# Staff Report to the Planning Commission

Application Number: **01-0572**

Applicant: Powers Land Planning, Inc.
Owner: Chy Company
APN: 099-171-03 & 099-251-01

Agenda Date: November *8,* **2006**
Agenda Item #: 8
Time: After 9:00 a.m.

Project Description: Permit Review for compliance with conditions of Mining Approval 88-0233. A proposal to amend Mining Approval 88-0233 to modify conditions of approval that require certain drainage and operating activities and to delete conditions that have been satisfied. Update of the 1992 Revegetation Plan is also included. Requires a Minor Amendment to Mining Approval 88-0233.

Location: Northern terminus *of* Olive Springs Road, Summit Planning Area

Supervisor District: First District (District Supervisor: Jan Beautz)

Permits Required: Minor Mining Approval Amendment

Staff Recommendation:

- Perform a Five-Year Permit Review for the Olive Springs Quarry.
- Approve the Minor Amendment application 01-0572, based on the following analysis and discussion, including the drainage calculations in Exhibit **E,** and the updated Revegetation Plan in Exhibit F.
- Approve the Negative Declaration for the Minor Amendment as complying with the California Environmental Quality Act (Exhibit B).
- Approve the revised Conditions of Approval in Exhibit D (changes listed in Exhibit C).

Exhibits

A. Permit Review
B. Negative Declaration (CEQA determination)
C. Proposed Changes to Conditions of Approval
D. New Conditions of Approval
E. Drainage Calculations
F. Revegetation Plan
G. Comments & Correspondence

**introduction**

Condition 111 of Mining Approval 88-0233 for Olive Springs Quarry requires that your Commission review this permit every five years. The last Permit Review was completed in 2001. As you may be aware, Section 16.54.074 of the County Mining Regulations states that new conditions shall not be imposed as part of a review process unless:

a) there is a threat to public health and safety;
b) there is a significant injurious threat **to** the environment;
c) there is a nuisance;
d) there is a violation of approval conditions;
e) there is a 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, the minor amendments, and includes a brief history of the issues currently affecting the quarry.

**History**

The County of Santa Cruz originally opened Olive Springs Quarry in 1932 to supply quarry products for County projects. Since that time the leasehold to operate the quarry and the property ownership have changed a number of times. The operation of the quarry continued through 1993 under use permits 431-U, 4413-U. 73-01-Q, and 78-355-PQ. In 1994 the Planning Commission certified an EIR and granted a Mining Approval for a 16-acre expansion and continuation of mining for another 50 years under Mining Approval 88-0233.

**Project Setting**

The Olive Springs Quarry is located on two contiguous parcels at the northern end of Olive Springs Road, approximately 1.5 miles east of Old San Jose Road on the easterly face of Sugarloaf Mountain (Exhibit B, Attachment 3). The site is located adjacent to Soquel Creek and timber resource land **to** the east, and the California Department of Forestry's (CDF) Soquel Demonstration Forest to the north. Rural residential uses exist to the southeast, south and west. The remainder of the land owned by CHY Company not included in the Mining Approval remains undeveloped, and has been harvested for timber periodically.

The combined size of both parcels is 296 acres; however, the mining operation takes place within three leasehold areas totaling 132 acres (Exhibit B, Attachment 4). The active mining site, the asphaltic concrete plant, and the crusher and screening facilities are located on Leasehold One. It is within Leasehold One that the 16-acre expansion area was approved in 1994. Leasehold Two provides access between Leasehold One and Three, and contains a permitted caretaker's quarters. Leasehold Three **is** the location of the Quarry entrance, scale house, and material stockpiles.

The mining operation at Olive Springs Quarry processes decomposed granite products for use in the construction industry. The work face consists of a series of stepped benches from which products are ripped and pushed from upper to lower benches with a large bulldozer. This requirement of moving resources **from** the upper bench *to* the lower bench within the limited Quarry area prevents concurrent reclamation of the working face. A front-end loader transports the material from the Quarry bottom to the receiving hopper of the crushing plant. After moving from the primary crusher to the secondary cone crusher, the rock is screened and mechanically conveyed to stockpile areas. Quarry products include baserock, granitic fines, and aggregate, in addition to the asphaltic concrete plant products.

The Planning Commission conducted a review of permit 88-0233 in 2001. At that time it was determined that Olive Springs Quarry was in substantial compliance with the conditions of Mining Approval 88-0233. However, in 2001 staff recommended that the quarry apply for a permit amendment to incorporate specific drainage-related changes into the conditions of approval. This, and other minor amendments proposed by the quarry operator are discussed in the following pages.

The Quarry has been operated in a manner that has not resulted in threats to public health or safety, or the environment. By the accounts of the Quarry's Civil Engineer, Geologist, and Planning Department staff, the quarry has improved operationally. Permits have been maintained with other agencies that regulate the Quarry operation.

**Permit Review**

The quarry is in substantial compliance with the Conditions of Approval of 88-0233. A complete review of permit compliance is included in Exhibit A with review comments enclosed in boxes. Some of the more important issues evaluated in the complete permit review are discussed below and in the Minor Amendment section of this staff report.

Protection of Soquei Creek

During the later parts of the dry season when pond water is depleted the quarry is allowed to pump water from Soquel Creek. Two Conditions of Approval require maintenance of a minimum creek flow rate during pumping (lli.C.6) and limit the pumping rate (lll.C.7). In the past, compliance with conditions lll.C.6 and lll.C.7 has been verified by alternative means, by estimating creek flow rates and establishing maximum capacity of the creek pump. County staff is satisfied that minimum flow rates have been maintained and verified by inspection that pumping capacity is well within the permit allowance. However, in order to verify compliance with the permit condition as written, the operator has proposed a method to measure creek flow and collect the specific information listed in the permit conditions and provide it to the County in the annual report.

An application has been submitted to the California Department of Fish and Game (CDFG) for a stream alteration agreement for the proposed temporary flume device to

measure stream flow during withdrawal periods. A final stream alteration agreement is pending.

Financial Assurance

An updated financial assurance cost estimate has been submitted. The new Revegetation Plan, which complies with SMARA and County Mining Regulations, provides a sound basis for the updated cost estimate. County staff has recently notified the operator that the cost estimate is approved and that an updated financial assurance mechanism for the new amount ($367,299) should be submitted.

**Minor Amendment**

As noted above, the current application for amendment has been submitted in accordance with a Planning staff recommendation of the 2001 review to incorporate the operational drainage changes into the conditions of approval. The applicant has proposed additional amendments to permit conditions regarding annual reports, wet/dry aggregate production limits and elimination of project conditions which have already been met. Additionally, to facilitate the review and update of the financial assurance for the mine a new revegetation plan has been completed to update the 1992 revegetation plan.

The conditions of approval for permit 88-0233 are included in Exhibit B as Attachment 1 and in the Permit Review, Exhibit A. This application proposes to modify the conditions of approval as follows:

- Annual Report II.J: Change the due date for the annual report to the Planning Director;
- Production Limits III.A.6: Eliminate the individual limit on wet aggregate production and limit only the total aggregate production.
- Drainage Control III.B.4 & 13: Eliminate certain interim drainage control facilities on the work face and quarry floor;
- Pond Capacity III.B.5.a &b: Eliminate conditions regarding increasing holding capacity for storm drainage;
- Pond Capacity III.B.14: Revise text of condition to reflect specific changes to the drainage plan;
- Pond Capacity III.D.1.a, III.D.2.a, III.D.3 and III.D.6: Eliminate conditions regarding erosion protection and stability of pond levees because the work has been completed;
- Trail to Soquel Demonstration Forest III.L.4: Eliminate a condition regarding the feasibility of a trail from Olive Springs Road to the Soquel Demonstration Forest

The applicant's amendment request is included in Exhibit B, Attachment 2. Proposed modifications are shown by strikeout for deleted text and underline for added text. Following each condition the applicant's explanatory comments are in the text box. Planning Department staff evaluation and recommendations regarding each proposed change follows.

Annual Report

Condition of Approval II.J requires the submittal of annual reports beginning on April 1, 1995. While the current due date is consistent with the version of the Mining Regulations in effect at the time of the approval *of* 88-0233, the applicant's request is consistent with the current requirement of the County Mining Regulations that annual reports are due no later than July **1.** The request to change the due date for the annual report is administrative in nature and staff recommends approval of the change in due date to July 1.

Production Limits

The applicant is requesting a change to Condition of Approval III.A.6, which limits production to 191,000 tons per year for dry aggregates and 35,000 tons per year for wet aggregates. This proposal would eliminate the limit on wet aggregate production, but would not affect total aggregate production limits. The condition regarding production limits states that if the aggregate production rate is exceeded, the Planning Commission shall review the increase for traffic, noise, and air quality and other related impacts and issues. Although the applicant is not requesting an increase in total aggregate production, an analysis of wet/dry aggregate production is provided below.

The EIR for application 88-0233 does not distinguish between wet and dry aggregate production in the analysis of potential impacts with respect to traffic, noise and air quality. Noise impacts were found to be less than significant during normal operation of the wet and dry plants. The Monterey Bay Unified Air Pollution Control District has issued Permits to Operate the wet plant, the dry plant and other facilities at the mine that produce air emissions. The overall production limit is well below the production rates allowed by the Air District permits. Therefore, the relative percentages of wet and dry aggregate production within an overall production limit will have no impact on traffic, noise and air quality.

Although the total aggregate production will not be exceeded, an increase in wet aggregate production would cause a corresponding increase in water use, including water withdrawal from Soquel Creek. Based on an analysis of water use in the production of wet aggregate, even if the total production limit were wet aggregate, water use would not exceed permitted creek withdrawal rates according to the 1993 EIR.

The California Department of Fish & Game (CDFG) requires minimum bypass flows in Soquel Creek during pumping periods. Based on Soquel Creek flow data and the small capacity of the pump, minimum bypass flow requirements are being met. Any increase in creek withdrawal rate (larger pump, for example) associated with increased production of wet aggregate will be subject to existing limits on creek withdrawal and requirements to maintain minimum bypass flow during pumping periods. Existing permit conditions require measurement of creek withdrawals and bypass creek flows to ensure compliance. Because any increased water use is still subject to the withdrawal limit and bypass minimum, the potential increase in wet aggregate production would have no additional impact on Soquel Creek and steelhead trout.

Drainage Control

Condition of Approval lll.B.4 requires interim drainage control facilities consisting of berms and a drainpipe on the working face of the quarry **to** prevent uncontrolled drainage from contributing **to** slope instability. Condition of Approval III.B.13 requires maintenance of an open channel in the granitic rock of the quarry floor **to** reduce quarry floor erosion and direct collected runoff to the culvert that discharges into the canyon that leads to pond A. The application proposes elimination of condition III.B.13 because existing practices are adequate and the quarry floor is non-erosive.

The quarry has been operating without the required interim drainage control facilities because they would conflict with machinery working the face. The annual geologic inspections of the quarry face, and inspections of drainage facilities by a civil engineer support the applicant's request to eliminate this condition because the reports indicate that the existing drainage controls are adequate. Quarterly and annual quarry inspections by County staff confirm these conclusions contained in the reports submitted by the quarry.

While eliminating the Condition of Approval for specific drainage control facilities appears appropriate, it is equally appropriate to replace the existing condition with a new condition reflecting the adaptive drainage control practices on the working face and quarry floor that have minimized erosion and subsequent possible siltation of the settling ponds and Soquel Creek. Therefore, staff proposes modified language for a Condition of Approval III.B.4 based on the descriptions in the annual geologic inspection reports and drainage reports. This proposed modified language is included for your consideration in Exhibit C.

Pond Capacity

Condition of Approval III.B.5.a requires Pond A to be enlarged by 200 cubic yards every year to a maximum design capacity and that the first pond expansion shall increase the storage volume by 400 cubic yards. Condition of Approval lll.B.5.b requires Pond B to be immediately expanded by removing the bench that exists within the southern portion for the pond. Condition of Approval III.B.14 requires the installation of floating or portable pumps in ponds A and B to allow draining of the ponds during the winter after sufficient detention and sediment settling has occurred, thereby increasing the capacity of the ponds to hold subsequent rainfall runoff.

Prior to the winter of 1994/95 ponds A and B were excavated to remove 400 cubic yards ***of*** sediment from pond A and the "bench" from within pond B in conformance with the conditions. Pond A has not been enlarged by 200 cubic yards yearly as required by condition lll.B.5.a. The quarry's civil engineer, based on updated drainage calculations and quarry inspection, has determined that the required annual enlargement of pond A is not necessary and additional enlargement of pond B, suggested in condition III.B.5.b, is not necessary. On this basis the application requests elimination of these conditions.

The quarry's civil engineer completed an analysis of the adequacy of the three sediment ponds in 2006 after working closely with Planning Department staff to refine

the original analysis from 1992. Both ponds A and B were cleaned prior to the 2004-2005 winter season and prior to the topographic survey used to complete the updated drainage analysis. The project civil engineer concludes that no enlargement of Pond A is needed to maintain compliance with the Mining Regulations. The engineer does, however, recommend some minor changes to Pond B in order to improve its function.

The Planning Department's Senior Civil Engineer has reviewed the calculations and concurs that the existing ponds do provide adequate capacity. In addition, monitoring of discharge water from the ponds to Soquel Creek has shown that the quality of this water is well within permit standards. Although the ponds do provide adequate capacity, ongoing maintenance and minor improvements to Pond B are necessary. Therefore, staff proposes modified conditions lll.B.5.a & b based on the engineer's recommendations. This proposed modified language is included for your consideration in Exhibit C.

Lastly, there is a request to modify condition of approval III.B.14. During the winter, quarry runoff fills pond A and sediment is allowed to settle out of the water. When the water level reaches a certain point in Pond A it spills through a culvert into Pond B. The outlet of pond B is to Soquel Creek. If Ponds A and B fill and discharge to Soquel Creek additional storage capacity is provided by lowering the water level in Pond B between winter storms.

Instead of installing a pump in pond B to pump excess water out of pond B into Soquel Creek, as required by condition III.B.14, the quarry operator has installed a siphon system to limit the water level in pond B and allow water levels to fall below the outlet level and provide storage capacity between winter storms. This system provides sufficient detention and sediment settling; therefore, it is appropriate to allow the requested revision of condition III.B.14 to allow the use of a siphon system, rather than a pump, to limit water levels in Pond B.

Pond Levees

The application proposes to eliminate conditions that were imposed in order to provide greater stability for embankment slopes for Ponds A, B and C along Soquel Creek. The work required by the conditions has been completed; therefore, the applicant is requesting to delete Conditions of Approval III.D.l .a, III.D.2.a, lll.D.3 and III.D.6.

The 1993 EIR identified a potential impact regarding potential slope instability within the pond A, B and *C* embankment slopes during earthquakes, which could cause deformation, sliding or cracking of the levees but not catastrophic failure. Mitigation Measures were developed to address these concerns and these mitigation measures were incorporated into Conditions of Approval III.D.l through III.D.6.

Levee C improvements, required by condition lll.D.3 and III.D.6, consist of construction of a buttress fill against the outboard side of the pond embankment and installation of a curtain drain along the embankment toe to collect seepage water and carry it through the buttress fill. The improvements have been completed; therefore the applicant is requesting elimination of conditions lll.D.3 and lll.D.6.

The project civil engineer and geotechnical engineer inspected the work and documented that it conforms to their requirements. The project civil engineer subsequently completed a follow-up inspection of the Levee C improvements and stated in the annual drainage inspection for 1995 that the work was performed very effectively, the area has revegetated extremely well and the discharge pipe below the pond has not caused any erosion of material. Subsequent inspections have also not found any problems with the work; therefore, staff concurs with this request to eliminate conditions lll.D.3 and III.D.6.

Levee B improvement, required by condition III.D.2.a, consists of repair **of** an erosion scar below the discharge pipe by placing riprap in the eroded area. This work was completed as required; therefore the applicant is requesting elimination of condition lll.D.2.a. The work required by the condition was completed and is documented by the project geotechnical engineer. The project civil engineer subsequently completed a follow-up inspection of the Levee **B** improvement and stated in the 1995 annual drainage inspection report that the discharge pipe and riprap are working effectively. Subsequent inspections have also not found any problems with the work. Staff concurs with the request that this condition be eliminated.

Levee A improvements, required by condition III.D.l.a, consist of placement of riprap from the toe of the levee to an elevation above the 100-year flood level and reducing the slope gradient of the levee. Placement of riprap was completed in December 1996. The additional grading and revegetation of the levee slope above the riprap was completed in 1997. Therefore, the applicant is requesting elimination of this condition. All the work was completed under the supervision of the project geotechnical engineer. Subsequent follow-up annual inspections by the quarry civil engineer confirm that the Pond A levee improvements are stable and effective and the slope is revegetated. Staff concurs with the request that this condition be eliminated.

Trail to Soquel Demonstration Forest

Condition of Approval lll.L.4 regarding trail feasibility between Olive Springs Road and the Soquel Demonstration Forest is not related to any environmental impact or mitigation measure in the Environmental Impact Report for this quarry, but was added by the Planning Commission as a result of public comment on application 88-0233.

As reported to the Planning Commission in 2001, a meeting was held with County Parks, the California Department of Forestry (CDF), County Planning, and the CHY Company to discuss this issue. The result of this meeting was that the potential routes investigated for access were infeasible due to safety issues regarding the Quarry, or due to the presence of steep slopes. Although access is not appropriate during mining operations, safety issues associated with mining operations would be eliminated after mining operations cease. Further work pursuant to this Condition of Approval at that time may determine that access is safe and feasible. Therefore, it is premature to eliminate this condition.

Revegetation Plan

A new revegetation plan (Exhibit F) has been completed to update the 1992 revegetation plan. Based on review by Planning Department staff the new plan meets the standards for revegetation plans contained in the Santa Cruz County Mining Regulations and SMARA. The proposed permit amendment will incorporate the new revegetation plan into the permit documents as an exhibit (see Exhibit C). The new revegetation plan and the associated updated cost estimate for revegetation is an important component of the update of the overall financial assurance cost estimate for the mine.

## Environmental Review

The proposed amendments to the Olive Springs Quarry Conditions of approval were reviewed by the County's Environmental Coordinator on July 31, 2006. Based on the Initial Study prepared for the project, the Environmental Coordinator has made a preliminary determination to issue a Negative Declaration. The environmental review process concluded that the proposed minor amendment could not have a significant affect on the environment; therefore, mitigation measures are not necessary. We are recommending that your Commission approve the preliminary Negative Declaration for the project included as Exhibit **B** to this report.

## Conclusion

The quarry is in substantial compliance with the Conditions of Approval of 88-0233. The quarry is well managed with mining excavations in good condition and good drainage control, which limits sedimentation of the ponds. The ponds have adequate holding capacity for the approved mining area and pond levees have been improved as required.

## Recommendation

As a result of the analysis and discussion above staff recommends that your Commission take the following action:

- Perform a Five-Year Permit Review for the Olive Springs Quarry,
- Approve the Minor Amendment application 01-0572, based on the above analysis and discussion, including the drainage calculations in Exhibit E, and the updated Revegetation Plan in Exhibit **F.**
- Approve the Negative Declaration for the Minor Amendment as complying with the California Environmental Quality Act (Exhibit B).
- Approve the revised Conditions of Approval in Exhibit D (changes listed in Exhibit C).

**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

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Report Reviewed By:

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I. Exhibits

All mining operations shall conform to the following exhibits, which are incorporated as conditions of this Mining Approval, except as modified by specific permit conditions set forth below.

A. Topographic Map of Olive Springs Quarry, lfland Engineers, November 20, 1990 (one sheet).

B. Leasehold One, Grading and Drainage Plan, Depletion Year 1993, lfland Engineers

C. Leasehold One, Ponds " A and "B" Levee Buttress Plan, lfland Engineers, Inc., October 22, 1993 (one sheet).

D. Leasehold One, Pond "C" Levee Buttress Plan, lfland Engineers, Inc., October 22, 1993 (one sheet).

E. Leasehold One, Site Plan Depletion Year 2000 through 2080, lfland Engineers, Inc., December 12, 1992, (five sheets).

F. Leasehold Three, Maximum Stockpile Plan and Sections, lfland Engineers, Inc., April 16, 1993 (two sheets).

G. Leasehold Three Drainage Plan, lfland Engineers, Inc. (Revised May 25, 1993- one sheet).

H. Grading and Drainage plan, Leasehold One, Year 2080 Drainage System, Ponds **A,** B, C, with Site Sections, lfland Engineers, Inc., Rev. December **4,** 1992. (Final Mining and Grading Plan- three sheets).

I. Olive Springs Quarry Revegetation Plan, BioSystems Analysis, Inc., April 1992 (13 pages includes Revegetation Planting Plan Figure 3 and Figure **4).**

**J.** Leasehold One Erosion Control Plan with Supporting Drawing, LSA Associates, November 30, 1993 **(44** pages and 1 drawing).

K. Draft Environmental Impact Report, Olive Springs Quarry, LSA.

L. Final Supplemental EIR, LSA November 30, 1993.

M. Draft Supplemental EIR, LSA, May 28, 1993.

N. Mitigation Monitoring and Reporting Program, LSA, November 30, 1993

Exhibit A

Copies of the above documents are available at the County of Santa Cruz Planning Department.

Mining operations conform substantially with. The County's Mining Regulations, SMARA and the above EIR and the above Exhibits are the basis for the following review.

II. GENERAL PROVISIONS

A. This Approval shall supersede all provisions of Use Permit 78-355-PD, and shall be the sole and exclusive permit or approval authorizing mining operations at the Olive Springs Quarry and shall control and bind owner and all future owners, lessees, or operators.

Mining operations stayed within the boundaries of the approved area, and are in substantial compliance with the Conditions of Approval.

**B.** This Approval is for the extraction, processing, storage, and shipping of all mineral resources obtained from the property, including the hot plant facilities, for production of asphalt conducted in accordance with the conditions herein and for the reclamation of existing, proposed and previously mined land as shown in the approved Reclamation Plan (Exhibits "H" and "I").

The operations at the Olive Springs Quarry are in general conformance with the Mining Approval for the extraction, processing, storage, and shipping of mineral resources. Reclamation of the Quany is not expected to begin, for the majority of the Quarry, until near completion since the quarried material is excavated and removed from across the entire Quarry face as the benches are worked. The relatively small size **of** the Quarry precludes most reclamation until quarrying is nearly complete.

C. This Approval is limited to a portion of the following County assessor parcel numbers: 099-171-02, -03. For specific areas **of** mining and reclamation within these areas, please refer to above listed Exhibits.

The Quarry has maintained operations to the parcels noted. APN 099-171-02 has changed, the new number is 099-251-01.

D. Minor variations to this Approval meeting the standards of County Code Section 18.10.134 and requested by the mining operator or staff which do not change the general concept of use and operation, and which do not adversely affect the environment, may be approved in writing by the Planning Director following review and recommendation by the County's Environmental Coordinator.

A Minor Variation was approved with the 2001 Permit Review to modify Condition III.J.4.a, **to** reduce the traffic speed monitoring program to a minimum of 12 times per

year. A review of the traffic information submitted in the 2001 Permit Review indicated that truck traffic speeding was not a significant problem. Approximately 6% of the trucks were recorded with speeds in excess of the speed limit. Speeding trucks were generally within 5 mph of the 25 mph posted speed limit. For comparison, 55% of residential vehicle traffic was recorded with speeds in excess of the speed limit, most oflen in excess of 30 mph. The truck traffic, under the Quarry Operator's control, continues to be well controlled. See review of more recent data under Condition **III.J.4.**

E. If, at any time, the Planning Director determines that there is a substantial noncompliance with any of these conditions, andlor Exhibits, the Planning Director shall forward a recommendation to the Planning Commission to set a hearing to consider a revocation of this approval in accordance with the provisions of County Code Section 18.10.136.

The quarry is in substantial compliance with these conditions.

F. Within 45 days from the date of issuance of this Approval, the property owner and applicant shall sign , date and return *two* copies of the Approval to indicate acceptance and agreement with the conditions thereof. By signing this Approval, property owners agree to file a Declaration with the County's Recorder Office within 45 days from the date of acceptance, binding themselves and any future lessees to the revegetation and reclamation requirements of this Approval, The Declaration shall be supplied by the Planning Director. Failure to sign the Approval or record the declaration as described above shall render this Approval null and void and all mining operations shall cease at the Quarry site except reclamation and revegetation work in accordance with the above listed exhibits.

The Quarry Operator complied with this condition in March 1994.

G. All mining and reclamation activities shall conform with the Conditions of Approval and with the regulations of the following agencies as they apply to the mining operations. The mining operator shall provide the County with copies of any permits issued by these agencies and any permit amendments, within 30 days of receipt.
   1. Central Coast Regional Water Quality Control Board (RWQCB)
   2. Monterey Bay Unified Air Pollution Control District (MBUAPCD)
   3. California Department of Fish and Game (DFG)

The Quarry operation requires compliance with permits with the RWQCB, MBUAPCD and DFG. In the annual report to the County the quarry provides copies of annual reports demonstrating compliance with permitting requirement of RWQCB and MBUAPCD. The quarry has submitted an application to DFG for a stream alteration agreement for the proposed temporary flume device for measuring flow in Soquel Creek.

H. This approval shall expire 50 years from the date of issuance.

The permit was issued in 1994; therefore, 50 years extends to 2044.

I. The Approval shall be reviewed by the Planning Commission within five years from the date of issuance. Subsequent reviews shall be done at a 5-year interval unless the Planning Commission determines that a shorter interval is necessary. In connection with such review, the Planning Commission shall take public testimony and shall otherwise investigate the permittee's compliance with the conditions of this Approval if there is a threat to public health and safety, a significant injurious threat to the environment, a nuisance or a violation of permit conditions.

The first Permit Review was completed in 2001.

J. In conjunction with the annual report to the State Geologist required by SMARA, an Annual Report to the Planning Director shall be prepared by the mining operator or other professional determined by the Planning Director as qualified to prepare such a report. The report shall be submitted by the mining operator to the Planning Director by April 1, 1995. If the Planning Director determines the need for an independent consultant with specialized expertise, the mining operator shall obtain such consultant. All costs of such report and its review shall be paid by the mining operator. The report shall include the following unless waived or modified in writing by the Planning Director.

1. A report on compliance with all Conditions of Approval including the required monitoring programs.

This report is included in the annual reports. The applicant has submitted a request to change the due date of the annual report to July 1st. A July 1st due date is consistent with County Mining Regulations; therefore, staff recommends approval of the request.

2. An analysis of any significant changes in environmental conditions or in the mining operation, which have not been anticipated in this Approval.

There have been no significant changes in environmental conditions or mining operations.

3. A current aerial photograph of the site (1' = 200' scale) showing facilities, stripped areas, and re-vegetated and reclaimed areas, together with a report on the extent of excavation and reclamation completed in the previous year and projected for the coming year.

Yearly aerial photographs have been included in the Annual Reports.

**Exhibit A**

4. Every fifth year, a current aerial photogrametric topographical map prepared from current aerial photographs map (1" + 200' scale with a 10 foot contour interval) showing lease and property lines and all the requirements of II.J.3 above.

This map was prepared in 2005.

5. A revegetation report prepared by a botanist, horticulturist or plant ecologist retained by the mining operator and approved by the Planning Director. The revegetation report shall describe the degree of success in achieving the objectives of the revegetation plan, and shall identify any changes or additional measures, which may facilitate achievement of the desired results.

For reasons discussed in this staff report, concurrent reclamation does not occur at this mine. When revegetation activities commence annual revegetation reports will be included in the annual report for the mine.

6. Written verification of the renewal andlor validity of the financial assurance.

An updated financial assurance cost estimate has been approved and the financial assurance mechanism will be updated accordingly.

7. A report to be held as proprietary information in accordance with the County's Mining Regulations, stating the annual amounts of production and shipping of mining products, and the estimated time to complete mining in the permitted area.

This information is submitted to the Planning Department in each annual report. The applicant has submitted a request to change the individual limits on wet and dry aggregate production without changing the overall production limit. Based on the analysis and discussion in the staff report, staff is recommending approval of this request.

8. A noise report prior to the required 5-year review shall be prepared by a qualified noise/acoustical consultant retained by the mining operator and approved by the Planning Director. The noise report shall determine whether or not the mining operator is in compliance with noise standards contained in the County Mining Regulations, and shall investigate and make recommendations regarding (relative to noise mitigations): (i) Any mining equipment used at the mining site); (ii) Proposed and existing noise protection; (iii) Any other significant impact resulting from mining operations. The mining operator shall implement all recommendations of the noise consultant determined to be necessary by the Planning Director for compliance with the conditions of the Approval.

Noise reports submitted prior to the 2001 Permit Review and in 2005 demonstrate compliance with noise standards.

9. All reports submitted to the Monterey Bay Unified Air Pollution Control District.

These reports are included in the annual report.

10. An inspection report by an Engineering Geologist addressing the safety of the work face.

This report is included in each annual report. The Geologist's reviews have not revealed any unexpected adverse geological conditions, and have noted that the quarry operation is maintaining good drainage control and the mining excavations are in good condition.

