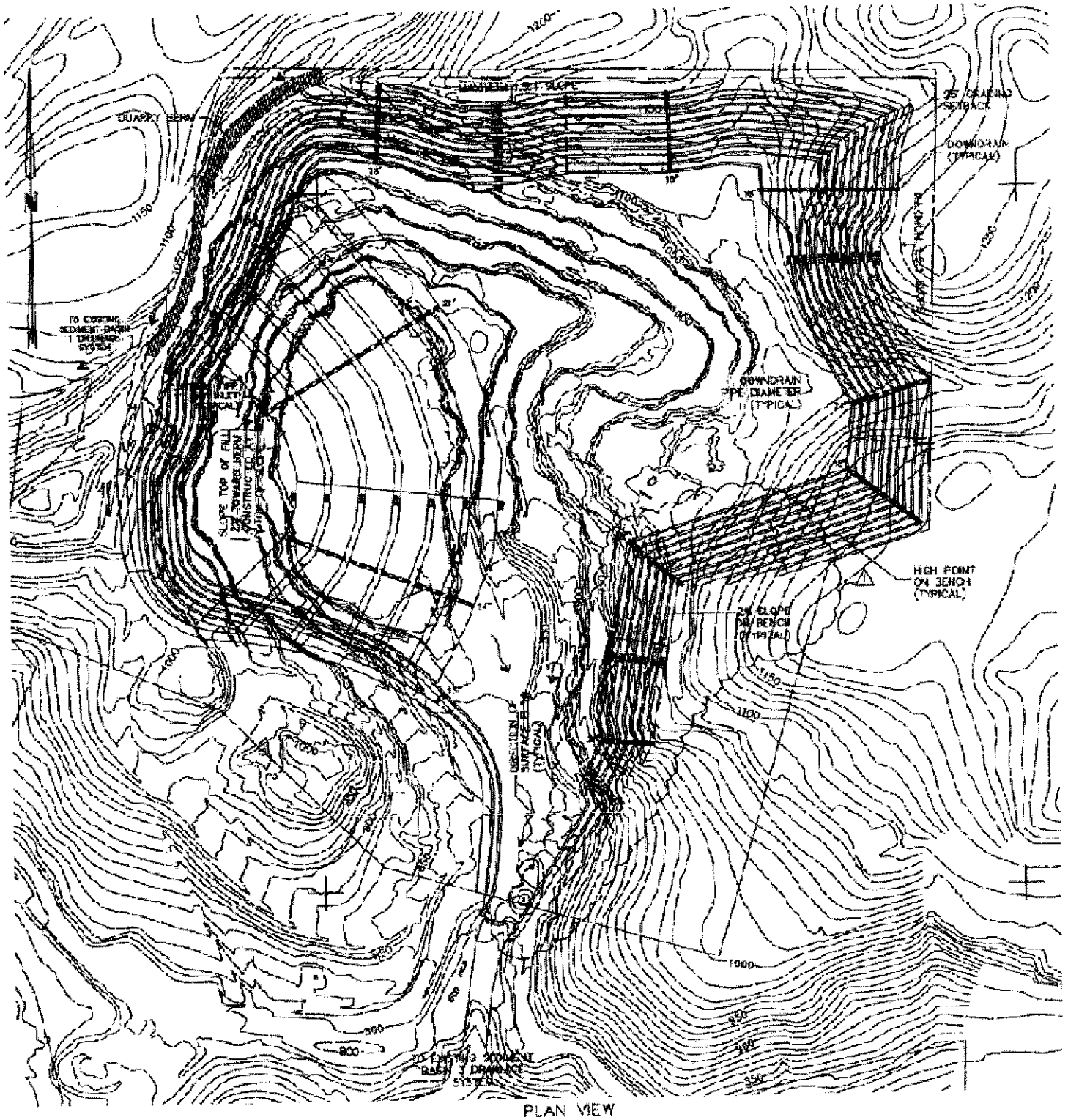

Legal Mining Limit
Mining Perimeter
Waste Disposal Area B
Active Mining Area
Settlement Basin #1
Access Road
Conveyor Line
On-site Diversion Ditch
Boundary Expansion Area
Haul Road
Office
Waste Disposal Area C
Silo
Liddell Spring #1
Limestone Crusher
Settlement Basin #2
Waste Disposal Area A
Property Line
Date of Photography: October 14, 2003
Scale of Photography: 1:7200
Source: Bowman and Williams, Towill, 2003
Map by TRA, February 2007

