Staff Report to the Planning Commission

Application Number:
89-0492

Applicant: Cemex
Owners: Cemex, Coast Dairies & Land Co
APN: 063-132-08 & 09, 063-251-03, 058-122-13 &10 (lessor)

Agenda Date: October 8, 2008
Agenda Item #: 8

Time: After 9:00 a.m.

Project Description: Permit Review for compliance with Conditions of Approval of Certificate of Compliance and Reclamation Plan Approval 89-0492 for the Bonny Doon Limestone and Shale Quarry.

Location: Bonny Doon Road

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

Permits Required: None (permit review only)

Staff Conclusion and Recommendation:

Based on a comprehensive review of the mining permits, staff concludes that the quarry is in substantial compliance with the Conditions of Approval of 89-0492, but more work needs to be done to achieve full compliance. It is, therefore, recommended that the Planning Commission perform a Permit Review of the Bonny Doon Limestone and Shale Quarry and require the mine operator to take the following actions:

- Pursuant to Condition 7 of Use Permit 3236-U Part III, in accordance with terms of an agreement regarding protection of the waters of Liddell Spring from detrimental effects of mining operations, known as the 1964 Agreement, between the quarry operator and the City of Santa Cruz, the quarry operator shall pay to the City the total amount calculated in Exhibit F and future amounts based on completion of a similar calculation at the end of each water year until reclamation is complete, or sooner if agreed to by the quarry operator, the City and the Planning Department.
- The quarry operator shall continue to pay the power and phone bills for Liddell Spring and continue to provide access to Liddell Spring to City employees via quarry property.
- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, commence construction

of the replacement culvert at the San Vicente Creek tributary downstream of Settlement Basin 5.

- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, commence construction of fish passage improvements at the mouth of Liddell Creek; or, with approval from California Department of Fish and Game (CDFG) and National Marine Fisheries Service (NMFS), commence construction of an equivalent alternative mitigation measure for the impacts associated with the expansion of Disposal Area C.
- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, implement relevant recommendations of the slope stability analysis regarding Settlement Pond 4 levee, the quarry pit and the conveyor crossing.
- Diligently pursue an interim agreement with Coast Dairies and Land Company (owned by Trust for Public Land) to allow the required monitoring and maintenance of the wetland mitigation ponds, while continuing to perfect legal access to the ponds in perpetuity.
- Obtain approval of a Reclamation Plan Amendment for the revisions to the revegetation plan. This may proceed as part of the proposed quarry expansion application; however, if the proposed quarry expansion is not approved the revegetation plan shall be revised to remove the expansion area acreage and submitted for approval as a separate Reclamation Plan Amendment.
- At least one year prior to cessation of mining the Reclamation Plan shall be amended to remove the fill along the conveyor line at the Liddell Creek crossing.
- At least one year prior to cessation of mining the Reclamation Plan shall be amended to include phased removal of the levees of Settlement Ponds 2X, 3, 4, 5, and 7 and the reestablishment of the stream channels. Ponds for California red-legged frog habitat should be incorporated into the designs as appropriate.

Exhibits

A.	89-0492 Permit Review	F.	Calculation of Contribution Toward Treatment Costs
B.	3236-U Permit Review	G.	Review of Turnout Logs
C.	Summary of 1964 Agreement	H.	Assessor's Parcel Map
D.	Summary of 1979 Arbitration	I.	Zoning & General Plan Maps
E.	Summary of Mitigation Measures		

Introduction

Condition II.G of Certificate of Compliance and Reclamation Plan Approval 89-0492 for the Bonny Doon Limestone and Shale Quarry requires that the Planning Commission

periodically review this permit for compliance with conditions of approval. Section 16.54.074 of the Santa Cruz County Mining Regulations states that new conditions shall not be imposed as part of a review process unless there is a:

a) Threat to public health and safety;
b) Significant injurious threat to the environment;
c) Nuisance;
d) Violation of approval conditions;
e) Change in the scope of operations; or,
f) The ordinance in effect at the time of the Mining Approval, Certificate of Compliance or Reclamation Plan Approval being reviewed was originally approved, or the Approval itself, authorized imposition of new conditions by the County."

The following analysis and discussion address the compliance review and includes a brief history of the permit process and issues currently affecting the quarry.

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.

History

The Bonny Doon Limestone and Shale Quarry is located off Bonny Doon Road approximately 2.3 miles northeast of its intersection with Highway 1. 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 99 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).

Original Use Permits issued to Pacific Cement and Aggregates in the 1960s consisted of multiple parts addressing the Cement Plant, San Vicente Creek Limestone and Shale Quarries, and the Bonny Doon Limestone and Shale Quarries. Part II of Use Permit 1941-U approved in 1964 allowed the continuation of mining limestone and shale in the San Vicente Creek watershed, and Part III allowed a future limestone quarry designated as the "Bonny Doon Quarry". Use Permit 2863-U approved in 1967 is an amendment to 1941-U allowing the expansion of the San Vicente Shale Quarry, expansion of the future Bonny Doon Limestone Quarry, and allowed a future quarry site designated Bonny Doon Shale Quarry (Part IV). Use Permit 3236-U approved in 1968 allowed the expansion of the Bonny Doon Shale Quarry and the further expansion of the San Vicente Shale Quarry. 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 a result, mining in the San Vicente quarries ceased.

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.

Because no mining takes place at the Cement Plant it is exempt from SMARA (PRC Section 2714(c)) and the County's Mining Regulations (16.54.014(b)(7)). In 1978 the Planning Commission certified an Environmental Impact Report (EIR) and approved Use Permit 76-606, which allowed a major modification to the Cement Plant. Use Permit 76-606 amended only Part I of 3236-U, which applies to the Cement Plant. Several subsequent Use Permits have been approved for further modifications to the Cement Plant, which currently operates pursuant to Use Permit 88-0188 approved by the Planning Commission in 1990.

In 1997 the Planning Commission certified an EIR and approved Certificate of Compliance and Reclamation Plan Approval (COC) 89-0492 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. Therefore, this Permit Review will review the Conditions of Approval of the COC and Parts III and IV 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. 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 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.

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. This is the first such Permit Review since the 1997 approval.

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.

Currently, the Reclamation Plan for the Bonny Doon Limestone and Shale Quarry 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 and County of Santa Cruz Environmental Review Guidelines.

There is an application pending for a 17.1-acre expansion of the Limestone Quarry, which requires an amendment to the COC and Reclamation Plan and a Coastal Permit. A draft EIR has been prepared and circulated for public comment. The Planning Department is currently in the process of preparing responses to comments on the Draft EIR and preparing a Final EIR. It is expected that this separate project will be scheduled for public hearing before the Planning Commission in late 2008 or early 2009.

Permit Review

Based on a comprehensive review of the mining permits, staff concludes that the quarry is in substantial compliance with the Conditions of Approval of COC 89-0492 and Use Permit 3236-U, Parts III and IV, but additional work is required to achieve full permit compliance. Exhibits A and B contain a review of each Condition of Approval for the COC and Use Permit, respectively. Review comments are located in the boxes. Some of the more important issues evaluated in the complete permit review, including areas of non-compliance, are discussed below.

Air Quality

Air quality was a significant issue in the 1996 EIR and was studied in detail with respect to PM10 emissions. PM10 is a term used to describe small dust particles (less than 10 microns in diameter) or "fine particulate matter". State and Federal PM10 standards are set for the 24-hour average concentration and the annual average concentration due to both short-term and long-term concern for particulate-based health effects. State standards are stricter than Federal standards.

Because the air modeling completed for the 1996 EIR was considered unreliable due to technical limitations of the model the quarry was required to implement a program of air monitoring to demonstrate compliance with State PM10 standards, particularly with respect to blasting at the Limestone Quarry. The protocol developed for air sampling was reviewed and approved by the Monterey Bay Unified Air Pollution Control District (MBUAPCD). The study included two types of monitoring: continuous monitoring of PM10 at two residences nearby the Limestone Quarry from September 1998 to September 1999, and intensive monitoring of three blast events at the quarry. Based on wind data collected during the study, the residences monitored are located in the

area of highest potential impact. The November 1999 final report concluded that monitoring at nearby residences demonstrated compliance with California ambient air quality standards with no discernible effect of quarry blasting on air quality at these residences. Therefore, pursuant to the COC, monitoring has been terminated.

The quarry implements a number of best management practices to control dust emissions from the quarries, including watering roads, various blast control measures and monthly inspection and maintenance of dust control equipment on the crusher, silo and conveyor belt.

Noise and Vibration

As required, the quarry submits noise monitoring reports each year, which address equipment noise and off site noise impacts at the Limestone and Shale Quarry. To avoid potential noise impacts equipment must be kept in proper working order and not generate noise levels higher than were used as the basis of the 1996 EIR. In addition, whenever feasible the rock breaker, which is the loudest piece of mobile equipment, must be located more than two levels below the rim of the quarry. Property line noise levels may not exceed the limits in the Mining Regulations. Based on the noise monitoring reports and inspections, the limestone quarry noise is in compliance with the property line noise limit, equipment noise is consistent with equipment used in 1997 and the rock breaker is routinely operated on the lower levels of the quarry.

In order to minimize the impacts of blasting, as required by the Use Permit, the 1996 EIR includes a comprehensive evaluation of potential blasting-related impacts, including ground vibration, air blast, fumes and odor, dust, nitrates, turbidity, and effect on structures and underground utilities. The EIR concluded that there was virtually no damage potential to residential structures and that the quarry had already implemented many measures modifying blast designs to minimize ground vibration and air blast levels, but there was still room for improvement. As a result, the quarry implemented additional specific blast design and control measures recommended in the 1996 EIR to further reduce ground vibration, noise, dust, and the potential for nitrate contamination of surface and groundwater.

Two blasts are permitted per working week at the Limestone Quarry. Time for blasting is set at approximately 12:25 p.m. and 3:25 p.m. As required, the quarry monitors each blast with a seismograph at the quarry and, occasionally, at neighboring residences. A qualified professional consultant to the quarry reviews the data and provides a summary report each year. Conclusions each year have been consistent: provided that no major changes are made to the blast design or procedures, there is no risk of any blast-related damage to structures located beyond the boundaries of the quarry. This conclusion is based on maximum vibration and air blast levels established by Federal regulations for residential structures.

However, neighbors of the Limestone Quarry do hear and feel blasts. In 2004 several blast–related complaints were received by the Planning Department, for example.

Based on the annual report for 2004 the maximum-recorded ground vibration, while in the distinctly perceptible range based on studies of human response to blast vibration, was still a factor of 15 below the Federal level for residential structures.

Water

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 (Exhibit C).

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 D).

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. Exhibit E is a summary of measures, other than contribution toward treatment costs, that have been implemented by the quarry operator, including those required by the COC, with the goal of studying, monitoring and rectifying water quality impacts. Measures described as ongoing will continue in accordance with the COC and the 1964 Agreement, and as a result of this 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 (Exhibit F). 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 required for the amount of water calculated above at the rate of $100 per million gallons during the 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 (Exhibit G). 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 the total amount calculated in Exhibit F and future amounts based on completion of a similar calculation at the end of each water year until reclamation is complete, or sooner if agreed to by the quarry operator, the City and the Planning Department.

Drainage and Erosion Control

A total of seven ponds, four at the Limestone Quarry and three at the Shale quarry collect storm water runoff within the quarries. The purpose of the ponds is to settle out sediment from storm water runoff to protect downstream water quality. The ponds are equipped with standpipes, which allow water to drain from the ponds after maximum settling time. All of the ponds have adequate capacity, which is maintained through periodic clean out of accumulated sediment during the dry season. All of the ponds are located within drainage courses and have been created by constructing levees across the drainage course.

Prior to the 1997 COC water quality monitoring downstream of sediment basins in the Limestone Quarry indicated that erosion and sediment control facilities and practices were inadequate resulting in siltation of watercourses downstream. During the COC process an Erosion Control Plan was developed for the Limestone and Shale quarries to address this impact. Recommendations of the Erosion Control Plan are summarized in a series of documents incorporated by reference into the COC. Based on a review of Planning Department files and site inspection all relevant aspects of the Erosion Control Plan have been implemented, including upgrades to sediment pond standpipes.

The quarry operates under the General Permit for Storm Water Discharges Associated with Industrial Activities and submits annual reports of monitoring activities to the Regional Water Quality Control Board (RWQCB). Copies of these reports are included in the quarry's annual reports to the County. Since approval of the COC, water quality monitoring, as required by the General Permit, indicates that implementation of the Erosion Control Plan, including upgrades to the sediment basins, has been effective in preventing siltation of watercourses downstream of the quarries. Ongoing erosion control and the need for remedial work are determined during regular quarterly and annual inspections of the site.

In March 2001 the drainage pipe beneath Sediment Pond 4 failed, causing discharge of sediment into the watercourse downstream of the pond. A problem with this pipe was identified one year earlier, which prompted the implementation of interim measures to divert drainage from this pond pending a full repair. After the March 2001 failure permanent repairs to the drainage system and levees were completed. As mitigation for the damage caused to downstream aquatic habitat from the sediment release, the RWQCB, accepted the quarry operator's proposal to enhance fish habitat in Liddell Creek. Subsequently, the quarry operator pursued an acceptable, equivalent alternative to the original proposal to the RWQCB by contributing quarry rock to the Department of Public Works to construct fisheries enhancement aspects of a culvert replacement project on Liddell Creek.

The Reclamation Plan indicates that all levees will be left intact after cessation of mining. Post-mining maintenance and monitoring of drainage structures will continue for 5-years or until runoff levels and sediment loads have been sufficiently reduced as determined by the Planning Department. All basin outflow and overflow structures will

be inspected and repaired, if necessary. Upon successful completion of the maintenance and monitoring requirements to reduce the sediment loads, the basin standpipes will be cut three feet from ground level to allow seasonal water flows to pass through the basins. Trash gates will be installed.

However, the sediment ponds have substantial levee fills that were built within tributary channels of Liddell and San Vicente Creek, which provide habitat for steelhead trout and coho salmon, both federally protected species. The potential for future failure of the levees, particularly when given no maintenance after the standpipes are cut, is high. Therefore, this aspect of the current Reclamation Plan presents a potentially significant injurious threat to the environment, which requires the imposition of new conditions as part of this review process. The majority of the levee fills should be removed from the channels and the channels reestablished at closure, to reduce the potential for future failures, which would send sediment into Liddell Creek and into habitat for the sensitive species, which exist there. The mitigation to remove these fills will reduce the potential impacts from a levee or berm failure after closure to a less than significant level. The Reclamation Plan shall be amended to include phased removal of the levees and the reestablishment of the stream channel. Ponds for California red-legged frog habitat should be incorporated into the design.

Similarly, the conveyor line has substantial fills where the conveyor crosses tributary channels of Liddell and San Vicente creeks. While the Reclamation Plan indicates the conveyor itself will be dismantled and the conveyor route will be revegetated, the fills where the conveyor crosses these stream channels will remain. However, there is significant erosion at the toe of the large fill where the conveyor crosses Liddell Creek between the limestone and shale quarries. Further erosion of the fill, or blockage of the culvert, which allows the year-round flow of Liddell Creek to pass through the fill, particularly when given no maintenance after the conveyor is dismantled, is high. Therefore, this aspect of the current Reclamation Plan presents a potentially significant injurious threat to the environment, which requires the imposition of new conditions as part of this review process.

The existing conveyor crossing slope is under investigation by a geotechnical engineering consultant. When completed the Planning Department's geotechnical engineer and engineering geologist will review the consultant's geotechnical investigation report. Interim measures may be necessary to address the erosion of the toe of this fill. Following the peer review of the report, if it is determined that the slope is unstable, appropriate and feasible measures will be implemented, to mitigate the instability.

The majority of the fill at the Liddell Creek conveyor crossing should be removed from the channel and the channel reestablished at closure, to reduce the potential for future failures, which would send sediment into Liddell Creek and into habitat for the sensitive species, which exist there. The mitigation to remove the fill will reduce the potential impact from erosion and slope failure after closure to a less than significant level. The

Reclamation Plan shall be amended to include removal of the fill and the reestablishment of the stream channel.

Settlement Basin 5 at the Shale Quarry is located on a tributary channel to San Vicente Creek. This tributary channel passes through a culvert under a road running along the bank of San Vicente Creek. In order to prevent periodic washing out of the road at that location, with the accompanying sedimentation of the creek that has occurred previously from discharge from Settlement Basin 5 the COC required upgrade of that culvert to accommodate higher flows. This culvert has not been constructed; however a design change has been submitted and is under consideration by the Department of Fish and Game and Army Corps of Engineers.