**K.** All costs for the County's inspections and review of the Annual Reports and other reports submitted by the Quarry shall be paid by the Quarry, within 30 days after billing.

All invoices are paid promptly.

L. **All** mining operations shall be in compliance with the State's Surface Mining and Reclamation Act (SMARA).

Olive Springs Quarry mining operations are in compliance with SMARA. This is documented in Annual Inspection Reports submitted to the State by the County in compliance with SMARA.

M. In the event that future County inspections of the subject property disclose non-compliance with any Conditions of this Approval 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 andlor necessary enforcement actions, up to and including Approval revocation.

The quarry is in substantial compliance with Conditions of Approval.

N. Within 120 days of the Approval of this application or prior to disturbance in the new mining area, whichever comes first, the Quarry should submit a revised financial assurance, in conformance with the requirements of SMARA, that takes into account the expanded mining area and the approved revegetation and reclamation plans. The Planning Director shall forward the financial assurance to the State Board of Mining and Geology for review and approval as specified in SMARA.

An updated financial assurance cost estimate has been approved and the financial assurance mechanism will be updated accordingly.

III. OPERATING REQUIREMENTS

A. Mining Operation

1. **All** mining activities, including clearing, excavation or other disturbances shall be done in conformance with the above Exhibits. Setbacks shall be measured from the property boundary lines on a horizontal plane. Within 60 days of issuance of Approval, staff shall determine which limits of Leasehold One and Three shall be surveyed and permanently staked at a 200 foot (maximum) interval by a licensed surveyor and fenced with a 3 foot high fence **to** prevent trespassing. Fencing and staking shall be completed within 120 days from Approval.

All mining activities have occurred within the areas designated on the above Exhibits. The limits of Leasehold One and Three were surveyed and staked in 1994, and have been maintained. The maintenance of the staking has been verified by quarterly inspections. The staked boundary has been roped-off, and posted with warning signs.

2. **A** benchmark shall be established in the mining floor at the 550-foot elevation in a visible area not proposed for disturbance. (Mit. B.1.2.)

A benchmark has been established on the Quarry floor, and maintained, as verified by inspections.

3. Any undiscovered active fault traces encountered during the mining operation shall be evaluated by an Engineering Geologist and documented in the required Annual Report. If an active fault trace is observed, the Engineering Geologist shall review the stability of the work face. (Mit. B.2.2.)

No new fault traces have been discovered per the reports of the Consulting Geologist and inspection by County staff.

**4.** The work face shall be excavated in compliance with the benching standards set forth by the Santa Cruz County Mining Ordinance, OSHA, MSHA, and in accordance with the above Exhibits. (Mit. B.3.1.)

The excavation is in compliance with the requirements of the County Mining Regulations and conditions of this permit.

5. Annual inspection of the work face shall be conducted by an Engineering Geologist to address conformance with the Mining and Drainage Plan. The annual inspection shall evaluate unexpected adverse geological conditions

Exhibit **A**

that may be encountered during mining operations. An inspection report shall be prepared by the Engineering Geologist and shall be included in the above required Annual Report. The report shall include the following:

a. A determination of how the newly exposed geologic structure will affect the stability of the work face.

b. An examination of stability factors using common engineering geologic graphs (hemispheric projections);

c. An examination of potential slope failures by a geotechnical engineer experienced in rock mechanics using data derived from the geologic examination:

d. A statistical analysis of the various features that can cause weakness in the slope (classification of the orientation, persistence, roughness, undulation and aperture of the fractures or joints in the work face); and,

e. How the fractures are filled or not filled with materials such as clay, rock, dust etc. The engineering geologist need not attempt to examine all fractures and joints, but can collect data along lines that represent different rock types in order to extrapolate the characteristics of the entire work face. (Mit. B.3.3 & B.3.2)

f. If any discontinuities are discovered in the inspection of the work face, a geotechnical engineer shall develop a program **to** evaluate the discontinuities including, but not limited to, any wedge or block slide type failure analysis. (Mit. B.3.3. & B.3.2.)

A Certified Engineering Geologist (CEG) has evaluated the active workface, and has prepared reports for each annual report. The CEG has noted no unexpected adverse geological conditions, and has concluded that the overall level of hazard has actually been reduced by the way the Quarry Operator has conducted excavations. The County Geologist has reviewed these Geologic Reports and found them acceptable.

6. Production shall be limited to 191,000 tons per year for dry aggregates and 35,000 tons per year for wet aggregates. If this aggregate production rate should be exceeded, it shall be reviewed by the Planning Commission for impacts to traffic, noise, air quality and other related issues.

Production information submitted to the Planning Department in each annual report **is** consistent with these limits. The applicant has submitted a request to change the individual limits on wet and dry aggregate production without changing the overall production limit. Based on the analysis and discussion in the staff report, staff recommends approval of this request.

**Exhibit A**

7. Within 120 days after Approval has been granted and continuously thereafter, the outer boundaries of the mining site shall be posted with signs providing notice of approved mining operations to the public. Each sign shall state in letters not less than four inches in height: "MINING APPROVAL NUMBER _____" and in letters not less than one inch in height: THIS PROPERTY MAY BE USED FOR THE MINING AND PROCESSING OF ROCK, SAND, GRAVEL AND MINERALS. THE HOURS OF OPERATION AND MAINTENANCE ARE AS FOLLOWS; _____." Each sign shall be maintained in legible condition at all times.

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|---|
| The specified signs have been placed along the outer boundary s of the mining area, as required, and have been maintained. |

B. Surface Drainage and Erosion Control:

**1.** All erosion control work shall be completed by October 15th *of* each year and stay in effect until April 15". (Mit. B.5.2. & Mit. C.3.11).

2. Measures provided in the Mining and Drainage and Revegetation Plans shall be implemented to reduce sediment concentrations. These measures shall include provisions and maintenance of ditches and waterbars along existing and future dirt roads and filter berms.

3. Existing drains and berms created to control storm water runoff shall be modified and maintained as necessary to provide adequate runoff control without erosion and sedimentation of Soquel Creek, and monitored annually to evaluate their effectiveness. The control of runoff from the work face and floor shall be in conformance with the above Exhibits. If required by the Planning Director, all design changes and improvements to the drainage system shall be designed by a Registered Civil Engineer and submitted to County Planning for review, approval, and incorporated into this Approval. The following additional drainage and erosion control measures shall be implemented'immediately:

   a. The quarried material stockpile shall be moved at least eight feet from the outboard edge of the Quarry floor.

   b. The six foot diameter culvert outlet extension shall be maintained to allow present and future runoff to continue discharging onto granitic rock to the headwall of the canyon.

   c. The erosion scar below the discharge pipe of Pond B shall be filled with rip-rap to a minimum gradient of 1.6:1. (Mit. C.1.1.)

The erosion control measures specified in items 1, 2 and 3 above have been implemented. The Civil Engineer's reports included in each annual report have verified these conditions have been met, and that surface erosion has been significantly reduced. The operator has recently installed additional drainage controls in an effort to further reduce runoff from the mining area and improve water quality.

**4.** The proposed phased Quarry expansion shall provide interim drainage control facilities for the site's increased drainage area. By October 15, 1994, a berm at the 1,200 foot elevation, a berm at the 700 foot elevation, installation of a 24 inch drain pipe between the two berms, and a series of three check ditches below the work face must be provided to protect slopes from erosion. The interim erosion control plan must be implemented as soon as possible. (Mit. B.5.1. & C.1.2.)

The benches have been constructed as specified. The installation of the 24" drain pipe has not been completed. The Quarry Operator has not installed the drain pipe because the pipe would essentially cut the work face into two halves, and be a constant hindrance to working the quarry face. Additionally, maintaining this pipe in the middle of an active quarry face would be extremely difficult given rockfall. The drainage on site is working adequately without the drainpipe as noted by the CEG and Civil Engineer in the annual report. Based on the analysis and discussion in the staff report, staff is recommending approval of the operator's request to eliminate this drainpipe as a condition of approval; and staff is recommending an alternative condition of approval to address drainage on the mine high wall.

5. Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity and/or long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred. To accomplish this, one or more of the following mitigation measures shall be implemented immediately:

   a. Pond A shall be enlarged by 200 cubic yards every year to a maximum design capacity. This excavation should take place immediately. The excavation slope gradients shall be no greater than 1:1 (horizontal: vertical). In conformance with the approved drainage plans, the first pond expansion shall increase the storage volume by 400 cubic yards. (Mit. C.2.1)

The pond slope gradients are approximately 1:1 in conformance with the Approval. Pond A was increased by 400 cubic yards, as required, and is verified by the 1995 Civil Engineer's Report. The pond has not been enlarged 200 cubic yards yearly, as required in the Approval. The Quarry Operator has submitted a request to eliminate the requirement to expand the ponds every year to a maximum design capacity, noting that onsite sediment sources have been reduced significantly (confirmed by 1999 Civil Engineer's Report), and that stormwater is adequately detained and monitoring of

discharge from the ponds has demonstrated good water quality. The Minor Amendment application includes a thorough re-evaluation of the drainage of the Quarry (existing and future), completed by a Civil Engineer, and reviewed by County Planning. Based on the analysis and discussion in the staff report, staff recommends elimination of the requirement to expand the ponds and continuation of periodic pond cleanout to maintain capacity.

b. Pond B, the secondary settling pond, shall be immediately expanded by removing the bench that exists within the southern portion for the pond. By increasing the extent of the pond to the west or south, additional sediment and runoff detention shall be obtained if required by the Quarry's Civil Engineer. (Mit. C.2.1)

The bench within Pond B was removed immediately after the approval in 1994 per the condition, as described in the 1995 Civil Engineers Report.

c. If material removed from the ponds has dried sufficiently (by September or October of each year), it shall be taken to Leasehold Three for temporary stockpiling until it can be sold. (Mit. C.2.1.)

The material excavated from the ponds has been stockpiled for processing near the ponds, and not taken to Leasehold Three. The storage of the material at this location is appropriate.

6. A written annual drainage report prepared by the Quarry's Civil Engineer shall be included in the Annual Report. (Mit. C.2.3.)

Annual inspection and report by the Quarry's Civil Engineer are completed and included in each annual report to the County.

7. Prior to stripping any new areas covered by loosely consolidated sediments (overburden) the operator shall notify the Planning Director for inspection to evaluate whether the stripping will affect erosion control measures. (Mit. C.3.1.)

New area stripped has been minor. The Quarry continues to work an existing, large quarry high wall. Stripping of new area has not affected erosion control measures.

*8.* Prior to October 15, the Quarry shall clear the work face of large quantities of loose sediment and debris, which are prone to severe erosion during rain storms. (Mit. C.3.2.)

The quarry Operator has done a good job keeping the work face free of loose material prior to the rainy season.

**Exhibit A**

9. Channels that are designed to concentrate and direct storm water runoff into the sediment pond detention system shall be armored with erosion resistant materials (such as rip-rap) at points of potential gullying. The areas to be protected shall be decided by the Quarry's Civil Engineer and recommendation included in the Annual Report to the County. (Mit. C.3.3.)

Rock armoring of channels has not been necessary since no rilling or gullying is evident on the quarry floor. The large old gully above Pond A is stable, having eroded down to sound granite bedrock years ago.

10. The surface area of the Quarry which is stripped, mined or otherwise disturbed at any given time shall be minimized to the greatest extent compatible with reasonable mining and marketing requirements. (Mit. C.3.4.)

Given the relatively confined operational area of the Quarry, this condition has been met.

11. Upon completion of the mining operations, reclamation and revegetation of each bench shall be done as soon as possible, in accordance with the Revegetation Plan. (Mit. C.3.5.)

Final benching of the quarry face, starting at the top, has not commenced.

12. All changes and improvements to the surface drainage system shall be designed by a Civil Engineer and a brief report addressing any changes and improvements shall be included in the Annual Report. (Mit. C.3.7.)

Changes in the surface drainage system include the deletion of the requirement to install a 24" downdrain pipe, and the elimination of the requirement to expand Pond A. The changes are designed by a civil engineer. The Minor Amendment application, which includes a request to eliminate these requirements, is analyzed in the staff report. Staff is recommending approval of the Minor Amendment.

13. An open channel shall be maintained in the granitic rock along the mining floor to reduce further erosion. (Mit. C.3.9. & C.3.10.)

An open channel has not been constructed on the mining floor; however, drainage is adequately controlled. The Quarry's Civil Engineer in each of the annual reports has noted this. The Minor Amendment application, which includes a request to eliminate these requirements, is analyzed in the staff report. Staff is recommending approval of the Minor Amendment.

14. The recommendations of the Mining and Drainage Plan shall be implemented, including the installation of floating or portable pumps in Pond B. (Mit. C.2.2.)

Both a portable pump and a siphon system are used to manage water in Pond B. The Minor Amendment includes a request to recognize the siphon system as an acceptable method to meet this requirement. Based on the analysis and discussion in the staff report, staff is recommending approval of this request.

C. Protection of Soquel Creek

1. Quarry storm water runoff control facilities into Soquel Creek shall be in compliance with the accepted Regional Water Quality Control Board (RWQCB) "natural turbidity" limits as set forth in the current approved RWQCB Discharge Order. (Mit. C.3.6.)

**2.** Prior to any discharge of pond water into Soquel Creek, turbidity and suspended solid tests of Soquel Creek and settling ponds shall be compared in order to determine if adequate settling has occurred in the ponds and if the pond's water quality is acceptable for release into Soquel Creek. The testing must take place immediately prior to discharge. (Mit. C.3.7)

3. Monitoring of water quality and discharges from the Quarry shall follow the standards for permissible increases in suspended solids and turbidity established by the RWQCB's Discharge Order and any standards set by California State Fish and Game. (Mit. C.3.7.)

4. If settling pond water is released, turbidity tests shall be run immediately upstream and downstream of the discharge point during discharge into Soquel Creek to monitor any increases in turbidity as a result of the release of pond waters. (Mit. C.3.7.)

**5.** As required by the RWQCB Order 89-02 (or subsequent Orders) for Leasehold One, runoff discharge into Soquel Creek shall meet the specified water quality requirements. A similar permit for Leasehold Three water discharge into Soquel Creek shall be obtained. All water quality monitoring and reporting requirements of the RWQCB shall be complied with. (Mit. C.3.8.)

Occasionally during the winter, overflow of storm water from Pond B and Leasehold 3 enters Soquel Creek. Additionally, overflow of storm water mixed with process water from Pond C enters Soquel Creek. These discharges are regulated under permits issued by the RWQCB. Results of monitoring and reporting of these discharges, whenever they occur, are reported to the RWQCB and copies of these monitoring reports are submitted to the County in the quarry annual report. The monitoring and

reporting indicate that the Ponds and other drainage and erosion control measures are effective at detaining storm water and process water and the quality of any overflow discharges is well within the standards established in the RWQCB permit.

6. A minimum flow rate in Soquel Creek of **0.5** to **0.75** cfs, as determined by the Department of Fish and Game, shall be maintained regardless of the water needs of the Quarry operations. Water withdrawal from the Creek shall not occur while the maintenance of this minimal flow rate is in jeopardy. Before any creek withdrawal, the operator shall be responsible for measuring the creek flow rate outside the southern boundary of the Quany property. (Mit. C.5.1. & D.3.4.)

Soquel Creek flows, within the Quarry reach, would only drop to .5- .75 cfs during drought conditions. The rainfall totals for the past 12 years have been approximately average or above average, and certainly not drought conditions. Stream flow data collected for steelhead monitoring in Soquel Creek adjacent to the quarry during low flow, late fall conditions, recorded flows of **2** to **5** cfs for 1997 and 1998, and are representative of the period covered in this review. Therefore it is estimated that minimum flow requirements have been met. Additionally, the Quarry Operator has purchased a portable pump which has enabled the operation to utilize runoff water stored in Ponds A and **B** to be transferred into Pond C, the recirculation pond for the washwater plant. This has significantly reduced the need to draw water from Soquel Creek.

Accurate measurement of creek flow rates during withdrawals is needed. An application has been submitted to the California Department of Fish and Game (CDFG) for a stream alteration agreement for a proposed temporary flume device to measure stream flow during withdrawal periods. A final stream alteration agreement is pending.

7. Unless a new agreement is made with the Department of Fish and Game, surface water pumping for mining operations shall not exceed their current permit allowance of 0.36 cfs. Any new requirement of the Department of Fish and Game are hereby included as conditions of this Approval. In the event that water from Soquel Creek is needed for mining operations, the flow rate, the date of withdrawal, the time duration and rate of withdrawal, as well as the downstream creek flow rate during withdrawal shall be logged by the operator and submitted to County Planning for review in the Annual Report. (Mit **C.5.4.** & C.5.2.)

Olive Springs Quarry has not pumped surface water from Soquel Creek in excess of the .36 cfs permit allowance (.36 cfs is equivalent to 161 gallons per minute). The pump at the Quarry was tested to determine the pumping capacity of the pump used for creek withdrawals. This test yielded 110 gallons per minute, well within the permit allowance.

**Exhibit A**

8. Any discharge into Soquel Creek from either Leasehold One or Three shall be monitored in accordance with standards established by the RWQCB. Monitoring shall be done by an independent laboratory or, as an alternative, may be accomplished by the installation of a mechanicallelectrical turbidity meter. All monitoring results **shall** be included in the Annual Report. (Mit. C.3.7. & D.3.3.)

The annual monitoring reports submitted by the quarry indicate that any discharges are monitored according to standards established by the RWQCB.

9. Prior to any pumping from Soquel Creek for mining operations, the operator shall notify the Planning Director for review of the necessity of pumping and to verify that the operator has investigated and tried new ways of minimizing their surface water pumping from Soquel Creek. (Mit. C.5.3)

Utilizing a portable pump the quarry operator pumps water stored in Ponds A and B to Pond C, the recirculating pond for the washwater plant. This is the most feasible way to reduce the need to draw water from Soquel Creek.

D. Protection of Pond Levees:

**1.** On or before October 15, 1994, the following measures shall be implemented in accordance with engineered plans **by** the Quarry's Civil Engineer, dated October 1993, to increase the stability of pond levee "A:

a. The outboard slope of the levee above the elevation of 395 feet shall be graded back to a 1.4:1 gradient or flatter. Erosion control measures in accordance with the approved Erosion Control Plan, including the placement of rip-rap or gabion revetment from the toe of the levee to an elevation about the 100-year flood level, shall be implemented to provide protection from scouring of creek flood waters. (Mit. B.4.1)

2. On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B:

a. The erosion scar below the discharge pipe shall be fitted with rip-rap to a minimum gradient of 1.6:1.

b. Because of the presence of heavy vegetation at the outboard slope of the levee which precludes access to heavy equipment and stabilizing work, an acceptable factor of safety shall be achieved by limiting the height of the water level within the pond to 376 feet above Mean Sea Level (MSL) by pumping water to pond "C" or the adjacent creek. Elevation markers shall be placed in the pond by the Quarry's Civil Engineer to verify the water

level during quarterly inspections for verification of the 376 foot elevation. (Mit B.4.2)

3. On or before October 15, 1994, a buttress fill shall be placed at the outboard slope of levee "C" including appropriate subdrainage structures, to increase the stability of the levee to an acceptable level. (Mit. B.4.3.)

4. Pond water shall not be released at a rate which exceeds one-third of its capacity per 24 hours to prevent the rapid drawdown of pore waters within the levee which could result in levee failure. (Mit. B.4.4)

5. All levees shall be maintained to prevent uncontrolled discharge into Soquel Creek during a major earthquake andlor unusual storm event. (Mit. D.3.1)

6. The existing outfall pipe from the pond "C" should be extended or, alternatively, rip-rap shall be placed into the erosion scar to prevent additional erosion of banks of Soquel Creek. Construction shall be confined as to the minimum riparian area. Following the construction activities, the affected areas shall be immediately replanted with riparian vegetation under the supervision of a qualified botanist or revegetation specialist. Trees removed shall be replaced by the same species at a 2:1 replacement ratio or pursuant to Section 16.00 of the Streambed Alteration Agreement. (Mit. D.3.2)

The measures specified in the conditions above have been met. Inspection reports from the Quarry's Geotechnical Engineer and Civil Engineer on these issues are included in Planning Department files. Planning staff have also observed compliance with these conditions during quarterly and annual inspections.

E. Groundwater Protection:

1. Operators shall continue to protect the existing local groundwater level and quality by not mining below the proposed final 550-foot elevation and by not expanding pond capacity by increasing their depth but rather by increasing their width. (Mit. C.6.1)

Mining operations have been maintained above the 550-foot elevation per the elevation monument surveyed onto the Quarry floor, and Planning staffs quarterly inspections.

2. Mining Operations shall maintain a minimum 20-foot separation between peak groundwater table and the mining floor.

A minimum of 20-feet of separation from the Quarry floor to the groundwater table has been maintained.

Exhibit A

F. Revegetation and Reclamation:

1. Within 90 days from issuance of Approval, a Habitat Management Plan with performance standards as set by SMARA shall be completed by a qualified biologist and submitted to County Planning for approval and inclusion in the Reclamation Plan for all species of concern as identified in the 1993 EIR by LSA. This report shall include nesting habitat for purple martin, golden eagle habitat identification of habitat of southwestern Pond Turtles, California Red-legged Frog and Foothill Yellow-legged Frog. (Mit. D.2.1 & D.2.2)

Olive Springs has complied with this condition. A Habitat Management and Monitoring Plan has been completed by Greening Associates in April 1994.

2. The Revegetation Plan designed by BioSystems (April, 1992) shall be implemented to offset potential vegetation and wildlife impacts as soon as and area within the approved mining area is completed. (Mit. D.I.I & D.2.3)

A new revegetation plan (Exhibit F) has been completed to update the 1992 revegetation plan. Based on review by Planning Department staff the new plan meets the standards for revegetation plans contained in the Santa Cruz County Mining Regulations and SMARA. The proposed permit amendment will incorporate the new revegetation plan into the permit documents as an exhibit. The revegetation plan will be implemented upon mining completion as the final quarry face is constructed starting with the top bench and working down.

3. The Revegetation Plan submitted by BioSystems Analysis shall be amended to include performance standards for revegetation. This amendment shall be included in the first Annual Report.

Performance standards for revegetation are incorporated into the new Revegetation Plan.

4. The Revegetation/Reclamation Plan shall be amended to indicate the location of all temporary topsoil storage areas. This amendment shall be included in the first Annual Report. (Mit. K.I.1)

All topsoil shall be stockpiled at Leasehold 3. Only minimal new stripping has occurred during this five year review period.

5. Upon closure of mining activities, all ponds shall be fenced. A 6-inch opening between the ground and the bottom of the fence shall be maintained to allow the passage of small animals. (Mit. K.2.1)

To be completed upon closure of mining activities.

6. Slash and brush from on-site clearing shall be chipped and added to the reserved topsoil on Leasehold Three. (Mit. K.1.2)

Slash and brush have been added to stockpiles in Leasehold Three per County quarterly inspections.

7. As soon as revegetation areas are available, test plots shall be conducted to determine the most successful revegetation procedures. (Mit. K.1.3)

There is an area on an existing bench on the mine face where test plots can be established, which will occur pursuant to the new Revegetation Plan.

8. Reclamation and revegetation shall occur concurrent with the continued mining to the extent feasible. (Mit. A.l.l)

Final revegetation areas are currently not available because virtually the entire quarry face is worked at the same time.

9. The Reclamation Plan shall conform to the County Mining Regulation standards. (Mit. C.3.12)

The Reclamation Plan conforms to the County Mining Regulations.

10. All drains, facilities, and devices to control storm water runoff shall be maintained effectively during reclamation. (Mit. C.3.13)

The quarry is in compliance with this condition during mining and this is to continue during reclamation.

G. Protection of Viewshed:

1. In the event that material in excess of the permitted 25,000 tons of material is needed to be stored on Leasehold Three, the extra material will be limited to a three-month storage period. After that time, all material in excess of 25,000 tons shall be removed from the Quarry property. If the need for storage of excess material occurs in future years, after the maturation of the vegetative screen required by this permit, the amount of material maintained on Leasehold Three may exceed the 25,000 ton existing limit for a longer period of time to the extent that the screening is effective. This additional amount of stored material shall require written approval by the Planning Director, in advance of placement of the material. (Mit. F.3.1)

There is less than 25,000 tons of material on Leasehold Three. This has been verified by the Quarry's Civil Engineer, and by quarterly inspections by Planning staff.

**Exhibit A**

2. Benches on the work face shall be contoured to provide for a gradual transition into the adjacent hillside. (Mit. B.I.1)

This condition will be met as benches are completed in the future. Work face excavation, with regard to final contours, has not yet progressed to the final contour stage since this Approval.

3. Within 90 days of the date of issuance of Approval, the vegetative screening shall be planted along the southern property line of Leasehold Three to complement the existing sparse vegetation between the adjacent residences and the Quarry. This vegetation shall be planted and maintained by the Quarry according to a landscape plan prepared by a qualified botanist and reviewed and approved by County Planning. (Mit. F.2.1)

Additional vegetative screening has been planted along the southern property line of Leasehold. The previously existing vegetation has filled in substantially since approval. Additionally, the stockpile along the southern end of Leasehold Three provides a substantial visual and sound screen to the properties south of the Quarry. Quarterly inspections have verified that the existing vegetation and stockpile is adequate to fulfill the screening requirement.

H. Protection of Paleontological Resources:

1. In the event that significant paleontological resources (i.e., significant skeletal remains that would substantially contribute to the 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 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. (Mit G.1.11)

Paleontological resources have not been discovered during operations.

I. Operating and Shipping Hours:

1. Hours of Quarry operation shall be 7:00 AM to 7:00 PM, Monday through Friday, but only during daylight hours. Retail sales may be allowed 7:30 AM to 12:00 noon on Saturdays.

County Planning has not received complaints of Quarry operations being conducted outside of the approved hours.

**Exhibit A**

J. Traffic Control:

1. The Quarry shall request from the Department of Public Works warning sign placement along Soquel-San Jose Road at its northern and southern approaches to Olive Springs Road to warn drivers of truck traffic entering and exiting Soquel-San Jose Road. Any cost of the preparation and placement of signs shall be paid by the Quarry. (Mit. H.2.1)

Signs have been placed along Soquel-San Jose Road as specified.

2. Pavement conditions along Olive Springs Road shall be monitored by the County Public Works Department to determine the extent to which pavement degradation is attributable to Quarry operations. The Quarry shall be responsible for repairing unacceptable pavement conditions caused by Quarry traffic. (Mit H.4.1)

The Department of Public Works assesses pavement damage caused by Quarry related trucking on Olive Springs Road. Pursuant to this permit the quarry will be responsible for repairs accordingly.

3. When logging of the Soquel Demonstration Forest begins in spring of 1994, the Quarry and the State Forest shall coordinate operation schedules to prevent traffic backup on this roadway. The State Forest access through the Quarry shall continue as administrative only, and public use by recreational visitors shall be prohibited by signing and gating the roadway to the State Forest. (Mit. A.2.1)

Since Approval, logging has taken place on the Soquel Demonstration Forest, and on the lands of CHY Company, with no significant traffic problems. The required signs and gating are in place.

**4.** The Quarry shall maintain a speed enforcement program at Olive Springs Road. The program shall include the following, at minimum:

a. Verification, using radar or other appropriate means, of truck speeds on Olive Springs Road. This verification shall occur at least two days per week, on a random day basis. The Quarry shall keep a record of the speed verification program and shall provide a summary of the results to the County in the Annual Report.

b. Trucks exceeding the posted 25 mph speed limit shall be reported to the Quarry. The Quarry shall provide written warnings to drivers observed exceeding the speed limit. Three-time violators shall be prohibited from transporting materials from the Quarry for a period of at least 30 days.

c. All complaints of excessive truck speed shall be reviewed by the Quarry and kept in a permanent log. All complaints shall be investigated promptly.

d. The Quarry shall provide written notification of the speed limit and the consequences of non-compliance to all truck drivers entering the Quarry. A sign informing drivers of the 25 mph speed limit on Olive Springs Road shall be posted at the weigh station.

The quarry has been diligent in their speed enforcement program as is evidenced in the voluminous radar log section in the annual reports. A review of the traffic information submitted in the 2001 Five Year Report indicated that truck traffic speeding has not been a significant problem. The speeds of over 1600 vehicles were recorded and submitted with the 2001 Five Year Report. Approximately 6% of the trucks were recorded with speeds in excess of the speed limit. Speeding trucks were generally within 5 mph of the 25 mph posted speed limit. Compared with the residential vehicle traffic, where 55% of the traffic was speeding, most often in excess of 30 mph, the truck traffic has been well controlled. Planning staff, on their quarterly inspections have not noted speeding truck traffic. As a result of the 2001 Permit Review a revised monitoring program was approved requiring random radar checks, 12 times a year (once every month). The quarry has continued the traffic enforcement program including monthly monitoring. For the year 2005 a total of 718 vehicle and truck trips were measured. Minor exceedance of the speed limit was measured for approximately 10% of the trucks, whereas approximately 42% of the cars exceeded the speed limit. The quarry operator issues speed limit reminders to truckers and warnings to truckers caught speeding. Planning staff does not receive complaints regarding truck traffic on Olive Springs Road.