EXHIBIT F



PLAN VIEW

EXHIBIT G

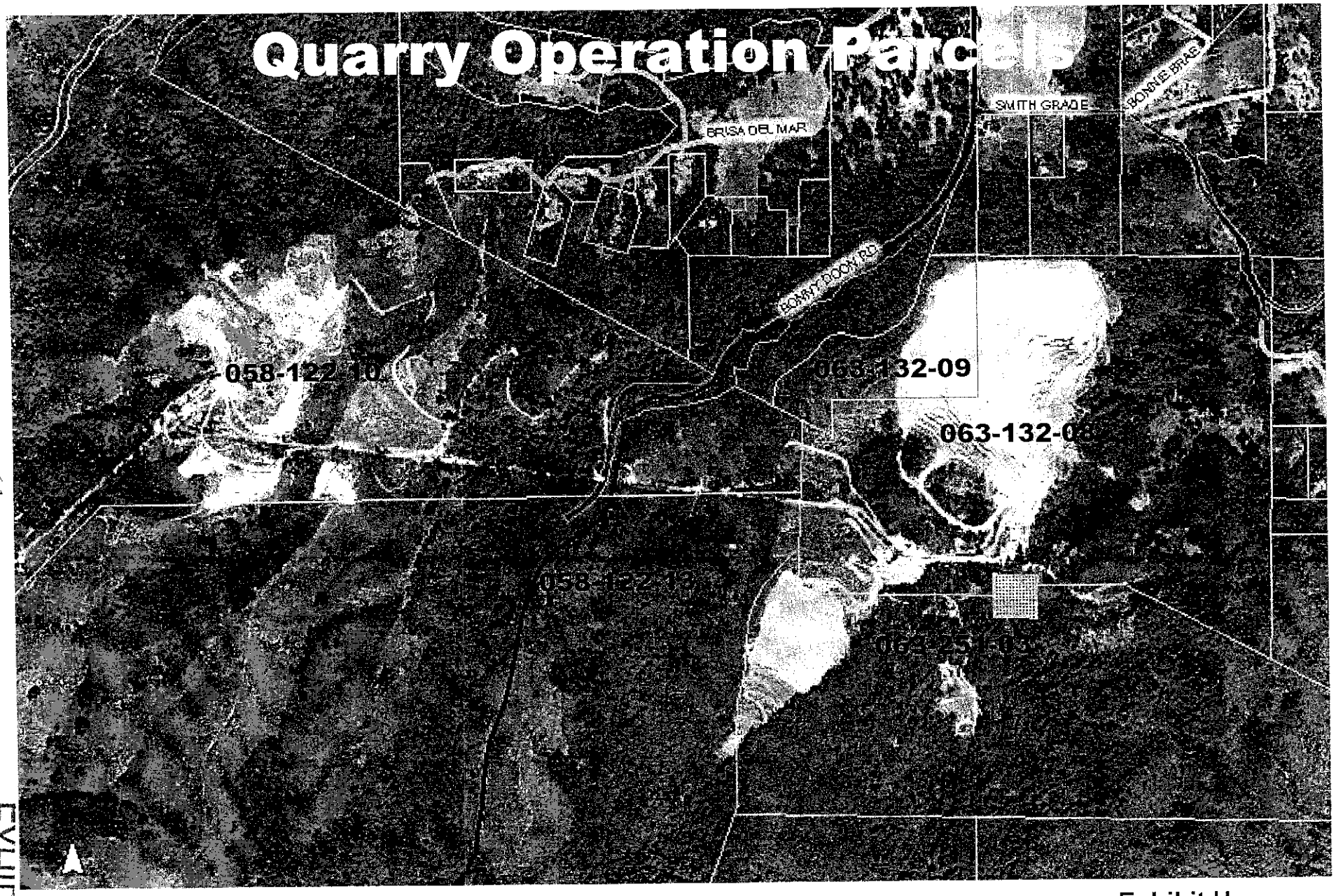


Exhibit H

EXHIBIT H

General Plan Map

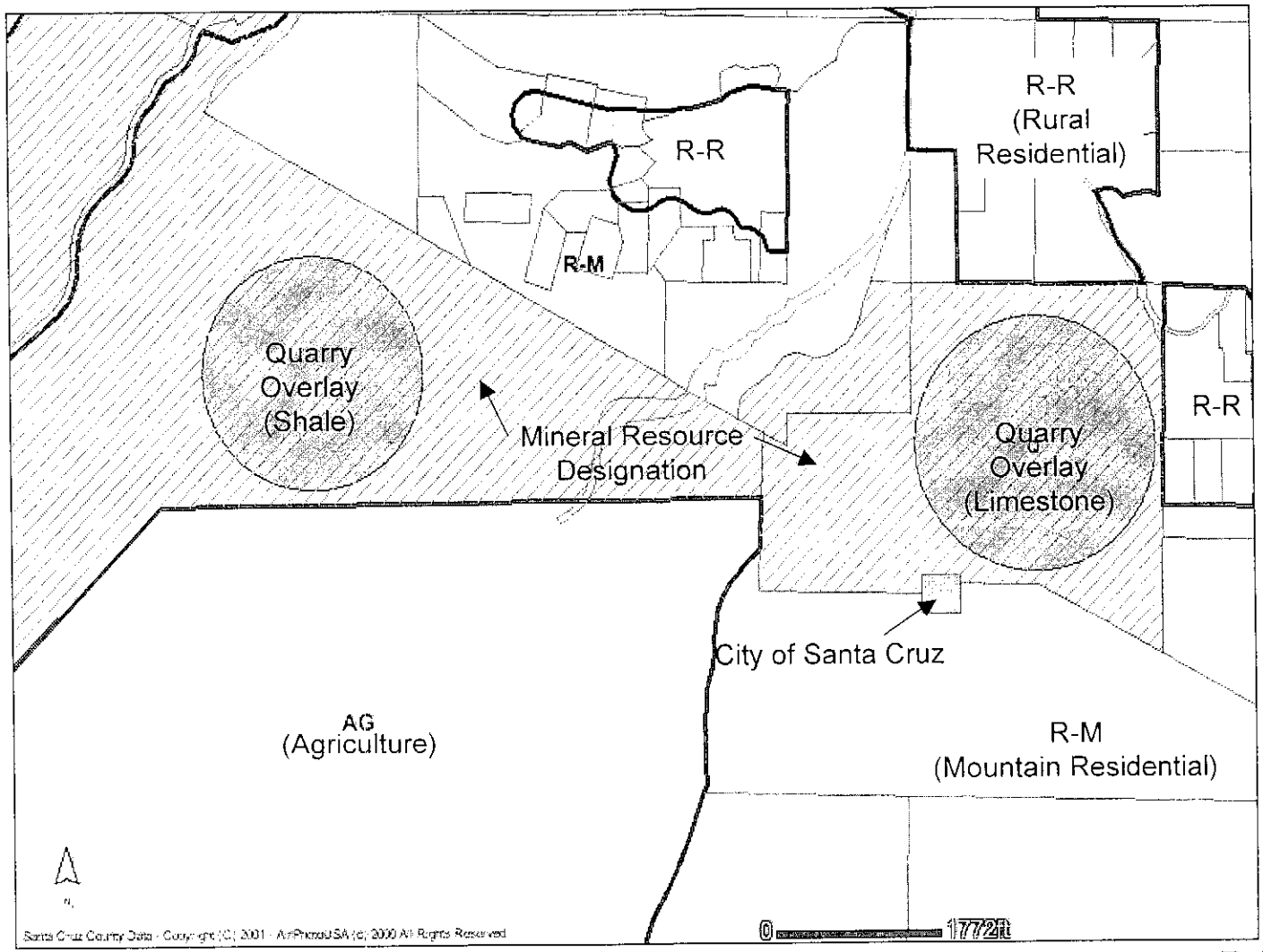


Exhibit I

EXHIBIT I

Zoning Map

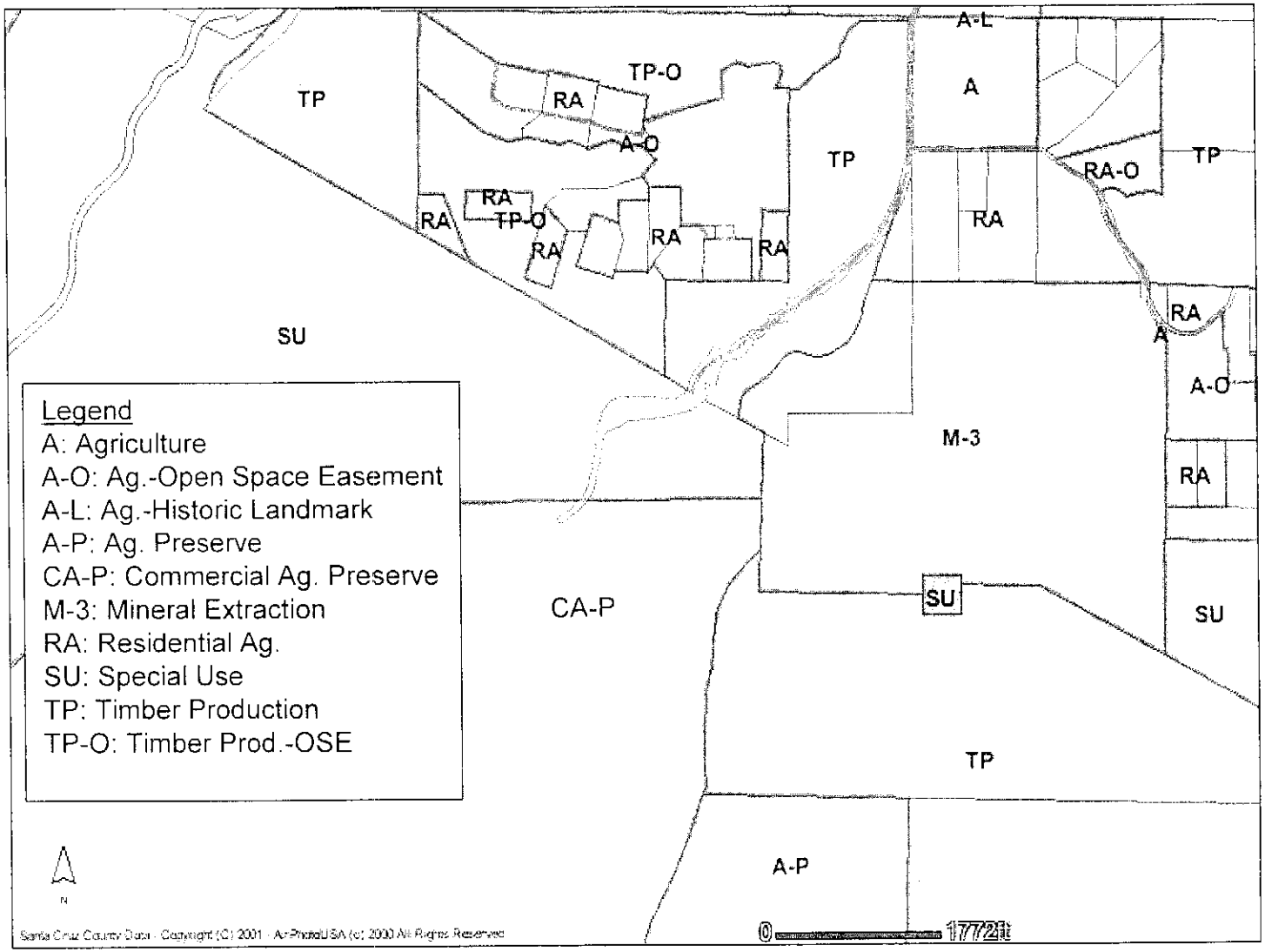


Exhibit I

EXHIBIT I

Liddell Spring Compliance

Liddell Spring, located approximately 1,500 feet south of the Limestone Quarry pit, is an important source of water for the City of Santa Cruz because of its good water quality, reliability, and low cost. It's the largest spring in the region and the City has operated this source since 1913.

The hydrogeologic (groundwater) conditions in the area of the Limestone Quarry, within the watershed of the spring, are dominated by a localized karst groundwater system. The term "karst" refers to terrain underlain by limestone or marble where runoff from rainfall drains primarily through a system of underground fissures or caverns rather than in surface streams. Surface water can enter the karst groundwater system relatively rapidly through sinkholes, stream capture, marble dissolution and collapse, carrying sediment with it. Groundwater flow in the karst system can also be rapid and carry with it significant amounts of suspended and bedload sediment.