Sensitive Habitat Protection

The expansion of Disposal Area C that started in the mid-1990's filled in approximately 1,000 feet of a Liddell Creek tributary canyon. This required a permit from the California Department of Fish and Game (CDFG). The purpose of Streambed Alteration Agreement 849-95 (SAA) with CDFG is to mitigate impacts to steelhead and wetland habitat in Liddell Creek as a result of the expansion of Disposal Area C and construction of Pond 2X. Mitigation Measures required by the SAA can be summarized as follows: 1) A new wetland area will be created downstream of Settling Pond 2X; 2) A 2,500 foot reach of an access road will be eliminated to allow the riparian corridor to reestablish; 3) A culvert crossing will be replaced with a bridge; 4) Fish passage improvements will be constructed at the seaward end of the Liddell Creek system, and; 5) Because RMC Lonestar (CEMEX) does not own any of the land on which these proposed mitigation measures are located, the agreement states that Conservation Easements will be procured from the landowner for the placement and maintenance of all mitigations. In addition, the agreement requires RMC Lonestar (CEMEX) to enter into a Memorandum of Understanding (MOU) with CDFG.

Compliance with the requirements of the SAA can be summarized as follows: 1) Wetland mitigation ponds have been constructed. However, the Planning Department has no documentation from the operator or CDFG that success criteria have been met; 2) The access road along the Middle Branch of Liddell Creek has been abandoned, which is allowing the riparian corridor to reestablish; 3) The culvert on the Middle Branch of Liddell Creek has been removed; 4) Fish passage improvements at the seaward end of the Liddell Creek system have not been constructed, and; 5) There is no evidence in Planning Department files that an MOU and Conservation Easement have been completed.

The wetland mitigation ponds were installed with permission of the previous landowner Coast Dairies and Land Company (CDLC). In 1998 CDLC was acquired by the Trust for Public Land (TPL). Cemex has informed the Planning Department that following the purchase TPL requested the quarry operator cease mitigation activities on CDLC property. Cemex has been in discussions with TPL to resolve the issue of access rights

to the mitigation ponds for the purpose of monitoring and maintaining the ponds, however, the issue has not been resolved.

Plans have been prepared for the fish passage improvements at the mouth of Liddell Creek. The improvements proposed include baffles in the culvert and tunnel beneath Highway 1 and the railroad tracks to assist fish passage through the culvert and tunnel. Permission from the railroad has been obtained to construct the improvements. Caltrans has not granted permission because they are not satisfied that the improvements will not have an adverse affect on their tunnel beneath Highway 1 due to higher flood water levels caused by the installation of the baffles. Cemex is in discussions with Caltrans to resolve the hydrologic issues.

Although compliance with the SAA is primarily a requirement of CDFG, it is also a requirement of the County Use Permit and COC. The Planning Department has informed CDFG of the results of our review of compliance status with the SAA, but no independent action has been taken by CDFG in response. Until these issues are resolved, CEMEX is not in compliance with Condition of Approval III.F.1 of the COC.

The settlement ponds at the Limestone Quarry provide habitat for the federally listed California red-legged frog (CRLF). A Habitat Conservation Plan (HCP) for the Limestone Quarry Settlement Ponds was completed in 1999 and submitted to the United States Fish and Wildlife Service (USFWS). The HCP addresses operation of the settlement ponds while conserving habitat for CRLF. The permit from the USFWS expires in 2009. In addition to a number of other measures in the HCP to mitigate the impacts associated with the quarry settlement ponds, the HCP describes the additional benefits to CRLF as a result of deepening and maintaining the depth of the mitigation ponds discussed above, which also provides the opportunity to study habitat enhancement for CRLF. A habitat evaluation of the mitigation ponds will be included in the annual HCP monitoring report, along with a description of the use of the ponds by CRLF. In addition to providing breeding habitat at Pond 1 and/or the mitigation ponds, performance standards in the HCP require the maintenance of a deep pool in the lower mitigation pond and maintenance of the water supply diverted from Liddell Creek. This is not occurring, nor is the annual habitat evaluation.

Based on a review of HCP annual monitoring reports submitted to the Planning Department, habitat evaluations of the Liddell Creek mitigation ponds were completed in 2000, 2001 and 2002. These reports indicate that, although the ponds have provided sheltering habitat for CRLF, because of problems with the intake structure in Liddell Creek, deep water levels in the ponds have not been maintained. It was observed during a site visit in 2006 that the water supply to the ponds is not maintained and trees are beginning to colonize the pond levees, which may not be desirable. The HCP annual monitoring reports for 2003, 2004 and 2005 do not include habitat evaluations of the Liddell Creek mitigation ponds. The mitigation ponds were surveyed in 2006, which found two CRLF metamorphs. The ponds were not surveyed in 2007.

Although compliance with the HCP is primarily a requirement of USFWS, it is also a requirement of the County Use Permit and COC and is incorporated by reference into the Reclamation Plan. The Planning Department has informed USFWS of the results of our review of compliance status with the SAA, but no independent action has been taken by USFWS in response. Until the water supply, maintenance and reporting issues regarding the mitigation ponds are resolved, CEMEX is not in compliance with the HCP and Condition of Approval III.E.1 of the COC.

Slope Stability

The COC, based on geotechnical studies, required improvements to the levee for Settlement Basin 4 to stabilize the settlement basin levee and protect against failure. Although designs for implementation were prepared, construction plans were never submitted and the required improvements to the upstream slope of the embankment have not been constructed. However, during the repair of the drainage pipe failure in 2001 some improvements were implemented, including grouting around the base of the standpipe and placement of rock on the upstream slope of the embankment.

Other relevant slope stability issues at the site include a relatively recent landslide in a section of the highwall in the limestone quarry pit, and the erosion of the toe of the conveyor line fill slope discussed above under Drainage and Erosion Control.

All three of these slope stability issues are within the scope of an updated slope stability analysis in progress. Pending the completion of that updated analysis and depending on the conclusions and recommendations of the report, implementation of appropriate measures will be required to address slope stability issues affecting the ongoing quarry operation.

Revegetation

Approval of the 1996 Revegetation Plan was conditioned on incorporating EIR mitigation measures into the plan. This required revisions to the plan to incorporate a non-native tree removal program, changes to planting methods, 1:1 replacement of each vegetation community affected by the mining operation, a test plot program, revegetation of settlement basins, a vegetation salvage program, a revegetation phasing map, and a maintenance and monitoring program.

Although most of the mitigation measures have been incorporated into different versions of a revised revegetation plan over the years, none of the proposed revised plans has ever been accepted, or approved, by the County or Department of Conservation Office of Mine Reclamation (OMR). To complicate matters, as a result of peer review of the plan during this time it was determined that a change in revegetation strategy was warranted, which eliminated the required 1:1 replacement of each vegetation community affected by the mining operation. The previous EIR did not evaluate these changes to the revegetation plan.

In addition, subsequent revisions of the 1996 revegetation plan to incorporate the new revegetation strategy have also incorporated the proposed quarry expansion area, which is the subject of Application 99-0561, which is not approved and is the subject of the current EIR process. Therefore, there is no "stand-alone" document that represents an "approved" revegetation plan for the Bonny Doon Quarry that incorporates the information required by the mitigation measures.

Ongoing revegetation activities at the quarry have evolved as the revegetation plan has undergone revisions and, therefore, are not being implemented in accordance with the approved revegetation plan as supplemented by the mitigation measures. However, as noted above, as a result of peer review of the revisions to the approved plan to comply with the mitigation measures, it became apparent that the approved plan and the mitigation measures were not entirely realistic and needed to be revised. Meanwhile, existing revegetation activities can be characterized as a hybrid of the approved plan and changes based on peer review. Revegetation activities continue and annual monitoring reports, including photo documentation, are submitted. Revegetation reports are included in the quarry annual reports.

As a result of several years of test plots and monitoring it now appears feasible to achieve the required 1:1 replacement of each vegetation community affected by the mining operation. Accordingly, a revised revegetation plan has been prepared and submitted that includes the required 1:1 replacement ratio, but still substantially differs from the original plan. Approval of the revised plan represents a major amendment to the original reclamation plan and is, therefore, undergoing environmental review in conjunction with the proposed quarry expansion. Because of these circumstances, the revised revegetation plan does include the proposed quarry expansion area. Therefore, depending on the outcome of the approval process for the proposed quarry expansion the revised revegetation plan may, or may not, need to be further revised to remove the expansion area acreage.

Conclusion

Based on a comprehensive review of the mining permits, staff concludes that the quarry is in substantial compliance with the Conditions of Approval of 89-0492 and Use Permit 3236U Parts III and IV, but more work needs to be done to achieve full compliance.

The mining operation is in compliance with conditions of approval and standards regarding air quality, noise and blasting. Surface drainage is well controlled and the settlement basins currently work well to protect downstream water quality. Feasible and reasonable measures have been implemented to mitigate impacts to groundwater water quality. A method of calculating compensation under the terms of the 1964 agreement between the operator and the City of Santa Cruz has been developed.

Areas of non-compliance include drainage and erosion control, sensitive habitat protection, slope stability and revegetation. Based on non-compliance with permit conditions and potentially significant injurious threats to the environment represented by

certain site conditions described in the staff report, it is, therefore, appropriate, pursuant to Section 16.54.074 of the Mining Regulations to impose new permit conditions as recommended below.

Furthermore, full compliance must be achieved prior to expansion of the mine, should the proposed expansion be approved. A final EIR for the proposed expansion project is in preparation and will be presented to the Planning Commission in the coming months. The EIR will include in depth analysis of the issue areas discussed above as they relate to the proposed expansion project.

Staff Recommendation

It is therefore, recommended that the Planning Commission perform a Permit Review of the Bonny Doon Limestone and Shale Quarry and require the mine operator to take the following actions:

- Pursuant to Condition 7 of Use Permit 3236-U Part III, in accordance with terms of an agreement regarding protection of the waters of Liddell Spring from detrimental effects of mining operations, known as the 1964 Agreement, between the quarry operator and the City of Santa Cruz, the quarry operator shall pay to the City the total amount calculated in Exhibit F and future amounts based on completion of a similar calculation at the end of each water year until reclamation is complete, or sooner if agreed to by the quarry operator, the City and the Planning Department.
- The quarry operator shall continue to pay the power and phone bills for Liddell Spring and continue to provide access to Liddell Spring to City employees via quarry property.
- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, commence construction of the replacement culvert at the San Vicente Creek tributary downstream of Settlement Basin 5.
- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, commence construction of fish passage improvements at the mouth of Liddell Creek; or, with approval from CDFG and NMFS, commence construction of an equivalent alternative mitigation measure for the impacts associated with the expansion of Disposal Area C.
- No later than October 15, 2009, or prior to expansion of the quarry, should the proposed expansion be approved, whichever is sooner, implement relevant recommendations of the slope stability analysis regarding Settlement Pond 4 levee, the quarry pit and the conveyor crossing.
- Diligently pursue an interim agreement with TPL to allow the required monitoring and maintenance of the wetland mitigation ponds, while continuing to perfect legal access to the ponds in perpetuity.

- Obtain approval of a Reclamation Plan Amendment for the revisions to the revegetation plan. This may proceed as part of the proposed quarry expansion application; however, if the proposed quarry expansion is not approved the revegetation plan shall be revised to remove the expansion area acreage and submitted for approval as a separate Reclamation Plan Amendment.
- At least one year prior to cessation of mining the Reclamation Plan shall be amended to remove the fill along the conveyor line at the Liddell Creek crossing.
- At least one year prior to cessation of mining the Reclamation Plan shall be amended to include phased removal of the levees of Settlement Ponds 2X, 3, 4, 5, and 7 and the reestablishment of the stream channels. Ponds for CRLF habitat should be incorporated into the designs as appropriate.

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:

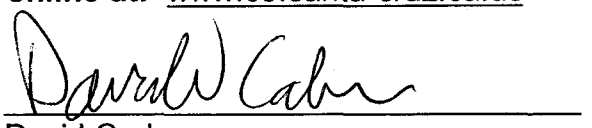

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Exhibit A: Bonny Doon Limestone and Shale Quarry
Certificate of Compliance and Reclamation Plan Approval 89-0492
Conditions of Approval with Staff Comments

Note: Text enclosed in boxes is staff comments. All other statements are Conditions of Approval of the COC in original outline numbered format. The Conditions of Approval begin with a list of exhibits to the COC, which are not the same as the exhibits to this staff report and permit review.

I. Exhibits

All mining operations shall confirm to the following Exhibits, which are incorporated as conditions of the Certificate of Compliance, except as modified by specific conditions set forth below:

A. Mitigation Monitoring Program, as amended in November 1996 by the State Mines and Geology Board, dated June 1997, prepared by Thomas Reid Associates for the Santa Cruz County Planning Department (Attached as Exhibit A).

RMC Lonestar appealed to the State Mining and Geology Board (SMGB) for approval of their Reclamation Plan. The SMGB accepted jurisdiction based on the County's alleged failure to act within a reasonable period of time following submittal of a completed Reclamation Plan application in 1989 (Application 89-0492). In November 1996 the SMGB approved the Reclamation Plan dated October 1996, supplemented by the amended Mitigation Monitoring Program from the Final EIR dated October 1996. The SMGB amended pages V-3, V-9 and V-19 of the Mitigation Monitoring Program. Changes on page V-3 included adding references to "Certified" Engineering Geologists, and Registered Civil Engineers; on pages V-9 and V-19 changes corrected the CDFG replacement ratio to 3:1 rather than the incorrect 1:1 ratio. Subsequently, the required changes were incorporated into the Mitigation Monitoring Program and the Planning Commission approved the Certificate of Compliance in June 1997. It was the intent of the SMGB that the Reclamation Plan package be revised to incorporate information required by the mitigation measures.

B. Use Permit 3236-U and Exhibits

The following is a very brief summary of permit history. Use Permit 1941-U approved in 1964 allowed the continuation of mining limestone and shale in the San Vicente Creek watershed (Part II) and establishment of a limestone quarry designated as the "Bonny Doon Quarry" (Part III). Use Permit 2863-U is an amendment to 1941-U allowing the expansion of the San Vicente Shale Quarry (Part II, southern expansion, not exercised), expansion of the Bonny Doon Limestone Quarry (Part III), and approval of a new quarry site designated Bonny Doon Shale Quarry (Part IV). Use Permit 3236-U allowed the expansion of the Bonny Doon Shale Quarry and the further expansion of the San Vicente Shale Quarry (Part VI, northern expansion, not exercised). Certificate of

Exhibit A

Compliance and Reclamation Plan Approval (COC) 89-0492 is limited to the Bonny Doon Limestone and Shale Quarries; therefore this Permit Review will review Conditions of Approval of COC 89-0492 and Parts III and IV of Use Permit 3236-U.

C. Bonny Doon Quarries Reclamation Plan Volumes I and II

Volume I contains sections: A) Description of Mining Operation; B) Geology of Mining Site; and C) Drainage and Erosion Control. Volume II contains sections: D) Revegetation Program; and E) Agency Permits.

D. Exhibit "A", pages III-13 and –14, Bonny Doon Quarries Draft Environmental Impact Report, Thomas Reid Associates, April 1996.

This page from the EIR provides a detailed table of contents for each section of each volume of the Reclamation Plan as described above.

E. Bowman and Williams, June 6, 1997, Sheet 1 of 1: Design for culvert from tributary of Basin 5 to San Vicente Creek, and Filter Berm at conveyor junction at West Liddell Creek.

The projects depicted on this plan are recommendations of the Drainage and Erosion Control Plan (Reclamation Plan, Volume 1, Section C.3). The culvert at San Vicente Creek tributary has not been constructed; however, potential design changes are under consideration.

F. Paul Kephart, Rana Creek Habitat Restoration, "Mitigation Measure VEG-7, Settlement Basin Vegetation and Reclamation," 1997.

This is a plan for reclamation of all settlement basins upon quarry closure. See Condition of Approval III.D.7.

G. Letter, Jo Crosby and Associates, Review of GEO-6 Mitigation Measure Item, May 27, 1997.

This is a document describing the slope stability analysis of Waste Disposal Area C. The calculated value for pseudostatic safety factor is greater than 1, which is in compliance with Mitigation Measure GEO-6.