**K.** Air Quality:

1. Actively used unpaved Quarry roads shall be watered or sprayed with lignin sulfonate or other environmentally approved dust retardant to reduce fugitive dust.

The Quarry has been diligent in maintaining their road system for dust control, as verified b[illegible] Pl[illegible] ff i[illegible]

2. **All** equipment and processing facilities shall be maintained in accordance with the Monterey Bay Air Pollution Control District standards for stationary sources.

The Olive Springs Quarry has maintained their permits with MBAPCD, and Planning staff has verified the permits are in good standing with MBAPCD staff. Annual reports include use log of equipment and processes that produce air emission to verify operations within limits set by the air district permits.

**Exhibit A**

3. By October 1994. the ooerati of the asphalt olant shall be perman ntly fueled by Liquefied Petroleum Gas (LPG). The use of diesel fuelshall be discontinued. (Mit. 1.2.1)

The asphalt plant has been converted to LPG, as verified by Planning staff and MBAPCD inspections.

4. Revegetation in accordance with the approved Reclamation and Vegetation Plan shall be initiated as soon as practical in order to minimize fugitive dust.

Revegetation has not yet begun on the Olive Springs Quarry property, however, erosion control efforts on Leasehold Three have greatly reduced fugitive dust from that area, paved roads and unpaved road watering continue to be effective at controlling fugitive dust.

L. Miscellaneous Conditions:

1. Any new on-site structures shall incorporate approximate seismic forces (a mean peak horizontal ground acceleration of 0.54, a maximum horizontal ground acceleration of 52 cm/sec, and a 20-40 sec ground shaking duration) into the design of criteria, and be designed by a registered Civil Engineer. (Mit. B.2.1)

There have been no new structures constructed on the Olive Springs Quar y site.

2. The Quarry shall obtain a Timber Conversion Permit from the California Department of Forestry prior to any timber harvest on the site. The Quarry shall comply with all requirements of this permit including installation of erosion control measures of the cessation of harvest and institution of the fire protection measures both during and after harvest. (Mit. E.I.I)

The Quarry has obtained the required permit from CDF.

3. All drains, facilities and devices to control storm water shall be maintained to operate effectively during Quarry reclamation. (Mit. C.3.13)

Effective drainage control is maintained during quarry operations and is to continue during reclamation.

4. The Quarry and CHY Corporation shall work with the County Parks and Open Space and Cultural Services Department to determine if a trail from Olive Springs Road to the Soquel Demonstration Forest is safe and feasible. The results of the research shall be reported by staff to the Planning Commission on the consent agenda in one year.

**Exhibit A**

As reported to the Planning Commission in 2001, a meeting was held with County Parks, the California Department of Forestry (CDF), County Planning, and the CHY Company. The result of this meeting was that the potential routes investigated for access were infeasible due to safety issues regarding the Quarry, or steep slopes. Although access is not appropriate during mining operations, safety issues associated with mining operations would be eliminated after mining operations cease. Further work pursuant to this Condition of Approval at that time may determine that access is safe and feasible. Therefore, it is premature to eliminate this condition.

CDF is pursuing the development of access from Soquel-San Jose Road by purchasing three private parcels along Soquel-San Jose Road and linking these properties to the Demonstration Forest, which involves discussions with the CHY company to acquire access across a corner of the larger CHY Company property on which the quany is located on the northwest side of Sugarloaf Mountain.

M. Mitigation Monitoring Program

The mitigation measures contained in Exhibit "N" 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. As required by Section 21081.6 of the California Public Resources Code, a monitoring and reporting program for the mitigations is hereby adopted as a Condition of Approval and is attached as Exhibit **" N .** The purpose of this 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 Santa Cruz County Code. All mitigation monitoring shall be documented in the required Annual Report. If the next quarterly inspection following the submittal of the Annual Report shows non-compliance with any provisions of this Mining Approval, enforcement actions in accordance with the County Code and SMARA will be implemented to achieve compliance.

As described in this Permit Review the quarry is in substantial compliance with Conditions of Approval and the Mitigation Monitoring Program.

COUNTYOFSANTACRUZ
PLANNING DEPARTMENT

Planning Commission
Meeting Date: 11/8/06
Agenda Item: # 8
Time: After 9:00 a.m.

# APPLICATION NO. 01-0572

## STAFF REPORT TO THE PLANNING COMMISSION

# EXHIBIT B

# COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
**TOM BURNS, PLANNING DIRECTOR**

## NEGATIVE DECLARATION AND NOTICE OF DETERMINATION

**Application Number: 01-0572** **Powers Land Planning, Inc., for Chy Company**

Proposal to amend Mining Approval 88-0233 to modify conditions **of** approval that require certain drainage and operation activities, and to delete conditions that have been satisfied. Requires an amendment to Mining Approval 88-0233. The project is located on the northern terminus of Olive Springs Road, Summit Planning Area.

**APN: 099-171-03 & 099-251-01** **David Carlson, Staff Planner**

**Zone District: M-3**

**ACTION: Negative Declaration**

**REVIEW PERIOD ENDS: September 6,2006**

This project will be considered at a public hearing by the Planning Commission. The time; date and location have not been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

Findings:

This project, if conditioned lo comply with required mitigation measures or conditions shown below. will not have significant effect on the environment. The expected environmental impacts of the project are documented in the Initial Study on this project attached to the original of this notice on file with the Planning Department, County of Sanla Cruz. 701 Ocean Street, Santa Cruz, California.

Required Mitigation Measures or Conditions:

____XX_ None

_____ Are Attached

Review Period Ends___ September 6. 2006

Date Approved By Environmental Coordinator___ September 11, 2006

KEN HART
Environmental Coordinator
(831) 454-3127

If this project is approved, complete and file this notice with the Clerk of the Board:

NOTICE OF DETERMINATION

The Final Approval of This Project was Granted by _____

on _____ No EIR was prepared **under** CEQA

THE PROJECT **WAS** DETERMINED TO NOT HAVE SIGNIFICANT EFFECT ON THE ENVIRONMENT

Date completed notice filed with Clerk of the Board:_____

# Environmental Review Initial Study

**Application Number: 01-0572**

**Date:** July 31, 2006
**Staff Planner:** David Carlson

## I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

**APPLICANT:** Powers Land Planning, Inc. **APN:** 099-171-03 & 099-251-01
**OWNER:** Chy Company
**OPERATOR:** Olive Springs Quarry, Inc. **SUPERVISORAL DISTRICT:** First District

**LOCATION:** Northern terminus of Olive Springs Road, Summit Planning Area

**SUMMARY PROJECT DESCRIPTION:** A proposal to amend Mining Approval 88-0233 to modify conditions of approval that require certain drainage and operating activities and to delete conditions that have been satisfied. Update of the 1992 Revegetation Plan is also included. Requires an amendment to Mining Approval 88-0233.

**ALL OF THE FOLLOWING POTENTIAL ENVIRONMENTAL IMPACTS ARE EVALUATED IN THIS INITIAL STUDY. CATEGORIES THAT ARE MARKED HAVE BEEN ANALYZED IN GREATER DETAIL BASED ON PROJECT SPECIFIC INFORMATION.**

| | | | |
|---|---|---|---|
| X | Geology/Soils | X | Noise |
| X | Hydrology/Water Supply/Water Quality | X | Air Quality |
| X | Biological Resources | | Public Services & Utilities |
| X | Energy 8 Natural Resources | | Land Use, Population 8 Housing |
| | Visual Resources & Aesthetics | | Cumulative Impacts |
| | Cultural Resources | | Growth Inducement |
| | Hazards & Hazardous Materials | | Mandatory Findings of Significance |
| X | Transportation/Traffic | | |

**DISCRETIONARY APPROVAL(S) BEING CONSIDERED**

| | | | |
|---|---|---|---|
| | General Plan Amendment | | Grading Permit |
| | Land Division | | Riparian Exception |

___ Rezoning
Development Permit
___ Coastal Development Permit

__X__ Other: Mining Approval Amendment
___
___

**NON-LOCAL APPROVALS**
Other agencies that must issue permits or authorizations: None

**ENVIRONMENTAL REVIEW ACTION**
On the basis of this Initial Study and supporting documents:

__X__ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

___ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the attached mitigation measures have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared.

___ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Paia Levine

8/2/06
Date

For: Ken Hart
Environmental Coordinator

## II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS
Parcel Size: 296 acres (two parcels total)
Leasehold Size: 132 acres
Existing Land Use: Mineral Quarry
Vegetation: Mixed Evergreen & Redwood Forest; Chaparral; Riparian Woodland
Slope in area affected by project: approx. 45 acres: 0 - 30%; 87 acres: 31 – 100%
Nearby Watercourse: Soquel Creek
Distance To: Adjacent

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

| | |
|---|---|
| Groundwater Supply: Adequate Quantity, Good Quality | Liquefaction: Yes |
| Water Supply Watershed: None mapped | Fault Zone: County Fault Zone |
| Groundwater Recharge: Yes, portion | Scenic Corridor: None mapped |
| Timber or Mineral: Mineral Resource | Historic: None mapped |
| Agricultural Resource: None mapped | Archaeology: Survey negative |
| Biologically Sensitive Habitat: Yes | Noise Constraint: None mapped |
| Fire Hazard: None mapped | Electric Power Lines: None |
| Floodplain: Yes | Solar Access: Adequate |
| Erosion: High to Very High Hazard | Solar Orientation: Adequate |
| Landslide: None mapped | Hazardous Materials: None |

SERVICES

| | |
|---|---|
| Fire Protection: Central Fire | Drainage District: No Zone |
| School District: Santa Cruz | Project Access: Olive Springs Road |
| Sewage Disposal: Septic System | Water Supply: Private Well, Soquel Creek |

PLANNING POLICIES

| | |
|---|---|
| Zone District: M-3 | Special Designation: Quarry |
| General Plan: R-M & R-R | |

| | | |
|---|---|---|
| Urban Services Line: | ___ Inside | _X_ Outside |
| Coastal Zone: | ___ Inside | _X_ Outside |

PROJECT SETTING AND BACKGROUND:

The Olive Springs Quarry is located on two contiguous parcels at the northern end of Olive Springs Road, approximately 1.5 miles east of Old San Jose Road on the easterly face of Sugarloaf Mountain (Attachment 3). The assessor's parcel numbers are: 099-171-03 and 099-251-02. The site is located adjacent to Soquel Creek and Nisene Marks State Park to the East, and the California Department of Forestry's (CDF) Soquel Demonstration Forest to the North. Rural residential uses exist to the southeast, south

and west. The remainder of the land owned by CHY/Setzer not included in the Mining Approval remains undeveloped, and has been harvested for timber periodically. The combined size of both parcels is 296 acres; however, the mining operation takes place within three leasehold areas totaling 132 acres (Attachment 4). The active mining site, the asphaltic concrete plant, and the crusher and screening facilities are located on Leasehold One. It is within Leasehold One that the 16-acre expansion area was approved in 1994. Leasehold Two provides access between Leasehold One and Three, and contains a permitted caretaker's quarters. Leasehold Three is the location of the Quarry entrance, scale house, and material stockpiles.

The mining operation at Olive Springs Quarry processes decomposed granite resources for use in the construction industry. The work face consists of a series of stepped benches from which products are ripped and pushed from upper to lower benches with a large bulldozer. This requirement of moving resources from the upper bench to the lower bench within the limited Quarry area prevents concurrent reclamation of the working face. A front-end loader transports the material from the Quarry bottom to the receiving hopper of the crushing plant. After moving from the primary crusher to the secondary cone crusher, the rock is screened and mechanically conveyed to stockpile areas. Quarry products include baserock, granitic fines, and aggregate, in addition to the asphaltic concrete plant products.

The County of Santa Cruz originally opened Olive Springs Quarry in 1932 to supply quarry products for County projects. Since that time the leasehold to operate the quarry and the property ownership have changed a number of times. The operation of the quarry continued through 1993 under use permits 431-U, 4413-U, 73-01-Q, and 78-355-PQ. In 1994 the Planning Commission certified an EIR and granted a Mining Approval for a 16-acre expansion and continuation of mining for another 50 years under Mining Approval 88-0233.

The Planning Commission conducted a review of permit 88-0233 in 2001. At that time it was determined that Olive Springs Quarry was in substantial compliance with the conditions of Mining Approval 88-0233. However, in 2001 staff recommended that the quarry apply for a permit amendment to incorporate specific operational drainage changes into the conditions of approval. The Quarry has been operated in a manner that has not resulted in threats to public health or safety, or the environment. By the accounts of the Quarry's Civil Engineer, Geologist, and Planning Department staff, the quarry has improved operationally. Permits have been maintained with other agencies that regulate the Quarry operation. The current application for amendment has been submitted in accordance with a Planning staff recommendation of the 2001 review to incorporate the operational drainage changes into the conditions of approval. The applicant has proposed additional amendments to permit conditions regarding annual reports, wet/dry aggregate production limits and elimination of project conditions which have already been met. Additionally, to facilitate the review and update of the financial assurance for the mine a new revegetation plan has been completed to update the 1992 revegetation plan.

**DETAILED PROJECT DESCRIPTION:**

In 1994 the Planning Commission certified an Environmental Impact Report and granted a Mining Approval for a 16-acre expansion and continuation of mining for another 50 years under Mining Approval 88-0233. The conditions of approval for permit 88-0233 are included as Attachment 1. This application proposes to modify the conditions of approval as follows:

- II.J.) Change the due date for the annual report to the Planning Director;
- III.A.6.) Eliminate the individual limit on wet aggregate production and limit only the total aggregate production.
- lll.B.4 & 13) Eliminate certain interim drainage control facilities on the work face and quarry floor;
- lll.B.5.a &b) Eliminate conditions regarding increasing holding capacity'for storm drainage;
- III.B.14) Revise text of condition to reflect specific changes to the drainage plan;
- III.D.l.) Eliminate conditions regarding erosion protection and stability of pond levees because the work has been completed;
- III.L.4.) Eliminate a condition regarding the feasibility of a trail from Olive Springs Road to the Soquel Demonstration Forest

The applicant's amendment request is included as Attachment 2. Proposed modifications are shown by strikeout for deleted text and underline for added text. Following each condition the applicant's explanatory comments are in the text box.

It should be noted that two of the applicants requests (II.J & III.L.4) are not analyzed in this initial study because the nature of these requests have no potential to impact the environment. The request to change the due date for the annual report is administrative in nature. The condition regarding trail feasibility is not related to any environmental impact or mitigation measure in the Environmental Impact Report for this quarry, but was added by the Planning Commission as a result of public comment on application 88-0233. Compliance with this condition and the request to eliminate it will by analyzed in the future staff report to the Planning Commission on this amendment application.

Additionally, a new revegetation plan has been completed to update the 1992 revegetation plan. Based on review by Planning Department staff the new plan meets the standards for revegetation plans contained in the Santa Cruz County Mining Regulations and SMARA. The proposed permit amendment will incorporate the new revegetation plan into the permit documents *as* an exhibit. The new revegetation plan and the associated updated cost estimate for revegetation is a component of the update of the overall financial assurance cost estimate for the mine.

There are no new physical changes or new practices associated with this project, which is largely the process of evaluating new or updated information and modifying or deleting certain conditions of approval. Mitigation measures are unchanged.

| Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|

## III. ENVIRONMENTAL REVIEW CHECKLIST

### A. Geology and Soils

Does the project have the potential to:

1. Expose people or structures to potential adverse effects, including the risk of material loss, injury, or death involving:

| | | | | |
|---|---|---|---|---|
| A. | Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or as identified by other substantial evidence? | | | X |
| B. | Seismic ground shaking? | | | X |
| C. | Seismic-related ground failure, including liquefaction? | | | X |
| D. | Landslides? | | | X |

An Environmental Impact Report was prepared in 1993 and certified in 1994 for the proposed phased quarry expansion permit 88-0233. The EIR identified potential impact 6.3 regarding slope failure of the quarry working face (Attachment 7). Associated Mitigation Measure **B.3.2** requires that annual inspections of the quarry face shall be conducted by a State Certified Engineering Geologist to address the conformance with the phased Mining and Drainage Plans and to evaluate unexpected potentially adverse geological constraints that may be encountered during future excavation such as breccia zones, adverse dip of jointing, springs or seeps, or fracture areas. Rogers Johnson & Associates have conducted the annual geologic inspections addressing the safety of the working face at Olive Springs Quarry, which include, in part, an evaluation of drainage control as it pertains directly to the active working faces and benches at the quarry. The reports of the inspections for the past eight years have concluded that the drainage control for the active working faces and benches at the top of the quarry is adequate. The latest report states that the quarry operation is well managed; the operations are maintaining good drainage control and the mining excavations are in good condition.

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

The mitigation measures identified in the EIR h re been incorporated into the conditions of approval for this project in order to mitigate or avoid significant effects on the environment. Mitigation Measure B.3.2 is incorporated into condition of approval III.B.4, which the applicant requests to eliminate. This condition requires interim drainage control facilities consisting of berms and a drainpipe on the working face of the quarry to prevent uncontrolled drainage and erosion from contributing to slope instability. The quarry has been operating without the required interim drainage control facilities; however, the annual geologic inspections support the applicant's request to eliminate this condition because the reports indicate that the existing drainage controls are adequate. In fact, it is not feasible to install the interim drainage controls as they were specified because of conflicts between the pipes and berms that would be installed and the machinery working the face.

While eliminating the Condition of Approval for specific drainage control facilities appears appropriate, it is equally appropriate to replace the existing condition with a new condition reflecting the adaptive drainage control practices on the working face that have kept the quarry working face in good condition and have minimized erosion and subsequent possible siltation of the settling ponds and Soquel Creek. Therefore, staff proposes modified language for a Condition of Approval III.B.4. based on the descriptions in the annual geologic inspection reports and drainage reports as follows:

"The proposed phased quarry expansion shall provide interim drainage control facilities for the site's increased drainage area as the mining operation progresses. Drainage control on the quarry face and floor shall be inspected and evaluated annually by the project engineering geologist and civil engineer. The annual geologic inspection of the working face by the engineering geologist and the annual drainage report by the civil engineer shall provide conclusion on the adequacy of interim drainage control facilities and, if appropriate, provide recommendations for improvements. The goals are to minimize the potential safety hazard from slope failure on the quarry workface, which may be caused by improper drainage control, and minimize erosion and sedimentation, which will preserve the capacity of the ponds."

Although modified language is proposed for the permit condition, there is no environmental impact from eliminating the old condition without adding new language.

| | | | | | |
|---|---|---|---|---|---|
| 2. | Subject people or improvements to damage from soil instability as a result of on- or off-site landslide, lateral spreading, to subsidence, liquefaction, or structural collapse? | | | X | |

The application proposes to eliminate conditions that were imposed in order to provide greater stability for embankment slopes for ponds A, B and C along Soquel Creek (Attachment 8). The work required by the conditions has been completed; therefore, the applicant is requesting to delete conditions III.D.1.a, III.D.2.a, III.D.3 and III.D.6.

| Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|

The 1993 EIR identified potential impact B.4 regarding potential slope instability within the pond A, B and C embankment slopes during earthquakes, which could cause deformation, sliding or cracking of the levees but not catastrophic failure. The EIR states that overly steep levee slopes left unattended could result in levee failure (Attachment 8). Associated mitigation measures B.4.1, B.4.2 and B.4.3 require grading to improve levee slope gradients, installation of riprap erosion protection on the levee slope and controls on pond water levels. These mitigation measures are incorporated into a series of conditions of approval III.D.I through III.D.6.

Levee C improvements, required by condition lll.D.3 and III.D.6, are described in 2 letter dated October 27, 1993 from the project geotechnical engineer. The work described consists of construction of a buttress fill against the outboard side of the pond embankment and installation of a curtain drain along the embankment toe to collect seepage water and carry it through the buttress fill. The improvements have been completed; therefore the applicant is requesting elimination of condition lll.D.3 and lll.D.6. The project civil engineer and geotechnical engineer inspected the work and documented that it conforms to their requirements. The project civil engineer subsequently completed a follow-up inspection of the Levee C improvements and stated in the annual drainage inspection letter report dated December 13. 1995 the work has performed very effectively, the area has revegetated extremely well and the discharge pipe below the pond has not caused any erosion of material. Subsequent inspections have also not found any problems with the work. Conditions of approval lll.D.3 and III.D.6 were satisfied within the timeline specified, which means corresponding Mitigation Measure B.4.3 has been implemented and the potential environmental impact identified in the EIR has been mitigated. Therefore, the question of whether or not to delete an operational condition that has been satisfied is an administrative rather than environmental question at this time.

Levee B improvement, required by condition III.D.2.a, consists of repair of an erosion scar below the discharge pipe by placing riprap in the scar at a minimum gradient of 1.6:1. This work was completed as required; therefore the applicant is requesting elimination of condition lll.D.2.a. The work required by the condition was completed and is documented in the letter dated October 27, 1993 from the project geotechnical engineer. The project civil engineer subsequently completed a follow-up inspection of the Levee B improvement and stated in the annual drainage inspection letter report dated December 13, 1995 the discharge pipe and riprap are working effectively. Subsequent inspections have also not found any problems with the work. Condition of approval III.D.2.a was satisfied within the timeline specified, which means corresponding Mitigation Measure B.4.2.a has been implemented; therefore, this proposed deletion is also an administrative, rather than an environmental issue.

Levee A improvements, required by condition III.D.l.a, consist of placement of riprap from the toe of the levee to an elevation above the 100-year flood level and reducing the slope gradient of the levee above 395 msl to 1.4:1 gradient or flatter and

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

revegetation. Placement of riprap was completed in December 1996. The additional grading and revegetation of the levee slope above the riprap was completed in 1997. Therefore, the applicant is requesting elimination of this condition. All the work was completed under the supervision of the project geotechnical engineer. Subsequent follow-up annual inspections by the quarry civil engineer confirm that the Pond A levee improvements are stable and effective. The slope is revegetated. Condition of approval III.D.l.a was satisfied, which means corresponding Mitigation Measure B.4.1 has been implemented.

Because the above described conditions of approval have been satisfied the potential environmental impact identified in the EIR has been mitigated; therefore, there is no physical change and no environmental impact associated with eliminating these conditions of approval.

| | | | | | |
|---|---|---|---|---|---|
| **3.** | Develop land with a slope exceeding 30%? | | | X | |

There are slopes that exceed 30% on the property. However, this amendment does not affect slopes in excess of 30%.

| | | | | | |
|---|---|---|---|---|---|
| 4. | Result in soil erosion or the substantial loss of topsoil? | | | X | |

The EIR identified potential impact B.5 regarding potential erosion and excess siltation of the sediment ponds. Mitigation Measure B.5.1 is intended to minimize and control erosion and sedimentation on the site and is incorporated into condition III.B.4, which requires the interim drainage control facilities consisting of berms and a drainpipe on the working face of the quarry to prevent uncontrolled drainage and erosion from contributing to excessive siltation of the pond A. See section **A-1** above for a full discussion of why it is appropriate to modify this condition to eliminate certain specific drainage facilities.

The EIR identified potential impact C.3 regarding the potential for quarry operations to increase rates of erosion and sedimentation on the site. Associated Mitigation Measures C.3.1 through C.3.13 are intended to minimize and control erosion and sedimentation on the site. Condition III.B.13 is intended to implement Mitigation Measures C.3.9 and C.3.10, which require maintenance of an open channel in the granitic rock of the quarry floor to reduce quarry floor erosion and direct collected runoff to the culvert that discharges into the canyon that leads to pond A. The application proposes elimination of condition III.B.13 because existing practices are adequate to implement the mitigation measure.

The discussion in A-I above and documentation of annual inspection by the project engineering geologist and civil engineer support the applicant's request to eliminate this condition because the reports over a number of years consistently indicate that the

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

existing drainage'controls are adequate and sediment build-up in pond A as been minimal. Quarterly and annual quarry inspections by County staff confirm the reports submitted by the quarry. While eliminating the condition III.B.13 for specific drainage control facilities is appropriate, it is equally appropriate to replace the existing condition with a new condition reflecting the adaptive drainage control practices on the working face and quarry floor that have kept these areas in good condition. Therefore, staff proposes modified language for a condition of approval, which is included in the discussion under A.l above and will be designated condition III.B.4. The modified condition of approval III.B.4 fully incorporates Mitigation Measure C.3.9 and C.3.10 from the 1993 EIR.

| | | | | | |
|---|---|---|---|---|---|
| 5. | Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to property? | | | X | |

There is no indication that the development site is subject to substantial risk caused by expansive soils.

| | | | | | |
|---|---|---|---|---|---|
| 6. | Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative wastewater disposal systems? | | | X | |

The proposed project has no effect on the existing onsite sewage disposal system

| | | | | | |
|---|---|---|---|---|---|
| 7. | Result in coastal cliff erosion? | | | X | |

The site is not located in the Coastal Zone

**B. Hydrology, Water Supply and Water Quality**

Does the project have the potential to:

| | | | | | |
|---|---|---|---|---|---|
| 1. | Place development within a 100-year flood hazard area? | | X | | |

Portions of the settling pond system are within the flood hazard area of Soquel Creek However, this application does not include any development within that area.

| | | | | | |
|---|---|---|---|---|---|
| 2. | Place development within the floodway resulting in impedance or redirection of flood flows? | | X | | |

See B-1 above.

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or *No* Impart | Not Applicable |
|---|---|---|---|---|
| **3.** Be inundated by a seiche or tsunami? | | | | X |
| 4. Deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit, or a significant contribution to an existing net deficit in available supply, or a significant lowering of the local groundwater table? | | | X | |

The project is not located in a mapped groundwater recharge area. The amendment has no effect on groundwater supplies

| | | | | |
|---|---|---|---|---|
| 5. Degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion). | | | X | |

The proposed amendments do not increase the potential for siltation as described below under B-7.

| | | | | |
|---|---|---|---|---|
| 6. Degrade septic system functioning? | | | X | |

There is no indication that existing septic systems in the vicinity would be affected by the changes to the mining permit conditions.

| | | | | |
|---|---|---|---|---|
| 7. Alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner, which could result in flooding, erosion, or siltation on or off-site? | | | X | |

Several of the mitigation measures from the EIR, which were incorporated into conditions of approval for the mining operation, were written in order to address concerns about siltation and erosion. To the extent that conditions are proposed to be modified or deleted the potential impacts have been examined and found to be less than significant or to be absent. See sections A-I, A-2 and A-4 for discussion and A-I for proposed alternate language for condition III.B.4.

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| *8.* Create or contribute runoff, which would exceed the capacity of existing or planned storm water drainage systems, or create additional source(s) of polluted runoff? | | X | | |

The application proposes elimination of conditions imposed in 1997 to ensure sufficient capacity in the detention ponds to hold runoff from storms and retain runoff until sufficient sediment has settled. The stated reasons for the request to eliminate these conditions is that work required by the conditions is either unnecessary or has been completed.

The EIR identified potential impact C.1 regarding adequacy of drainage facilities to handle the changing hydrologic conditions of the site. Mitigation Measure C.1.2 requires interim drainage control facilities for the site increased drainage area and is incorporated into condition III.B.4, which requires interim drainage control facilities consisting of berms and a drainpipe on the working face of the quarry to control drainage. The application proposes elimination of condition III.B.4 because existing practices are adequate to implement the mitigation measure. Planning staff proposes modified language for a condition of approval, which is included in the discussion under A.l and A.4 above. The modified condition of approval III.B.4 adequately incorporates Mitigation Measure C.1.2 of the 1993 EIR.

The EIR identified potential impact C.2 that the ponds may have insufficient capacity to hold runoff from storms and retain runoff until sufficient sediment has settled (Attachment 8). Associated Mitigation Measure C.2.1.a requires that pond A shall be immediately excavated to remove 400 cubic yards of sediment, then 200 cubic yards of sediment shall be removed each year after that until maximum design capacity has been attained. Mitigation Measures C.2.1.b requires that pond **B** shall be expanded by removing a "bench" of sediment in the southern portion of the pond and, if deemed necessary by the quarry's civil engineer in the future, the pond shall be further expanded to the south and west. Mitigation Measure C.2.2 requires the installation of floating or portable pumps in ponds A and B to allow draining of the ponds during the winter afler sufficient detention and sediment settling has occurred, thereby increasing the capacity of the ponds to hold subsequent rainfall runoff. These Mitigation Measures are incorporated into conditions III.B.5.a, III.B.5.b and III.B.14, respectively.