Suspended sediment is the cause of turbidity at Liddell Spring while bedload sediment is occasionally deposited in the Liddell Spring box. Sources of sediment include eroded material washed into sink holes, stream sediment intercepted by swallow holes, sediment stored and transported within the subsurface, erosion and collapse of rocks within the subsurface, broken rock and rock dust from quarry blasting, and material fallen and washed into open fractures. Turbidity is a concern to the City of Santa Cruz Water Department because the suspended sediment that causes turbidity must be removed in order to effectively disinfect and purify water, which adds cost to the treatment process.

The karst groundwater system underlying the Limestone Quarry and discharging at Liddell Spring is complex and difficult to accurately model. Many studies over the past approximately 50 years have attempted to better understand groundwater conditions and the response of groundwater and spring flow to quarry operations. The need for further study was recognized in the original permit for the quarry to resolve potential disputes that could arise during quarry operations.

Pursuant to Condition 7 of Use Permit 3236-U Part III, protection of the waters of Liddell Spring from detrimental effects of mining operations shall be in accordance with terms of an agreement, known as the 1964 Agreement, between the permittee and the City of Santa Cruz. Because there was disagreement whether the quarry would have an adverse effect on Liddell Spring, Pacific Cement and Aggregates (now Cemex) agreed to indemnify the City against adverse impacts to water quality or quantity at Liddell Spring. In exchange, the City agreed not to contest the operation of the quarry. The 1964 Agreement sets forth the terms of Cemex's indemnity.

In 1979, an arbitration process resolved a dispute between the quarry operator and the City regarding deterioration in water quality during the period 1969 through 1974. This period included the beginning of quarry operations and involved a massive amount of earthmoving to remove overburden. The issues were settled under the terms of the 1964 Agreement.

Exhibit J

In conjunction with the 1989 application for a COC, additional studies were completed. As a result, the 1996 EIR concluded that quarry operations had resulted in deterioration of water quality, but a more specific source of turbidity was not definitively determined. Therefore, the EIR Mitigation Measures required the quarry to: 1) install an additional monitoring well, and 2) assist the City in a meaningful way such as conducting and financing additional monitoring of water supplies and/or contribution toward treatment costs, which is consistent with the terms of the 1964 Agreement.

Accordingly, the COC requires installation of an additional monitoring well and additional third party hydrogeologic studies (Condition of Approval III.C.1. through III.C.3.). If the studies determine that the Quarry operations adversely affect the quantity and/or quality of water from Liddell Spring, the Quarry is required to implement mitigation measures recommended by the consultants and agreed to by the City of Santa Cruz Water Department and the County Planning Department. Further review of the COC by the Planning Commission is required in the event that either 1) no feasible mitigation measures are recommended by the consultants, and/or 2) the Quarry, the City and the Planning Department cannot agree on the implementation of mitigation measures. This is consistent with the terms of the 1964 Agreement incorporated as a Condition of Approval of the COC.

Following approval of the COC in 1997, under the direction of a Technical Advisory Committee, consisting of representatives of the Quarry, the Planning Department and the City Water Department, additional hydrogeologic and landslide studies were completed. In addition, the 1999 application to expand the mining area includes multiple additional studies completed by consultants for the mine operator; and the 1997 draft EIR includes an additional study by a consultant for the Planning Department. Based on a review of all studies completed to date several key conclusions can be made regarding turbidity at Liddell Spring:

- Liddell Spring's turbidity response to precipitation is complex and highly variable from storm to storm and year to year
- There is evidence that runoff captured by - and percolated into - the quarry pit, along with sediment generated by quarrying, are a component of turbidity at the spring
- The pre-quarry turbidity data record is not adequate for before-and-after comparison with current data.
- Blasting increases turbidity at the Spring
- There is no evidence of a decline in the quantity of Liddell Spring discharge as a result of quarrying

In sum, permit compliance involves implementation of the 1964 Agreement, including ongoing monitoring and study of the water supply, implementation of mitigation measures if feasible and agreeable, and contribution toward treatment costs, if warranted. A number of measures, other than contribution toward treatment costs, have been implemented by the quarry operator, including those required by the COC, with the goal

of studying, monitoring and rectifying water quality impacts. Some of the measures are ongoing and will continue in accordance with the COC and the 1964 Agreement, and as a result of the 2008 Permit Review.