H. Bonny Doon Quarries, Certificate of Compliance and Reclamation Plan Draft Environmental Impact Report, Thomas Reid Associates, April, 1996 (and Appendix A through G, November, 1993).

I. Bonny Doon Quarries, Certificate of Compliance and Reclamation Plan Final Environmental Impact Report, Thomas Reid Associates, October, 1996.

Exhibits B, C, D, E, F, G, H and I are on file with the Planning Department.

Exhibit A

II. General Provisions

A. The Certificate of Complaince for Use Permit 3236-U, Parts III and IV only, is for the extraction, processing, storage and transfer of quarried materials from the Quarry sites to the Davenport Cement Plant and for reclamation of existing, proposed and previously mined lands as shown in the approved Reclamation Plan and Mitigation Monitoring Plan. All provisions of Parts III and IV of Use Permit 3236-U shall remain in effect. The conditions of the Certificate of Compliance shall augment, and supersede where in conflict with, the provisions of Use Permit No. 3236-U.

A review of Use Permit 3236-U Parts III & IV is included in this Permit Review.

B. The Certificate of Compliance is limited to a portion of the following County Assessor Parcel Numbers: 063-132-08 & 09, 063-251-03, 058-122-09 &10. For specific area of mining and reclamation within the boundaries of these parcel numbers please refer to the above listed Exhibits, as amended.

APN 063-132-08 & 09 are owned by Lonestar California Inc. and Lone Star Cement Corp., respectively (dba Cemex) and encompass the Limestone Quarry and Disposal Area B. APN 063-251-03 is owned by Coast Dairies and Land Co. (c/o Trust for Public Land) and encompasses the leased areas for Disposal Areas A & C and Pond 2X and Ponds 3 & 4. APNs 058-122-09 &10 are owned by Coast Dairies and Land Co. and encompass leased areas for the Shale Quarry. As a result of a Lot Line Adjustment (02-0572) involving an adjacent parcel in the town of Davenport APN 058-122-09 is retired and the new number is 058-122-13.

C. All mining and reclamation activities shall conform with the Conditions of Approval and the regulations of the following agencies as they apply to the mining operations. Mitigation Measures included in approvals from the following agencies are included by reference as conditions of approval of the Mining Certificate of Compliance:

1. Regional Water Quality Control Board (RWQCB)
2. Monterey Bay Unified Air Pollution Control District (MBUAPCD)
3. California Coastal Commission (CCC)
4. U. S. Fish and Wildlife Service (USFWS)
5. U. S. Army Corps of Engineers (COE)

The mining operator shall provide the County with copies of any permits, orders, or agreements issued by these agencies and any permit amendments, within 30 days of approval receipt.

1. The quarry operates under the General Permit for Storm Water Discharges Associated with Industrial Activities and submits annual reports of monitoring

Exhibit A

activities to the RWQCB. As required by the General Permit, a Storm Water Pollution Prevention Plan, which identifies Best Management Practices in place, has been submitted.
2. The quarry operates under 5 Permits to Operate from the MBUAPCD for the Limestone Quarry Crushing and Screening System, Overland Conveyor System, Shale Quarry System, and two Mobile Drill Rigs. Cemex reports no citations or violations and maintains compliance with these permits.
3. The Bonny Doon Limestone and Shale Quarries lie within the Coastal Zone. In accordance with the Santa Cruz County Local Coastal Plan Land Use Plan (LCP) COC and Reclamation Plan Approval 89-0492 includes a Coastal Permit for the Reclamation Plan. A Coastal Permit is not required for a Certificate of Compliance for an existing mining operation.
4. Because the settlement ponds at the quarry provide potential habitat for California red-legged frog, the operator has prepared a Habitat Conservation Plan (HCP) and obtained an Incidental Take Permit from the USFWS. The quarry is not in compliance with the requirements of the HCP as described under Condition of Approval III.E.1.
5. The quarry obtained authorization from the COE under Nationwide Permit 26, which included review by the RWQCB, to fill wetlands as part of the expansion of Disposal Area C. Prior to granting authorization the COE consulted with the USFWS, which issued a Biological Opinion for potential effects on red-legged frogs. Also see Condition of Approval III.F.1 for a description of compliance with the Stream Alteration Agreement by California Department of Fish and Game (CDFG) for wetland impacts associated with construction of Disposal Area C.

D. All mining operations shall be in compliance with the State Surface Mining and Reclamation Act (SMARA) and Chapter 16.54 of the County Code.

This is a review for compliance with SMARA and the County Mining Regulations (16.54) and Conditions of Approval of COC 89-0492.

E. Each property owner of the mining site, the applicant and operator shall execute, date and return to the Planning Director two copies of a Mining Declaration of Restrictions binding each to comply with each and every term and condition of the Mining Certificate of Compliance pursuant to the requirements of Section 16.54.050. Failure to sign the Mining Certificate of Compliance or record the Declaration as described above shall render this Certificate of Compliance null and void and all mining operations shall cease at the quarry site except reclamation and revegetation work in accordance with the approved Reclamation Plan.

This requirement has been partially satisfied. RMC Lonestar (Cemex) has recorded a Declaration for the entire mining site (Limestone and Shale Quarries, Dump Sites and Conveyor Line). The Declaration is binding on Cemex. Although Cemex owns the Limestone Quarry, the land encompassing the Shale Quarry, the Dump Sites and the

Exhibit A

Conveyor Line are owned by Coast Dairies and Land Company and portions of this land containing these facilities are leased to Cemex. Coast Dairies and Land Company, as a property owner of a portion of the mine site, has never signed the Declaration. According to a lease dated July 9, 1923, which appears to cover the Conveyor Line and Dump Sites forever, Cemex becomes the lessee.

The attorney for RMC Lonestar in 1999 reported that Coast Dairies and Land Company declined to sign the Declaration because there was no contractual obligation to do so under the lease(s) and suggested other options be explored for securing the reclamation obligations of the operator. Other actions taken to secure the reclamation obligations of the operator include the following: the Declaration of Restriction binding on Cemex for the entire mine site; the Reclamation Plan for the entire mine site includes a signed statement by the operator accepting responsibility for reclaiming the mined lands in accordance with the Reclamation Plan; the term of the lease is forever; the County and State hold a financial assurance to ensure reclamation based on a cost estimate to reclaim the entire mine site. The cost estimate is updated periodically. It should be noted that SMARA requires a statement by the *operator* (emphasis added) accepting responsibility for reclaiming the mined lands in accordance with the reclamation plan. In other words, the specific requirement in the County Mining Regulations that the property owner, applicant and operator sign and record a Declaration of Restriction is a local modification of the SMARA requirement. It should be further noted that the Federal Bureau of Land Management (BLM) is slated to soon become the owner of the Coast Dairies and Land Company property.

F. In conjunction with the annual report to the State Geologist required by the SMARA, an annual report to the Planning Director shall be prepared by a professional determined by the Planning Director as qualified to prepare such report. The report shall be submitted by the mining operator to the Planning director by April 1 of each year, except, however, a current photogrammetric topographical map prepared from current aerial photographs (1"=200', 10-foot contour interval) showing all property and lease lines, facilities, striped areas, and vegetated areas shall be submitted to the Planning Director within 90 days of approval of this Certificate of Compliance. If the Planning Director determines the need for an independent consultant with specialized expertise, such report and its review shall be paid by the mining operator. The annual report to the Planning Director shall include the information required by Section 16.54.073 of the County Code and the following additional material:

1. The results from all monitoring of surface water runoff.

Attached to the Annual Reports is a copy of the annual report to the RWQCB for storm water discharges associated with industrial activity.

2. Results of all hydrogeologic investigating of the groundwater flow system at the quarry site.

Exhibit A

Numerous studies have been completed, which have attempted to analyze the groundwater conditions at the quarry.

3. Water diversion amounts from Liddell Spring #2 for each month during summer and fall (June through October).

Water use data is used to monitor the implementation of Mitigation Measure FSH-2 that the quarry operator should implement water conservation measures to reduce summer diversions at Liddell Spring #2. This will increase base flow of Liddell Creek during low flow periods and improve fish habitat. According to the 1996 EIR 927,000 gallons of water is diverted at peak monthly usage. Diversion amounts reported in annual reports from 1997 through 2005 do not exceed this peak amount. However, these are estimates because the quarry's water use from Liddell Spring #2 is not metered. A meter has recently been installed and initial measurements are consistent with previous estimates.

4. A copy of the maintenance log of dust control devices on stationery equipment.

This requirement is associated with Mitigation Measure AIR-3 to insure optimal performance of the equipment. Based on the maintenance logs submitted with the annual reports, as required, it appears that the equipment is properly monitored and maintained.

5. A copy of the log of calls made to neighbors notifying them of blasting.

As of 4/20/00 all of the neighbors had requested to be removed from the notification list.

6. Summary report by a qualified professional of the results from all monitoring of air blasts and ground vibration.

This is required by Mitigation Measure BLS-2 in order to monitor the effectiveness of the quarry operator's blasting schemes in reducing air blast and ground vibration. The monitoring has consistently indicated minimal effects. In accordance with the Mitigation Measure the quarry has taken measurements at adjacent residences on occasion when residents have reported vibrations.

7. Results of air quality monitoring under Section III.G of these conditions of this Mining Certificate of Compliance pursuant to the requirements of Mitigation Measure AIR-1. A report shall be prepared by a qualified professional and additionally report on results from all monitoring of dust emissions and report of all dust control measures implemented.

The required air quality monitoring was completed and compliance was demonstrated in 1999; therefore, the monitoring was discontinued. See review of Condition of Approval III.G.1.

Exhibit A

8. All biotic reports required in conjunction with permits or other approvals from USFWS, CDFG, COE, and/or the RWQCB.

Annual reports include a copy of the annual monitoring report for the Settlement Ponds HCP submitted to the USFWS. See Condition of Approval III.E.1.

9. Annual inspection reports regarding stability and any changes to environmental conditions to Settlement Basin 2X and/or any changes to environmental conditions within the Waste Disposal Area C Extension.

Annual reports include the required inspection reports completed by a qualified professional.

G. The Certificate of Compliance shall be reviewed by the Planning Commission within five years from the date of issuance. In connection with such review, the Planning Commission shall take public testimony and shall otherwise investigate the permittee's compliance with the conditions of the Certificate of Compliance and Use Permit 3236-U, and shall be empowered to amend the conditions of the Certificate of Compliance if necessary to eliminate nuisance conditions or to mitigate problems resulting from a change of circumstances pursuant to Section 16.54.074.

This is the required Permit Review, which does identify areas of noncompliance with permit conditions. Based on non-compliance with permit conditions and potentially significant injurious threats to the environment represented by certain site conditions described in the staff report, it is, therefore, appropriate, pursuant to Section 16.54.074 of the Mining Regulations to impose new permit conditions as recommended in the staff report.

H. If, at any time, the Planning Director determines that there is a substantial noncompliance with any of the conditions, and/or Exhibits, the Planning Director shall forward a recommendation to the Planning Commission to set a hearing to consider revocation of the Certificate of Compliance in accordance with the provisions of County Code Section 18.10.136, or enforcement measures as provided in Sections 16.54.090 through 16.54.098.

Although areas of noncompliance are identified, it is expected that full compliance can be achieved, as described in the staff report; therefore, revocation of the Certificate of Compliance is not recommended at this time.

I. All costs for the County's inspection and review of annual reports and other reports submitted by the mining operator shall be paid by the quarry within 30 days after billing. In the event that future County inspections of the subject property disclose noncompliance with any conditions of the Certificate of Compliance or use Permit 3236-U or any violation of the County Code, the

operator shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

All County costs are paid in a timely manner.

J. Minor mining approval amendments to the Certificate of Compliance as defined in County Code Section 16.54.020, and requested by the quarry or staff may be approved in writing by the Planning Director following review and recommendation by the County's Environmental Coordinator, pursuant to the requirements of Section 16.54.032.

Under special circumstances the County has approved Minor Amendments/Minor Variations for hours of operations, export of rock and redwood stumps for road and stream bank repair projects, and monitoring well construction.

III. Operating Conditions

A. Mining
(References to GEO, VEG, etc. throughout these conditions are to the Mitigation Monitoring Program in Exhibit A and, unless otherwise specified incorporate all of the requirements set forth therein.)

1. All mining activities, including clearing, excavation or other disturbances shall be done in conformance with the above Exhibits.

This Permit Review describes specific areas of noncompliance.

2. A benchmark shall be established in the Limestone Quarry floor upon establishment of the 750-foot elevation. Prior to excavation, clearing, or otherwise disturbing the land within 200 feet of a site boundary, a licensed surveyor or civil engineer employed by the operator shall provide survey markers at 200 foot intervals along both the mining site boundary line and the mining setback line. Each marker shall be maintained in place until a clear, readily identifiable, working face is established at an approved setback line.

The quarry floor benchmark has been established at the 750-foot elevation.

3. Waste disposal slopes in Areas A, B and C shall not exceed 1.5 horizontal to 1 vertical (1.5H:1V) (GEO-1). Waste disposal slopes within Area C Extension shall not exceed 2H:1V unless they otherwise comply with Section 16.54.055(e)(4) of the County Code; but in all cases such slopes shall have a pseudostatic safety factor greater than or equal to 1.0 (Exhibit G) (GEO-6). Any expansion of waste disposal areas shall require a major amendment to the mining permit.

Slopes in Waste Disposal Areas A and B exceed 1.5:1 and approach 1:1. This was an existing condition when the COC was approved. Slopes in Waste Disposal Area C do not exceed a gradient of 2:1. Implementation of the Erosion Control Plan, as required by Mitigation Measure GEO-1, addresses active gully erosion and sloughing or sliding of steeper less stable waste disposal slopes. See review of condition III.B.1.

4. Improvements to Settlement Basin 4 shall be implemented pursuant to the design requirements of GEO-3 of the Mitigation Monitoring Program and shall be incorporated into the Reclamation Plan. Designs shall demonstrate prevention of rapid drawdown failure of the inboard slopes of Settlement Basin 4 by regular maintenance and use of multi-level dewatering gates as recommended in the E-S Erosion Control Plan (1991) and as modified by the EMCON Associates (1994) recommendations. Designs for implementation shall be prepared by a Certified Engineering Geologist, Geotechnical Engineer, or a Registered Civil Engineer and submitted for review and approval to the County Planning Director within 90 days of issuance of the Certificate of Compliance. (GEO-3) (GEO-5)

Although a Certified Engineering Geologist (CEG) has prepared designs for implementation (Jo Crosby & Assoc., 9/18/97), construction plans have not been submitted and the improvements to the upstream slope of the embankment of Settlement Basin 4 have not been constructed.

5. Improvements to the levee for Settlement Basin 7 shall be implemented pursuant to the design requirements of GEO-4 of the Mitigation and Monitoring Program and shall be incorporated into the Reclamation Plan. Designs for implementation shall be prepared by a CEG or a Registered Civil Engineer and submitted for review and approval to the County Planning Director within 90 days of issuance of this Certificate of Compliance. (GEO-4)

Although designs for implementation have been prepared by a CEG (Jo Crosby & Assoc., 9/18/97), construction plans have not been submitted and the improvements to the embankment of Settlement Basin 7 have not been constructed. However, based on inspection and performance (very little water actually accumulates in Settlement Basin 7), it has been determined that this requirement is excessive and unnecessary.

6. Construction of or modifications to Settlement Basin 2-X shall be monitored by a CEG to ensure implementation of necessary modifications for stability of side slopes and the adjacent fill slope. Within 90 days of approval of the Certificate of Compliance a letter from the CEG overseeing implementation shall be submitted to the Planning Director verifying design stability. (GEO-7)

An acceptable letter from the CEG overseeing implementation was submitted (Jo Crosby & Assoc., 12/5/96).

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7. Within 90 days of approval of the Certificate of Compliance, the Quarry shall submit a report prepared by a CEG demonstrating: (1) that all final cut slopes are in compliance with the conclusions and recommendations contained in the "Geotechnical Study for the County Certificate of Compliance, Limestone and Shale Quarries," by Geoconsultants, Inc., dated November, 1988; and, (2) all final cut slopes completed after September 12, 1996 shall have a stability factor of safety not less than 1.2 as required by Section 16.54.055(e)(6) of the County Code.