Prior to the winter of 1994/95 ponds A and B were excavated to remove 400 cubic yards of sediment from pond A and the "bench" from within pond B in conformance with the conditions. Pond A has not been enlarged by 200 cubic yards yearly as required by condition III.B.5.a. The quarry's civil engineer, based on updated drainage calculations and quarry inspection, has determined that the required annual enlargement of pond A is not necessary and enlargement of pond B, suggested in condition III.B.5.b is not necessary. On this basis the application requests elimination of these conditions.

| Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|

The quarry's civil engineer completed an analysis of the adequacy of the three sediment ponds in 2006 after working closely with Planning Department staff to refine the original analysis from 1992. Both ponds A and B were cleaned prior to the 2004-2005 winter season and prior to the topographic survey used to complete the updated drainage analysis. The project civil engineer concludes that no enlargement of Pond A is needed to maintain compliance with the Mining Regulations and that the existing combined storage volume of Ponds A and B is substantially more than the volume requirement for current quarry conditions and approved future mining. The Planning Department's senior civil engineer has reviewed the information and calculations and concurs that the existing ponds do provide adequate capacity and that the permit requirement to expand pond A by 200 cubic yards annually is not necessary. Therefore, condition III.B.5.a can be eliminated with no environmental impact associated with the decision not to further enlarge pond A.

The quarry's civil engineer recommends Pond A sediment be removed annually during the summer/fall periods and that the levee of Pond B be raised or the culvert outlet be lowered. Therefore, staff will propose new conditions III.B.5.a & b as follows:

a. Pond A and B sediment shall be removed annually, or less frequently at the discretion of the quarry's civil engineer or Planning Department staff, during the summer/fall periods in order to maintain the volume established by the 2005 topographic survey.
b. The inlet level of the 30-inch culvert in Pond B shall be lowered by a minimum of 1.0 foot.

Lastly, there is a request to modify condition of approval III.B.14. During the winter quarry runoff fills pond A and sediment is allowed to settle out of the water. When water level reaches a certain point in pond A it spills through a culvert into pond B. Instead of installing a pump in pond B to pump excess water out of pond B into Soquel Creek, as required by condition III.B.14, the quarry operator has installed a siphon system to limit the water level in pond B and prevent the water level from rising too high. A portable pump is used to pump water from pond B to pond C to provide water for the processing plant. This system has an environmental benefit over the system specified in the condition of approval: it reduces the need to take water from Soquel Creek for the plant. Therefore, it is appropriate to allow the requested revision of condition III.B.14 to recognize the siphon and pumping from pond B to pond C. The resulting condition of approval adequately incorporates Mitigation Measure C.2.2 of the 1993 EIR.

| | | | | |
|---|---|---|---|---|
| 9. | Contribute to flood levels or erosion in natural watercourses by discharges of newly collected runoff? | | X | |

No new impervious surfaces are proposed as part of the project, thus there will be no

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| additional storm water runoff that could contribute to flooding or erosion | | | | |
| 10. Otherwise substantially degrade water supply or quality? | | | X | |

***C. Biological Resources***

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| 1. Have an adverse effect on any species identified as a candidate, sensitive, or special status species, in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service? | | | X | |

Pursuant to Condition of Approval III.F.l a Habitat Management and Monitoring Plan was completed in 1994 for all species of concern as identified in the 1993 EIR. The operation is in compliance with the management plan, which is not effected by the proposed permit amendment. The management plan includes provisions for management of the ponds for Southwestern Pond Turtle and preinspection of any proposed timber harvest areas for Sharp-shinned Hawk nests.

The 1993 EIR identified a potential impact to Soquel Creek, including steelhead trout (Oncorhynchus mykiss), associated with withdrawal of water from the creek for quarry operations. Mitigation Measures establish a limit on the withdrawal rate and a minimum bypass flow that must be maintained in the creek.

The applicant is requesting a change to the Condition of Approval that establishes production limits for wet and dry aggregate to eliminate the limit on wet aggregate production. The limit on total aggregate production would stay the same. The condition regarding production limits states that if the aggregate production rate is exceeded, the Planning Commission shall review the increase for traffic, noise, and ***air*** quality and other related impacts and issues. Although the total aggregate production will not be exceeded, an increase in wet aggregate production would cause a corresponding increase in water use, including water withdrawal from Soquel Creek. Based on an analysis of water use in the production of wet aggregate, even if the total production limit were wet aggregate, water use would not exceed permitted creek withdrawal rates according to the 1993 EIR. It should be noted, however, that actual creek withdrawals are significantly less than permitted rates because of the small capacity of the pump used by the operator.

According to the 1993 EIR the California Department of Fish & Game requires minimum bypass flows in Soquel Creek during pumping periods. Based on Soquel

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

Creek flow data and the small capacity of the pump, minimum bypass flow requirements are being met. Any increase in creek withdrawal rate (larger pump, for example) associated with increased production of wet aggregate will be subject to existing limits on creek withdrawal and requirements to maintain minimum bypass flow during pumping periods. Existing permit conditions require measurement of creek withdrawals and bypass creek flows to ensure compliance with respective parameters. Because any increased water use is still subject to the withdrawal limit and bypass minimum, the potential increase in wet aggregate production would have no impact on Soquel Creek and steelhead trout.

*a*. Have an adverse effect on a sensitive biotic community (riparian corridor), wetland, native grassland, special forests, intertidal zone, etc.)? ____ ____ X ____

The ponds are located within the riparian corridor of Soquel Creek. However, the proposed permit amendment has no effect on the riparian corridor.

**3.** Interfere with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites? ____ ____ X ____

The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site.

**4.** Produce nighttime lighting that will illuminate animal habitats? ____ ____ X ____

5. Make a significant contribution to the reduction of the number of species of plants or animals? ____ ____ X ____

***6.*** Conflict with any local policies *or* ordinances protecting biological resources (such as the Significant Tree Protection Ordinance, Sensitive Habitat Ordinance, provisions of the Design Review ordinance protecting trees with trunk sizes of *6* inch ____ ____ ____ ____

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| diameters or greater)? | | | | |

The project will not conflict with any local policies or ordinances. The project includes a new revegetation plan updating the 1992 revegetation plan. The new revegetation plan is "state of the art", including the establishment of test plots, for example; and complies with the State Surface Mining and Reclamation Act and County Mining Regulations standards for revegetation. It is environmentally superior to the original plan. An updated cost estimate for revegetation based on the new plan is part of the update of the overall financial assurance cost estimate for the mine.

| | | | | |
|---|---|---|---|---|
| 7. Conflict with the provisions of an adopted Habitat Conservation Plan, Biotic Conservation Easement, or other approved local, regional, or state habitat conservation plan? | | | | X |

**D. Energy and Natural Resources**

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| 1. Affect or be affected by land designated as "Timber Resources" by the General Plan? | | | X | |

The project is located on land designated as Timber Resource. However, the project will not affect the resource or access to harvest the resource in the future.

| | | | | |
|---|---|---|---|---|
| 2. Affect or be affected by lands currently utilized for agriculture, or designated in the General Plan for agricultural use? | | | | X |

The project site is not currently being used for agriculture and no agricultural uses are proposed for the site or surrounding vicinity.

| | | | | |
|---|---|---|---|---|
| 3. Encourage activities that result in the use of large amounts of fuel, water, or energy, or use of these in a wasteful manner? | | | X | |
| **4.** Have a substantial effect on the potential use, extraction, or depletion of a natural resource (i.e., minerals or energy resources)? | | | X | |

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

Existing mining operations will continue.

## E. Visual Resources and Aesthetics

Does the project have the potential to:

1. Have an adverse effect on a scenic resource, including visual obstruction of that resource?

The project will not impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources.

2. Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees; rock outcroppings. and historic buildings? X

The project site is not located along a County designated scenic road or within a designated scenic resource area.

3. Degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, andlor development on a ridgeline? X

The existing visual setting is an active quarry. The proposed permit amendment will not affect the visual character of the site.

4. Create a new source of light or glare, which would adversely affect day *or* nighttime views in the area? X

5. Destroy, cover, or modify any unique geologic or physical feature? X

There are no unique geological or physical features on or adjacent to the site that would be destroyed, covered, or modified by the project.

## F. Cultural Resources

Does the project have the potential to:

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| 1. Cause an adverse change in the significance of a historical resource as defined in CEQA Guidelines 15064.5? | | | X | |

The site does not contain any historical resources

| | | | | |
|---|---|---|---|---|
| 2. Cause an adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines 15064.5? | | | X | |

The 1993 EIR found no evidence of archaeological resources.

| | | | | |
|---|---|---|---|---|
| 3. Disturb any human remains, including those interred outside of formal cemeteries? | | | X | |

Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

| | | | | |
|---|---|---|---|---|
| **4.** Directly or indirectly destroy a unique paleontological resource or site? | | | X | |

## G. Hazards and Hazardous Materials

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| 1. Create a significant hazard to the public or the environment as a result of the routine transport, storage, use, or disposal of hazardous materials, not including gasoline or other motor fuels? | | | | X |

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| 2. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | | | | X |

The project site is not included on the list of hazardous sites in Santa Cruz County compiled pursuant to the specified code.

| | | | | |
|---|---|---|---|---|
| **3.** Create a safety hazard for people residing or working in the project area as a result of dangers from aircraft using a public or private airport located within two miles of the project site? | | | | X |
| **4.** Expose people to electro-magnetic fields associated with electrical transmission lines? | | | | X |
| 5. Create a potential fire hazard? | | | | X |
| 6. Release bio-engineered organisms or chemicals into the air outside of project buildings? | | | | X |

## H. Transportation/Traffic

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| **1.** Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)? | | | X | |

The condition regarding production limit states that if the aggregate production rate is exceeded, it shall be reviewed by the Planning Commission for traffic, noise, and air quality and other related impacts and issues. The applicant is not requesting an

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

increase in total aggregate production, only that there be no limit on the percentage of wet aggregate production within the total limit. The EIR for application *88-0233* does not distinguish between wet or dry aggregate production in the analysis of potential impacts with respect to traffic. The relative percentages of wet and dry aggregate production within an overall production limit will have no impact on traffic. See 11 and J.l for discussion of noise and air quality.

| | | | | | |
|---|---|---|---|---|---|
| *2.* | Cause an increase in parking demand, which cannot be accommodated by existing parking facilities? | | | X | |
| *3.* | Increase hazards to motorists, bicyclists, or pedestrians? | | | X | |

The proposed project will comply with current road requirements to prevent potential hazards to motorists, bicyclists, andlor pedestrians.

| | | | | | |
|---|---|---|---|---|---|
| **4.** | Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the county congestion management agency for designated intersections, roads or highways? | | | | |

See response H-1 above.

**I. Noise**

Does the project have the potential to:

| | | | | | |
|---|---|---|---|---|---|
| 1. | Generate a permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | | | X | |

The EIR for application *88-0233* does not distinguish between wet or dry aggregate production in the analysis of potential impacts with respect to noise. Noise impacts were found to be less than significant during normal operation of the wet and dry plants. The relative percentages of wet and dry aggregate production within an overall production limit will have no impact on noise levels.

| | | | | | |
|---|---|---|---|---|---|
| 2. | Expose people to noise levels in excess of standards established in the General Plan, or applicable standards | | | X | |

| | Significant Or Potentially Significant Impact | Less thin Significant with Mitigation Incorporation | Less thin Significant Or No Impact | Not Applicable |
|---|---|---|---|---|
| of other agencies? | | | | |

See response I-1 above

| | | | | |
|---|---|---|---|---|
| 3. Generate a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | | | X | |

See response I-1 above

**J. Air Quality**

Does the project have the potential to:
(Where available, the significance criteria established by the MBUAPCD may be relied upon to make the following determinations).

| | | | | |
|---|---|---|---|---|
| 1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | | | X | |

The EIR for application 88-0233 does not distinguish between wet or dry aggregate production in the analysis of potential impacts with respect to air quality. The relative percentages of wet and dry aggregate production within an overall production limit will have no impact on air quality. The Monterey Bay Unified Air Pollution Control District has issued Permits to Operate the wet plant, the dry plant and other facilities at the mine that produce air emissions. The overall production limit is well below the production rates allowed by the Air District permits.

| | | | | |
|---|---|---|---|---|
| 2. Conflict with or obstruct implementation of an adopted air quality plan? | | | X | |

The project will not conflict with or obstruct implementation of the regional air quality plan.

| | | | | |
|---|---|---|---|---|
| 3. Expose sensitive receptors to substantial pollutant concentrations? | | | X | |

See response J-1 above.

| | | | | |
|---|---|---|---|---|
| 4. Create objectionable odors affecting a substantial number of people? | | | X | |

See response J-1 above

| | Significant Or Potentially Significant Impact | *Less than* Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

## **K.** Public Services **and** Utilities

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| 1. | Result in the need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: | | | |
| | a. Fire protection? | | X | |
| | b. Police protection? | | X | |
| | c. Schools? | | X | |
| | d. Parks or other recreational activities? | | X | |
| | e. Other public facilities; including the maintenance of roads? | | X | |

The proposed permit amendment does not affect any of these services.

| | | | | |
|---|---|---|---|---|
| 2. | Result in the need for construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | | X | |

Drainage analysis of the project concluded that existing storm water drainage facilities on the site are adequate. See response to B-8 above.

| | | | | |
|---|---|---|---|---|
| 3. | Result in the need for construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | | X | |

| | Significant Or Potentially Significant Impact | Less than Significant with Mitigation Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

The project relies on an individual well and the ponds for water supply. Public water delivery facilities will not have to be expanded.

The project is served by an existing on-site sewage disposal system, which is not effected by the proposed permit amendment.

| | | | | |
|---|---|---|---|---|
| 4. | Cause a violation of wastewater treatment standards of the Regional Water Quality Control Board? | | | X |

The project's wastewater flows will not violate any wastewater treatment standards.

| | | | | |
|---|---|---|---|---|
| 5. | Create a situation in which water supplies are inadequate to serve the project or provide fire protection? | | X | |

Water quantity is addressed in the 1993 EIR. The proposed permit amendment will have no effect on water quantity.

| | | | | |
|---|---|---|---|---|
| 6. | Result in inadequate access for fire protection? | | X | |

The proposed permit amendment will have no effect on fire access

| | | | | |
|---|---|---|---|---|
| 7. | Make a significant contribution to a cumulative reduction of landfill capacity or ability to properly dispose of refuse? | | X | |

The project will make an incremental contribution to the reduced capacity of regional landfills. However, this contribution will be relatively small and will be of similar magnitude to that created by existing land uses around the project.

| | | | | |
|---|---|---|---|---|
| 8. | Result in a breach of federal, state, and local statutes and regulations related to solid waste management? | | | X |

## L. Land Use, Population, and Housing

Does the project have the potential to:

| | | | | |
|---|---|---|---|---|
| **1.** | Conflict with any policy of the County adopted for the purpose of avoiding or mitigating an environmental effect? | | X | |

| | Significant Or Potentially *Significant* Impact | Less than Significant with *Mitigation* Incorporation | Less than Significant Or No Impact | Not Applicable |
|---|---|---|---|---|

The proposed project does not conflict with any policies adopted for the purpose of avoiding or mitigating an environmental effect.

| | | | | |
|---|---|---|---|---|
| 2. Conflict with any County Code regulation adopted for the purpose of avoiding or mitigating an environmental effect? | | | X | |

The proposed project does not conflict with any regulations adopted for the purpose of avoiding or mitigating an environmental effect.

| | | | | |
|---|---|---|---|---|
| 3. Physically divide an established community? | | | X | |

The project will not include any element that will physically divide an established community.

| | | | | |
|---|---|---|---|---|
| 4. Have a potentially significant growth inducing effect, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | | | X | |

The proposed permit amendment will not extend the mine *of* increase its capacity

| | | | | |
|---|---|---|---|---|
| 5. Displace substantial numbers of people, or amount of existing housing, necessitating the construction of replacement housing elsewhere? | | | | X |

## **M.** Non-Local **Approvals**

| | | |
|---|---|---|
| Does the project require approval of federal, state, or regional agencies? | Yes | No X |

## **N. Mandatory Findings of** Significance

| | | | |
|---|---|---|---|
| 1. | Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population **to** drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant, animal, or natural community, or eliminate important examples of the major periods of California history or prehistory? | Yes | No X |
| 2. | Does the project have the potential to achieve short term, to the disadvantage of long-term environmental goals? (A short term impact on the environment is one which occurs in a relatively brief, definitive period of time while long term impacts endure well into the future) | Yes | No X |
| **3.** | Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects **of** past projects, and the effects of reasonably foreseeable future projects which have entered the Environmental Review stage)? | Yes | No X |
| 4. | Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly? | Yes | No X |

## TECHNICAL REVIEW CHECKLIST

| | REQUIRED | COMPLETED* | N/A |
|---|---|---|---|
| Agricultural Policy Advisory Commission (APAC) Review | | | X |
| Archaeological Review | | | X |
| Biotic Report/Assessment | | | X |
| Geologic Hazards Assessment (GHA) | | | X |
| Geologic Report | | | X |
| Geotechnical (Soils) Report | | | X |
| Riparian Pre-Site | | | X |
| Septic Lot Check | | | X |
| Other: | | | |
| Engineered Drainage Calculations | | X | |
| Engineering Geologist Review | | X | |

## Attachments:

1. 88-0233 Conditions of Approval
2. Applicant's Amendment Request
3. Vicinity Map
4. Site Plan with Leasehold Areas
5. Select Impacts and Mitigation Measures from 1993 EIR
6. Site Plan Leasehold Area 1
7. Map of Zoning Districts
8. Map of General Plan Designations

## Other technical reports or information sources used in preparation of this Initial Study

Environmental Impact Report for Olive Springs Quarry, 1993
Annual Geologic Inspection Reports
Annual Civil Engineer Inspection Reports
Geotechnical Reports Evaluating Levee Stability and Improvements
Revegetation Plan
Drainage calculations prepared by Ifland Engineers, dated April 2006

This information is on file at the Planning Department

CONDITIONS OF APPROVAL

I. EXHIBITS

All mining operations shall conform to the following exhibits which are incorporated as conditions of this Mining Approval, except as modified by specific permit conditions set forth below.

A. Topographic Map of Olive Springs Quarry, Ifland Engineers, November 20, 1990 (one sheet).

B. Leasehold One, Grading and Drainage Plan, Depletion Year 1993, Ifland Engineers, December 4, 1992 (three sheets includiny details).

C. Leasehold One, Ponds "A" and "B" Levee Buttress Plan, Ifland Engineers, Inc., October 22, 1993 (one sheet).

D. Leasehold One, Pond "C" Levee Buttress Plan, Ifland Enginerr:, Inc., October 22, 1993 (one sheet).

E. Leasehold One, Site Plan Depletion Year 200 through 2080, Ifland engineers, Inc., December 12, 1992 (five sheets).

F. Leasehold Three, Maximum Stockpile Plan and Sections, Ifland Engineers, Inc., April 16, 1993 (two sheets).

G. Leasehold Three Drainage Plan, Ifland Engineers, Inc. (revised May 25, 1993 - one sheet).

H. Grading and Drainage Plan, Leasehold one, Year 2080 Drainage System, Ponds A, B, C, with Site Sections, Ifland Engeineers, Inc., Rev. December 4, 1992. (Final Mining and Grading Plan - three sheets).

I. Olive Springs Quarry Revegetation Plan, BioSystems Analysis, Inc., April 1992 (13 Pages includes Revegetation Planting Plan Figure 3 and Figure 4).

J. Leasehold One Erosion Control Plan with Supporting Drawing, LSA Associates, November 30, 1993 (44 pages and 1 drawing).

K. Draft Environmental Impact Report, Olive Springs Quarry, LSA, May 28, 1993

L Final Supplemental EIR, LSA, November 30, 1953, and Environmental Impact Report Addendum, January 18, 1994

M. Draft Supplemental EIR, LSA, May 28, 1993

N. Mitigation Monitoring and Reporting Program, LSA, November 30, 1993

COPIES OF THE ABOVE DOCUMENTS ARE AVAILABLE AT THE COUNTY OF SANTA CRUZ PLANNING DEPARTMENT.

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APPLICATION 01-0572

II. GENERAL PROVISIONS

A. This Approval shall supersede all provision: of Use Permit 78-355-PD, and shall be the sole and exclusive permit or approval authorizing mining operations at the Olive Springs Quarry and shall control and bind owner and all future owners, lessees, or operators.

B. This Approval is for the extraction, processing, storage, and shipping of all mineral resources obtained from the property, including the hot plant facilities for production of asphalt conducted in accordance with the conditions herein and for reclamation of existing, proposed and previously mined land as shown in the approved Reclamation Plan (Exhibits "H" and "J").

C. This Approval is limited to a portion of the following County assessor parcel numbers: 099-171-02, -03. For specific areas of mining and reclamation within these areas, please refer to above listed Exhibits.

D. Minor variations to this Approval meeting the standdrds oF County Code Section 18.10.134 and requested by the mining operator or staff which do not change the general concept of use and operation, and which do not adversely affect the environment, may *be* approved in writing by the Planning Director following review and recommendation **by** the County's Environmental Coordinator.

E. If, at any time, the Planning Director determines that there is a substantial noncompliance with any of these conditions, and/or Exhibits, the Planning Director shall forward a recommendation to the Planning Commission to set a hearing to consider revocation of this Approval in accordance with the provisions of County Code Section 18.10.136.

F. Within 45-days from the date of issuance of this Approval, the property owner and applicant shall sign, date and return two copies of the Approval to indicate acceptance and agreement wit:! the conditions thereof. By signing this Approval, property owners agree to file a Declaration with the County's Recorder Office within 45 days from the date of acceptance, binding themselves and any future owners or lessees to the revegetation and reclamation requirements of this Approval. The Declaration shall Lit supplied by the Planning Director. Failure to sign the Approval or record the declaration as described above shall render this Approval null and void and all mining operations shall cease at the Quarry site except reclamation and revegetation work in accordance with the above listed exhibits.

G. All mining and reclamation activities shall conform with the Conditions of Approval and with the regulations ot the following agencies as they apply to the mining operations. The mining operator shall provide the County with copies of any permits

Environmental Review Inital Study
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APPLICATION 01-0572

issued by these agencies and any permit amendments, within 30 days of receipt.

1. Central Coast Regional Water Quality Control Board
2. Monterey Bay Unified Air Pollution Control District
3. California Department of Fish and Game
4. State Coastal Commission

H. This Approval shall expire fifty years from the dote of issuance.

I. The Approval shall be reviewed by the Planning Commission within five years from the date of issuance. Subsequent t-rvitws shall be done at a 5-year interval unless the Planning Commission determines that a shorter interval is necessary. In connection with such review, the Planning commission shall take public testimony and shall otherwise investigate the permittee's compliance with the conditions of this Approval it there is a thrtat to public health and safety, a significant injurious threat to the environment, a nuisance or a violation of permit conditions.

J. In conjunction with the annual report to the State Geologist required by SMARA, an Annual Report to the Planning Director shall be prepared by the mining operator or other 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 1st of each year starting with April 1, 1995. If the Planning Director determines the need tot- an independent consultant with specialized expertist, the mining operator shall obtain such consultant. All costs of such report and its review shall be paid by the mining operator. The report shall include the following unless waived or modified in writing by the Planning Director.

1. A report on compliance wirh all Conditions of Approval in cluding the required monitoring program.

2. An analysis of any significant changes in environmental conditions or in the mining Operation which have not been anticipated in this Approval.

3. A current aerial photograph of the **entire** site (1"=200' scale) showing facilities, stripped areas, and revegetated and reclaimed areas, together with a report on the extent of excavation and reclamation Completed in the previous year and projected for the coming year.

4. Every fifth year, a current aerial photoyramttic topographical map prepared from current aerial photographs map (1"=200' scale with a 10 foot contour interval) showing lease and property lines and all the requirements of II.J.3 above.

5. A revegetation report prepared by a botanist, horticulturist or plant ecologist retained by the mining operator and approved by the Planning Director. The revegetation report shall describe the degree of success in achieving the objectives of the revegetation plan, and shall identify any changes or additional measures which may facilitate achievement of the desired results.

6. Written verification of the renewal and/or validity of the financial assurance.

7. A report to be held as proprietary information in accordance with the County's Mining Regulations, stating the annual amounts of production and shipping of mining product:, and the estimated time to complete mining in the permitted area.

8. A noise report prior to the required 5-year review shall be prepared by a qualified noise/acoustical consultant retained by the mining operator and approved by the Planning Director. The noise report shall determine whether or not the mining operator is in compliance with noise standards contained in the County Mining Regulations, and shall investigate and make recommendations regarding (relative to noise mitigations): (i) Any mining equipment used at the mining site; (ii) Proposed and existing noise protection; (iii) Any other significant impact resulting from mining operation:. The mining operator shall implement all recommendations or the noise consultant determined to be necessary by the Planning Director for compliance with the conditions of the Approval.

9. All reports submitted to the Monterey Bay Unified Air Pollution Control District.

10. An inspection report by an Engineering Geologist addressing the safety of the work face.

K. All costs for the County's inspections and review of Annual Reports and other reports submitted by the Quarry shall be paid by the Quarry, within 30 days after billing.

L. All mining operations shall be in compliance with the State's Surface Mining and Reclamation Act (SMARA).

M. In the event that future County inspections of the subject property disclose non-compliance with any Conditions of this Approval 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 Approval revocation.

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N. Within 120 days of Approval of this application or prior to disturbance in the new mining area, whichever comes first, the Quarry shall submit a revised financial assurance, in conformance with the requirements of SMARA, that takes into account the expanded mining area and the approved revegetation and reclamation plans. The Planning Director shall forward the financial assurance to the State Board of Mining and Geoloyy for review and approval as specified in SMARA.

## III. OPERATING REQUIREMENTS

A. Mining Operation:

1. All mining activities, including clearing, excavation or other disturbances shall be done in conformance with the above Exhibits. Setbacks shall be measured from the property boundary lines on a horizontal plane. Within 60 days of issuance of Approval, staff shall determine which limits of Leasehold One and Three shall be surveyed and permanently staked at a 200 foot (maximum) interval by a licensed surveyor and fenced with a 3 foot high fence to prevent trespassing. Fencing and staking shall be completed within 120 days from Approval.

2. A benchmark shall be established in the mining floor at the 550-foot elevation in a visible area not proposed for disturbance. (Mit. B.1.2.)

3. Any undiscovered active fault traces encountered during mining operation shall be evaluated by an Engineering Geologist and documented in the required Annual Report. If an active fault trace is observed, the Engineering Geologist shall review the stability of the work face. (Mit. 8.2.2.)

4. The work face shall be excavated in compliance with the benching standards set forth by the Santa Cruz County Mining Ordinance, OSHA, MSHA, and in accordance with the above Exhibits. (Mit. 8.3.1.)

5. Annual inspection of the work face shall be conducted by a Engineering Geologist to address conformance with the Mining and Drainage Plan. The annual inspection shall evaluate unexpected adverse geological conditions that may be encountered during mining operations. An inspection report shall be prepared by the Engineering Geologist and shall be included in the above required Annual Report. The report shall include the following:

   a. A determination of how the newly exposed geologic structure will affect the stability of the work face;

b. An examination of stability factors using common engineering geologic graphs (hemispheric projection.:!;

c. An examination of potential slope failures by a geotechnical engineer experienced in rock mechanics using data derived from the geologic examination;

d. A statistical analysis of the various features that can cause weakness in the slope (classification of the orientation, persistence, roughness, undulation and aperture of the fractures or joints in the work face); and,

e. How the fractures are filled or not filled with material such as clay, rock dust, etc. The engineering geologist need not attempt to examine all fractures arid joints, but can collect data along lines that represent different rock types in order to extrapolate the characteristics of the entire work face. (Mit. B.3.3 & B.3.2)

f. If any discontinuities are discovered in the inspection of the work face, a geotechnical engineer shall develop a program to evaluate the discontinuities including, but not limited to, any wedge or block slide type failure analyses. (Mit. B.3.3. & B.3.2.)

6. Production shall be limited to 191,000 tons per year for dry aggregates and 35,000 tons per year for wet aggregates. If this aggregate production rate should be exceeded, it shall be reviewed by the Planning Commission for impacts to traffic, noise, air quality and other related issues.

7. Within 120 days after Approval has been granted and continuously thereafter, the outer boundaries of the mining site shall be posted with signs providing notice of approved mining operations to the public. Each sign shall state in letters of not less than four inches in height: "MINIPIG APPROVAL NUMBER ___" and in letters of not less thdn ont inch in height: "THIS PROPERTY MAY BE USED FOP THE MINING AND PROCESSING OF ROCK, SAND, GRAVEL OR MINERALS. THE HOURS OF OPERATION AND' MAINTENANCE ARE AS FOLLOWS: _____ Each sign shall be maintained in legible condition at all times.

8. Surface Drainage & Erosion Control:

1. All erosion control work shall be completed by October 15th of each year and stay in effect until April 15th. (Mit. 8.5.2 & Mit. C.3.11)

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2 Measures provided in the Mining and Drainage and Revegetation Plans shall be implemented to reduce sediment concentrations. These measures shall include provisions and maintenance of ditches and waterbars along existing and future dirt roads and filter berms. (Mit. B.5.1.)