The component of the total turbidity at the spring contributed by the quarry operation cannot be quantified. However, there is no evidence that turbidity caused by the quarry has resulted in any actual loss of water to the City Water Department. The available data indicate that any impact on the City water supply source at Liddell Spring as a result of quarry operations is limited to potential increased treatment cost associated with an unknown, but likely very small, increment of poorer quality water. Even this conclusion appears to be of little importance, however, because there has been no loss of production and all of the water produced from Liddell Spring can be treated at the City's Graham Hill Water Treatment Plant. Any incremental increase in treatment costs attributable to poorer quality water from Liddell Spring has not been quantified. Nonetheless, for purposes of full permit compliance a contribution toward treatment costs and additional compensation must be calculated under the terms of the 1964 Agreement.

As noted above, the component of total turbidity at the spring contributed by quarry operations can not be quantified, which makes it difficult to calculate actual proportional treatment costs. However, the cost of providing or implementing facilities to rectify presumed water quality deterioration can be calculated pursuant to the terms of the 1964 Agreement. Specific water quality standards are included in the agreement for the purpose of calculating compensation under the terms of the agreement. Under the terms of the 1964 Agreement, if quality of water flowing from the spring does not meet these standards it is presumed that the quarry is the cause. Therefore, water quality monitoring data and flow rates are compared to presumptive water quality standards in the 1964 Agreement to calculate an amount of water that does not meet the standards in the agreement. The cost of providing or implementing facilities to rectify presumed water quality deterioration would be current costs to treat the calculated amount of Liddell Spring water at the Graham Hill Water Treatment Plant. Under the terms of the 1964 Agreement additional compensation is not required for the amount of water calculated above at the rate of $100 per million gallons during the period of presumed deterioration because there has been no loss of production. However, the quarry operator has agreed to an amount of compensation based on applying $100.00 per million gallons during the entire period of presumed deterioration.

It would be impossible to verify if the quarry's contribution to spring turbidity has been rectified because available data on pre-quarry water quality is not adequate for before-and-after comparison. Therefore, it is not possible to predict the endpoint of the period of presumed or actual water quality deterioration. The presumption in the 1964 Agreement is that turbidity impacts persist as long as water quality does not meet the standards in the agreement. However, a reasonable endpoint could be as long as quarry operations continue or until the site is reclaimed. Reclamation of the quarry will include a combined process of land treatment that will minimize the generation of sediment that could become a component of turbidity at the spring. The process will include, grading, resoiling, revegetation, soil compaction, stabilization, and other measures. It is,

therefore, conservatively recommended to define the period of deterioration as continuing until the quarry is reclaimed, or sooner if agreed to by the quarry, the City and the Planning Department.

It is important to note that the quantity of water calculated using the methodology in the 1964 Agreement for any given water year will not equal the amount of water production lost during actual time of turnout, regardless of the cause of turnout. A turnout is when the City diverts water from Liddell Spring out of the pipeline shutting this source off from the Graham Hill Water Treatment Plant. Typical reasons for a turn out are high turbidity or pipeline maintenance. A review of City turn out logs from 1990 through 2007 found no evidence that total quantity of production had been adversely affected by quarry operations. On the contrary, a significant reduction in overall time of turn out and average time per turnout occurred shortly after installation of improvements at the spring required pursuant to the 1997 COC, specifically, continuous monitoring equipment and power and phone lines. An apparent beneficial result of these improvements for the City is more efficient management of this water source to maximize production.

It is also important to note that presumptive water quality standards in the 1964 Agreement were exceeded before quarry operations began and are, therefore, not a representative baseline to measure the actual impact of quarry operations on water quality. In other words, the above calculation overestimates any actual impact on the water supply. Furthermore, the calculation uses the full cost of treatment for the Liddell Spring source during the period of presumptive deterioration of water quality while any impact as a result of the quarry operation is only one source of the turbidity in the spring water. Based on the available data the quarry's contribution to Liddell Spring turbidity appears to be of little importance in terms of quality, reliability and treatment cost.

Therefore, the contribution toward treatment costs and additional compensation calculated above is probably excessive. However, the methodology is consistent with the terms of the 1964 Agreement, which is incorporated as a Condition of Approval of the COC, and it is the most accurate calculation possible based on the available information. For purposes of permit compliance and compliance with the 1964 Agreement the quarry operator must compensate the City under the terms of the 1964 Agreement. It is recommended that the quarry operator pay to the City on an annual basis the total amount calculated using the algorithm developed by the Planning Department until reclamation is complete, or sooner if agreed to by the quarry operator, the City and the Planning Department.