An acceptable report was submitted (Jo Crosby & Assoc., 7/24/97 & 6/1/99).

8. Upon Limestone Quarry closure, public safety shall be protected by trimming rock slopes to remove loose rock. A fence with warning signs posted shall be maintained around the perimeter of the Limestone Quarry for as long as the property is owned or leased by the Quarry operators. (GEO-8)

To be implemented upon quarry closure.

9. A plan for long term maintenance of the waste fill slope in Waste Disposal Area C and its related drainage system required under Streambed Alteration Agreement # 849-95, shall be submitted to the Planning Director for review and approval within 90 days of approval of the Certificate of Compliance and incorporated into the Reclamation Plan. (GEO-9) All work shall be implemented in conformance with the approved plans.

The Stream Alteration Agreement requires a Memorandum of Understanding (MOU) for monitoring and maintenance of the mitigation measures for the expansion of Area C, which includes construction of wetland mitigation ponds, stream enhancements and fish passage structures. See Condition of Approval III.F.1 for discussion of the MOU. Mitigation Measure GEO-9 requires that the Reclamation Plan provide a mechanism for long-term maintenance of the Waste Disposal Area C fill slope and its related drainage system. A series of plans and conditions of approval provide this mechanism: the revegetation component of the Reclamation Plan includes a maintenance program to ensure that revegetation success criteria are met; as required by Condition of Approval II.F.9, the slope is inspected annually by a CEG for any changes to environmental conditions; pursuant to Condition of Approval III.B.11 post-closure on-going maintenance and monitoring of drainage structures is required for 5-years or until runoff levels and sediment loads have been sufficiently reduced as determined by the Planning Director. Together, these requirements represent the plan for long-term maintenance of the fill slope in Waste Disposal Area C.

B. Drainage and Erosion Control

1. Recommendations identified in the Drainage and Erosion Control Plan by Engineering Science, 1991, and EMCON Associates, 1994, or comparable alternative measures approved by the Planning Director, shall be

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implemented by October 15, 1997, or as approved by U.S. Fish and Wildlife Service. Improvements requiring an engineered design shall be prepared by a qualified professional, and be reviewed and approved by the Planning Director prior to implementation and incorporated into the Reclamation Plan. (GEO-1, HYD-3)

Recommendations of the Erosion Control Plan are summarized in the following documents: Figures 2B and 3B (located in Reclamation Plan, Volume 1, Section C); Parsons-Brinkerhoff pages 37 and 46 through 52; 1996 EIR Figures IV-5 and IV-6, and; EMCON pages 4-1 through 4-8. It appears that the site is in general compliance with this condition, except as noted below. Ongoing erosion control and the need for remedial work are determined during ongoing quarterly inspection of the site.

2. Basin capacities of the settlement ponds shall be increased as specified in the reports referenced in Condition III.B.1 above. The required settlement basin capacities may be reduced if the quarry operator can demonstrate lower capacity requirements. Such analysis shall include measuring rainfall/infiltration rates and developing a better balance model, which takes infiltration into account and reduces basin volume requirement. These measurements shall be made by a registered Civil Engineer. Existing capacity measurements shall be submitted to the Planning Director for review and approval within 90 days of approval of this Certificate of Compliance. Existing capacity measurements, which include infiltration rates for support of a request for reduction in capacity requirements shall be submitted on or before July 1, 1998. (HYD-2)

It was determined that Settlement Basins 3, 5 and 7 had inadequate capacity. The results of additional analysis by a registered Civil Engineer have been submitted for Settlement Ponds 3 and 5, which demonstrate that these settlements ponds do have adequate capacity. The required information has not been submitted to support a reduction in the capacity of Settlement Basin 7. . However, based on inspection and performance (very little water actually accumulates in Settlement Basin 7), it has been determined that this requirement is excessive and unnecessary for Settlement Basin 7.

3. The remnant channel of the Middle Branch of Liddell Creek west of Waste Disposal Area B shall be protected from sedimentation by implementing erosion control measures for this area contained in the Drainage and Erosion Control Plan (E-S, 1991) and shall be enhanced with additional planting of native riparian vegetation. (HYD-4, VEG-2)

Erosion control measures and revegetation have been implemented in this area.

4. The Quarry shall provide drainage controls approved by County Planning where the western intermittent tributary from Settlement Basin 5 enters San Vicente Creek. Culverts shall be properly sized to receive flash peak flows from runoff produced from cleared slopes in the quarried areas above. Work

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shall be completed in conformance with the plans (Bowman and Williams, June 6, 1997, sheet 1 of 1) and calculations for implementation that were submitted to the Planning Director on 6/12/97 (EXHIBIT E) and within 180 days of the approval of this Certificate of Compliance or as approved by U. S. Fish and Wildlife Service and the California Department of Fish and Game. (HYD-5)

The culvert at San Vicente Creek tributary has not been constructed; however potential design changes are under consideration.

5. The Quarry shall construct a filter berm on the outboard side of the conveyor junction at West Liddell Creek to prevent sediments from entering the creek and shall manually clear all debris from this area as needed. Work for installation of the filter berm shall be completed in conformance with the plans (Bowman and Williams, June 6, 1997, Sheet 1 of 1) submitted to the Planning Director on 6/12/97 (EXHIBIT E) and within 180 days of the approval of this Certificate of Compliance. (HYD-6)

The filter berm at the conveyor junction above West Liddell Creek has been constructed.

6. The Quarry shall annually remove loose shoulder material from quarry roadbeds, which could wash into the creek. Permanent berms required for truck safety shall be treated with erosion control methods prior to October 15 of each year. If a chronic situation in a given area exists, a gutter system should be constructed which will shunt all road edge run off into a roadside collector basin for periodic sediment removal. (HYD-7)

Permanent berms are hydromulched/seeded each year.

7. Runoff originating from the mining site, stockpiles, unpaved onsite roads or other disturbed areas shall be contained on-site except as permitted under this Certificate of Compliance. Runoff leaving the mining site shall comply with the requirements of the Regional Water Quality Control Board. Monitoring of runoff discharge by an independent laboratory, and/or installation of a continuous monitoring device shall be required at all discharge points. Results from monitoring shall be submitted to the Planning Director within thirty (30) days after the monitoring results are obtained and shall also be included in the annual report. (Section 16.54.050(c)(4)(iii) and (4)(ix))

All storm water runoff from the quarry is captured in the settlement ponds. Controlled discharge from the settlement ponds is monitored in compliance with the requirements of the RWQCB. Annual water quality monitoring reports are submitted to the RWQCB and the County.

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8. Six months prior to proposed construction, plans for implementation of Basins 8 and/or 9, designed by a certified California Civil Engineering Geologist or a registered Civil Engineer shall be submitted to the Planning Director for review, and approval. Basins shall be designed for a 10-year six-hour event. If Basin 8 and/or 9 is to be deleted, revised plans showing drainage areas and calculations shall be submitted to the Planning Director for review and approval. All work shall be implemented in conformance with the approved plans.

Basins 8 and 9 have never been constructed. The area that drains to the proposed Basin 8 has not been mined; therefore Basin 8 is not needed. The area that drains to proposed Basin 9 has been mined and recontoured to drain to existing Basin 6.

9. Within 90 days of approval of this Certificate of Compliance the Landscape Program section of the Reclamation Plan, "Grading and Erosion Control Plan for Overburden and Waste Deposits Sites" for the Limestone Quarry shall be modified to reflect the "Proposed Erosion Control and Revegetation Plan for Disposal Area C" which has been incorporated into the conditions of the Streambed Alteration Agreement with the California Department of Fish and Game. Any revisions necessary to incorporate the proposed Habitat Conservation Plan/Section 10a Permit for the Red-legged frog and/or Coho Salmon shall be incorporated as needed into the Reclamation Plan and submitted to the Planning Director for review and approval. (HYD-9) All work shall be implemented in conformance with the approved plans.

Approval of the 1996 Reclamation Plan (Volume 1, Section A, B and C and Volume 2, Section D and E) was granted by the State Mining and Geology Board (SMGB) as supplemented by the EIR Mitigation Monitoring Program. This requires revisions to the plan to incorporate information required by the mitigation measures. The Erosion Control and Revegetation Plan for Disposal Area C and the HCP were completed, as required by the Mitigation Measures, and are incorporated by reference into the Conditions of Approval. Compliance with the Settlement Ponds HCP and the Stream Alteration Agreement is described in Sections III.E.1 and III.F.1 of this Permit Review, respectively.

10. Verification of compliance with HYD-5, HYD-6, HYD-7 shall be submitted to the Planning Director within 90 days of approval of this Certificate of Compliance for incorporation into the Reclamation Plan. (HYD-10)

The culvert at San Vicente Creek required pursuant to HYD-5 has not been constructed; however, potential design changes are under consideration. Pursuant to HYD-6 the filter berm has been constructed. Pursuant to HYD-7 permanent berms are hydromulched/seeded each year. Loose shoulder material is removed as necessary.

11. Within 90 days of approval the Quarry shall submit a plan for post-closure on-going maintenance and monitoring of drainage structures for 5-years or until

runoff levels and sediment loads have been sufficiently reduced as determined by the Planning Director. (HYD-8)

This plan was submitted as Exhibit J attached to the "90-day submittal" letter dated October 23, 1997 from the attorney for RMC Lonestar.

12. Approved Regional Water Quality Control Board permits or orders for the Limestone and Shale Quarries shall be on file with the County Planning Department within 90 days of approval of the Certificate of Compliance.

A copy of the Storm Water General Permit for Industrial Activities issued by the State Water Resources Control Board is on file with the County Planning Department. The quarry submits annual water quality monitoring reports to the RWQCB and includes copies in the quarry annual report to the County Planning Department.

C. Hydrology

1. As a condition of this Certificate of Compliance and in order to ensure compliance with Conditions III.7, 25, and 26 of Use Permit 3236-U and with Section 16.54.050(c)(4)(vii) of the County Code, within 90 days the Quarry, the Santa Cruz City Water Department, the County, and a certified hydrogeologic consultant shall enter into a contract for an independent hydrogeologic study and report to be prepared pursuant to Section 16.54.050(C)(3)(v) of the County Code, with the consultant's primary responsibilities to be to the County. The Scope of Work for such study shall be agreed upon by all parties to the contract prior to its initiation. (HYD-1A) The study shall also include assessment and recommendation for the placement of the monitoring well discussed in HYD-1 of the adopted Mitigation Measures. Water elevations from all existing monitoring wells shall be submitted to County Planning quarterly. (HYD-1)

The contract for an independent hydrogeologic study and report was completed in April, 2000.

2. As a condition of this Certificate of Compliance and in order to ensure compliance with Conditions III.7, 25, and 26 of Use Permit 3236-U and with Section 16.54.050(c)(4)(vii) of the County Code, within 90 days the Quarry, the Santa Cruz City Water Department, the County, and a Certified Engineering Geologist, shall enter into a contract for an independent geologic study and report analyzing the geologic conditions at the site of the slide upslope of Liddell Spring #1, to be paid for by Quarry and with the consultant's primary responsibilities to be to the County. The Scope of Work for such study and report shall be agreed upon by all parties to the contract prior to its initiation (HYD-1A). The study and report shall include an analysis of factors contributing to reactivation of the slide, which shall include but not be limited to the quarry road above the slide and crusher vibrations as well as

other site-specific factors. If the analysis demonstrates that quarry operations are contributing to instability, then a proposal for stabilization of the slide or amelioration of the effects of the Quarry operations on the slide, which is occurring upslope of Liddell Spring #1, shall be prepared. The report shall be prepared by a professional qualified to prepare such a report and submitted to the Planning Director for review and approval.

The contract for an independent geologic study and report was completed in September, 2000. The study was completed and a final report submitted in February 2002. The study concluded that quarry operations are not contributing to instability as long as road drainage above the slide is properly maintained, which it has been. The potential for blasting to induce slope instability in the slide is low.

3. If the studies and reports provided in paragraphs 1 and/or 2 of this condition III.C-Hydrology determine that the Quarry operations adversely affect the quantity and/or quality of water from Liddell Spring #1, the Quarry shall implement those mitigation measures recommended by the consultants and agreed to by the City of Santa Cruz Water Department and the County Planning Department. 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 Certificate of Compliance shall be returned to the Planning Commission for further hearing to review and determine the Quarry's compliance with Conditions III.7, 25, and 26 of Use Permit 3236-U and Section 16.54.050(c)(4)(vii) of the County Code and to consider adoption of a Statement of Overriding Considerations for this environmental impact.

There is evidence that the quarry contributes turbidity to the spring. The component of total turbidity at the spring contributed by the quarry operation cannot be quantified. There is no evidence of a decline in the quantity of Liddell Spring discharge as a result of quarrying. 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. This calculation is described in the staff report.

D. Vegetation

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1. All reclamation and revegetation work shall be implemented in accordance with the approved Reclamation Plan (EXHIBIT C) and the Mitigation Monitoring Program (EXHIBIT A).

The status of compliance with the approved Reclamation Plan and Mitigation Monitoring Program is described in this Permit Review.

2. The Quarry shall consult with CDFG and if required obtain a Streambed Alteration Agreement prior to removal of riparian vegetation above Settlement Basins 6 and 7 in the Shale Quarry. The Quarry shall replace lost riparian and wetland habitat values, at an on-site or off-site location at a minimum 3:l ratio as adopted by the State Mining and Geology Board and in accordance with CDFG recommendations. (VEG-2)

Because mining has not occurred in this area, removal of riparian vegetation above Basins 6 and 7 has not occurred and is unlikely to occur.

3. Any riparian habitat removal at either the Limestone or Shale Quarries shall be replaced at a 3:l replacement ratio per the requirements of the State Mining and Geology Board. Replacement habitat shall be shown on a revised Reclamation Plan and submitted to the Planning Director within 90 days of approval of this Certificate of Compliance. (VEG-1, VEG-2)

Riparian habitat removal occurred as a result of the expansion of Waste Disposal Area C. Mitigation to recreate the riparian values impacted by the extension of Waste Area C has been incorporated into conditions of the SAA with CDFG. Compliance with this Agreement, which has been incorporated by reference into the Reclamation Plan, would adequately mitigate the long-term loss of riparian habitat. See staff report for an explanation of status of compliance with the SAA.

4. The Landscape Program for the Shale and Limestone Quarries shall be revised to include a non-native tree and shrub removal program within 90 days of approval of the Certificate of Compliance. The program shall include identification of the trees to be removed and replacement with native evergreen plants suitable for visual screening. The herbaceous seed mixes of the Landscape Program shall be reformulated to eliminate non-native species. If a non-native erosion control mix must be used, a nurse crop shall be one that does not persist beyond the first year or two. (VEG-3)

The Revegetation Program has been extensively revised and includes a non-native tree and shrub removal program and a reformulated seed mix. However, neither the County nor the Department of Conservation Office of Mine Reclamation has ever accepted the revised plan as explained below under III.D.6. Nevertheless, the operator has continued to remove non-native trees and shrubs pursuant to the submitted plan.

5. A revegetation report prepared by a botanist, horticulturist or plant ecologist retained by the Operator and approved by the Planning Director shall be included in the Quarry's annual report to the Planning Director pursuant to Section 16.54.073 of the County Code. All reclamation and revegetation work shall be implemented in accordance with the approved Reclamation Plan as supplemented by the Mitigation Monitoring Plan (November, 1996) and the requirements of the County Mining Ordinance and SMARA.

Revegetation reports are included in the quarry annual reports. Ongoing revegetation activities at the quarry have evolved as the revegetation plan has undergone revisions and, therefore, are not being implemented in accordance with the approved Revegetation Program as supplemented by the Mitigation Monitoring Plan. However, it should be noted that following approval of the Revegetation Program in 1997 and as a result of peer review of the revisions to the approved plan to comply with the mitigation measures, it became apparent that the approved plan and the mitigation measures were not entirely realistic and needed to be revised. Meanwhile, existing revegetation activities can be characterized as a hybrid of the approved plan and changes based on peer review, which is providing some useful information. See staff report for further information.

6. The Shale and Limestone Quarries Landscape Program shall include changes, planting methods, replacement of lost native plant communities, and test plot program as identified in the Mitigation and Monitoring Program, VEG-4, VEG-5, and VEG-6. Revisions to drawings shall include revegetation of all areas impacted by mining activities, roadways, and settlement basins (see III.D.7 below), needlegrass grasslands, and sensitive plant replacement and be submitted to the Planning Director for review and approval within 90 days of approval of this Certificate of Compliance.