3. Existing drains and berms created to control stormwater runoff shall be modified and maintained as necessary to provide adequate runoff control without erosion and sedimentation of Soquel Creek, and monitored annually to evaluate their effectiveness. The control of runoff from the work face and floor shall be in conformance with the above Exhibits. If required by the Planning Director, all design changes and improvements to the drainage system shall he designed by a Registered Civil Engineer and submitted to County Planning for review, approval, and incorporated into this Approval. The following additional drainage and erasion control measures shall **be** implemented immediately:

   a. The Quarried material stockpile shall te moved at least eight feet from the outboard edge of the Quarry floor.

   b. The six foot diameter culvert outlet extension shall be maintained to allow present and future runoff tu continue discharging onto granitic rock in the headwall of the canyon.

   c. The erosion scar below the discharge pipe of Pond B shall be filled with rip rap to a minimum gradient of 1.6:1. (Mit. C.l.l.)

4. The proposed phased Quarry expansion shall provide interim drainage control facilities for the site's increased drainage area. By October 15, 1994, a berm at the 1,201) foot elevation, a berm at the 700 foot elevation, installation of a 24 inch drain pipe between the two berms, and a series three check ditches below the work face must be provided tu protect slopes from erosion. The interim erosion control plan must **be** implemented as soon as possible. (Mit. B.5.1 & C.1.2.)

5. Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity and/or long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred. To accomplish this, one or more of the following mitigation measures shall **be** implemented immediately:

   a. Pond A shall be enlarged by 200 cubic yards every year to a maximum design capacity. This excavation should take place immediately. The excavation slope gradients shall be no greater than 1:1 (horizontal:vertical). In

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conformance with the approved drainiage plans, the first pond expansion shall increase the storage volume by 400 cubic yards. (Mit. C.2.1)

b. Pond 6, the secondary settling pond, shall be immediately expanded by removing the bench that exists within the southern portion for the pond. By increasing the extent of the pond to the west or south, additional sediment and runoff detention shall be obtained if required by the Quarry's Civil Engineer. (Mit. C.2.1)

c. If material removed from the ponds has dried sufficiently (by September or October of each year), it shall be taken to Leasehold Three for temporary stock piling until it can be sold. (Mit. C.2.1)

6. A written annual drainage report prepared by the Quarry's Civil Engineer shall be included in the Annual Report. (Mit. C.2.3.)

7. Prior to stripping any new areas covered by loosely consolidated sediments (overburden) the operator shall notify the Planning Director for inspection to evdluate whether the stripping will affect erosion control measures. (Mit. C.3.1.)

8. Prior to October 15, the Quarry shall clear the work face of large quantities of loose sediment and debris which are prone to severe erosion during rain storms. (Mit. C.3.2.)

9. Channels which are designed to concentrate and direct storm water runoff into the sediment pond detention system shall be armored with erosion resistant materials (such as rip-rap) at points of potential gullying. The areas to be protected shall be decided by the Quarry's Civil Engineer and recommendation included in the Annual Report to the County. (Mit. C.3.3.)

10. The surface area of the Quarry which is stripped, mined or otherwise disturbed at any given time shall be minimized to the greatest extent compatible with reasonable mining and marketing requirements. (Mit. C.3.4.)

11. Upon completion of mining operations, reclamation and revegetation of each bench shall be done as soon as possible, in accordance with the Revegetation Plan. (Mit. C.3.5.)

12. All changes arid improvements to the surface drainage system shall be designed by a Civil Engineer and a brief report addressing any changes and improvements shall be included in the Annual Report. (Mit. C.3.7.)

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13. An open channel shall be maintained in the granitic rock along the mining floor to reduce further erosion. (Mit. C.3.9. & Mit. C.3.10.)

14. The recommendations of the Mining and Drainage Plan shall be implemented, including the installation of floating or portable pumps in Pond B. (Mit. C.2.2.)

C. Protection of Soquel Creek:

1. Quarry storm water runoff control facilities *into* Soquel Creek shall be in compliance with the accepted Regional Water Quality Control Board (RWQCB) "natural turbidity" limits as set forth in the current approved Regional Water Quality Control Board Discharge Order. (Mil. C.3.6.)

2. Prior to any discharge of pond water into Soquel Creek, turbidity and settleable solid tests of Soquel Creek and settling ponds shall be compared in order to determine if adequate settling has occurred in the ponds and if the pond's water quality is acceptable for release into Soquel Creek. The testing must take place immediately prior to discharge. (Mit. C.3.7)

3. Monitoring of water quality of discharges from the Quarry shall follow the standards for permissible increases in settleable solids and turbidity established by the Regional Water Quality Control Board's Discharge Order and any standards set **by** California State Fish and Game. (Mit. C.3.7.)

4. If settling pond water is released, turbidity tests shall be run immediately upstream and downstream of the discharge point during discharge into Soquel Creek to monitor any increases in turbidity as a result of the release of pond waters. (Mit. *C.3.7.)*

5. As required by the Regional Water Quality Control Board (RWQCB) Order 89-02 (or subsequent Orders) for Leasehold One, runoff discharge into Soquel Creek shall meet the specified water quality requirements. A similar permit tor Leasehold Three water discharge into Soquel Creek shall be obtained. All water quality monitoring and reporting requirements of the RWQCB shall **be** complied with. (Mit. C.3.8.)

6. A minimum rate of flow in Soquel Creek of 0.5 to 0.75 cfs, as determined **by** the Department of Fish and Game, shall be maintained regardless of the uater needs of the Quarry operations. Water withdrawal from the Creek shall not occur while the maintenance of this minimal flow rate is in jeopardy. Before any creek withdrawal, the operator shall be responsible for measuring the creek flow rate outside the

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southern boundary of the Quarry property. (Mit. C.5.1. & Mit. D.3.4.)

7. Unless a new ayreement is made with the Department of Fish and Game, surface water pumping for mining operations shall not exceed their current permit allowance of 0.36 cfs. Any new requirements of the Department of Fish and Game are hereby included as conditions of this Approval. In the event that water from Soquel Creek is needed for mining operation, the flow rate, the date of withdrawal, the time duration and rate of withdrawal, as well as the downstream creek flow rate during withdrawal shall be logged by the operator and submitted to County Planning for review in the Annual Report. (Mit. C.5.4 & C.5.2.)

8. Any discharge into Soquel Creek from either Leasehold One or Three shall be monitored in accordance with standards established by the Regional Water Quality Control Board. Monitoring shall be done **by** an independent laboratory or, as an alternative, may be accomplished by the installation of a mechanical/electrical turbidity meter. All monitoring results shall be included in the Annual Report. (Mit. C.5.7. & D.3.3.)

9. Prior to any pumping from Soquel Creek for mining operations, the operator shall notify the Planning Director for review of the necessity of pumping and to verify that the operator has investigated and tried new ways of minimizing their surface water pumping from Soquel Creek. (Mit. C.5.3)

D. Protection of Pond Levees:

1. On or before October 15, 1994, the following measures shall be implemented in accordance with engineered plans by the Quarry's Civil Engineer, dated October 1953, tu increase the stability of pond levee "A":

   a. The outboard slope of the levee above the elevation of 395 feet shall be graded back to a 1.4:1 gradient or flatter. Erosion control measures in accordance with the approved Erosion Control Plan, includiny the placement of rip rap or gabion revetment from the toe of the levee to an elevation about the 100-year flood level, shall **be** implemented to provide protection from scouring of creek flood waters. (Mit. 8.4.1)

2. On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B":

   a. The erosion scar below the discharge pipe shall be filled with rip rap to a minimum gradient of 1.6:1

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b. Because of the presence of heavy vegetation at the outboard slope of the levee which precludes access to heavy equipment and stabilizing work, an acceptable factor of safety shall be achieved by limiting the height of the water level within the pond to 376 feet above Mean Sea Level (MSL) by pumping to pond "C" or the adjacent creek. Elevation markers shall be placed in the pond by the Quarry's Civil Engineer to verify the water level during quarterly inspections for verification of the 376 foot elevation. (Mit. B.4.2)

3. On or before October 15, 1994, a buttress fill shall be placed at the outboard slope of levee "C" including appropriate cubdrainage structures, to increase the stability of the levee to an acceptable level. (Mit. B.4.3)

4. Pond water shall not be released at a rate which exceeds one-third of its capacity per 24 hours to prevent the rapid drawdown of pore waters within the levee which could result in levee failure. (Mit. B.4.4)

5. All levees shall be maintained to prevent uncontrolled <!>-charge into Soquel Creek during a major earthquake and/or unusual storm event. (Mit. D.3.1)

6. The existing outfall pipe from the pond "C" should be extended or, alternatively, rip rap shall be placed into the erosion scar to prevent additional erosion of banks of Soquel Creek. Construction shall be confined as to the minimum riparian area. Following the construction activities, the affected areas shall be immediately replanted with riparian vegetation under the supervision of a qualified botanist or revegetation specialist. Trees removed shall be replaced by the same species at a 2:1 replacement ratio or pursuant to Section 16.00 of the Streambed Alteration Agreement. (Mit. D.3.2)

E. Groundwater Protection:

1. Operators shall continue *to* protect the existing local groundwater level and quality by not mining below the proposed final 550-foot elevation and by not expanding pond capacity by increasing their depth but rather by increasing their width. (Mit. C.6.1)

2. Mining operations shall maintain a minimum 20-foot separation between peak groundwater table and mining floor.

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F. Revegetation and Reclamation:

1. Within 90 days from issuance of Approval, a Habitat Management Plan with performance standards as set by SMAKA shall be completed by a qualified biologist and submitted to County Planning for approval and inclusion in the Reclamation Plan for all species of concern as identified in the 1993 EIR by LSA. This report shall include nesting habitat for purple martin, golden eagle habitat, identification of habitat of southwestern Pond Turtles, California Red-legged Frog and Foothill Yellow-legged Frog. (Mit. D.2.1 & D.2.2)

2. The Revegetation Plan designed by Biosystems (April. 1992) shall be implemented to offset potential vegetation and wildlife impacts as soon as any area within the approved mining area is completed. (Mit. D.1.1 & Mit. D.2.3)

3. The Revegetation Plan submitted by Biosystems Analysis shall be amended to include performance standards for revegetation. This amendment shall be included in the first Annual Report.

4. The Revegetation/Reclamation Plan shall be amended to indicate the location of all temporary topsoil storage area. This amendment shall be included in the first Annual Report. (Mit. K.1.1)

5. Upon closure of mining activities, all ponds shall be fenced. A 6-inch opening between the ground and the bottom of the fence shall be maintained to allow the passage of small animals. (Mit. K.2.1)

6. Slash and brush from on-site clearing shall be chipped and added to the reserved topsoil on Leasehold Three. (wit. K.1.2)

7. As soon as revegeration areas are available, test plots shall be conducted to determine the most successful revegetation procedures. (Mit. K.1.3)

a. Reclamation and revegetation shall occur concurrent with continued mining to the extent feasible. (Mit. A.1.1)

9. The Reclamation Plan shall conform to the County Mining Regulation standards. (Mit. C.3.12)

10. All drains, facilities, and devices to control storm water runoff shall be maintained effectively during reclamation. (Mit. C.3.13)

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G. Protection of Viewshed:

1. In the event that material in excess of the existing permitted 25,000 tons of material is needed to be stored on Leasehold Three, the extra material will be limited to a three-month storage period. After that time, all material in excess of 25,000 tons shall be removed from the Quarry property. If the need for storage of excess material occurs in future years, after the maturation of the vegetative screen required by this permit, the amount of material maintained on Leasehold Three may exceed the 25,0130 ton existing limit for a longer period of time to the extent that the screening is effective. This additional amount of stored material shall require written approval by the Planning Director, in advance placement of the material. (Mit. F.3.1)

2. Benches on the work face shall be contoured to provide tor. a gradual transition into the adjacent hillside. (Mit. B.1.1)

3. Within 90 days of the date of issuance of Approval, the vegetative screening shall be planted along the southern property line of Leasehold Three to complement the existing sparse vegetation between the adjacent residences and the Quarry. This vegetation shall be planted and maintained by the Quarry according to a landscape pian prepared by a qualified botanist and reviewed and approved by County Planning. (Mit. F.2.1)

H. Protection of Paleontological Resources:

1. In the event that significant paleontological resources (i.e., significant skeletal remains that would 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 shall be retained to assess the significance of the find and implement mitigations measures recommended as a result of such assessment, consistent with the County's Paleontological Resource Protection ordinance. (Mit. G.1.11)

I. Operating and Shipping Hours:

1. Hours of Quarry operation shall be 7:00 a.m. to 7:00 p.m., Monday through Friday, but only during daylight hours. Retail sales may be allowed 7:30 a.m. to 12:00 noon on Saturdays.

J. Traffic Control:

1. The Quarry shall request from the Department of Public Works warning signs placement along Soquel-San Jose Koad at its

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northern and southern approaches to Olive Springs Road to warn drivers of truck traffic entering and exiting Soquel-San Jose Road. Any cost of the preparation and placement of signs shall be paid by the Quarry. (Mit. H.2.1)

2. Pavement conditions along Olive Springs Road shall be monitored by the County Public Works Department to determine the extent to which pavement degradation is attributable to Quarry operations. The Quarry shall be responsible for repairing unacceptable pavement conditions caused by Quarry traffic. (Mit. H.4.1)

3. When logging of the Soquel Demonstration State Forest begins in spring of 1994, the Quarry and the State Forest shall coordinate operations schedules to prevent traffic backup on this roadway. The State Forest access through the Quarry shall continue as administrative only, and public use by recreational visitors shall be prohibited by signing and gating the roadway to the State Forest. (Mit. A.2.1)

4. The Quarry shall maintain a speed enforcement program on Olive Springs Road. The program shall include the following, at minimum:

   a. Verification, using radar or other appropriate means, of truck speeds on Olive Springs Road. This verification shall occur at least two days per week, on a random day basis. The Quarry shall keep a record of the speed verification program and shall provide a summary of the results to the County in the Annual Report.

   b. Trucks exceeding the posted 25 mph speed limit shall be reported to the Quarry. The Quarry shall provide written warnings to drivers observed exceeding the speed limit. Three-time violators shall be prohibited from transporting materials from the Quarry for a period of at least 30 days.

   c. All complaints of excessive truck speed shall be reviewed by the Quarry and kept in a permanent log. All complaints shall be investigated promptly.

   d. The Quarry shall provide written notification of the speed limit and the consequences of non-compliance to all truck drivers entering the Quarry. A sign informing drivers of the 25 mph speed limit on Olive Springs Road shall be posted at the weigh statim.

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K. Air Quality:

1. Actively used unpaved Quarry roads shall be watered or sprayed with lignin sulfonate or other environmentally approved dust retardant to reduce fugitive dust.

2. All equipment and processing facilities shall be maintained in accordance with the Monterey Bay Air Pollution Control District standards for stationary sources.

3. By October 14, 1994, the operation of the asphalt plant shall be permanently fueled by Liquefied Petroleum Gas (LPG). The use of diesel fuel shall be discontinued. (Mit. I.2.1)

4. Revegetation in accordance with the appruved Reclamation and Vegetation Plan shall be initiated as soon as practical in order to minimize fugitive dust.

L. Miscellaneous Conditions:

1. Any new on-site structures shall incorporate appropriate seismic forces (a mean peak horizontal ground acceleration of 0.54, a maximum horizontal ground acceleration of 52 cm/sec, and a 20-40 sec ground shaking duration) into the design of criteria, and be designed by a registered civil engineer. (Mit. 8.2.1)

2. The Quarry shall obtain a Timber Conversion Permit from the California Department of Forestry prior to any timber harvest on site. The quarry shall comply with all requirements of this permit including installation of erosion control measures of the cessation of harvest and institution of the fire protection measures both during and after harvest. (Mit. E.1.1)

3. All drains, facilities and devices to contrcl storm water shall be maintained to operate effectively during Quarry reclamation. (Mit. C.3.13)

4. The Quarry and CHY Corporation shall work with tne County Parks and Open Space and Cultural Services Department tu determine if a trail from Olive Springs Road to the Soquel Demonstration forest is safe and feasible. The results of the research shall be reported by staff to the Planning Commission on the consent agenda in one year.

M. Mitigation Monituring Plan:

The mitigation measures listed under this heading hdve been incorporated into the Conditions of Approval for this project in order to mitigate or avoid significant effects on the environ-

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ment. As required by Section 21081.6 of the California Public Resource Code, a monitoring and reporting program for the mitigations is hereby adopted as a Condition of Approval and is attached as Exhibit "N" (Section 1, Conditions of Approval) and Exhibit "U" (exhibit to this staff report). The purpose of this 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 Santa Cruz County Code. All mitigation monitoring shall be documented in the required Annual Report. If the next quarterly inspection following the submittal of the Annual Report shows non-compliance with any provisions of this Mining Approvai, enforcement actions in accordance with the County Code and *SMAKA* will **be** implemented to achieve compliance.

Mitigation A.l.l: Requirement regarding concurrent reclamation
(Condition of Approval: III.F.8)

Mitigation A.2.1: Traffic control during logging operation
(Condition of Approval: III.J.3)

Mitigation 8.1.1: Gradual transition of workface slopes
(Condition of Approval II.C.2)

Mitigation 8.1.2: Establishment of benchmark
(Condition of Approval: III.A.2)

Mitigation 8.2.1: Design criteria for new structures
(Condition of Approval: III.A.3)

Mitigation 8.2.2: Geologic evaluation of work face
(Condition of Approval: III.A.3)

Mitigation 8.3.1: Safe mining operation
(Condition of Approval: III.A.4)

Mitigation B.3.2: Annual inspection of work face by geologist
(Condition of Approval: III.A.5)

Mitigation B.3.3: Inspection and test of work face by geotechnical engineer
(Condition of Approval: III.A.5)

Mitigation 8.4.1: Pond "A" levee improvement
(Condition of Approval: III.0.1)

Mitigation B.4.2: Pond "B" ievee improvement
(Condition of Approval: III.0.2)

Mitigation 8.4.32: Pond "C" levee improvement
(Condition of Approval: III.0.3)

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Mitigation B.4.4: Release of pond water
(Condition of Approval: III.D.4)

Mitigation B.5.1: Erosion Control:
(Condition of Approval: III.B.3)

Mitigation B.5.2: Erosion Control:
(Condition of Approval: III.B.1)

Mitigation C.l.l: Erosion Control:
(Condition of Approval: III.B.3)

Mitigation C.1.2: Orainage Control:
(Condition of Approval: 111.8.3)

Mitigation C.2.1: Drainage Control:
(Condition of Approval: III.B.5)

Mitigation C.2.2: Drainage Control:
(Condition of Approval: III.B.14)

Mitigation C.2.3: Drainage Inspection:
(Condition of Approval: III.B.6)

Mitigation C.3.1: Erosion Control:
(Condition of Approval: III.B.7)

Mitigation C.3.2: Erosion Control:
(Condition of 'Approval: III.B.8)

Mitigation C.3.3: Erosion Control:
(Condition of Approval: III.B.9)

Mitigation C.3.4: Erosion Control:
(Condition of Approval: III.B.10)

Mitigation C.3.5: Erosion Control and Reclamation
(Condition of Approval: III.B.11)

Mitigation C.3.6: Discharge of pond water
(Condition of Approval: III.C.l)

Mitigation C.3.7: Discharge of pond water
(Conditions of Approval: III.C.2 and III.C.4)

Mitigation C.3.8: Discharge of pond water
(Condition of Approval: III.C.5)

Mitigation C.3.9: Erosion Control
(Condition of Approval: III.B.13)

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Mitigation C.3.10: Erosion Control
(Condition of Approval: III.B.1)

Mitigation C.3.11: Erosion Control
(Condition of Approval: III.B.1)

Mitigation C.3.12: Reclamation
(Condition of Approval: III.F.9)

Mitigation C.3.13: Storm water control
(Condition of Approval: III.F.9)

Mitigation C.5.1: Water pumping from Soquel Creek
(Condition of Approval: I I.C.6)

Mitigation C.5.2: Water pumping from Soquel Creek
(Condition of Approval: I I.C.6)

Mitigation C.5.3: Water pumping from Soquel Creek
(Condition of Approval: I I.C.9)

Mitigation C.5.4: Water pumping from Soquel Creek
(Condition of Approval: III.C.10)

Mitigation C.6.1: Groundwater protection
(Condition of Approval: III.E.1)

Mitigation D.1.1 Revegetation
(Condition of Approval: III.F.1)

Mitigation D.2.1 Wildlife protection
(Condition of Approval: III.F.1)

Mitigation D.2.2 Wildlife protection
(Condition of Approval: III.F.1)

Mitigation 0.2.3: Revegetation
(Condition of Approval: III.F.2)

Mitigation D.3.1: Levee improvement
(Condition of Approval: III.D.6)

Mitigation D.3.2: Levee improvement
(Condition of Approval: III.D.6)

Mitigation D.3.3: Discharge of pond water
(Condition of Approval: III.C.1)

Mitigation D.3.4: Pumping from Soquel Creek
(Condition of Approval: III.C.1)

Mitigation E.1.1: limberland conversion

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(Condition of Approval: III.C.2)

Mitigation F.2.1: Viewshed protection
(Condition of Approval: III.G.3)

Mitigation F.3.1: Viewshed protection
(Condition of Approval: III.G.1)

Mitigation G.1.1: Archaeology protection
(Condition of Approval: III.H.1)

Mitigation H.2.1: Traffic control
(Condition of Approval: III.J.1)

Mitigation H.4.1: Maintenance of street pavement
(Condition of Approval: III.J.2)

Mitigation I.2.1: Air quality
(Condition of Approval: III.K.3)

Mitigation K.1.1: Reclamation
(Condition of Approval: III.F.4)

Mitigation K.1.2: Reclamation
(Condition of Approval: III.F.6)

Mitigation K.1.3: Reclamation
(Condition of Approval: III.F.7)

Mitigation K.2.1: Reclamation
(Condition of Approval: III.F.5)

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## REQUESTED AMENDMENTS TO CONDITIONS OF APPROVAL
## QUARRY PERMIT 88-0233

### II. GENERAL PROVISIONS

Modifying the annual report submittal date from April 1st to July 1st allows for better aerial photographs to be taken during the spring months when the sun angle is higher. The better aerial photographs assist both engineering consultants and county staff with the review of the changes to the quarry. The July 1st date also corresponds to the Mining Ordinance Section 16.54.073.

requested.

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4. ~~The proposed phased Quarry expansion shall provide interim drainage control facilities for the site's increased drainage area. By October 15, 1994, a berm at the 1,200 foot elevation, a berm at the 700 foot elevation, installation of a 24 inch drain pipe between the two berms, and a series of three check ditches below the work face must be provided to protect slopes from erosion. The interim erosion control plan must be implemented as soon as possible. (Mit. B.5.1 & C.1.2.~~,

Delete this condition. See attached letter from Duane Smith, lfland Engineers.

5. Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity and/or long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred. To accomplish this, one or more of the following mitigation measures shall be implemented immediately:

~~a. Pond A shall be enlarged by 200 cubic yards every year to a maximum design capacity. This excavation should take place immediately. The excavation slope gradients shall be no greater than 1:1 (horizontal: vertical). In conformance with the approved drainage plans, the first pond expansion shall increase the storage volume by 400 cubic yards. (Mit. C.2.1)~~

Delete this condition. See attached letter from Duane Smith, Ifland Engineers.

~~b. Pond B, the secondary settling pond, shall be immediately expanded b removing the bench that exists within the southern portion for the pond. By increasing the extent of the pond to the west or south, additional sediment and runoff detention shall be obtained if required by the Quarry's Civil Engineer. (Mit. C.2.1)~~

Delete this condition. Time sensitive condition completed.

~~13. An open channel shall be maintained in the granitic rock along the mining floor to reduce further erosion. (Mit. C.3.9. & Mit. C.3.10.)~~

Delete this condition. See attached letter from Duane Smith, Ifland Engineers.

14. ~~The recommendations of the Mining and Drainage Plan shall b implemented, including the installation of floating or portable pumps in Pond B. (Mit. C.2.2.)~~ The recommendations of the Mining and Drainage Plan shall be implemented, as amended through the annual operational drainage reports approved by the County Planning Department. During winter months, a siphon system may be used. The Soquel Creek pump may be moved to Pond B for use in pumping from Pond B to Pond C as needed.

Consideration should be given to rephrasing this condition as suggested to recognize the siphon system. Allowing pumping from Pond B to Pond C reduces the need to pump from Soquel Creek.



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APPLICATION 01-0575

**D. Protection of Pond Levees:**

~~1. On or before October 15, 1994, the following measures shall be implemented in accordance with engineered plans by the Quarry's Civil Engineer, dated October 1993, to increase the stability of pond levee "A":~~

~~a. The outboard slope of the levee above the elevation of 395 feet shall be graded back to a 1.4:1 gradient or flatter. Erosion control measures in accordance with the approved Erosion Control Plan, including the placement of rip rap or gabion revetment from the toe of the levee to an elevation about the 100 year flood level, shall be implemented to provide protection from scouring of creek flood waters. (Mit. B.4.1)~~

Delete condition. Time-sensitive condition completed.

~~2. On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B":~~

~~a. The erosion scar below the discharge pipe shall be filled with rip rap to a minimum gradient of 1.6:1.~~

Delete condition. Time-sensitive condition completed.

~~3. On or before October 15, 1994, a buttress fill shall be placed at the outboard slope of levee "C" including appropriate subdrainage structures, to increase the stability of the levee to an acceptable level. (Mit. B.4.3)~~

Delete condition. Time-sensitive condition completed.

~~6. The existing outfall pipe from the pond "C" should be extended or, alternatively, rip rap shall be placed into the erosion scar to prevent additional erosion of banks of Soquel Creek. Construction shall be confined as to the minimum riparian area. Following the construction activities, the affected areas shall be immediately replanted with riparian vegetation under the supervision of a qualified botanist or revegetation specialist. Trees removed shall be replaced by the same species at a 2:1 replacement ratio or pursuant to Section 16.00 of the Streambed Alteration Agreement. (Mit. D.3.2)~~

Delete condition. Time-sensitive condition completed.