Approval of the 1996 Revegetation Plan was conditioned on incorporating EIR mitigation measures into the plan. This required revisions to the plan to address a broad range of issues. During the process of revising the plan it was determined that a change in revegetation strategy was warranted. The previous EIR did not evaluate these changes to the revegetation plan. There is no "stand-alone" document that represents an "approved" revegetation plan for the Bonny Doon Quarry that incorporates the information required by the mitigation measures.

As noted above, as a result of peer review of the revisions to the approved plan to comply with the mitigation measures, it became apparent that the approved plan and the mitigation measures were not entirely realistic and needed to be revised. As a result of several years of test plots and monitoring it now appears feasible to achieve the required 1:1 replacement of each vegetation community affected by the mining operation. Accordingly, a revised revegetation plan has been prepared and submitted that includes the required 1:1 replacement ratio, but still substantially differs from the original plan. Approval of the revised plan represents a major amendment to the original reclamation plan and is, therefore, undergoing environmental review in

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conjunction with the proposed quarry expansion. Because of these circumstances, the revised revegetation plan does include the proposed quarry expansion area. Therefore, depending on the outcome of the approval process for the proposed quarry expansion the revised revegetation plan may, or may not, need to be further revised to remove the expansion area acreage.

Meanwhile, existing revegetation activities can be characterized as a hybrid of the approved plan and changes based on peer review. Revegetation activities continue and annual monitoring reports, including photo documentation, are submitted. Revegetation reports are included in the quarry annual reports.

7. The Shale and Limestone Quarries shall implement the Landscape Program including the reclamation and revegetation of the settlement basins upon quarry closure consistent with the requirements of Condition III.B.11 (post closure maintenance and monitoring of settlement ponds) and in accordance with the plans by Paul Kephart, Rana Creek Habitat Restoration, "Mitigation Measure VEG-7, Settlement Basin Vegetation and Reclamation," 1997) that were submitted to the Planning Director for review and approval on 6/12/97 (EXHIBIT F). The Program shall describe any structural changes to the settlement ponds (e.g. fill the pond, breach the levee, etc.) and shall specify a planting plan with native riparian/wetland plant species. Revised drawings required by Condition III.D.6 above, shall include pond areas final revegetation. (VEG-7)

The Reclamation Plan indicates that all levees will be left intact after cessation of mining. Pursuant to Condition III.B.11, post-mining on-going maintenance and monitoring of drainage structures will continue for 5-years or until runoff levels and sediment loads have been sufficiently reduced as determined by the Planning Director. All basin outflow and overflow (spillway) structures shall be inspected and repaired if required. Upon successful completion of the maintenance and monitoring requirements to reduce the sediment loads, the basin stand pipes and ladder structures will be cut three feet from ground level to allow seasonal water flows to pass through the basins. Trash gates will be installed.

8. The revegetation plan for Waste Area C Extension shall be revised consistent with "as-builts," and as required in the Mitigation and Monitoring Program VEG-7, and VEG-8. (VEG-8)

The Revegetation Plan has been revised accordingly; however, see the staff report for a description of the overall status of the Revegetation Plan.

9. A Reclamation Phasing Map shall be incorporated into the Reclamation Plan. The phasing map shall delineate 1) areas ready for immediate reclamation (e.g. completed quarry areas, waste disposal area, abandoned roads), 2) areas to be reclaimed in phases as mining progresses and 3) areas reclaimed only upon quarry closure. Acreages of these areas shall be identified.

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Reclamation of ready areas shall begin immediately upon reclamation plan approval. (VEG-9)

The Revegetation Plan has been revised and incorporates a reclamation phasing map; however, see staff report for overall status of the Revegetation Plan.

10. A Maintenance and Monitoring program shall be prepared for the Shale and Limestone Quarries as a component of the Landscape Program, The Maintenance and Monitoring Program shall be consistent with the components of the Mitigation and Monitoring Program VEG-10 components and Section 16.54.055(f) of the County Mining Ordinance and shall be submitted to the Planning Director for review and approval within 90 days of approval of this Certificate of Compliance. (VEG-10) The Maintenance and Monitoring program shall become a condition of this Certificate of Compliance upon approval by the Planning Director. Annual monitoring reports shall be prepared by a qualified biotic consultant and submitted to the Planning Director for review and approval. The annual report shall include monitoring of vegetation (quantitative data such as survival, vigor, percent species composition, percent cover, etc.) wildlife habitat values, and erosion control. Photo documentation is required to be included in the report

Although a 1999 revision of the Revegetation Plan included a major section on success criteria and monitoring, the section is omitted from the 2001 plan revision. See the staff report for overall status of plan.

E. Wildlife

1. The Quarry shall comply with the provisions of the United States Endangered Species Act regarding the California red-legged frog, Coho Salmon, and other federally listed species. No take shall occur unless authorized by a Section 10(a) permit from the U. S. Fish and Wildlife Service (USFWS). Until such time a Section 10(a) permit is issued by USFWS for the Habitat Conservation Plan currently in preparation for the red-legged frog, the operator shall consult with USFWS prior to conducting operations in areas where frog presence is known or anticipated in either the Limestone or Shale Quarries and shall proceed only as approved by USFWS. Communications with USFWS regarding monitoring procedures as approved by USFWS and implementation by the operator shall be submitted to the Planning Director. Once the Habitat Conservation Plan/Section 10(a) permit is issued, the County shall retain a copy of said permit, and requirements shall be incorporated in the Reclamation Plan as required. Within 90 days of approval of this Certificate of Compliance, the Quarry shall submit written verification of compliance with the U. S. Fish and Wildlife Service and the Endangered Species Act, and written verification of the compliance with the California Department of Fish and Game Streambed Alteration Agreement (#849-95). (WIL-1)

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A Habitat Conservation Plan (HCP) for the Limestone Quarry Settlement Ponds was completed in 1999 and submitted to the United States Fish and Wildlife Service (USFWS). The HCP addresses operation of the settlement ponds while conserving habitat for CRLF. The staff report describes status of compliance with measures in the HCP to mitigate the impacts associated with the quarry settlement ponds Although compliance with the HCP is primarily a requirement of USFWS, it is also a requirement of the County Use Permit and COC and is incorporated by reference into the Reclamation Plan. The Planning Department has informed USFWS of the results of our review of compliance status with the HCP, but no independent action has been taken by USFWS in response. Until the water supply, maintenance and reporting issues regarding the mitigation ponds are resolved, CEMEX is not in compliance with the HCP and Condition of Approval III.E.1 of the COC.

2. Within one year of any new federal listing of a rare, threatened, or endangered species, the Quarry shall comply with County Code Section 16.54.050(c)(6)(i).

Steelhead trout, a federally listed threatened species, inhabit Liddell Creek and both steelhead trout and coho salmon, a federally listed threatened and State listed endangered species, are present in San Vicente Creek. These are the two watersheds affected by the quarry. These species were listed after previous environmental reviews were completed. Reduced baseflow of Liddell Creek is detrimental to steelhead production. Therefore, the current level of water use from Liddell Spring #2 may create impacts that rise to the level of a "take" of a federally protected species. NMFS is responsible for making this determination. The current level of water use is consistent with historic use as evidenced by water use data and no changes in the quarry operation that would demand more water.

F. Fisheries

1. The Quarry shall comply with its Streambed Alteration Agreement (# 849-95) with the California Department of Fish and Game (CDFG) in order to satisfy CDFG requirements and mitigate impacts to steelhead habitat in the Liddell Creek. (FSH-1)

The purpose of Streambed Alteration Agreement 849-95 (SAA) with CDFG is to mitigate impacts to steelhead and wetland habitat in Liddell Creek as a result of the expansion of Disposal Area C and construction of Pond 2X. The staff report describes status of compliance with measures in the SAA to mitigate the impacts associated with Disposal Area C and Pond 2X. Although compliance with the SAA is primarily a requirement of CDFG, it is also a requirement of the County Use Permit and COC. The Planning Department has informed CDFG of the results of our review of compliance status with the SAA, but no independent action has been taken by CDFG in response. Until these issues are resolved, CEMEX is not in compliance with Condition of Approval III.F.1 of the COC.

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2. The Quarry shall continue implementation of water conservation measures to reduce summer diversions at Liddell Spring #2. (FSH-2)

The quarry implements the following measures: Recycling of limestone crusher cooling water and use of baserock to reduce watering requirements in dust control operations. Water use data is included in the quarry's annual reports.

G. Air Quality

1. At the Limestone Quarry, a series of at least two particulate samplers shall be established at the site perimeter, or more off-site with landowner cooperation. Samples shall be taken on days with and without blasting and on non-operation days to discern typical background PM10 levels. The protocol for the samplers shall be submitted for review and approval by the MBUAPCD prior to implementation, but shall be within 90 days of approval of this Certificate of Compliance. Approved protocol shall be kept on file at the Planning Department. Sample frequency should be sufficient to resolve Quarry impact, two or three times per month. Data can be collected by the Quarry, but raw data shall be provided to the County with a log sheet of what control measures are in use. In one year, if compliance is demonstrated, monitoring may be terminated. However, if noncompliance continues, additional review by the Planning Commission shall be required to determine compliance with the Mining Regulations.

   If exceedances continue beyond the one year monitoring program, the program to control dust emissions from blasting shall include the following elements, implemented in progressive order of difficulty and cost until a performance standard of no exceedance of the state PM10 standard is attained:

   a. Implementation of blasting recommendations in the EIR (Thomas Reid and Associates, 1996).
   b. Use of fabric curtains or water mist.
   c. Removal of drill waste from bench and use of coarse base rock fill.
   d. Delay of blasting if wind speed and direction would lead to high off-site impact.
   e. Other amelioration measures recommended by an approved professional in dust measurements and control measures as approved by the Planning Director. (AIR-1)

   If implementation of the above program does not result in obtaining a performance standard of no exceedance of the state PM10 standard, this Certificate of Compliance shall be returned to the Planning Commission for further hearing to review and determine the Quarry's compliance with Condition 23 of Use Permit 3236-U and Section 16.54.050(c)2 of the County

Exhibit A

Code and to consider adoption of a Statement of Overriding Considerations for this environmental impact.

The protocol for the samplers was approved by the MBUAPCD in 1997 and the sampling data was collected in 1998 and 1999. During the study the following dust control measures were implemented: haul roads and work areas were kept wet with a water truck, as much dust as possible was removed from blast sites prior to blasting and instead of drill cuttings, coarser material from the screening pile was used for stemming of the blast holes. The 1999 final report concluded that monitoring at nearby residences demonstrated compliance with California ambient air quality regulations; therefore, monitoring has been terminated.

2. In dry weather, watering shall be done each morning before operations begin and then continue periodically, as needed throughout the day. The frequency of watering shall be increased during drier periods and when wind speeds exceed 15 miles per hour. Lignin sulfonate or other U. S. Fish and Wildlife Service approved surfactant may be used as needed. (AIR-2)

Haul roads and work areas are watered as needed.

3. At least monthly maintenance of the dust control devices on stationary equipment in each quarry shall be performed and kept in a maintenance log by the Quarry. The maintenance log shall be submitted to the Planning Director in the Quarry's annual report. (AIR-3)

The monthly maintenance logs are submitted with the annual reports.

4. At the time that compliance with Mitigation Measure AIR-1 (Condition III.G.1 above) is shown, the Quarry may request an amendment to Use Permit 3236-U, Condition III.23, citing State ambient air quality standards be the measurement for compliance. (AIR-4)

State ambient air quality standards were used to measure compliance with Condition III.G.1. As explained above, based on study conclusions, monitoring has been terminated.

5. Each unvegetated disturbed area not actively involved in a mining operation, including interim slopes which does not meet final contours, shall be hydromulched, hydroseeded, or otherwise treated to reduce off-site dust nuisance. (Section 16.54.050(c)(2)(vii))

The quarry hydroseeds these areas on an annual basis.

6. Removal of vegetation shall be only permitted in accordance with the approved phasing plan. Section 16.54.050(c)(2)(ii)

Exhibit A

Vegetation has been removed in phases.

H. Noise

1. Whenever feasible, rock-breaker equipment shall be located more than two levels below the Limestone Quarry rim, and use shall be limited to minimum necessary to allow safe transfer of rocks to the crusher. (NOI-1)

This procedure has been used whenever feasible.

2. Annual noise report to the Planning Director shall include a description of equipment maintenance verifying equipment is in proper working order and not generating noise levels higher than was used as the basis of the EIR. Noise reports shall verify noise levels while heavy equipment (i.e., rock-breaker, etc.) is operating at highest bench closest to the Limestone property line during that year's operations. (NOI-2)

The quarry has submitted noise reports each year, which address equipment noise and noise at the property line. The limestone quarry noise is in compliance with the property line noise limit and equipment noise is consistent with equipment used in 1997.

3. Prior to blasting, the Quarry shall notify neighbors. A written log of calls made and whether contact was made at the residence shall be maintained by the Quarry and submitted with the Quarry's Annual Report to the Planning Director. (NOI-3)

A blast phone log was kept. As of 4/20/00 all of the neighbors had requested to be removed from the notification list.

I. Blasting

1. The blasting design for the Limestone Quarry shall be modified as follows:
   a. Timing between holes in a row shall be a minimum of 1.8 msec per foot of spacing.
   b. Timing between rows shall be a minimum of 3.0 msc per foot of burden.
   If blast design parameters, explosives, and/or material mass blasted change considerably, new single hole signature analysis may be required to estimate delay interval. (BLS-1)

These modifications to blasting design have been implemented.

2. The Limestone Quarry shall conduct monitoring of airblast and ground vibration at adjacent residences as deemed necessary by the Planning Director. However, monitoring shall be conducted for each blast during the first three years following approval of the Certificate of Compliance.

Exhibit A

Information collected during monitoring shall be submitted in the Quarry's Annual Report to the Planning Director. (BLS-2)

The quarry continues to monitor each blast at the quarry with a seismograph. A review of the data by a qualified professional is provided in each annual report. The professional reviewer has consistently concluded that, provided that no major changes are made to the blast design or procedures, there is no risk of any blast-related damage to structures located beyond the boundaries of the quarry.

3. Limestone Quarry blasting practices shall include the following to mitigate for dust and fumes from drifting offsite:
   a. Wherever practical maintain increased stemming length at 18 feet.
   b. Water trucks and hoses shall moderately wet down all bench floors in the direction where blasted material is anticipated. (BLS-3)

Blasting practices include these procedures.

4. At the time any future amendment to the mining area is applied for, the Quarry shall consider wider bench widths and changing blast direction to shoot sideways or 90 degrees to the current blasting directions. Analysis of potential impacts of implementation of above blasting practices shall be included in the amendment package submitted to the Planning Department. (BLS-4)

This analysis was submitted in the amendment package. It concluded that rotating the direction of rock movement by 90 degrees will have severe negative consequences, including creating a hazardous flyrock condition and increasing ground vibration, and strongly advised against the suggested change to the current blasting practice.

5. To mitigate for potential nitrate contamination due to blasting, the following practices shall be employed at the Limestone Quarry: (BLS-5)
   a. A back up initiation system.
   b. In severe wet hole conditions, only water resistant explosives for the entire length of the explosive column.
   c. In holes containing small amounts of water, use water resistant cartridge explosives as a bottom load to a height above the water level. The last cartridge shall be slit to form a fully coupled plug, which acts as a barrier for the top load of ANFO explosive from coming into contact with the water.
   d. To aid in identifying ANFO spillage during loading operations in the blast area, the red, orange or pink dye currently in use shall continue to be used in the fuel oil. This will also act as a good quality control measure to indicate that the ammonium nitrate has been properly sensitized before use.
   e. Detonate the blast on the same day in which it was loaded to minimize potential for ground water seepage coming in contact with ANFO.

Exhibit A

f. Utilize an anti-static plastic or not-sparking funnel to assist in hole loading.

These blasting practices are employed.

J. Visual Resources

1. The Landscape Program for the Shale Quarry shall be implemented concurrently as mining areas are completed. The visible north central portion of the site shall be reclaimed as soon as possible with appropriate native species as shown in the above Exhibit. (VIS-1)

Although revegetation activities in the Shale quarry are ongoing, reclamation of the north central portion of the site is not complete. Status of the Landscape Program is described in the staff report.

K. Financial Assurances

1. Within 90 days of approval of this Certificate of Compliance a revised Financial Assurance proposal shall be submitted to the Planning Director for review pursuant to Section 16.54.061 of the County Code. Once the Financial Assurance proposal is approved, RMC Lonestar shall post a security payable to both the County of Santa Cruz and the State of California Department of Conservation in the approved amount. (POL-2)

The County in 1999 approved a financial assurance cost estimate based on the April, 1999 version of the Revegetation Plan (Section D of Volume 2 of the 1996 Reclamation Plan) and holds a corresponding surety bond. The cost estimate has been updated in 2008 and will be further updated annually. The recent update has been approved by the Planning Department and the State Department of Conservation, Department of Mine Reclamation.

L. Protection of Paleontological Resources

1. In the event that potentially significant paleontological resources (i.e., significant skeletal remains that might substantially contribute to knowledge of prehistory) are found during mining operations, all work shall be halted within 200 feet of the find and the Planning Director shall be notified immediately. A qualified paleontologist, as approved by the Planning Director, shall be retained to assess the significance of the find and implement mitigation measures recommended as a result of such assessment, consistent with the County's Paleontological Resource Protection Ordinance.

No paleontological resources have been found.

IV. Mitigation Monitoring Program

The mitigation measures contained in Exhibit A of this permit have been incorporated into the conditions of approval for this project in order to mitigate or avoid significant effects on the environment. Exhibit A of this permit specifies which mitigation measure are the responsibility of the applicant. As required by Section 21081.6 of the California Public Resources Code, the monitoring is to ensure compliance with the environmental mitigations during project implementation and operation. Failure to comply with the conditions of approval, including the terms of the adopted monitoring program, may result in permit revocation pursuant to Section 18.10.136 of the County Code.

Compliance with Conditions of Approval is described in this Permit Review.

Exhibit A

Exhibit B: Bonny Doon Limestone and Shale Quarry
Use Permit 3236-U, Parts III & IV
Conditions of Approval with Staff Comments

Note: Text enclosed in boxes is staff comments. All other statements are Conditions of Approval of the Use Permit in original outline numbered format. The Conditions of Approval reference a list of exhibits to the Use Permit, which are not the same as the exhibits to this staff report and permit review.

As used in any part of Use Permit 3236-U:

1. P.C.A. means the applicant for the use permit, Pacific Cement and Aggregates Division of Lone Star Cement Corporation, and includes its successors and assigns.

2. Particulate Matter shall be defined according to the definition of particulate matter contained in Regulation 2 of the Bay Area Air Pollution Control District as revised January 1, 1962.

Part III Bonny Doon Limestone Quarry

This part of the use permit authorizes and permits the establishment by permittee of a quarry for the mining of the limestone within parcels C and D, as shown on Exhibit B and described in Exhibit A attached hereto; permits the installation and operation of facilities incidental to the mining and quarrying of limestone on parcels C, D, and E, also on Exhibit B and described in Exhibit A, as follows: A crusher building or buildings to house a rock crushing system; a rock crushing system; a covered storage building to hold the rock for transportation from the quarry; a covered conveyor belt system for the transportation of limestone to the cement mill; all equipment necessary to dislocate, excavate and transport reduced rock to the crushing system; a small shop to make minor adjustments and repairs; and other auxiliary buildings; a water wagon to keep quarry floor free from dust and other equipment incidental to servicing quarrying operations; and further permits the deposit of overburden within the portions of parcels 13, 14, 15, 16 and 17, as shown on Exhibit E, all subject to the following conditions:

Exhibits, including A, B and E noted above, are located in the two Exhibit binders for Use Permit 3236-U. For many years the County has regulated the limestone quarry in accordance with approved use permits as well as various maps and diagrams, all of which show the location of the approved mining plan area that is currently being mined ("quarry boundary"). These maps and diagrams also identify the perimeter of the "Use Permit Boundary," which encompasses the proposed expansion area. (See drawings A-1 through A-6 and 3279-DAV, for example.) Exhibit X dated 9/21/70 shows areas of waste disposal more clearly defined and more limited in scope that Exhibit E.

In 1997, as a result of a review of a 1997 aerial photograph, County staff determined that mining had occurred in a small area outside of the eastern quarry boundary and

encroaching into the current proposed expansion area. This was reported to the Planning Commission on February 10, 1998. The attorney for RMC explained in a letter dated March 6, 1998 that this was inadvertent (they believed that the line extended to the road), that this was done at least a year before, and that the area involved is less than the size of a football field. Written assurance was provided that RMC Lonestar would not mine any further within this area until the expansion has been approved. No further mining has occurred.

1. Subject to other conditions of this part of the use permit, permittee shall have until March 1, 1972, to exercise this part of the use permit. The exercise of any rights granted in Part I and Part II of the use permit shall not be deemed as a commencement of operation of Part III.

The permit was exercised prior to March 1, 1972. This condition clearly separates the different parts of the permit.

2. Transportation of mined materials shall be solely by covered belt conveyor system to be constructed in accord with plans and specifications approved by the Board of Zoning Adjustment. Said plans shall include; precise location of right-of-way, grading plans, drainage and erosion control plans, to be submitted to the Board of Zoning Adjustment for approval not later than December 31, 1968. Review of said plans by the Board of Zoning Adjustment shall be made within sixty (60) days after submittal. Failure to file said plans prior to December 31, 1968, shall cause permittee or its successors in interest, to acquire additional use permit for the covered belt conveyor system.

Mined materials are transported solely by covered belt conveyor system.

3. No overburden shall be stripped and no limestone mining shall commence on parcels C or D until such time as permittee has recorded in the official records of the County of Santa Cruz a Record of Survey of the area to be quarried within the limits of said parcels.

A Record of Survey has been recorded.

4. No overburden shall be stripped or deposited and no mining shall take place on any portion of parcels C and D within 500 feet of the Bonny Doon Road, as it now exists or as it may here after be realigned.

Bonny Doon Road was realigned to maintain the 500-foot buffer noted.

5. No overburden shall be stripped from the site nor shall any quarrying operation commence until such time as permittee has filed a map with the Board of Zoning Adjustment delineating specific sites for the deposit of overburden and waste materials in areas which shall be more clearly defined and more limited in scope than those shown on Exhibit E, hereof. This permit specifically prohibits the use

Exhibit B

of the southerly 1/2 of Sections 35 and 36, T 10 S, R 3 W, M. D. B. & M. and those portions of Section 26 and 35, T 10 S, R 3 W, M. D. B. & M., lying westerly of Bonny Doon Road for the purpose of depositing overburden or waste materials. Moreover, overburden and waste materials shall not be deposited within 500 feet of the Bonny Doon Road except when used as fill material for the construction of covered conveyor belt system in accord with plans to be filed as required by this permit.

Exhibit X, dated 9/21/70, shows overburden and waste material deposit areas more clearly defined and more limited in scope than Exhibit E. Exhibit X conforms to the prohibitions noted.

6. No excavation shall be permitted to penetrate lower than an elevation of seven hundred-fifty (750) feet above mean sea level.

The lowest level of excavation is approximately 752 feet mean sea level.

7. Protection of the waters of Liddell Spring from detrimental effects of mining operations shall be in accord with terms of an agreement between permittee and the City of Santa Cruz; said agreement is attached hereto as Exhibit Z.

See staff report for full description of compliance status with this permit condition.

8. Final cut slopes shall not exceed the normal angle of repose of the natural materials. In any case, when cut slopes steeper than one to one (1:1) exceed sixty (60) feet vertically, they shall be stepped at intervals not exceeding sixty (60) feet vertically and such steps shall be at least thirty (30) feet wide.

See Exhibit A, 89-0492 Condition of Approval III.A.7 and III.A.8 and staff comments.

9. In any event, the top of any cut slope in no case shall be brought closer than twenty-five (25) feet to any exterior property line of the actual site to be excavated.

On October 10, 1991 County staff measured in the field distances less than 25 feet (21.5 feet). A map prepared by the quarry's civil engineer of the edge of mining along the north property line shows a small area where the edge of mining encroaches a few feet into the setback.

10. Finished excavation shall in all cases be graded in such a manner as to prevent the accumulation of storm waters or natural seepage.

See Exhibit A, 89-0492 Condition of Approval III.B.1 through III.B.12 and staff comments.

Exhibit B

11. Finished grades in all cases shall have slopes not less than one and one- half percent (I-I/2%).

See Exhibit A, 89-0492 Condition of Approval III.A.1 through III.A.9 and staff comments.

12. The entire north boundary and the northerly two-hundred (200) feet of the east and west boundaries of the quarry site shall be fenced by a substantial six (6) foot fence with posts spaced at fifteen (15) feet center to center and barbed wire spaced one (I) foot apart. Said fence shall not be closer than ten (10) feet to the top edge of any cut slope.

This fencing has been constructed.

13. Signs shall be conspicuously posted along the required fence at intervals not to exceed one hundred (100) feet. The signs shall give reasonable notice of the matter contained in such notice by stating in letters not less than four (4) inches in height, "Property Subject to Commercial Excavation of Natural Materials Under County of Santa Cruz Use Permit No. 2863-U". Permittee may use such additional warning language as it may desire.

These signs have been installed.

14. A landscape-management program shall be initiated on the lands owned or leased by PCA within the visual corridor partially described on Exhibit X of the conveyor route and the Bonny Doon limestone and shale quarries which shall be operative as an overall program during the operational life of quarries and conveyor system. The purpose of this program is to insure the preservation, conservation and management of this vegetative resource for the general benefit of the community and specifically as an element in a program to minimize the environmental impact of this industrial use upon adjacent rural properties and the public in general.

See Exhibit A, 89-0492 Condition of Approval III.D.1 through III.D.10 and staff comments.

15. The management program shall be developed and implemented utilizing the criteria and guidelines set forth in Exhibit L attached hereto.

See Exhibit A, 89-0492 Condition of Approval III.D.1 through III.D.10 and staff comments.

16. Operations within the quarry shall take place on Mondays through Fridays only and shall not commence before 7:30 a. m., nor extend beyond 5:00 p. m.; provided, however, that the transport of limestone from stockpiles may take place between the hours of 7:30 a. m. and 11:30 p. m., on each day Monday through Friday.

Quarry operations are limited to these hours, although temporary Minor Variations to these hours of operation have occasionally been approved.

17. Any blasting which shall take place at the quarry site shall be solely for the purpose of the primary dislocation of rock.

All blasts are for the primary dislocation of rock.

18. A rock crushing system within parcel E, as shown on Exhibit B attached hereto, is permitted by terms of this use permit only as a component of the system for the manufacture of cement at Davenport.

The rock crushing system is linked to the cement plant by the covered belt conveyor.

19. The covered conveyor belt system constructed for transport of mined material on or above the surface of the ground shall be removed by permittee when quarrying operations are terminated by exhaustion of the quarry or by economic or physical unfeasibility of further quarrying.

Removal of the conveyor system is provided for in the Reclamation Plan. Quarry operations have not ceased.

20. Not more than two (2) blasts shall be permitted per working week. Time for blasting shall be set at approximately 12:25 p. m. and 3:25 p. m.

No more than two blasts occur each week at the appropriate times.

21. No public road shall be used to haul limestone, overburden or waste products from quarry site.

No limestone overburden or waste products are hauled over public roads. Temporary Minor Variations have been approved to allow transport of rock and tree stumps from the quarry for road and stream bank repairs and similar individual projects.

22. Overburden or waste materials to be excavated from this quarry site shall not be stockpiled for the purpose of recapture, recovery or retaking.

All overburden and waste materials are placed permanently in the Waste Disposal Areas A, B and C.

23. Dust or other such materials originating from operations, including covered belt conveyor system, shall be held to a minimum by the use of dust arresting equipment on the conveyor system and the use of water wagons or other dust control devices and in no case shall dust be permitted to blow onto adjacent land or in any way accumulate on public roads in the vicinity.

Exhibit B

See Exhibit A, 89-0492 Condition of Approval III.G.1 through III.G.6 and staff comments.

24. Noise and ground vibration shall be reduced to a minimum.

See Exhibit A, 89-0492 Condition of Approval III.H.1 through III.H.3 and staff comments.

25. The operation of Part III of this permit shall not cause a diminution, in either quantity or quality of any water supply.

Condition 7 addresses the City's water supply from Liddell Spring. No other water supplies are affected by quarry operations.

26. Drainage facilities and devices to control storm water runoff shall be constructed as required in order to minimize erosion and prevent pollution of natural water courses or the Pacific Ocean by sand, silt, or other materials, that in any way will result in damage to fish, aquatic or marine life.

See Exhibit A, 89-0492 various Conditions of Approval in sections III.A and III.B and associated staff comments, which address various best management practices at the quarry.

27. Prior to the construction of settling ponds, slurry ponds, water reservoirs, or storm drainage facilities, final plans based on design by a Registered Civil Engineer shall be approved by the Department of Public Works.

See Exhibit A, 89-0492 various Conditions of Approval in sections III.A and III.B and associated staff comments.

28. All requirements of the Regional Water Quality Control Board and Department of Fish and Game shall be met.

See Exhibit A, 89-0492 Conditions of Approval II.C.1, II.F.1, III.B.7 and III.B.12 and associated staff comments regarding RWQCB requirements, and III.D.2 and III.F.1 and associated staff comments regarding DFG requirements.

29. Noncompliance with any of the foregoing conditions shall be cause for revocation of Part III of this use permit pursuant to provisions of Santa Cruz County Code, Sections 13.04.324, and 13.04.332.

Although areas of noncompliance are identified, it is expected that full compliance can be achieved; therefore, revocation of the Certificate of Compliance is not recommended at this time.

Part IV Bonny Doon Shale Quarry

This part of the use permit authorizes and permits the quarrying, crushing and storage of shale and uses incidental thereto, and the construction of a covered belt conveyor system for transportation of quarried materials from the quarry site to Davenport Cement Plant, all as shown on Exhibit M as outlined in red.

Exhibit M is located in the Exhibit binder 1 of 2 for Use Permit 3236-U. Operations have been confined within the limits shown on Exhibit M.

1. The exercise of this part shall not occur until or unless permittee exercises Part III hereof (i.e., Bonny Doon Limestone Quarry).

Part III (Bonny Doon Limestone Quarry) and Part IV (Bonny Doon Shale Quarry) have been exercised.

2. No overburden shall be stripped from the site nor shall any quarrying operation commence until such time as a Record of Survey of the specific site to be quarried has been recorded and a copy filed with the Planning Department. Said site shall be selected from within the boundary of parcel B, as shown outlined in red on Exhibit M.

A Record of Survey has been recorded.

3. Transportation of mined material shall be solely by covered belt conveyor system to be constructed in accord with plans and specifications approved by the Board of Zoning Adjustment. Said plans shall include precise location of right-of-way, grading plans, drainage and erosion control plans, to be submitted to the Board of Zoning Adjustment for approval not later than December 31, 1968. Review of said plans by the Board of Zoning Adjustment shall be made within sixty (60) days after submittal. Failure to file said plans prior to December 31, 1968, shall cause permittee, or its successors in interest, to acquire an additional use permit for the covered belt conveyor system.

Mined materials are transported solely by covered belt conveyor system.

4. Final cut slopes shall not exceed the normal angle of repose of the natural materials. In any case, when cut slopes steeper than one to one (1:1) exceed sixty (60) feet vertically, they shall be stepped at intervals not exceeding sixty (60) feet vertically and such steps shall be at least thirty (30) feet wide.

All final cut slopes in the shale quarry will comply with this condition.

5. In any event, the top of any cut slope in no case shall be brought closer than twenty-five (25) feet to any exterior property line of the actual site to be excavated.

Exhibit B

All mining areas within the approved shale quarry boundaries comply with this condition.

6. Finished excavation shall in all cases be graded in such a manner as to prevent the accumulation of storm waters or natural seepage.

See Exhibit A, 89-0492 Condition of Approval III.B.1 through III.B.12 and staff comments.

7. Finished grades in all cases shall have slopes not less than one and one-half percent (1-1/2%).

See Exhibit A, 89-0492 Condition of Approval III.A.1 through III.A.9 and staff comments.

8. The entire north boundary and the northerly two-hundred (200) feet of the east and west boundaries of the quarry site shall be fenced by a substantial six (6) foot fence with posts spaced at fifteen (15) feet center to center and barbed wire spaced one (1) foot apart. Said fence shall not be closer than ten (10) feet to the top edge of any cut slope.