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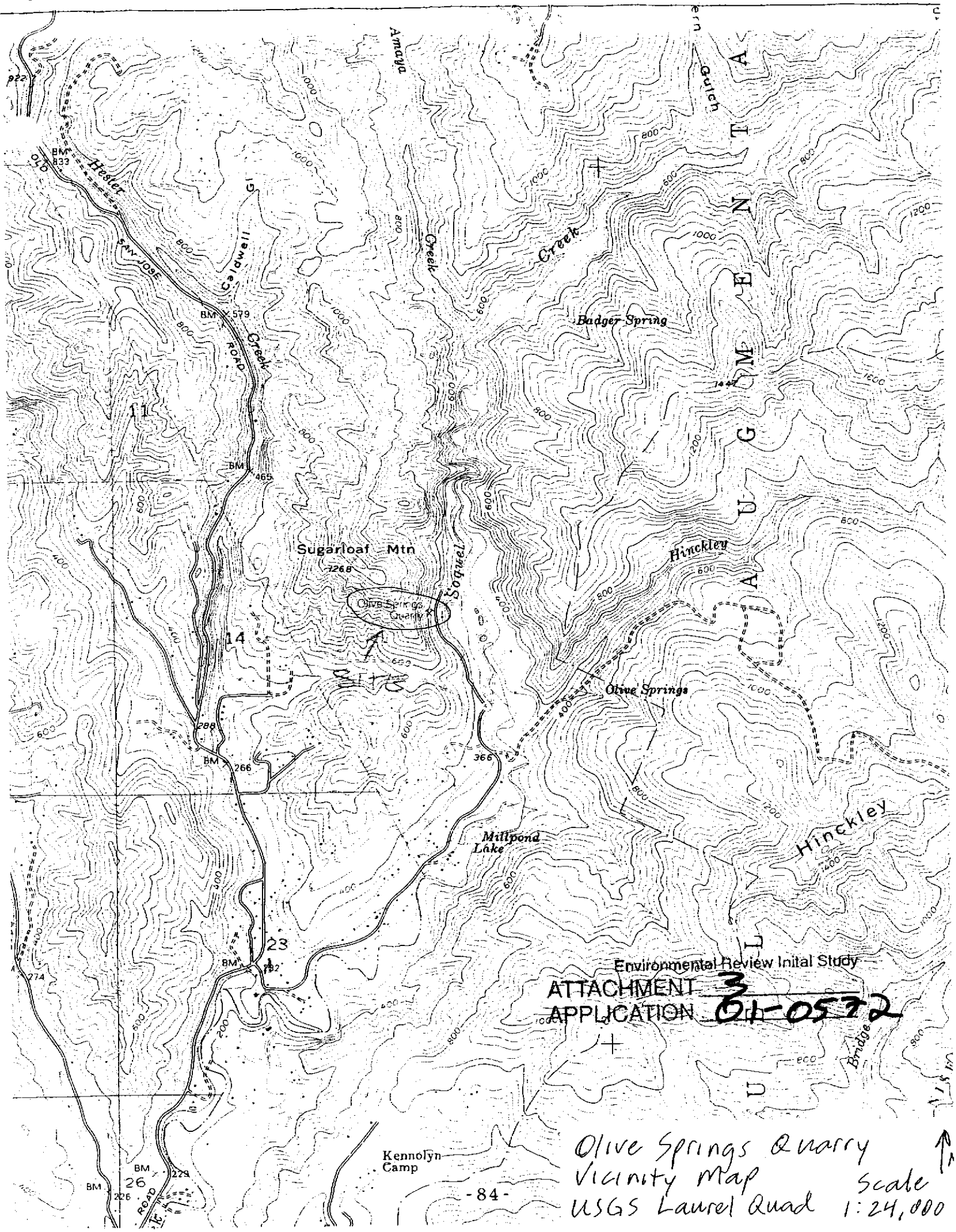
**L. Miscellaneous Conditions:**

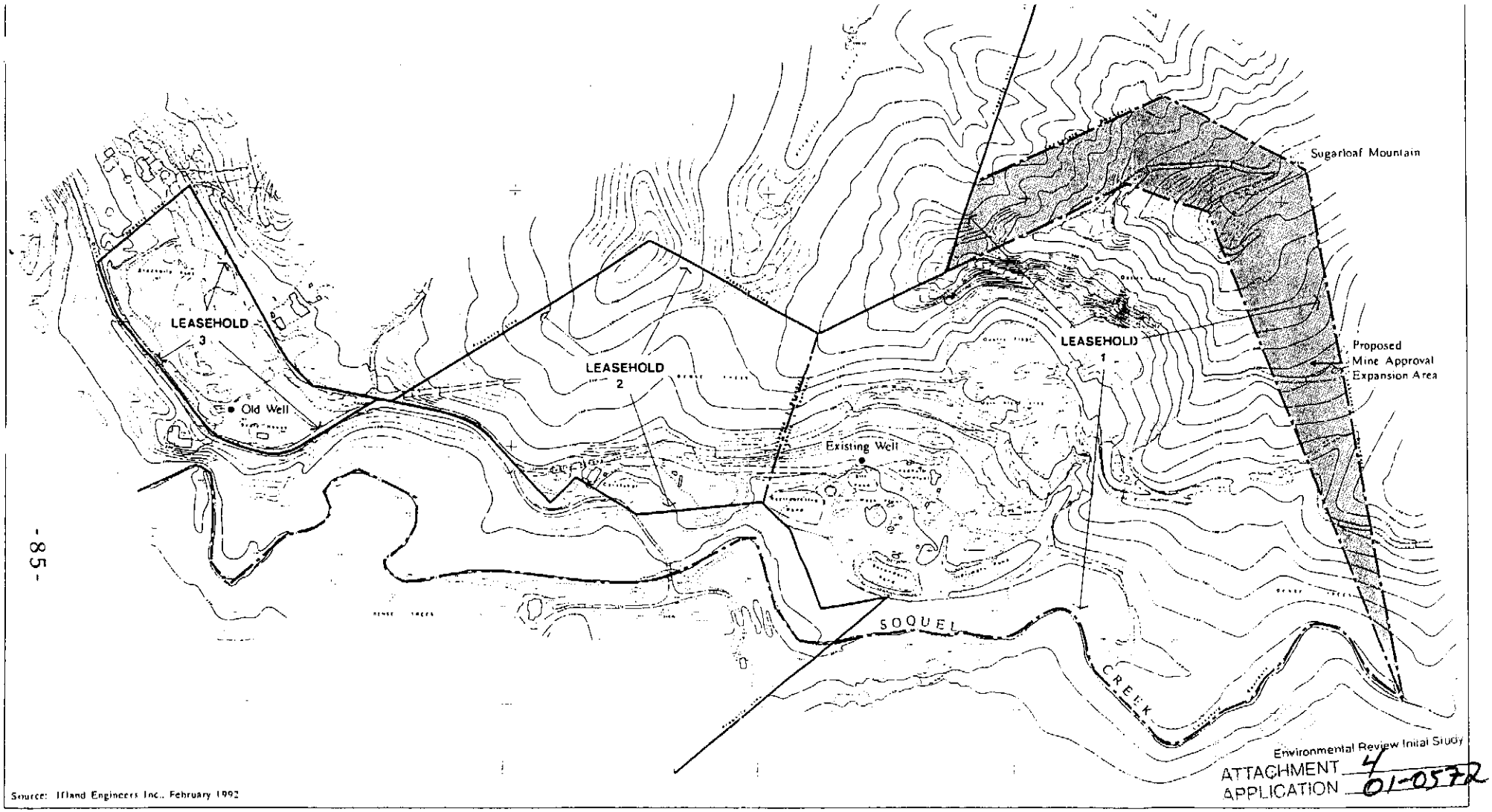
~~4. The Quarry and CHY Corporation shall work with the County Parks and Open Space and Cultural Services Department to determine if a trail from Olive Springs Road to the Soquel Demonstration Forest is safe and feasible. The results of the research shall be reported by staff to the Planning Commission on the consent agenda in one year.~~

Delete condition. Time-sensitive condition completed.




Olive Springs Quarry
Vicinity Map
USGS Laurel Quad

Scale 1:24,000




Source: Ifland Engineers Inc., February 1992

01-09-92(PSC301)

Figure 3

Project Site Plan

Environmental Review Initial Study
ATTACHMENT 4
APPLICATION 01-057R

# POTENTIAL IMPACTS AND MITIGATION MEASURES SUMMARY

| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| **Land Use** | | |
| A.1 | Appr<br>expar<br>Appr<br>activi<br>woul<br>heav<br>ximately nine acres of vegetative cover within the sion area (17 acres including the existing Mine val area) would be removed by the proposed quarry ies through the year 2080. Land use on this portion change from vacant forest or chaparral land to industrial quarrying activities. (SM) | A.1.1 Reclamation and revegetation of the quarry shall occur concurrent with continued mining of the quarry workface to the extent feasible. (A) |
| A.2 | Use<br>traffi<br>woul<br>prop<br>Olive Springs Road through the quarry by logging destined for the Soquel Demonstration State Forest potentially cause traffic congestion on the subject rty. (SM) | A.2.1 When logging of the Soquel Demonstration State Forest begins in spring 1993, the quarry and the State Forest shall coordinate operations schedules to prevent traffic backup on this roadway. The State Forest access through the quarry shall continue as an administrative access only, and public use by recreational visitors shall be prohibited by signing and gating the roadway to the State Forest. |
| **Geology, Seismicity and Soils** | | |
| B.1 | Con<br>nue<br>nuation of quarry activities would permanently alter opography of an additional 17 acres of hillside. (SU) | B.1.1 A permanent alteration of the hillside is unmitigable within the quarry objectives. However, as compensation, the final mining plan benches are designed to ensure slope stability and will be contoured into the adjacent hillside for a more gradual transition of slopes in compliance with County Mining Ordinance final contour requirements. (A) |

| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | B.1.2 Establish a benchmark at the lowest point of the quarry floor in a visible area not proposed for disturbance. |
| B.2 | The quarry face and settling pond levees could be potentially impacted during a major earthquake. However, the proposed mining and drainage plans and levee facilities have been approved for their stability. Project structures would be subject to strong seismic shaking. Areas within the site along Soquel Creek could be subject to secondary seismic hazards such as liquefaction. (SM) | B.2.1 All quarry areas and facilities (quarry structures, roadways, or other graded features), particularly those in areas subject to liquefaction shall be engineered to withstand the expected seismic forces (a mean peak horizontal ground acceleration of 0.54, a maximum horizontal ground velocity of 52 cm/sec., and a 20 to 40 second total ground shaking duration) recommended for design purposes within the body of this report. The facilities adjacent to the Soquel Creek floodplain are most susceptible to liquefaction. |
| | | B.2.2 Any presently undiscovered active fault traces subsequently encountered during continued quarry excavation shall be evaluated by a State-certified Engineering Geologist to assess their impact on slope stability in the quarry area. (Mitigation measure 3 of this section provides for an annual inspection of the quarry face by a State Certified Engineering Geologist). The implementation of any recommendations provided in these annual inspections shall be made a condition of project approval.) |



LEGEND:

LTS = Less than Significant
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| | | Measure |
|---|---|---|
| B.3 | Slope failure of the quarry workface could occur if not property constructed. Landsliding within the quarry operation area could jeopardize the safety of the quarry operators located on the workface or on the pit floor. Through the years, all landslide debris and breccia zones will be removed, lessening the impact. (SM) | B.3.1 The quarry workface shall be excavated in a manner which provides an adequate level of safety to the quarry operators and complies with the benching standards set forth by the Santa Cruz County Mining Ordinance, OSHA, MSHA, and in accordance with the plan by Ifland Engineers, Inc. (A) |
| | | B.3.2 Annual inspections of the quarry face shall be conducted by a State Certified Engineering Geologist to address the conformance with the phased Mining and Drainage Plans and to evaluate unexpected potentially adverse geological constraints that may be encountered during future excavation such as breccia zones, adverse dip of jointing, springs or seeps, or fracture areas. The revised mining and drainage plans for Olive Springs Quarry, prepared by Ifland Engineers, Inc., dated December 4, 1992, includes drainage and erosion mitigation measures for the completed quarry face. The measures include a 1.5-foot thick compacted berm on each 10-foot wide bench with catch basins, check ditches, and drain pipes to convey runoff to collection facilities downslope. This examination shall include: |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|

a) A determination of how the newly exposed geologic structure will affect the stability of the quarry workface;

b) An examination of stability factors using common engineering geologic graphs called hemispheric projections;

c) An examination of potential slope failures by a geotechnical engineer experienced in rock mechanics using data derived from the geologic examination;

d) A statistical analysis of the various features that can cause weakness in the slope (classification of the orientation, persistence, roughness, undulation and aperture of the fractures or joints in the workface); and

e) How the fractures are filled or not filled with material such as clay, rock dust, etc. The engineering geologist need not attempt to examine all fractures and joint, but can collect data along lines that represent different rock types with the Quarry to extrapolate the characteristics of the entire workface.



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | B.3.3 A geotechnical engineer shall develop a program to test the strength of discontinuities discovered in the geologic examination of the workface. The tested values shall be used to test wedge and other types of slope failures to assure appropriate slope stability. (A) |
| B.4 | Potential slope instability within the pond embankment slopes during earthquakes could cause deformation, resulting in pond overtopping or localized inundation of surrounding quarry areas. The levee stability and displacement analysis indicated that, under existing conditions, some sliding and/or cracking of the levees could be expected, without catastrophic failure. However, oversteep slopes left unattended or too rapid a rate of pond water release may result in levee failure. (SM) | |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | B.4.1 On or before October 15, 1994, the following measure shall be implemented in accordance with engineered plans by the Quarry's civil engineer, dated October 1993, to increase the stability of pond levee "A":<br><br>• The outboard slope of the levee above the elevation of 395 feet shall be graded back to a 1.4:1 gradient or flatter. Erosion control measures in accordance with the approved erosion control plan including the placement of rip rap or gabion revetment from the toe of the levee to an elevation above the 100-year flood level shall be implemented to provide protection from scouring of creek floodwaters. |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|

B.4.2 On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B":

a) The erosion scar below the discharge pipe shall be filled with rip rap to a minimum gradient of 1.6:1.

b) Because of the presence of heavy vegetation at the outboard slope of the levee which precludes access to heavy equipment and stabilizing work, an acceptable factor of safety shall be achieved by limiting the height of the water level within the pond to 376 feet by pumping to pond "C" or the adjacent creek. Elevation markers shall be placed in the pond by the Quarry's civil engineer to verify the water level during quarterly inspections for verification of the 376-foot elevation.

B.4.3 On or before October 15, 1994, a buttress fill shall be placed at the outboard slope of the levee including appropriate subdrainage structures to increase the stability of the levee to an acceptable level.



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | B.4.4 Pond water shall not be released at a rate which exceeds one-third of its capacity per 24 hours to prevent the rapid drawdown of pore waters within the levee which could result in levee failure. (A) |
| B.5 | Erosion-prone areas identified in Leasehold One could contribute sediment loads in excess of the siltation control capacity of the sedimentation ponds. (The recommended erosion control measures suggested for Leasehold Three have already been implemented). (SM) | B.5.1 Measures provided in the Ifland Engineers Mining and Drainage Plan, the Foxx-Nielsen Erosion Control Plan, and the BioSystems Revegetation Plan shall be implemented to reduce sediment concentrations to below a level of significance. These measures include the provision and maintenance of ditches and waterbars along the existing and future dirt roads, the provision of filter berms in small drainage swales when determined needed by the State-registered consulting civil engineer, the provision of berms at the 1,200-foot and 700-foot elevations, a temporary 24-inch drain pipe leading down from the 1,200-foot berm to the 700-foot berm, and a series of three check ditches below the quarry face in the year 1994 to provide immediate slope erosion protection, the enlargement of Pond A by 400 cubic yards in 1994 and 200 cubic yards per year thereafter, the riprapping of the levee along Pond A, the placement of rip rap into the erosion scar below the discharge pipe of Pond B, and the reseeding of disturbed areas. (A) |
| | | B.5.2 All erosion control work shall be completed before October 15 of each year. (A) |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| Hydrology and Drainage<br>C.1 | Hydrologic characteristics of the site would change significantly, including the time of runoff concentration, volume of runoff, and boundary of the drainage basin. Existing drainage facilities may not be adequate. (SM) | C.1.1 Existing drains and berms created to control stormwater runoff shall be modified and maintained as necessary to provide adequate runoff control without erosion and sedimentation of Soquel Creek, and monitored annually to evaluate their effectiveness. All runoff from the quarry workface and floor shall be directed to the existing six-foot diameter culvert that discharges into the canyon above Pond A. All proposed design changes and improvements to the quarry drainage system (additional water bars, roadside ditches, culverts under roads) shall be provided by a State Registered Consulting Civil Engineer.<br><br>a) The quarried material stockpile shall be moved at least eight feet from the outboard edge of the quarry floor.<br><br>b) The six-foot diameter culvert outlet extension shall be maintained to allow present and future runoff to continue discharging onto granitic rock in the headwall of the canyon.<br><br>c) The erosion scar below the discharge pipe of Pond B shall be filled with rip rap to a minimum gradient of 1.6:1. |



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| Potential Impact | Mitigation Measure |
|---|---|
| | C.1.2 The proposed phased quarry expansion shall provide interim drainage control facilities for the site's increased drainage area. In the year 1994 a berm at the 1,200-foot elevation and a berm at the 700-foot elevation shall be installed. As soon as mining of the workface permits, installation of a 24-inch drain pipe between the two berms, and a series of three check ditches below the workface will be provided to protect slopes from erosion. The interim erosion control plan shall be implemented as soon as possible. (A) |



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| | Potential Impact | Mitigation Measure |
|---|---|---|
| C.2 | Detention ponds may have insufficient capacity to hold runoff from storms and retain runoff until sufficient sediment has settled. (SM) | C.2.1 Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity and/or long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred.<br><br>Increase both the volume (acre-feet) and surface area (acres) of both the existing primary and the secondary settling ponds. Enlarged pond volumes will increase the ponds' capacity for turbid water storage while enlarged pond surface areas will increase the ponds' exfiltration capacity (their drainage rate without overflow). (A)<br><br>a) The 1993 Drainage Plan by Ifland Engineers shows the first increment of pond expansion to be a 400 cubic yard removal. Based on the hydrologic investigation, Pond A shall be enlarged by 200 cubic yards every year until maximum design capacity has been attained. This excavation should take place immediately. The excavation slope gradients shall be no greater than 1:1 (horizontal:vertical). |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | b) Pond B, the secondary settling pond, shall be immediately expanded by removing the bench at approximately 383 feet above mean sea level that exists within the southern portion of the pond. By increasing the extent of the pond to the west or south, additional sediment and runoff detention can be obtained if required by observations made in the future by the quarry's State Registered Civil Engineering consultant. |
| | | c) After all material removed from the ponds has dried sufficiently (by September or October of each year), it shall be taken to Leasehold Three for temporary stockpiling until it can be sold. |
| | | d) Maintain existing capacity of all ponds on Leasehold Three. |
| | | C.2.2 The recommendations of the Mining and Drainage Plan shall be implemented; specifically, the installation of floating or portable pumps in Ponds A and B. This will provide an easily maintained system for draining the detention ponds during wet winter months after sufficient runoff detention and sediment settling has occurred, thereby increasing the capacity of the ponds to hold subsequent rainfall runoff. (A) |

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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | C.2.3 A written annual drainage inspection report shall be prepared by the quarry's civil engineer and submitted to Santa Cruz County. |
| C.3 | Quarry operations have the potential to increase rr ≈ of erosion and sedimentation on the site. (SM) | C.3.1 Quarry operators shall avoid stripping new areas covered by loosely consolidated sediments (overburden) immediately prior to or during each rainy season. The areas to be protected shall be determined by the quarry's consulting civil engineers. |
| | | C.3.2 The working face of the quarry shall be kept free from large quantities of loose sediment and debris which are prone to severe erosion during rain storms. |
| | | C.3.3 Existing channels which are designed to concentrate and direct quarry runoff into the sediment pond detention system shall be armored with erosion resistant materials (such as rip-rap) at points of potential gullying. The areas to be protected shall be decided by the quarry's consulting civil engineer. |
| | | C.3.4 Attempts shall be made to minimize the surface area of the quarry which is stripped, mined or otherwise disturbed at any given time to the greatest extent compatible with reasonable mining and marketing requirements. |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | C.3.5 Reclamation and revegetation of each quarry bench shall be done as soon as possible, upon completion of mining operations on that bench, and in accordance with the revegetation plan. |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|

C.3.6 Design discharge facilities shall not exceed the accepted RWQCB "natural turbidity" limits as set forth in their NPDES (discharge) permit that is discharged into the Soquel Creek water course.

C.3.7 Periodic turbidity and settleable solid tests of Soquel Creek water and settling pond water shall be compared in order to determine if adequate settling has occurred in the ponds and if water quality is acceptable for release into Soquel Creek. This testing must take place immediately prior to discharge.

Turbidity impacts shall be mitigated by either installing turbidity meters at discharge points on both Leasehold One and Leasehold Three or by monitoring of discharge points on both Leaseholds One and Three by personnel of an independent water quality laboratory. (A)

Those officially responsible for monitoring the water quality of discharges from the quarry should follow the standards for permissible increases in settleable solids and turbidity established by the Regional Water Quality Control Board's Discharge Permit, and any standards set by California State Fish and Game.



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | Once settling pond water is released, turbidity tests shall also be run immediately upstream and downstream of the discharge point during discharge into Soquel Creek to monitor any increases in turbidity as a result of the release of settling pond waters.<br><br>All proposed design changes and improvements to the quarry drainage system shall be provided by a State Registered Consulting Civil Engineer. |
| | | C.3.8 As required by RWQCB Order 89-02 for Leasehold One, quarry discharge into Soquel Creek shall meet the specified water quality requirements. A similar permit for Leasehold Three water discharge into Soquel Creek shall be obtained. All water quality monitoring and reporting requirements specified in the RWQCB Orders must be complied with. (A) |
| | | C.3.9 An open channel shall be maintained in the granitic rock along the quarry floor to reduce further quarry floor erosion. |



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| Topic | Potential Impact | Mitigation Measure |
|---|---|---|
| | | C.3.10 All other runoff that does not emanate from the quarry face and quarry floor should be directed into the open channel excavated into granitic rock, that discharges into the canyon that leads to Pond A. Additional drainage facilities such as water bars, inside ditches along quarry roads, culverts under quarry operation roads in the active quarry area, etc., will be needed in the future and are to be recommended by the quarry's consulting civil engineer. |
| | | C.3.11 The 1993 Drainage Plan by Ifland Engineering and the Erosion Control Plan shall be implemented to offset potential erosion and sedimentation. The erosion control measures are to remain in effect from October 15 through April 15 of each year. (A) |
| | | C.3.12 The quarry reclamation plans shall conform to the Santa Cruz County Mining Ordinance Reclamation Standards (County Code Section 16.54.070). |
| | | C.3.13 All drains, facilities, and devices to control storm water runoff at the quarry site shall be maintained to operate effectively during quarry reclamation. |
| C.4 | The north side of Pond A is within the 100-year flood plain of Soquel Creek and could experience levee damage or failure due to flood water scour. (SM) | C.4.1 See mitigation B.4.1. |
| | | C.4.2. See mitigation B.4.1. |





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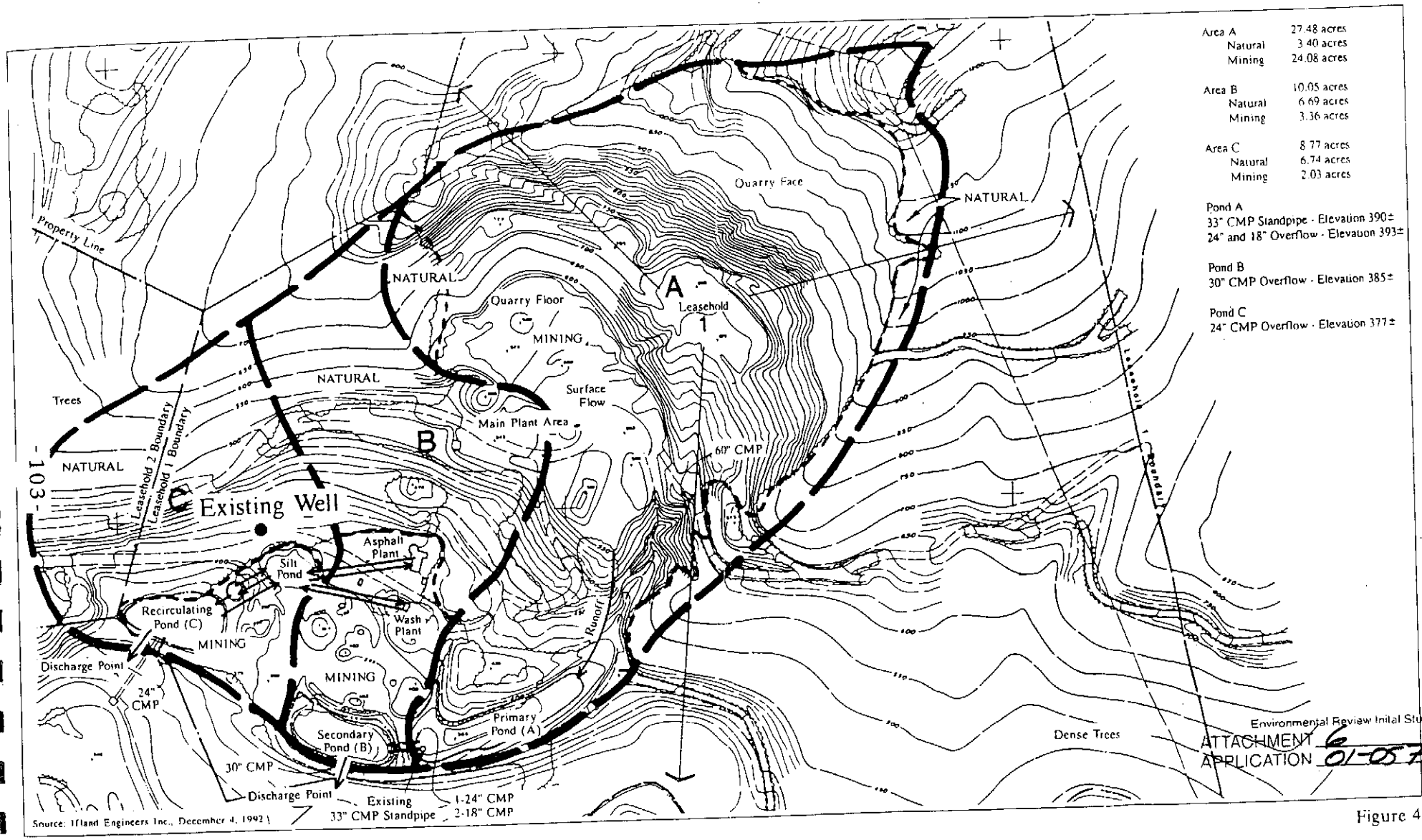


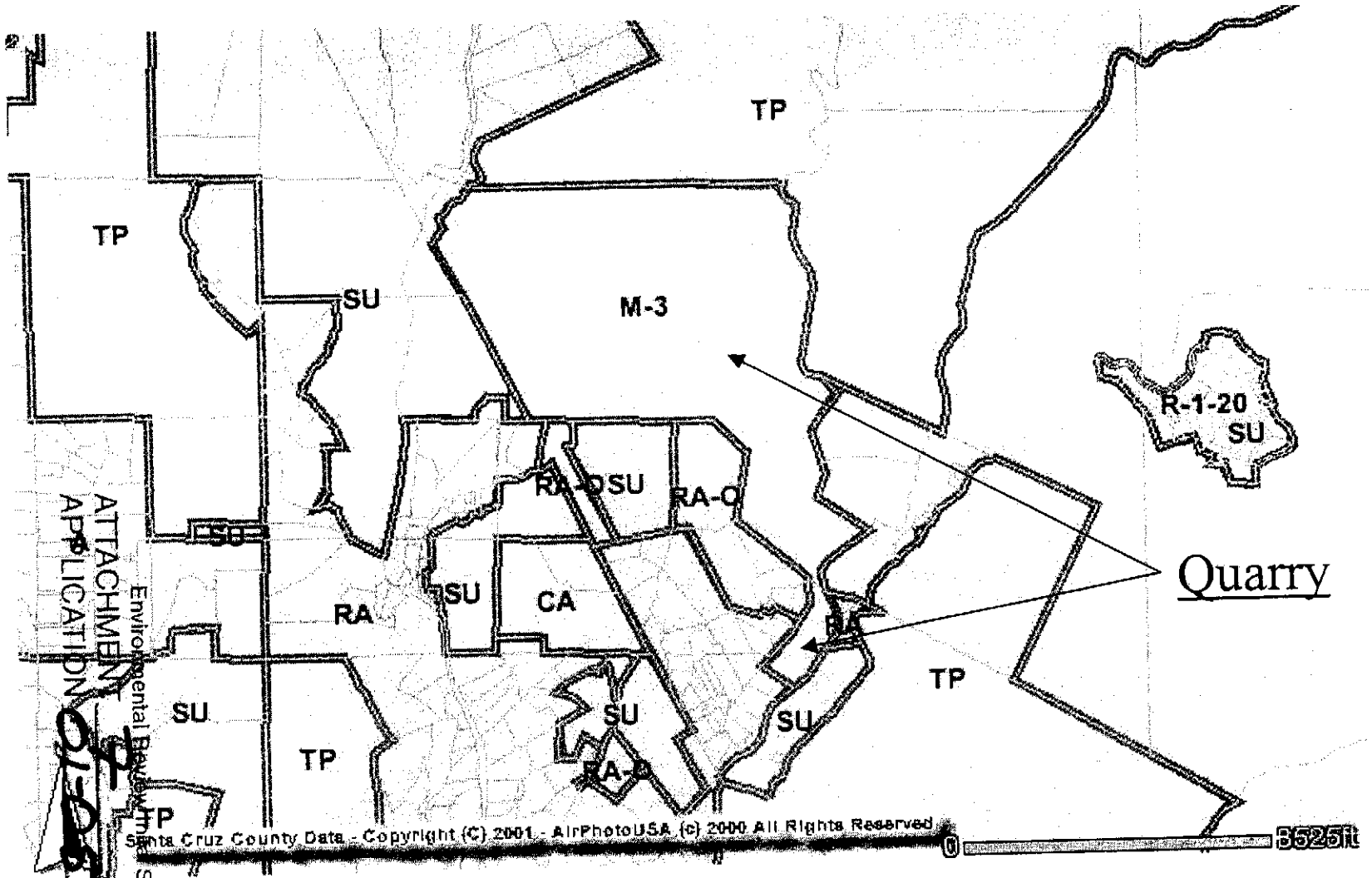

Figure 4

8-14-92(PSC101)

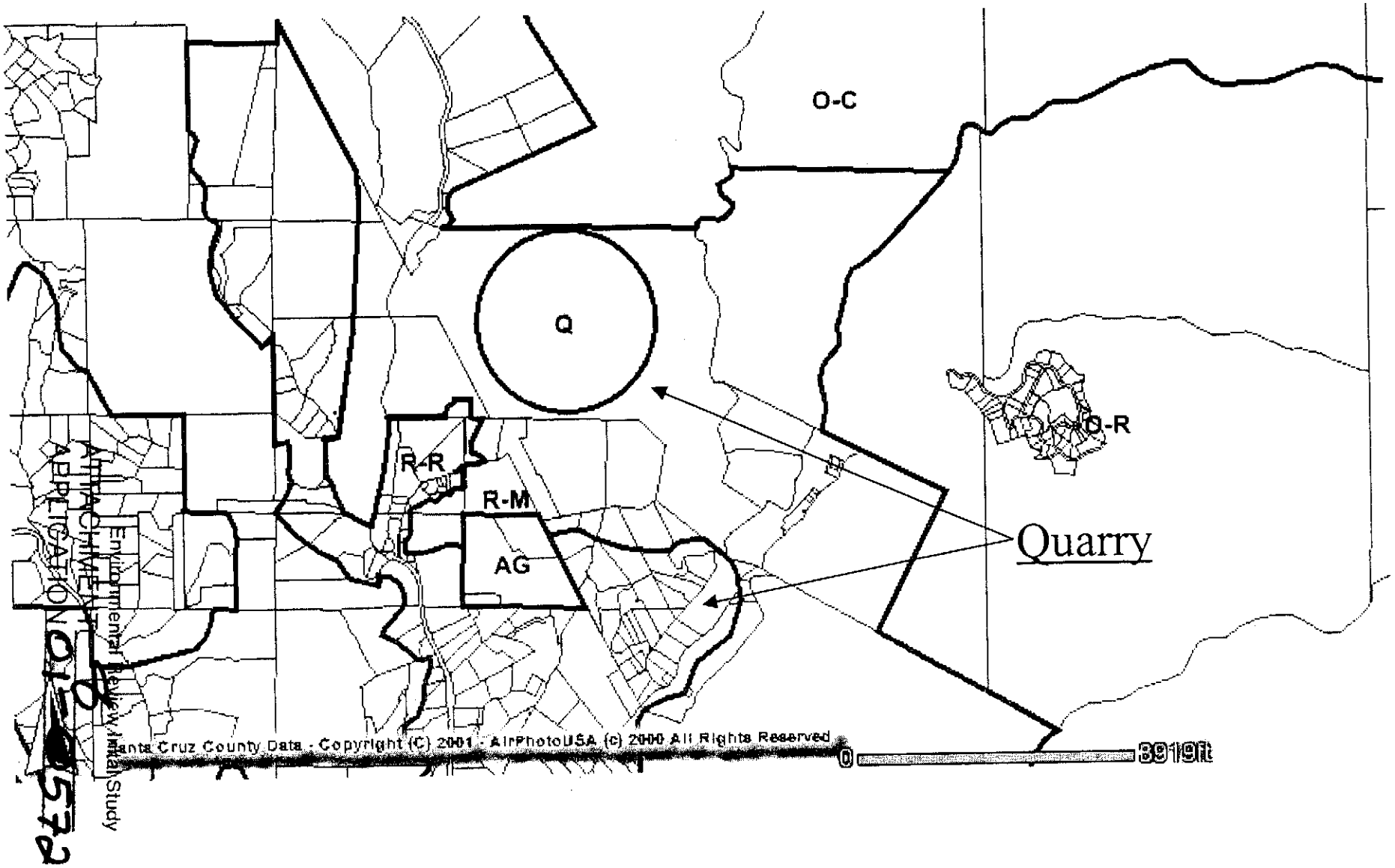
Environmental Review Inital Study
ATTACHMENT 6
APPLICATION 01-0572

1993
~~Existing~~ Leasehold One Drainage System

# Map of Zoning Districts



# Map of General Plan Designations



I. EXHIBITS

I. ~~Olive Springs Quarry Revegetation Plan, BioSystems Analysis, Inc,. April 1992.~~ Revegetation Plan by Greening Associates dated May 2006

P. Drainage Calculations by Ifland Engineers dated April 2006

II. GENERAL PROVISIONS

J. In conjunction with the annual report to the State Geologist required by SMARA, an Annual Report to the Planning Director shall be prepared by the mining operator or other professional determined by the Planning Director as qualified to prepare such a report. The report shall be submitted by the mining operator to the Planning Director ~~by April 1, 1995~~ each year by July 1. If the Planning Director determines the need for an independent consultant with specialized expertise, the mining operator shall obtain such consultant. All costs of such report and its review shall be paid by the mining operator. The report shall include the following unless waived or modified in writing by the Planning Director.