This fencing has been constructed.

9. Signs shall be conspicuously posted along the required fence at intervals not to exceed one-hundred (100) feet. The signs shall give reasonable notice of the matter contained in such notice by stating in letters not less than four (4) inches in height, "Property Subject to Commercial Excavation of Natural Materials Under County of Santa Cruz Use Permit No. 2863-U". Permittee may use such additional warning language as it may desire.

These signs have been installed.

10. A landscape-management program shall be initiated on the lands owned or leased by PCA within the visual corridor partially described on Exhibit X of the conveyor route and the Bonny Doon limestone and shale quarries which shall be operative as an overall program during the operational life of quarries and conveyor system. The purpose of this program is to insure the preservation, conservation and management of this vegetative resource for the general benefit of the community and specifically as an element in a program to minimize the environmental impact of this industrial use upon adjacent rural properties and the public in general.

See Exhibit A, 89-0492 Condition of Approval III.D.1 through III.D.10 and staff comments.

11. The management program shall be developed and implemented utilizing the criteria and guidelines set forth in Exhibit L attached hereto.

Exhibit B

See Exhibit A, 89-0492 Condition of Approval III.D.1 through III.D.10 and staff comments.

12. Operations within the quarry shall take place on Mondays through Fridays only and shall not commence before 7:30 a. m., nor extend beyond 5:00 p. m.; provided, however, that the transport of shale and limestone from the stockpiles may take place between the hours of 7:30 a. m. and 11:30 p. m., on each day Monday through Friday.

Quarry operations are limited to these hours, although temporary Minor Variations to these hours of operation have occasionally been approved.

13. Any blasting which shall take place at the quarry site shall be solely for the purpose of the primary dislocation o f rock.

Blasting does not occur in the shale quarry.

14. Not more than two (2) blasts shall be permitted per working week. Time for blasting shall be set at approximately 12:25 p. m. and 3:25 p. m.

Blasting does not occur in the shale quarry.

15. A rock crushing system within the quarry site is permitted by terms of this use permit only as a component of the system for the manufacture of cement at Davenport.

The rock crushing system is linked to the cement plant by the covered belt conveyor.

16. The covered conveyor belt system constructed for transport of mined material on or above the surface of the ground shall be removed by permittee when quarrying operations are terminated by exhaustion of the quarry or by economic or physical unfeasibility of further quarrying.

Removal of the conveyor system is provided for in the Reclamation Plan. Quarry operations have not ceased.

17. No public road shall be used to haul shale, overburden or waste products from this quarry site.

No shale overburden or waste products are hauled over public roads. Minor Variations have been approved to allow transport of rock and tree stumps from the quarry for road and stream bank repairs and similar individual projects.

18. Overburden or waste materials to be excavated from this quarry site shall not be stockpiled for the purpose of recapture, recovery or retaking.

All overburden and waste materials are placed permanently in the Waste Disposal Areas A, B and C.

19. Dust or other such materials originating from operations, including covered belt conveyor system, shall be held to a minimum by the use of dust arresting equipment on the conveyor system and the use of water wagons or other, dust control devices and in no case shall dust be permitted to blow onto adjacent land or in any way accumulate on public roads in the vicinity.

See Exhibit A, 89-0492 Condition of Approval III.G.1 through III.G.6 and staff comments.

20. Noise and ground vibration shall be reduced to a minimum.

See Exhibit A, 89-0492 Condition of Approval III.H.1 through III.H.3 and staff comments.

21. The operation of Part IV of this permit shall not cause a diminution in either quantity or quality of any water supply.

Condition 7 of Part III addresses the City's water supply from Liddell Spring. No other water supplies are affected by quarry operations.

22. Drainage facilities and devices to control storm water runoff shall be constructed as required in order to minimize erosion and prevent pollution of natural water courses or the Pacific Ocean by sand, silt, or other materials, that in any way will result in damage fish, aquatic or marine plant life.

See Exhibit A, 89-0492 various Conditions of Approval in sections III.A and III.B, and associated staff comments, which address various best management practices at the quarry.

23. Prior to the construction of settling ponds, slurry ponds, water reservoirs, or storm drainage facilities, final plans based on design by a Registered Civil Engineer shall be approved by the Department of Public Works.

See Exhibit A, 89-0492 various Conditions of Approval in sections III.A and III.B and associated staff comments.

24. All requirements of the Regional Water Quality Control Board and State Department of Fish and Game shall be met.

See Exhibit A, 89-0492 Conditions of Approval II.C.1, II.F.1, III.B.7 and III.B.12 and associated staff comments regarding RWQCB requirements, and III.D.2 and III.F.1 and associated staff comments regarding DFG requirements.

Exhibit B

25. Noncompliance with any of the foregoing conditions shall be cause for revocation of Part IV of this permit pursuant to provisions of Santa Cruz Code, Section 13.04.324 and 13.04.332.

Although areas of noncompliance are identified, it is expected that full compliance can be achieved; therefore, revocation of the Use Permit is not recommended at this time.

Exhibit B

Exhibit C: Summary of The 1964 Agreement

- The City agrees not to contest the operation of the quarry, by litigation or otherwise.
- Quarry operator agrees to indemnify the City against diminution of quantity or deterioration of quality of the water obtained by the City from Liddell Spring to the extent caused by the quarry operation.
- Ongoing water quality testing and water quantity measurement by the quarry and the City is required in order to implement the agreement.
- Specific flow quantities and water quality standards are included in the agreement for the purpose of determining whether the quantity or quality of the water flowing from the spring has been adversely affected by the quarry operation.
- If quantity or quality of water flowing from the spring deteriorates below agreed levels it is presumed that the Quarry is the cause unless in the opinion of a qualified third-party hydrologist the cause is beyond the control of the quarry.
- As compensation for deterioration in quantity of water flowing from the spring the quarry is required to pay the City $100.00 per one million gallons.
- The quarry is required to immediately remove or rectify any deterioration in water quality and continue to remove or rectify such causes of contamination.
- As compensation for deterioration in quality of water flowing from the spring the quarry is required to pay the City $100.00 per one million gallons for water lost to the City as the result of such contamination.
- If the deterioration in water quality is not rectified within six months the quarry is required to pay the City the cost of providing or implementing facilities to rectify the particular deterioration. The agreement specifies a treatment plant on the North Coast.
- Should this option of a treatment plant on the North Coast become obsolete the agreement requires the quarry to pay the cost of a reasonable alternative.Both parties agree that any disputes shall be settled by arbitration.

Exhibit C

Exhibit D: Summary of 1979 Arbitration

With respect to the critical elements of the 1964 agreement the issues were settled as follows:

- There appeared to be a temporary decrease in water quality during the period December 1, 1969 to March 1, 1974, followed by a return to pre-quarry levels.
- Baseline water quality data are inadequate to establish definite pre-quarry spring quality characteristics; data do indicate presumptive quality limits set forth in the 1964 Agreement were sometimes exceeded under natural, pre-quarry conditions.
- The water quality standards established in the 1964 Agreement are not a representative measure of the actual impact of quarry operations on water quality.
- There was no evidence that quantity of production had been adversely affected by quarry operations.
- For the purposes of settlement Quarry operations were presumed to have caused a loss to the City due to the temporary deterioration in water quality. Compensation was calculated per the agreement based on $100.00 per million gallons of lost[1] water.
- Because water quality appeared to have returned to pre-quarry levels there was no requirement to rectify, or pay for facilities to rectify, the particular deterioration.

[1] The presumption under the terms of the agreement of a deterioration of water quality and loss of water production as a result does not mean a real loss of water production by the City. It only means a presumed loss of water quality. This is because the standards in the agreement are set well below the level at which the City would actually divert water from Liddell Spring out of the pipeline shutting this source off from the Graham Hill Water Treatment Plant. These events are called "turnouts". The arbitration reviewed time of turnout and concluded that there was no evidence that quantity of production had been adversely affected by quarry operations.

Exhibit E: Summary of Actions to Address Issues at Liddell Spring

This is a summary of actions, other than contribution toward treatment costs, that have been taken by the quarry operator, including those required by the COC, with the goal of studying, monitoring and rectifying water quality impacts. Measures described as ongoing will continue in accordance with the COC and the 1964 Agreement, and as a result of this permit review. Payment by the quarry operator of power and phone bills for Liddell Spring and providing access to Liddell Spring to City employees via quarry property are additional Conditions of Approval recommended as a result of this permit review.

Past:

- Monitoring well installation (1959, 1966, 1999, 2000, 2003)
- Numerous hydrogeologic investigations and reports (1950's-present)
- Liddell Spring Technical Advisory Committee participation (1996-2004)
- Agreement on a Scope of Work for, and completion of, third-party hydrogeologic and landslide investigations (1997-2002).
- Extension of power (1999) and phone lines (2000) to Liddell Spring to power equipment and allow for remote operation.
- Installation of turbidity instrumentation at Liddell Spring (2000, 2001)
- Cooperative landslide monitoring (2000-2004).
- In conjunction with the application to expand the quarry, completion of additional hydrogeologic studies. (PELA, 2005).
- In conjunction with the application to expand the quarry and preparation by the Planning Department of an EIR for the project, additional hydrogeologic studies have been completed for the EIR. (Nolan Associates, 2007).

Ongoing:

- Blast design modifications implemented prior to, and as a result of, 1997 COC to reduce ground vibration and the potential for nitrate contamination of surface and groundwater.
- Drainage and erosion control measures to divert storm water away from Liddell Spring.
- Monitoring of water levels and water quality in monitoring wells.

Exhibit E

- Payment of power and phone bills for Liddell Spring.
- Access to Liddell Spring to City employees via quarry property.
- Cooperation and communication between the quarry operator and the City regarding ongoing Liddell Spring monitoring and blasting.

Exhibit F: Contribution toward treatment cost under the terms of the 1964 Agreement

For the purpose of determining whether the quality of the water flowing from Liddell Spring has been adversely affected by quarry operations, the 1964 Agreement contains minimum standards, presumed to be the standards existing on the date of the Agreement, for bacteria, turbidity, color, taste and odor, and other chemicals, including nitrates. The City has expressed concern regarding turbidity and nitrates. Quarry operations (blasting) may have an influence on concentration of nitrates in groundwater. However, there is insufficient evidence linking blasting and groundwater nitrate concentrations, there are other potential sources (septic systems, animal raising) in the watershed and concentrations have remained well below standards in the agreement. Therefore, contribution toward treatment cost is limited to a calculation based on the turbidity standards in the agreement.

The baseline turbidity standard in the 1964 Agreement is 0.5 standard turbidity units except immediately following a rain, when it shall not exceed 2.0 standard turbidity units for a period of 48 hours. In other words, for 48 hours immediately following a rain turbidity shall not exceed 2.0 and shall return to 0.5 standard turbidity units. There is no exception for immediately after a blast; therefore, at no time shall a blast cause an increase above 0.5 standard turbidity units.

Standard turbidity units have changed over time from Jackson Turbidity Units (JTU), which were used during the 1960s until some time in the 1970's, to the current standard of Nephelometric Turbidity Units (NTU).

Recognizing that data obtained by the 1720c turbidimeter, installed in November 2004, is the most accurate for turbidity measurements between 0 and 30 NTU, this calculation uses data collected between November 2004 and September 2007 (Water Years[1] 2005, 2006 and 2007). Amounts of water are calculated separately for each water year. The calculation uses an Excel spreadsheet and formulas to perform the necessary functions. Data is collected by the rain gauge, turbidimeter and flow meter every 15 minutes resulting in approximately 35,000 separate rainfall, turbidity and flow measurements per water year.

The calculation begins by determining the gross amount of water with turbidity exceeding 0.5 NTU. This is accomplished by multiplying flow data in gallons per minute by the number of minutes during which the turbidity readings exceed 0.5 NTU. Because water with turbidity between 0.5 and 2 NTU within 48-hours immediately following a rain is allowed under the terms of the agreement, the amount of water meeting this criteria should be eliminated. This amount of water is calculated by comparing rainfall data to the turbidity and flow data. The 48-hour period immediately following a rain is defined as beginning after at least 0.1 inches of rainfall. Subsequent 48-hour periods would start after turbidity returns to 0.5 NTU or below.

[1] A Water Year begins on October 1 and ends on September 30 of the following year. Water Year 2005, for example begins October 1, 2004 and ends September 30, 2005.

The amount of water resulting from the above calculations that exceeds the standards in the agreement should be further reduced by the amount of water turned out of the pipeline. Water turned out flows downstream and does not go to the Graham Hill Water Treatment Plant, therefore, should not be considered in the amount of water available to the City presumed to be deteriorated as a result of quarry operations.

The amount of water calculated should be further reduced because there is a difference between the flow measurements obtained by the flow meter and the actual amount of water that flows through he pipeline to the treatment plant. This is due to the location of the meter and the flow dynamics in the pipeline. Therefore, flow measurements in the data that exceed the capacity of the pipeline are capped to reflect actual pipeline capacity.

Results of the calculation are summarized as follows:

Summary WY 2005	Gallons	Cubic Feet	Acre Feet
Total volume when turbidity over limit	195,688,839	26,159,795.0	600.5
Total Volume when turbidity over limit and not turned out	101,814,089	13,610,565.2	312.5
Total Volume when turbidity over limit and not turned out but under city pipeline diversion limit	99,998,384	13,367,840.7	307.9
Summary WY 2006			
Total volume when turbidity over limit	228,154,255	30,499,790.2	700.2
Total Volume when turbidity over limit and not turned out	166,416,966	22246714.4	510.7
Total Volume when turbidity over limit and not turned out but under city pipeline diversion limit	160,395,193	21441720.4	492.2
Summary WY 2007			
Total volume when turbidity over limit	19,898,085	2,659,987.3	61.1
Total Volume when turbidity over limit and not turned out	12,218,427	1,633,366.3	37.5
Total Volume when turbidity over limit and not turned out but under city pipeline diversion limit	1,172,240	156,705.7	3.6

The next step is to multiply the amount of water calculated above by the cost to treat water from Liddell Spring at the Graham Hill Water Treatment Plant. The City of Santa Cruz Water Department has provided a cost of $37.00 per million gallons for power to treat water from Liddell Spring. Additional costs were calculated for operations and maintenance of the Liddell Spring source based on an annual fixed cost provided by the City divided by annual production. The resultant cost per million gallons varies from year to year because production varies from year to year. In addition, the 1964

Agreement requires that the quarry indemnify the City at the rate of $100.00 per million gallons of water calculated above. All costs are rounded to the nearest dollar.

Therefore, the contribution toward treatment costs are summarized as follows:

	Gallons	Treatment cost and Indemnity (per million gallons)	Total
WY 2005	99,998,384	$144.00	$14,400.00
WY 2006	160,395,193	$143.00	$22,937.00
WY 2007	1,172,240	$144.00	$169.00
Total			$37,506.00

Exhibit F

Exhibit G: Review of Turn Out/In Logs 1990 through 2007

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. Turnouts are typically caused by elevated turbidity or pipeline maintenance. Therefore, a review of turnout logs would indicate impacts on water production from the spring if turnouts became more frequent or lengthy due to elevated turbidity.

As noted in Exhibit D, the 1979 arbitration reviewed turnout logs and found no evidence that quantity of production had been adversely affected by quarry operations at any time. Similarly, a review of turnouts logs from 1990 through 2007 (Water Years[1] 1992 to 2007) found no evidence that total quantity of production had been adversely affected by quarry operations.

On the contrary, a significant reduction in time of turn out 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. Improvements, which apparently came on line in 1999 (Figure 1), resulted in a significant drop in overall time of turnout. Further improvements, which apparently came on line in 2002 (Figure 2), resulted in another significant reduction in average time of turnout.

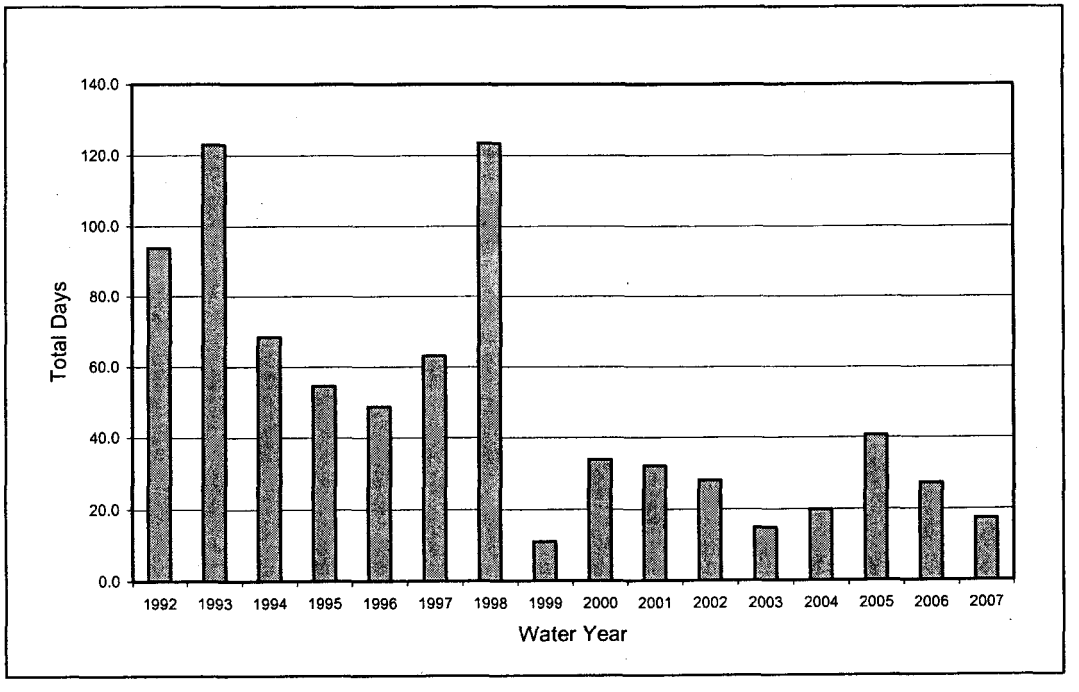

Figure 1: Total Time of Turnout

[1] A Water Year begins on October 1 and ends on September 30 of the following year. Water Year 2005, for example begins October 1, 2004 and ends September 30, 2005.

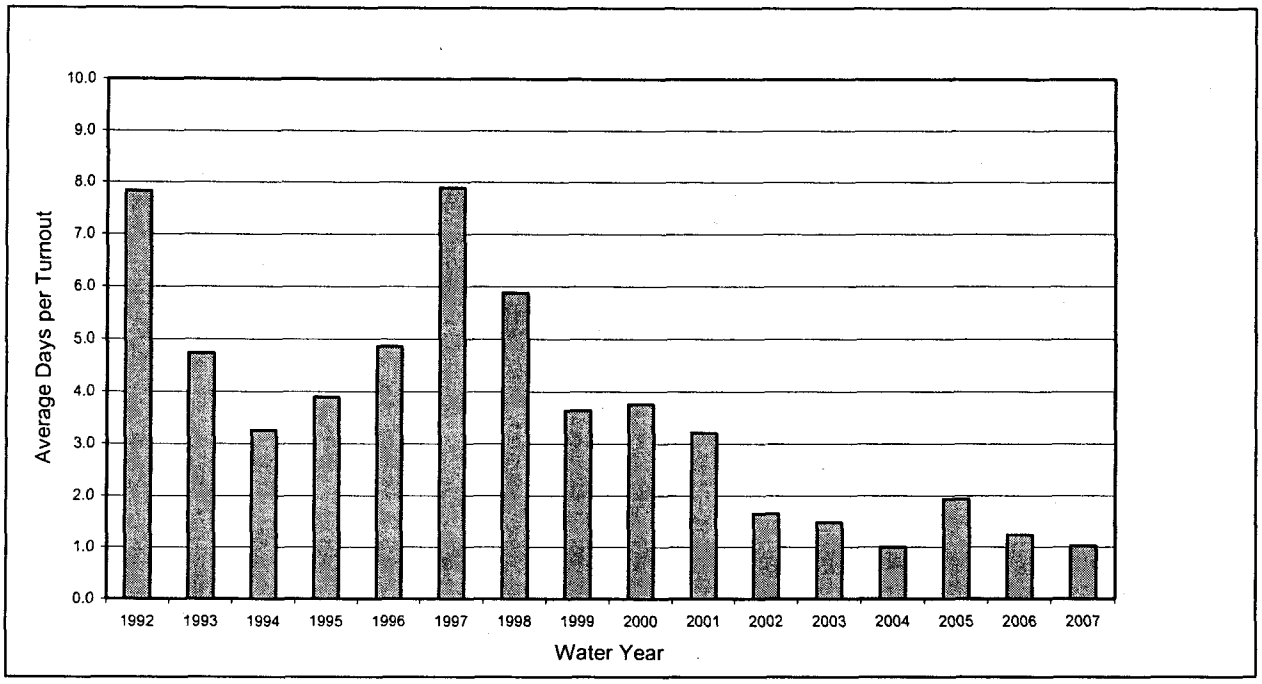

Figure 2: Average Time of Turnout

Exhibit G

Assessor's Parcel Map

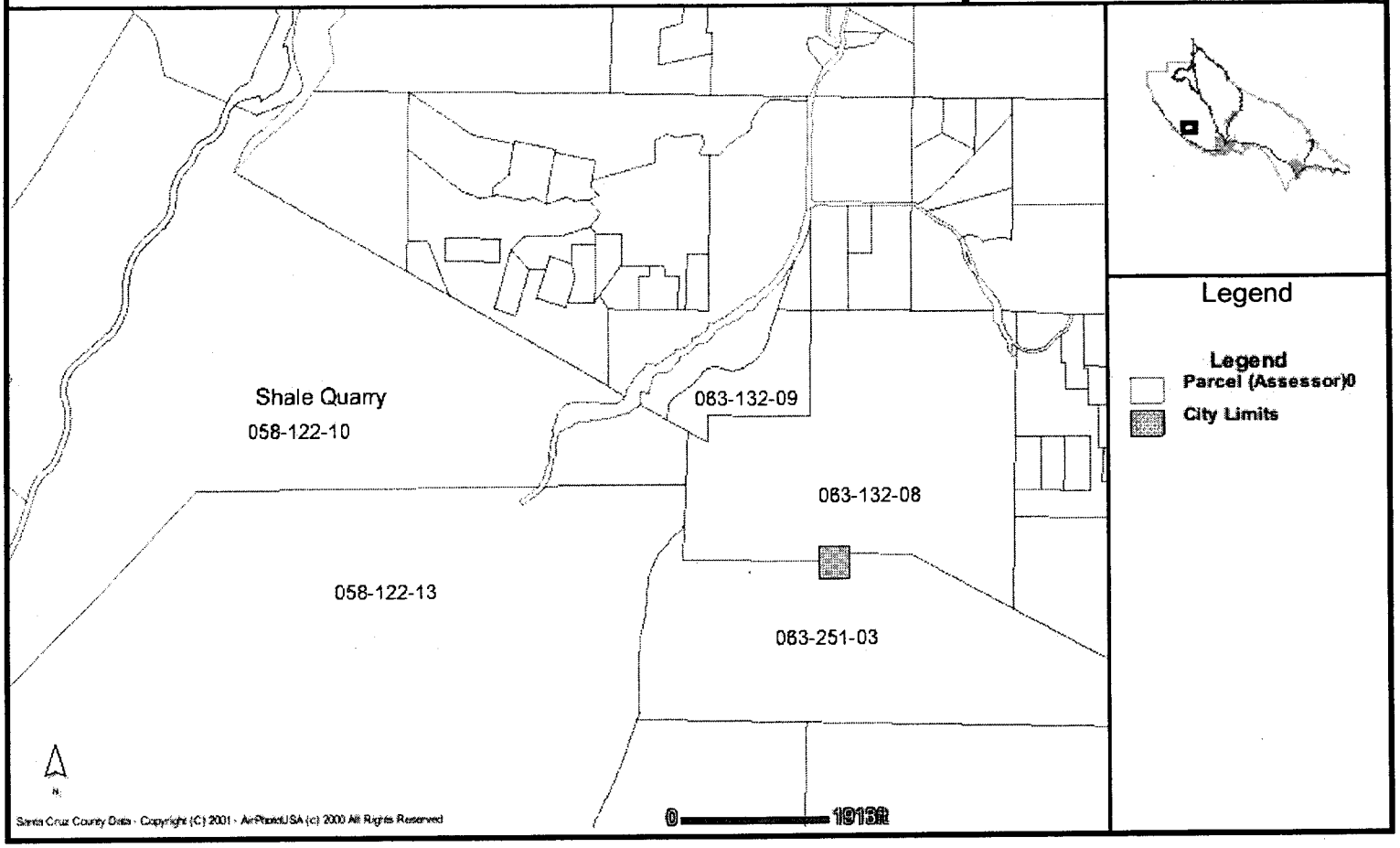

EXHIBIT H

Zoning Map

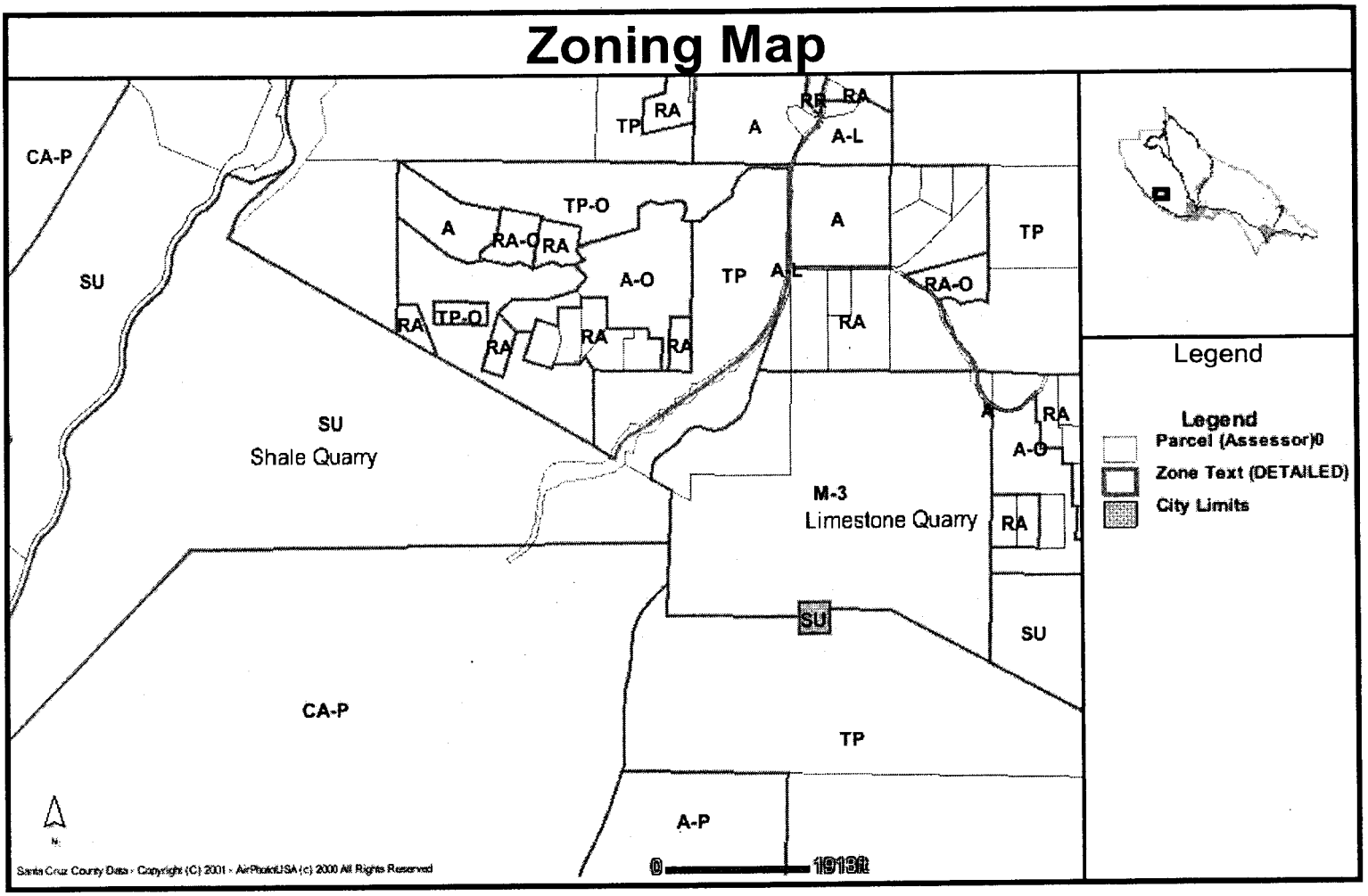

EXHIBIT I

General Plan Map

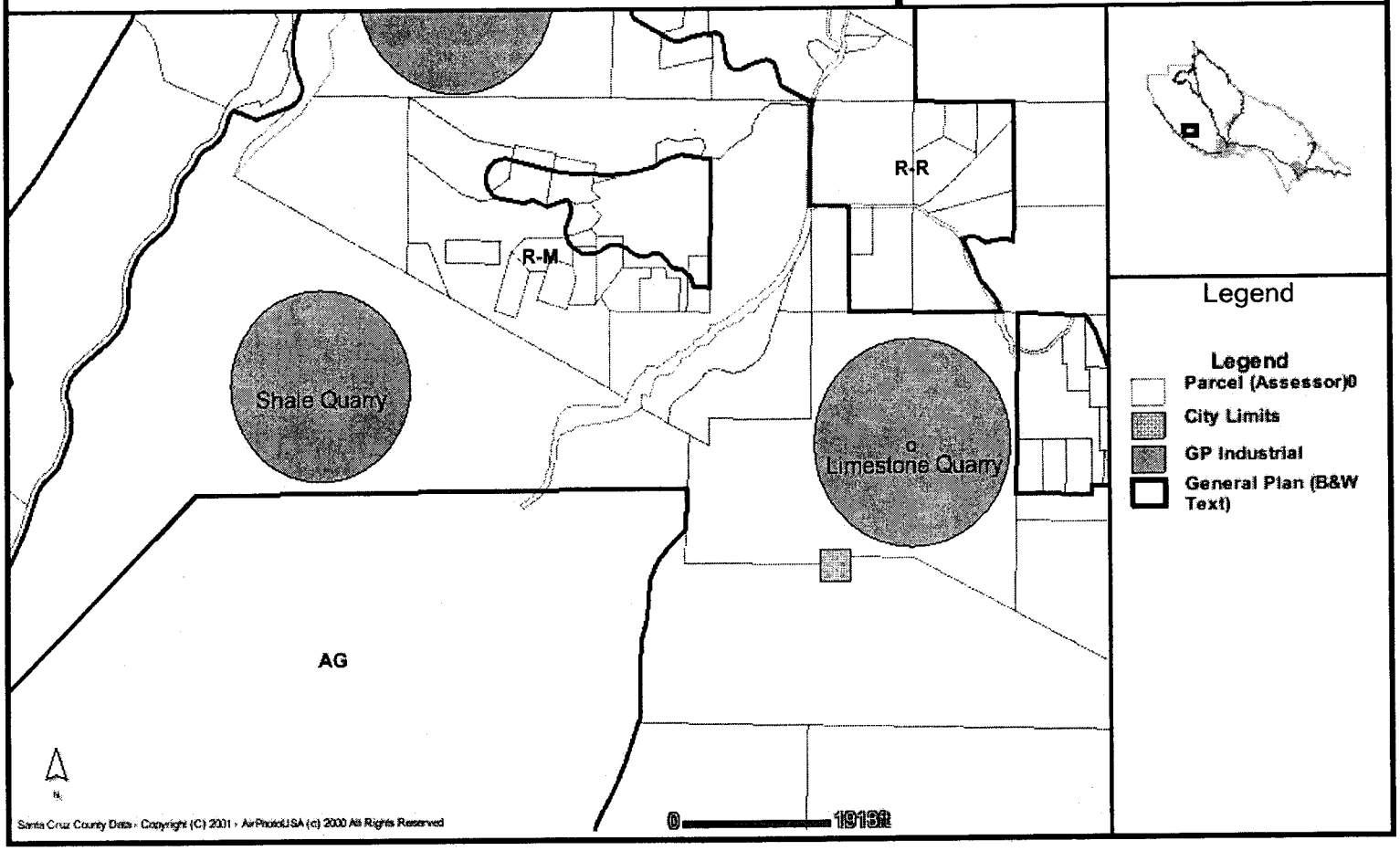

EXHIBIT I