III. OPERATING REQUIREMENTS

A. Mining Operation

*6.* Production shall be limited to 226,000 tons per year of wet and dry aggregates ~~191,000 tons per year for dry aggregates and 35,000 tons per year for wet aggregates~~. If this aggregate production rate should be exceeded, it shall be reviewed by the Planning Commission for impacts to traffic, noise, air quality and other related issues.

B. Surface Drainage and Erosion Control:

**4.** ~~The proposed phased Quarry expansion shall provide interim drainage control facilities for the site's increased drainage area. By October 15, 1004, a berm at the 1,200 foot elevation, a berm at the 700 foot elevation, installation of a 24 inch drain pipe between the two berms, and a series of three check ditches below the work face must be provided to protect slopes from erosion. The interim erosion control plan must be implemented as soon as possible.~~ The proposed phased quarry expansion shall provide interim drainage control facilities for the site's increased drainage area as the mining operation progresses. Drainage control on the quarry face and floor shall be inspected and evaluated annually by the project engineering geologist and civil engineer. The annual geologic inspection of the working face by the engineering geologist and the annual drainage report by the civil engineer

Exhibit C

shall provide conclusion on the adequacy of interim drainaae control facilities and, if appropriate. provide recommendations for improvements. The aoals are to minimize the potential safetv hazard from slope failure on the quarry workface, which may be caused by improper drainage control, and minimize erosion and sedimentation, which will preserve the capacity of the ponds. (Mit. B.5.1. & C.1.2.)

5. Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity and/or long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred. To accomplish this, one or more of the following mitigation measures shall be implemented immediately:

   a. ~~Pond A shall be enlarged by 200 cubic yards every year to a maximum design capacity. This excavation should take place immediately. The excavation slope gradients shall be no greater than 1:1 (horizontal: vertical). In conformance with the approved drainage plans, the first pond expansion shall increase the storage volume by 400 cubic yards.~~ Pond A and B sediment shall be removed annually, or less frequently at the discretion of the quarry's civil engineer or Planning Department staff, during the summer/fall periods in order to maintain the volume established by the 2005 topographic survey. (Mit. C.2.1)

   b. ~~Pond B, the secondary settling pond, shall be immediately expanded by removing the bench that exists within the southern portion for the pond. By increasing the extent of the pond to the west or south, additional sediment and runoff detention shall be obtained if required by the Quarry's~~ The inlet level of the 30-inch culvert in Pond B shall be lowered by a minimum of 1.0 foot. (Mit. C.2.1)

~~13. An open channel shall be maintained in the granitic rock along the mining floor to reduce further erosion. (Mit. C.3.9. & C.3.10.)~~

14. ~~The recommendations of the Mining and Drainage Plan shall be implemented, including the installation of floating or portable pumps in Pond B.~~ The recommendations of the Mining and Drainage Plan shall be implemented, as amended through the annual operational drainage reports approved by the County Plannina Department. During winter months. a siphon system may be used. The Soquel Creek pump may be moved to Pond B for use in pumping from Pond B to Pond C as needed. (Mit. C.2.2.)

D. Protection of Pond Levees:

~~1. On or before October 15, 1994, the following measures shall be implemented in accordance with engineered plans by the Quarry's Civil Engineer, dated October 1993, to increase the stability of pond levee "A":~~

**Exhibit C**

a. ~~The outboard slope of the levee above the elevation of 395 feet shall be graded back to a 1.4:1 gradient or flatter. Erosion control measures in accordance with the approved Erosion Control Plan, including the placement of rip-rap or gabion revetment from the toe of the levee to an elevation about the 100-year flood level, shall be implemented to provide protection from scouring of creek flood waters. (Mit. B.4.1)~~

2. ~~On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B":~~

   a. ~~The erosion scar below the discharge pipe shall be fitted with rip-rap to a minimum gradient of 1.6:1.~~

3. ~~On or before October 15, 1994, a buttress fill shall be placed at the outboard slope of levee "C" including appropriate subdrainage structures, to increase the stability of the levee to an acceptable level. (Mit. B.4.3.)~~

**6.** ~~The existing outfall pipe from the pond "C" should be extended or, alternatively, rip-rap shall be placed into the erosion scar to prevent additional erosion of banks of Soquel Creek. Construction shall be confined as to the minimum riparian area. Following the construction activities, the affected areas shall be immediately replanted with riparian vegetation under the supervision of a qualified botanist or revegetation specialist. Trees removed shall be replaced by the same species at a 2:1 replacement ratio or pursuant to Section 16.00 of the Streambed Alteration Agreement. (Mit. D.3.2)~~

I. Exhibits

All mining operations shall conform **to** the following exhibits, which are incorporated as conditions of this Mining Approval, except as modified by specific permit conditions set forth below.

B. Leasehold One, Grading and Drainage Plan, Depletion Year 1993, lfland Engineers

C. Leasehold One, Ponds " A and "B" Levee Buttress Plan, lfland Engineers, Inc., October 22, 1993 (one sheet).

D. Leasehold One, Pond "C" Levee Buttress Plan, lfland Engineers, Inc., October 22, 1993 (one sheet).

**E.** Leasehold One, Site Plan Depletion Year 2000 through 2080, lfland Engineers, Inc., December 12, 1992, (five sheets).

F. Leasehold Three, Maximum Stockpile Plan and Sections, lfland Engineers, Inc., April 16, 1993 (two sheets).

G. Leasehold Three Drainage Plan, lfland Engineers, Inc. (Revised May 25, 1993- one sheet).

H. Grading and Drainage plan, Leasehold One, Year 2080 Drainage System, Ponds A, **B,** C, with Site Sections, lfland Engineers, Inc., Rev. December **4,** 1992. (Final Mining and Grading Plan- three sheets).

I. Revegetation Plan by Greening Associates dated May 2006

**J.** Leasehold One Erosion Control Plan with Supporting Drawing, LSA Associates, November 30,1993 **(44** pages and 1 drawing).

**K.** Draft Environmental Impact Report, Olive Springs Quarry, LSA.

L. Final Supplemental EIR, LSA November 30, 1993

M. Draft Supplemental EIR, LSA, May 28,1993.

N. Mitigation Monitoring and Reporting Program, LSA, November 30, 1993

O. Drainage Calculations by lfland Engineers dated April 2006

Exhibit D

Copies of the above documents are available at the County of Santa Cruz Planning Department.

II. GENERAL PROVISIONS

A. This Approval shall supersede all provisions of Use Permit 78-355-PD, and shall be the sole and exclusive permit or approval authorizing mining operations at the Olive Springs Quarry and shall control and bind owner and all future owners, lessees, or operators.

B. This Approval is for the extraction, processing, storage, and shipping of all mineral resources obtained from the property, including the hot plant facilities, for production of asphalt conducted in accordance with the conditions herein and for the reclamation of existing, proposed and previously mined land as shown in the approved Reclamation Plan (Exhibits "H" and **"I").**

C. This Approval is limited to a portion of the following County assessor parcel numbers: 099-171-02, -03. For specific areas of mining and reclamation within these areas, please refer to above listed Exhibits.

D. Minor variations to this Approval meeting the standards **of** County Code Section 18.10.134 and requested by the mining operator or staff which do not change the general concept of use and operation, and which do not adversely affect the environment, may be approved in writing by the Planning Director following review and recommendation by the County's Environmental Coordinator.

E. If, at any time, the Planning Director determines that there is a substantial noncompliance with any of these conditions, and/or Exhibits, the Planning Director shall forward a recommendation to the Planning Commission to set a hearing **to** consider a revocation of this approval in accordance with the provisions of County Code Section 18.10.136.

F. Within 45 days from the date of issuance of this Approval, the property owner and applicant shall sign , date and return two copies of the Approval to indicate acceptance and agreement with the conditions thereof. By signing this Approval, property owners agree to file a Declaration with the County's Recorder Office within **45** days from the date of acceptance, binding themselves and any future lessees to the revegetation and reclamation requirements of this Approval. The Declaration shall be supplied by the Planning Director. Failure to sign the Approval or record the declaration as described above shall render this Approval null and void and all mining operations shall cease at the Quarry site except reclamation and revegetation work in accordance with the above listed exhibits.

G. All mining and reclamation activities shall conform with the Conditions of Approval and with the regulations of the following agencies as they apply to the mining operations. The mining operator shall provide the County with copies of any permits issued by these agencies and any permit amendments, within 30 days of receipt.
   **1.** Central Coast Regional Water Quality Control Board (RWQCB)
   2. Monterey Bay Unified Air Pollution Control District (MBUAPCD)
   3. California Department of Fish and Game (DFG)

H. This approval shall expire 50 years from the date of issuance.

I. The Approval shall be reviewed by the Planning Commission within five years from the date of issuance. Subsequent reviews shall be done at a 5-year interval unless the Planning Commission determines that a shorter interval is necessary. In connection with such review, the Planning Commission shall take public testimony and shall otherwise investigate the permittee's compliance with the conditions of this Approval if there is a threat to public health and safety, a significant injurious threat to the environment, a nuisance or a violation of permit conditions.

J. In conjunction with the annual report to the State Geologist required by **SMARA,** an Annual Report to the Planning Director shall be prepared by the mining operator or other professional determined by the Planning Director as qualified to prepare such a report. The report shall be submitted by the mining operator to the Planning Director each year by July 1. If the Planning Director determines the need for an independent consultant with specialized expertise, the mining operator shall obtain such consultant. All costs of such report and its review shall be paid by the mining operator. The report shall include the following unless waived or modified in writing by the Planning Director.

   1. A report on compliance with all Conditions of Approval including the required monitoring programs.

   **2.** An analysis of any significant changes in environmental conditions or in the mining operation, which have not been anticipated in this Approval.

   3. A current aerial photograph of the site **(1'** = 200' scale) showing facilities, stripped areas, and re-vegetated and reclaimed areas, together with a report on the extent of excavation and reclamation completed in the previous year and projected for the coming year.

   **4.** Every fifth year, a current aerial photogrametric topographical map prepared from current aerial photographs map **(1"** + 200' scale with a 10 foot contour interval) showing lease and property lines and all the requirements of II.J.3 above.

5. A revegetation report prepared by a botanist, horticulturist or plant ecologist retained by the mining operator and approved by the Planning Director. The revegetation report shall describe the degree of success in achieving the objectives of the revegetation plan, and shall identify any changes or additional measures, which may facilitate achievement of the desired results.

6. Written verification of the renewal and/or validity of the financial assurance.

7. A report to be held as proprietary information in accordance with the County's Mining Regulations, stating the annual amounts of production and shipping of mining products, and the estimated time to complete mining in the permitted area.

8. A noise report prior to the required 5-year review shall be prepared by a qualified noise/acoustical consultant retained by the mining operator and approved by the Planning Director. The noise report shall determine whether or not the mining operator is in compliance with noise standards contained in the County Mining Regulations, and shall investigate and make recommendations regarding (relative to noise mitigations): (i) Any mining equipment used at the mining site); (ii) Proposed and existing noise protection; (iii) Any other significant impact resulting from mining operations. The mining operator shall implement all recommendations of the noise consultant determined to be necessary by the Planning Director for compliance with the conditions of the Approval.

9. All reports submitted to the Monterey Bay Unified Air Pollution Control District.

10. An inspection report by an Engineering Geologist addressing the safety of the work face.

K. All costs for the County's inspections and review of the Annual Reports and other reports submitted by the Quarry shall be paid by the Quarry, within 30 days after billing.

L. All mining operations shall be in compliance with the State's Surface Mining and Reclamation Act (SMARA).

M. In the event that future County inspections of the subject property disclose non-compliance with any Conditions of this Approval 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 Approval revocation.

N. Within 120 days of the Approval of this application or prior to disturbance in the new mining area, whichever comes first, the Quarry should submit a revised financial assurance, in conformance with the requirements of SMARA, that takes into account the expanded mining area and the approved revegetation and reclamation plans. The Planning Director shall forward the financial assurance to the State Board of Mining and Geology for review and approval as specified in SMARA.

III. OPERATING REQUIREMENTS

A. Mining Operation

1. All mining activities, including clearing, excavation or other disturbances shall be done in conformance with the above Exhibits. Setbacks shall be measured from the property boundary lines on a horizontal plane. Within 60 days of issuance of Approval, staff shall determine which limits of Leasehold One and Three shall be surveyed and permanently staked at a 200 foot (maximum) interval by a licensed surveyor and fenced with a 3 foot high fence to prevent trespassing. Fencing and staking shall be completed within 120 days from Approval.

2. A benchmark shall be established in the mining floor at the 550-foot elevation in a visible area not proposed for disturbance. (Mit. **B.1.2.)**

3. Any undiscovered active fault traces encountered during the mining operation shall be evaluated by an Engineering Geologist and documented in the required Annual Report. If an active fault trace is observed, the Engineering Geologist shall review the stability of the work face. (Mit. B.2.2.)

**4.** The work face shall be excavated in compliance with the benching standards set forth by the Santa Cruz County Mining Ordinance, OSHA, MSHA, and in accordance with the above Exhibits. (Mit. B.3.1.)

5. Annual inspection of the work face shall be conducted by an Engineering Geologist to address conformance with the Mining and Drainage Plan. The annual inspection shall evaluate unexpected adverse geological conditions that may be encountered during mining operations. An inspection report shall be prepared by the Engineering Geologist and shall be included in the above required Annual Report. The report shall include the following:

a. **A** determination of how the newly exposed geologic structure will affect the stability of the work face.

b. An examination of stability factors using common engineering geologic graphs (hemispheric projections);

c. An examination of potential slope failures by a geotechnical engineer experienced in rock mechanics using data derived from the geologic examination;

d. A statistical analysis of the various features that can cause weakness in the slope (classification of the orientation, persistence, roughness, undulation and aperture of the fractures or joints in the work face); and,

e. How the fractures are filled or not filled with materials such as clay, rock, dust etc. The engineering geologist need not attempt to examine all fractures and joints, but can collect data along lines that represent different rock types in order to extrapolate the characteristics of the entire work face. (Mit. B.3.3 & B.3.2)

f. If any discontinuities are discovered in the inspection of the work face, a geotechnical engineer shall develop a program to evaluate the discontinuities including, but not limited to, any wedge or block slide type failure analysis. (Mit. B.3.3. & B.3.2.)

6. Production shall be limited to 226,000 tons per year of wet and dry aggregates. If this aggregate production rate should be exceeded, it shall be reviewed by the Planning Commission for impacts to traffic, noise, air quality and other related issues.

7. Within 120 days after Approval has been granted and continuously thereafter, the outer boundaries of the mining site shall be posted with signs providing notice of approved mining operations to the public. Each sign shall state in letters not less than four inches in height: "MINING APPROVAL NUMBER _____" and in letters not less than one inch in height: THIS PROPERTY MAY BE USED FOR THE MINING AND PROCESSING OF ROCK, SAND, GRAVEL AND MINERALS. THE HOURS OF OPERATION AND MAINTENANCE ARE AS FOLLOWS; _____." Each sign shall be maintained in legible condition at all times.

B. Surface Drainage and Erosion Control:

1. All erosion control work shall be completed by October 15" of each year and stay in effect until April **15".** (Mit. B.5.2. & Mit. C.3.11).

2. Measures provided in the Mining and Drainage and Revegetation Plans shall be implemented to reduce sediment concentrations. These measures shall include provisions and maintenance of ditches and waterbars along existing and future dirt roads and filter berms.

3. Existing drains and berms created to control storm water runoff shall be modified and maintained as necessary to provide adequate runoff control without erosion and sedimentation of Soquel Creek, and monitored annually to evaluate their effectiveness. The control of runoff from the work face and floor shall be in conformance with the above Exhibits. If required by the Planning Director, all design changes and improvements to the drainage system shall be designed by a Registered Civil Engineer and submitted to County Planning for review, approval, and incorporated into this Approval. The following additional drainage and erosion control measures shall be implemented immediately:

   a. The quarried material stockpile shall be moved at least eight feet from the outboard edge of the Quarry floor.

   b. The six foot diameter culvert outlet extension shall be maintained to allow present and future runoff to continue discharging onto granitic rock to the headwall of the canyon.

   **c.** The erosion scar below the discharge pipe of Pond B shall be filled with rip-rap to a minimum gradient of 1.6:1. (Mit. C.1.1.)

**4.** The proposed phased quarry expansion shall provide interim drainage control facilities for the site's increased drainage area as the mining operation progresses. Drainage control on the quarry face and floor shall be inspected and evaluated annually by the project engineering geologist and civil engineer. The annual geologic inspection of the working face by the engineering geologist and the annual drainage report by the civil engineer shall provide conclusion on the adequacy of interim drainage control facilities and, if appropriate, provide recommendations for improvements. The goals are to minimize the potential safety hazard from slope failure on the quarry workface, which may be caused by improper drainage control, and minimize erosion and sedimentation, which will preserve the capacity of the ponds. (Mit. B.5.1. & C.1.2.)

5. Sediment detention ponds shall have the capacity to hold the runoff from repeated high-intensity andlor long-duration winter rainstorms and detain this turbid water until a sufficient amount of sediment removal has occurred. To accomplish this, one or more of the following mitigation measures shall be implemented immediately:

   a. Pond A and B sediment shall be removed annually, or less frequently at the discretion of the quarry's civil engineer or Planning Department staff, during the summer/fall periods in order to maintain the volume established by the 2005 topographic survey. (Mit. **C.2.1)**

b. The inlet level of the 30-inch culvert in Pond **B** shall be lowered by a minimum of 1.0 foot. (Mit. **C.2.1)**

c. If material removed from the ponds has dried sufficiently (by September or October of each year), it shall be taken to Leasehold Three for temporary stockpiling until it can be sold. (Mit. C.2.1.)

6. A written annual drainage report prepared by the Quarry's Civil Engineer shall be included in the Annual Report. (Mit. C.2.3.)

7. Prior to stripping any new areas covered by loosely consolidated sediments (overburden) the operator shall notify the Planning Director for inspection to evaluate whether the stripping will affect erosion control measures. (Mit. C.3.1.)

*8.* Prior to October 15, the Quarry **shall** clear the work face of large quantities of loose sediment and debris, which are prone to severe erosion during rain storms. (Mit. C.3.2.)

9. Channels that are designed to concentrate and direct storm water runoff into the sediment pond detention system shall be armored with erosion resistant materials (such as rip-rap) at points of potential gullying. The areas to be protected shall be decided by the Quarry's Civil Engineer and recommendation included in the Annual Report to the County. (Mit. C.3.3.)

10. The surface area of the Quarry which **is** stripped, mined or otherwise disturbed at any given time shall be minimized to the greatest extent compatible with reasonable mining and marketing requirements. (Mit. C.3.4.)

11. Upon completion of the mining operations, reclamation and revegetation of each bench shall be done as soon as possible, in accordance with the Revegetation Plan. (Mit. C.3.5.)

12. All changes and improvements to the surface drainage system shall be designed by a Civil Engineer and a brief report addressing any changes and improvements shall be included in the Annual Report. (Mit. C.3.7.)

13. The recommendations of the Mining and Drainage Plan shall be implemented, as amended through the annual operational drainage reports approved by the County Planning Department. During winter months, a siphon system may be used. The Soquel Creek pump may be moved to Pond **B** for use in pumping from Pond **B** to Pond C as needed. (Mit. C.2.2.)

C. Protection of Soquel Creek

1. Quarry storm water runoff control facilities into Soquel Creek shall be in compliance with the accepted Regional Water Quality Control Board (RWQCB) "natural turbidity" limits as set forth in the current approved RWQCB Discharge Order. (Mit. C.3.6.)

2. Prior to any discharge of pond water into Soquel Creek, turbidity and suspended solid tests of Soquel Creek and settling ponds shall be compared in order to determine if adequate settling has occurred in the ponds and if the pond's water quality is acceptable for release into Soquel Creek. The testing must take place immediately prior to discharge. (Mit. C.3.7)

3. Monitoring of water quality and discharges from the Quarry shall follow the standards for permissible increases in suspended solids and turbidity established by the RWQCB's Discharge Order and any standards set by California State Fish and Game. (Mit. C.3.7.)

4. If settling pond water is released, turbidity tests shall be run immediately upstream and downstream of the discharge point during discharge into Soquel Creek to monitor any increases in turbidity as a result of the release of pond waters. (Mit. C.3.7.)

5. **As** required by the RWQCB Order 89-02 (or subsequent Orders) for Leasehold One, runoff discharge into Soquel Creek shall meet the specified water quality requirements. A similar permit for Leasehold Three water discharge into Soquel Creek shall be obtained. All water quality monitoring and reporting requirements of the RWQCB shall be complied with. (Mit. C.3.8.)

6. A minimum flow rate in Soquel Creek of 0.5 to 0.75 cfs, as determined by the Department of Fish and Game, shall be maintained regardless of the water needs of the Quarry operations. Water withdrawal from the Creek shall not occur while the maintenance of this minimal flow rate is in jeopardy. Before any creek withdrawal, the operator shall be responsible for measuring the creek flow rate outside the southern boundary of the Quarry property. (Mit. C.5.1. & D.3.4.)

7. Unless a new agreement is made with the Department of Fish and Game, surface water pumping for mining operations shall not exceed their current permit allowance of 0.36 cfs. Any new requirement of the Department of Fish and Game are hereby included as conditions of this Approval. In the event that water from Soquel Creek is needed for mining operations, the flow rate, the date of withdrawal, the time duration and rate of withdrawal, as well as the downstream creek flow rate during withdrawal shall be logged by the operator and submitted to County Planning for review in the Annual Report. (Mit C.5.4. & C.5.2.)

8. Any discharge into Soquel Creek from either Leasehold One or Three shall be monitored in accordance with standards established by the RWQCB. Monitoring shall be done by an independent laboratory or, as an alternative, may be accomplished by the installation of a mechanicallelectrical turbidity meter. All monitoring results shall be included in the Annual Report. (Mit. C.3.7. & D.3.3.)

9. Prior to any pumping from Soquel Creek for mining operations, the operator shall notify the Planning Director for review of the necessity of pumping and to verify that the operator has investigated and tried new ways of minimizing their surface water pumping from Soquel Creek. (Mit. C.5.3)

D. Protection of Pond Levees:

1. On or before October 15, 1994, the following measures shall be implemented to increase the stability of pond levee "B":

   a. Because of the presence of heavy vegetation at the outboard slope of the levee which precludes access to heavy equipment and stabilizing work, an acceptable factor of safety shall be achieved by limiting the height of the water level within the pond to 376 feet above Mean Sea Level (MSL) by pumping water to pond "C" or the adjacent creek. Elevation markers shall be placed in the pond by the Quarry's Civil Engineer to verify the water level during quarterly inspections for verification of the 376 foot elevation. (Mit B.4.2)

2. Pond water shall not be released at a rate which exceeds one-third of its capacity per 24 hours to prevent the rapid drawdown of pore waters within the levee which could result in levee failure. (Mit. B.4.4)

3. All levees shall be maintained to prevent uncontrolled discharge into Soquel Creek during a major earthquake and/or unusual storm event. (Mit. D.3.1)

E. Groundwater Protection:

1. Operators shall continue to protect the existing local groundwater level and quality by not mining below the proposed final 550-foot elevation and by not expanding pond capacity by increasing their depth but rather by increasing their width. (Mit. C.6.1)

2. Mining Operations shall maintain a minimum 20-foot separation between peak groundwater table and the mining floor.

F. Revegetation and Reclamation:

1. Within 90 days from issuance of Approval, a Habitat Management Plan with performance standards as set by SMARA shall be completed by a qualified biologist and submitted to County Planning for approval and inclusion in the Reclamation Plan for all species of concern as identified in the 1993 EIR by LSA. This report shall include nesting habitat for purple martin, golden eagle habitat identification of habitat of southwestern Pond Turtles, California Red-legged Frog and Foothill Yellow-legged Frog. (Mit. D.2.1 & D.2.2)

2. The Revegetation Plan designed by BioSystems (April, 1992) shall be implemented to offset potential vegetation and wildlife impacts as soon as and area within the approved mining area is completed. (Mit. D.I.I & D.2.3)

3. The Revegetation Plan submitted by BioSystems Analysis shall be amended to include performance standards for revegetation. This amendment shall be included in the first Annual Report.

4. The Revegetation/Reclamation Plan shall be amended to indicate the location of all temporary topsoil storage areas. This amendment shall be included in the first Annual Report. (Mit. K.I.1)

5. Upon closure of mining activities, all ponds shall be fenced. A 6-inch opening between the ground and the bottom of the fence shall be maintained to allow the passage of small animals. (Mit. K.2.1)

6. Slash and brush from on-site clearing shall be chipped and added *to* the reserved topsoil on Leasehold Three. (Mit. K.1.2)

7. As soon as revegetation areas are available, test plots shall be conducted to determine the most successful revegetation procedures. (Mit. K.1.3)

8. Reclamation and revegetation shall occur concurrent with the continued mining to the extent feasible. (Mit. A.I.I)

9. The Reclamation Plan shall conform to the County Mining Regulation standards. (Mit. C.3.12)

10. All drains, facilities, and devices to control storm water runoff shall be maintained effectively during reclamation. (Mit. C.3.13)

*G.* Protection of Viewshed:

1. In the .eventthat material in excess of the permitted 25,000 tons of material is needed to be stored on Leasehold Three, the extra material will be limited to a three-month storage period. After that time, all material in excess of 25,000

tons shall be removed from the Quarry property. If the need for storage of excess material occurs in future years, after the maturation of the vegetative screen required by this permit, the amount of material maintained on Leasehold Three may exceed the 25,000 ton existing limit for a longer period of time to the extent that the screening is effective. This additional amount of stored material shall require written approval by the Planning Director, in advance of placement of the material. (Mit. F.3.1)

2. Benches on the work face shall be contoured to provide for a gradual transition into the adjacent hillside. (Mit. B.I.1)

3. Within 90 days of the date of issuance of Approval, the vegetative screening shall be planted along the southern property line of Leasehold Three to complement the existing sparse vegetation between the adjacent residences and the Quarry. This vegetation shall be planted and maintained by the Quarry according **to** a landscape plan prepared by a qualified botanist and reviewed and approved by County Planning. (Mit. F.2.1)

**H.** Protection of Paleontological Resources:

1. In the event that significant paleontological resources (i.e., significant skeletal remains that would substantially contribute to the 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 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. (Mit G.I.II)

I. Operating and Shipping Hours:

1. Hours of Quarry operation shall be 7:00 AM to 7:00 PM, Monday through Friday, but only during daylight hours. Retail sales may be allowed 7:30 AM **to** 12:00 noon on Saturdays.

J. Traffic Control:

1. The Quarry shall request from the Department of Public Works warning sign placement along Soquel-San Jose Road at its northern and southern approaches to Olive Springs Road to warn drivers of truck traffic entering and exiting Soquel-San Jose Road. Any cost of the preparation and placement of signs shall be paid by the Quarry. (Mit. H.2.1)

2. Pavement conditions along Olive Springs Road shall be monitored by the County Public Works Department to determine the extent to which pavement

degradation is attributable to Quarry operations. The Quarry shall be responsible for repairing unacceptable pavement conditions caused by Quarry traffic. (Mit H.4.1)

3. When logging of the Soquel Demonstration Forest begins in spring of 1994, the Quarry and the State Forest shall coordinate operation schedules to prevent traffic backup on this roadway. The State Forest access through the Quarry shall continue as administrative only, and public use by recreational visitors shall be prohibited by signing and gating the roadway to the State Forest. (Mit. A.2.1)

**4.** The Quarry shall maintain a speed enforcement program at Olive Springs Road. The program shall include the following, at minimum:

   a. Verification, using radar or other appropriate means, of truck speeds on Olive Springs Road. This verification shall occur at least two days per week, on a random day basis. The Quarry shall keep a record of the speed verification program and shall provide a summary of the results to the County in the Annual Report.

   b. Trucks exceeding the posted 25 mph speed limit shall be reported to the Quarry. The Quarry shall provide written warnings to drivers observed exceeding the speed limit. Three-time violators shall be prohibited from transporting materials from the Quarry for a period of at least 30 days.

   c. All complaints of excessive truck speed shall be reviewed by the Quarry and kept in a permanent log. **All** complaints shall be investigated promptly.

   d. The Quarry shall provide written notification of the speed limit and the consequences of non-compliance to all truck drivers entering the Quarry. A sign informing drivers of the 25 mph speed limit on Olive Springs Road shall be posted at the weigh station.

K. Air Quality:

1. Actively used unpaved Quarry roads shall be watered or sprayed with lignin sulfonate or other environmentally approved dust retardant to reduce fugitive dust.

2. All equipment and processing facilities shall be maintained in accordance with the Monterey Bay Air Pollution Control District standards for stationary sources.

3. By October 14, 1994, the operation of the asphalt plant shall be permanently fueled by Liquefied Petroleum Gas (LPG). The use of diesel fuel shall be discontinued. (Mit. 1.2.1)

4. Revegetation in accordance with the approved Reclamation and Vegetation Plan shall be initiated as soon as practical in order to minimize fugitive dust.

L. Miscellaneous Conditions:

1. Any new on-site structures shall incorporate approximate seismic forces (a mean peak horizontal ground acceleration of 0.54, a maximum horizontal ground acceleration of 52 cm/sec, and a 20-40 sec ground shaking duration) into the design of criteria, and be designed by a registered Civil Engineer. (Mit. B.2.1)

2. The Quarry shall obtain a Timber Conversion Permit from the California Department of Forestry prior to any timber harvest on the site. The Quarry shall comply with all requirements of this permit including installation of erosion control measures of the cessation of harvest and institution of the fire protection measures both during and after harvest. (Mit. E.1.1)

3. All drains, facilities and devices to control storm water shall be maintained to operate effectively during Quarry reclamation. (Mit. C.3.13)

4. The Quarry and CHY Corporation shall work with the County Parks and Open Space and Cultural Services Department to determine if a trail from Olive Springs Road to the Soquel Demonstration Forest is safe and feasible. The results of the research shall be reported by staff to the Planning Commission on the consent agenda in one year.

M. Mitigation Monitoring Program

The mitigation measures contained in Exhibit "N" 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. As required by Section 21081.6 of the California Public Resources Code, a monitoring and reporting program for the mitigations is hereby adopted as a Condition of Approval and is attached as Exhibit "N. The purpose of this 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 Santa Cruz County Code. All mitigation monitoring shall be documented in the required Annual Report. If the next quarterly inspection following the submittal of the Annual Report shows non-compliance with any

provisions of this Mining Approval, enforcement actions in accordance with the County Code and SMARA will be implemented to achieve compliance.

COUNTY OF SANTA CRUZ
PLANNING DEPARTMENT

Planning Commission
Meeting Date: 11/8/06
Agenda Item: # 8
Time: After 9:00 a.m.

# APPLICATION NO. 01-0572

## STAFF REPORT TO THE PLANNING COMMISSION

# EXHIBIT E

# OLIVE SPRINGS QUARRY

## SEDIMENT BASIN ANALYSIS
## PONDS A AND B

**April 2006**

**IFLAND ENGINEERS, INC.**
**1100** Water Street
**Santa** Cruz, **CA 95062**
**(831)426-5313 FAX (831)426-1763**

## TABLE OF CONTENTS



## APPENDICES

# OLIVE SPRINGS QUARRY

QUARRY DRAINAGE AND SEDIMENT BASIN ANALYSIS FOR PONDS A AND B

## I. INTRODUCTION AND ASSUMPTIONS:

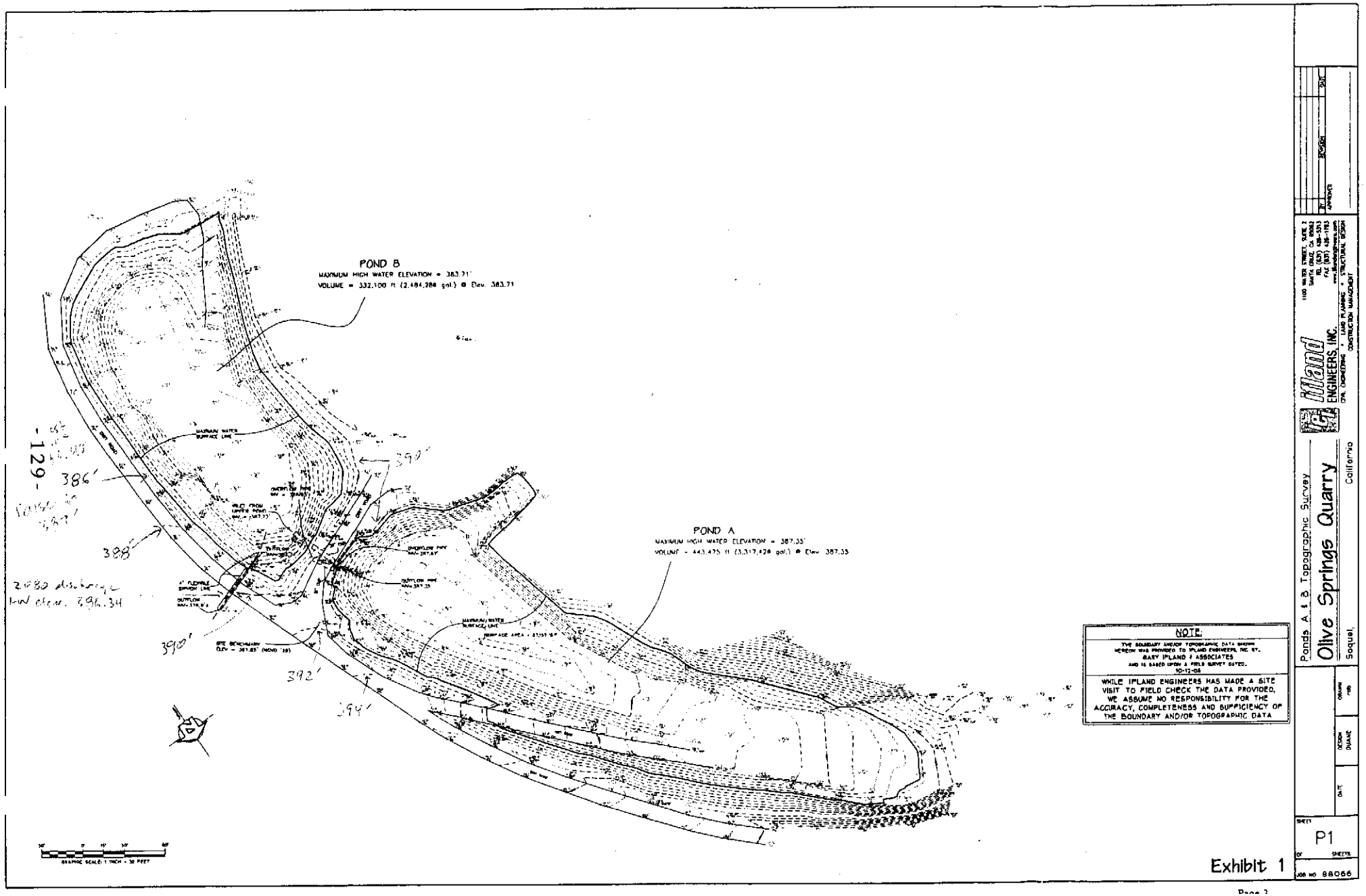
The initial Quarry Permit was issued under Use Permit 78-355-PD and reissued under Permit 88-0233 January 26, 1994. Quarry plans were prepared between 1988 and 1992 with periodic updates as necessary and as required by the 5-year permit renewals. In order to bring the permit application and current quarry conditions into uniformity, this report provides a comprehensive review of the operational elements of the drainage and sediment collection system in order to demonstrate the adequacy of said systems not only under current operations but also for the continued life of the quarry to year 2080

The following assumptions and statements provide the basis of the study and its conclusions and recommendations:

- Data compiled by **S.E.** Rantz is used in determining depth, duration and frequency for varying storm conditions. Calculations are run for the 10-year, 6-hour duration storm event per Chapter 16.54.040 *(C)* (9) of the Mining Ordinance based on a mean annual precipitation ($P_{MA}$) of 40 inches. See Appendix A for excerpt from the **S.E.** Rantz publication "Mean Annual Precipitation and Precipitation Depth-Duration-Frequency Data for the San Francisco Bay Region, California, dated October 26, 1971. Section II of the report contains the calculations determining adequacy of pond volumes under current and quarry life scenarios
- The Rational Method is used for determining the runoff inflow to the ponds for the IO-year, 6-hour storm event. The rainfall intensity map and Rainfall Intensity-Duration Curves are included in Appendix B for Reference.
- The aerial survey completed in the Spring of 2005 is used to identify the current extents of the quarrying and to approximate the storm water runoff to Ponds A and B, the primary sediment ponds and discharging pond (Pond B)
- A current topographic survey of Ponds A and **B** (Exhibit 1) determine the holding capacity *of* each of these ponds. Both ponds were cleaned prior the 2004-2005 winter season and prior to the field run topographic survey and therefore represent maximum storage capacities.
- The 2080 Quarry Plan (dated October 1991) continues to be used for Master Planning and quarry life, however at the request **of** Environmental Planning staff, the underlying topographic base map has been replaced with the updated aerial survey for all exhibits.
- Plant operation provides for the use of ponded water from both Ponds A and B and largely eliminates the need to pump from Soquel Creek other than in mid to

late summer. This practice also has the advantage of "drawing down" pond levels during the rainy months.

- The siphon is also used to "draw down" Pond B during the rainy season when the ponds are reaching full capacity.


POND B
MAXIMUM HIGH WATER ELEVATION = 383.71'
VOLUME = 332,100 ft (2,484,288 gal.) @ Elev. 383.71
POND A
MAXIMUM HIGH WATER ELEVATION = 387.35'
VOLUME = 443,475 ft (3,317,428 gal.) @ Elev. 387.35
386'
388'
390'
392'
394'
NOTE
THE BOUNDARY AND/OR TOPOGRAPHIC DATA SHOWN HEREON WAS PROVIDED TO IFLAND ENGINEERS, INC BY: GARY IFLAND & ASSOCIATES AND IS BASED UPON A FIELD SURVEY DATED: 10-12-06
WHILE IFLAND ENGINEERS HAS MADE A SITE VISIT TO FIELD CHECK THE DATA PROVIDED, WE ASSUME NO RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS AND SUFFICIENCY OF THE BOUNDARY AND/OR TOPOGRAPHIC DATA
Ponds A & B Topographic Survey
Olive Springs Quarry
Soquel, California
IFLAND ENGINEERS, INC.
P1
Exhibit 1

## II. POND SIZING

Based on the topographic survey completed in spring 2005 and the pond survey done in the summer of 2005, (Exhibit 1) we can accurately calculate the pond volumes of Ponds A and 8. Since the quarry operator cleaned both ponds prior to the 2004/2005 winter season the pond volumes reflect their maximum capacity. With this available information, we are providing calculations for (A) the existing quarry condition (2005) and (B) the quarry plan for year 2080.

The schematic cross-section of Ponds **A** *8* B is provided in Exhibit 2 and is based on current survey data far the pond bottoms and culvert configurations shown on Exhibit 1.

### *A. PRESENT CONDITIONS (2005)*

**Pond A -**

Volume calculated from topographic survey – 443,475 Cu. Ft.

**Pond B -**

Volume calculated from topographic survey –332,100 Cu. Ft.

Pond Capacities

**1)** Existing Quarry Conditions ***(See*** Exhibit 3)

Runoff to Pond A: (Area **A)**

Area A – 25.83 Ac. $C_{10}$ = 0.9 $P_{ma}$ = 40" 10 yr./6hr. storm = 3.10"

Pond Volume Required = (0.9)(3.10/12)(25.83)(43,560)

= **261,598 Cu. Ft. < 443,475 Cu. Ft. OK**

Using the map and nomograph included in Appendix B the $P_{60}$ Value is determined to be 1.7 inches of rainfall and 0.55 inches per hour for a 6-hour storm. Thus, the runoff rate for this area is determined as follows:

**Q** = CiA = (0.9)(0.55)(25.83) = **12.8 c.f.s.**

Area B -12.49 Ac.

**Runoff** to Pond 8: (Areas 81-84, C1-C4)

$C_{10}$ 0.3 for areas B3, B4, C1, C3 A = 3.47 + 1.27+2.33 + 0.70 = 7.77 Ac.

$C_{10}$ 0.9 for areas B1, B2, C2, C4 A = 6.71 + 1.04+0.51+2.44 = 10.70 Ac.

$C_{10}$ (Composite) = (0.3)(7.77) + (0.9)(10.70)/18.47 = 0.65

Pond Volume Required = (0.65)(3.10/12) (18.47) (43,560)

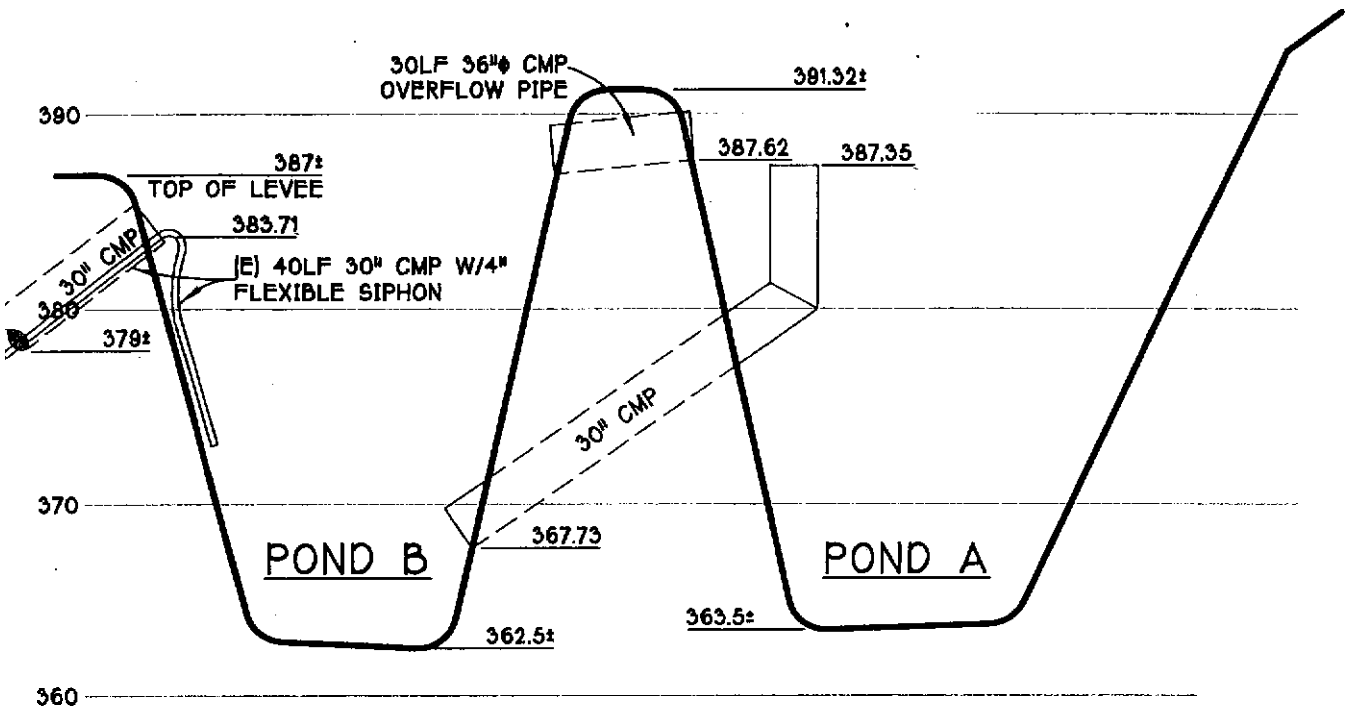
= **135,098 Cu. Ft. < 332,100 Cu. Ft. OK**

**As** with Pond A, the Rational Method, **Q** = CiA is used to determine the runoff rate

**Q** = CiA = (0.65)(0.55)(18.47) = **6.6 c.f.s.**

ifland ENGINEERS, INC.
CIVIL ENGINEERING • LAND PUNNING • STRUCTURAL DESIGN
CONSTRUCTION MANAGEMENT
1100 WATER STREET, SUITE 2
SANTA CRUZ, CA 95062
TEL (831) 426-5313
FAX (831) 126-1763
www.iflandengineers.com

JOB NO. 88066.01 OLIVE SPRINGS QUARRY
SHEET NO. 1 OF 1
CALCULATED BY HDS DATE 10110105
SCALE NTS




## POND B:

VOLUME TO ELEV. 383.71 - 332,100 C.F.

DISCHARGE THROUGH 30" CMP
USE CULVERT CALC./INLET CONTROL NOMOGRAPH

## POND A:

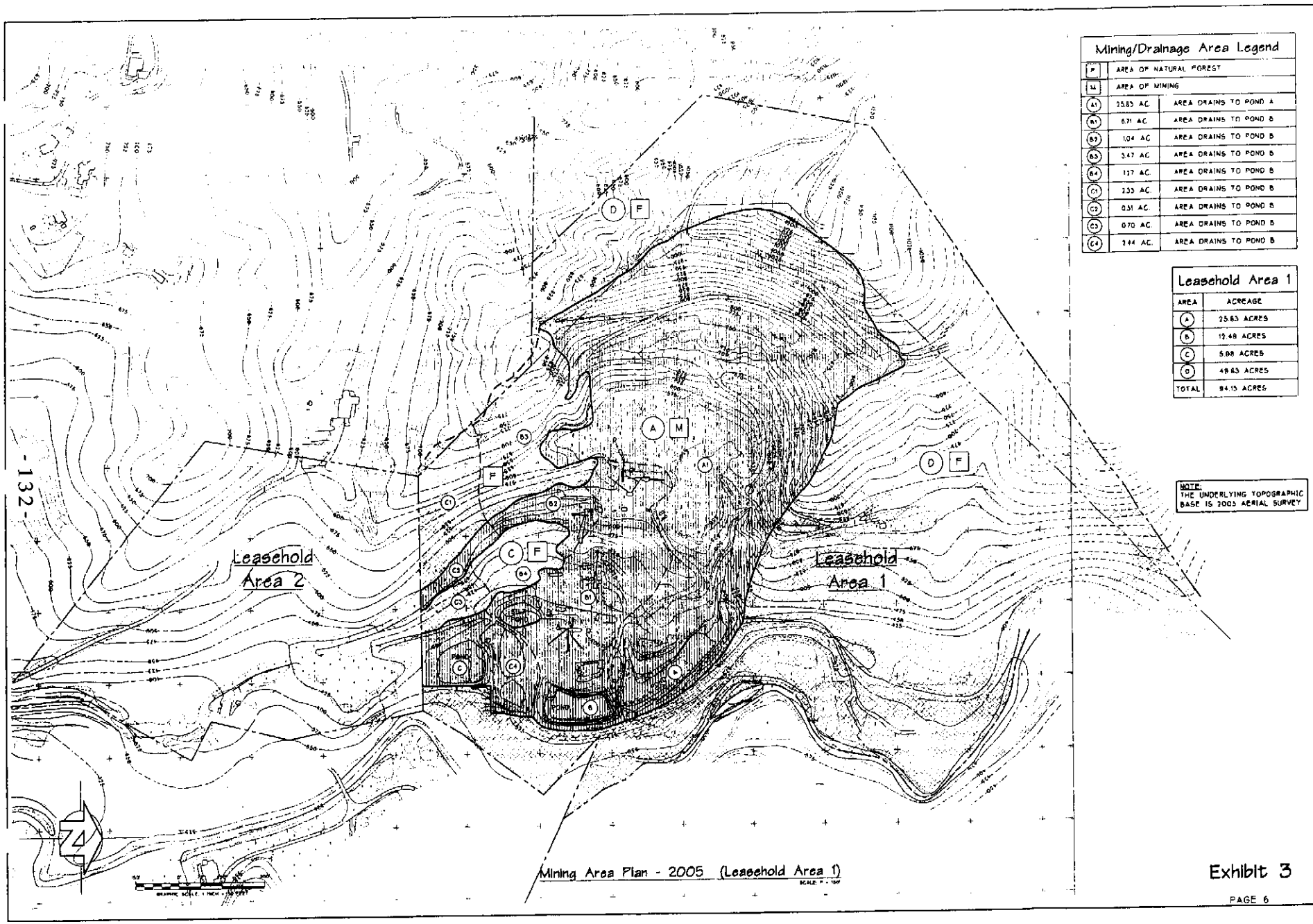
VOLUME TO ELEV. 387.35 - 443,475 C.F.

DISCHARGE THROUGH 30" CMP
USE WEIR CALC. - $Q = CLH^{3/2}$
WHERE C=3.2

DISCHARGE THROUGH 36" CMP
USE CULVERT CALC./INLET CONTROL NOMOGRAPH

# Ponds A & B - Schematic X-Section

# Exhibit 2


Mining/Drainage Area Legend
P AREA OF NATURAL FOREST
M AREA OF MINING
A1 25.83 AC. AREA DRAINS TO POND A
B1 6.71 AC. AREA DRAINS TO POND B
B2 1.04 AC. AREA DRAINS TO POND B
B3 3.47 AC. AREA DRAINS TO POND B
B4 1.27 AC. AREA DRAINS TO POND B
C1 2.33 AC. AREA DRAINS TO POND B
C2 0.31 AC. AREA DRAINS TO POND B
C3 0.70 AC. AREA DRAINS TO POND B
C4 2.44 AC. AREA DRAINS TO POND B
Leasehold Area 1
AREA ACREAGE
A 25.83 ACRES
B 19.48 ACRES
C 5.88 ACRES
D 43.83 ACRES
TOTAL 94.15 ACRES
NOTE:
THE UNDERLYING TOPOGRAPHIC BASE IS 2005 AERIAL SURVEY
Leasehold Area 2
Leasehold Area 1
Mining Area Plan - 2005 (Leasehold Area 1)
Exhibit 3
PAGE 6
Mining Area Plan - 2005
Olive Springs Quarry
Soquel California
Marti ENGINEERS, INC.
CIVIL ENGINEERING • LAND PLANNING • STRUCTURAL DESIGN
1100 WATER STREET, SUITE 1
SANTA CRUZ, CA 95062
TEL (831) 426-3172
FAX (831) 426-3175
DRAWN MARC
DESIGN DUANE
DATE 04/17/06
SHEET M1
JOB NO. 88066

Since Ponds A & B work in tandem with the only outlet to Soquel Creek leaving from Pond B, the required volume is the sum of the two pond volumes or 396,696 cu. ft. The existing combined volume of the two ponds is 775,575 cu. ft. Thus, the existing pond volume is more than adequate *to* meet the current quarry requirement.

The combined inflow for a 6-hour storm is 19.4 c.f.s. Based on the nomograph (Exhibit 5), the Hw/D = 0.96. The Hw will be (0.96)(2.5') = 2.40 and the Pond elevation at this discharge will be 386.11. Since the top of the levee is 386.45, there is 0.34 feet (4 inches) of freeboard.

Because the ponds are excessively large and because discharge to the creek from Pond B is so infrequent, it is our opinion that the present pond configuration and design is adequate. In addition at full pipe flow discharge will increase to 20.0 c.f.s.

## *B.* QUARRY PLAN (2080)

1) Existing Quarry Permit for 2080 (See Exhibit 4)

We have determined the runoff coefficients for each of the ponds to be based on the areas and development characteristics as shown on Drainage Area Map – 2080 included in the appendix of this report (and labeled D.10.d.5 in the Quarry Plan). These coefficients are presented below.

Pond A

A= 43.05 Ac

$$C_{10} = \frac{(0.9)(16.33) + 0.40(5.04) + 0.75(21.68)}{43.05} = 0.77$$ **Use 0.80**

Pond B

A= 10.05 Ac

$$C_{10} = \frac{(0.9)(3.36) + 0.40(6.69)}{10.05} = 0.57$$ Use **0.60**

Pond A

A = 43.05 Ac, $C_{10}$ = 0.80

Pond Volume Required = (0.8)(3.10/12)(43.05)(43.560)
= **387,553 Cu. Ft. < 443,475 Cu. Ft. *OK***

Q= CiA = (0.8)(0.55)(43.05) = **18.9 cf.s.**

Pond B

A = 10.05 Ac, $C_{10}$ = 0.60

Pond Volume Required = (0.6)(3.10/12)(10.05)(43,560)
= **67,856 Cu. Ft. < 331,100 Cu. Ft. *OK***

Q = CiA = (0.6)(0.55)(10.05) = **3.3 c.f.s.**

As with the 2005 condition, pond adequacy at the closure date of 2080 continues to be met with the present volumes. The required volume for 2080 is 455,409 cu. ft. The existing combined volume of the two ponds is 775,575 cu. fl.

The combined inflow for a 6-hour storm is 22.2 c.f.s. Based on the nomograph (Exhibit 5). the Hw/D is 1.05. Thus the Hw will be 2.63' or elevation 386.34.

Because the discharge elevation is nearly at the level of the lowest point on the levee, it is recommended that the levee along the creek side of Pond **B** be raised to elevation 387.0.

## III. DRAINAGE STRUCTURE ASSESSMENT

### *A. POND* A

1. 30" CMP standpipe with overflow at 387.35

Q = **CLH** $^{3/2}$ where C = 3.2 (assumed) and L = 7.85' circumference of 30" pipe
The discharge for variable H is tabulated below.

| **H** | Elevation | **Q (c.f.s.)** |
|---|---|---|
| 0.27 | 387.62 | 3.52 |
| 0.5 | 387.85 | 8.87 |
| 0.64 | 387.99 | **12.8** (2005) |
| 0.83 | 388.18 | **18.9** (2080) |
| 1.0 | 388.35 | 25.1 |

Both the 2005 and 2080 design flows will also discharge to the 36" diameter.

2. 36" CMP overflow pipe

Once the ponding height reaches the invert of the overflow pipe (36" CMP), it will start to run as well. The following chart provides "combined" flow up to the top of the 36" pipe. The following table provides combined flow out of Pond A when both culverts are discharging to Pond B.

**POND A**

| Elevation | *30"* CMP Standpipe | **36"CMP* Culvert** | Combined Outflow |
|---|---|---|---|
| 387.35 | - | | - |
| 387.62 | 3.52 cfs. | - | 3.52 cfs. |
| 389.12 | 59.15 cfs. | 10.5 | 69.65 cfs. |
| 390.62 | 148.54 cfs. | 32.5 | 181.04 cfs. |
| 391.32 | 198.70 cfs. | 40.1 | 238.80 cfs. |

**'Using the Nomograph on** Exhibit 5

With the 2005 inflow of 12.8 c.f.s. and the 2080 projected inflow of 18.9 c.f.s. it is obvious that the combined standpipe and overflow culvert are more than adequate.

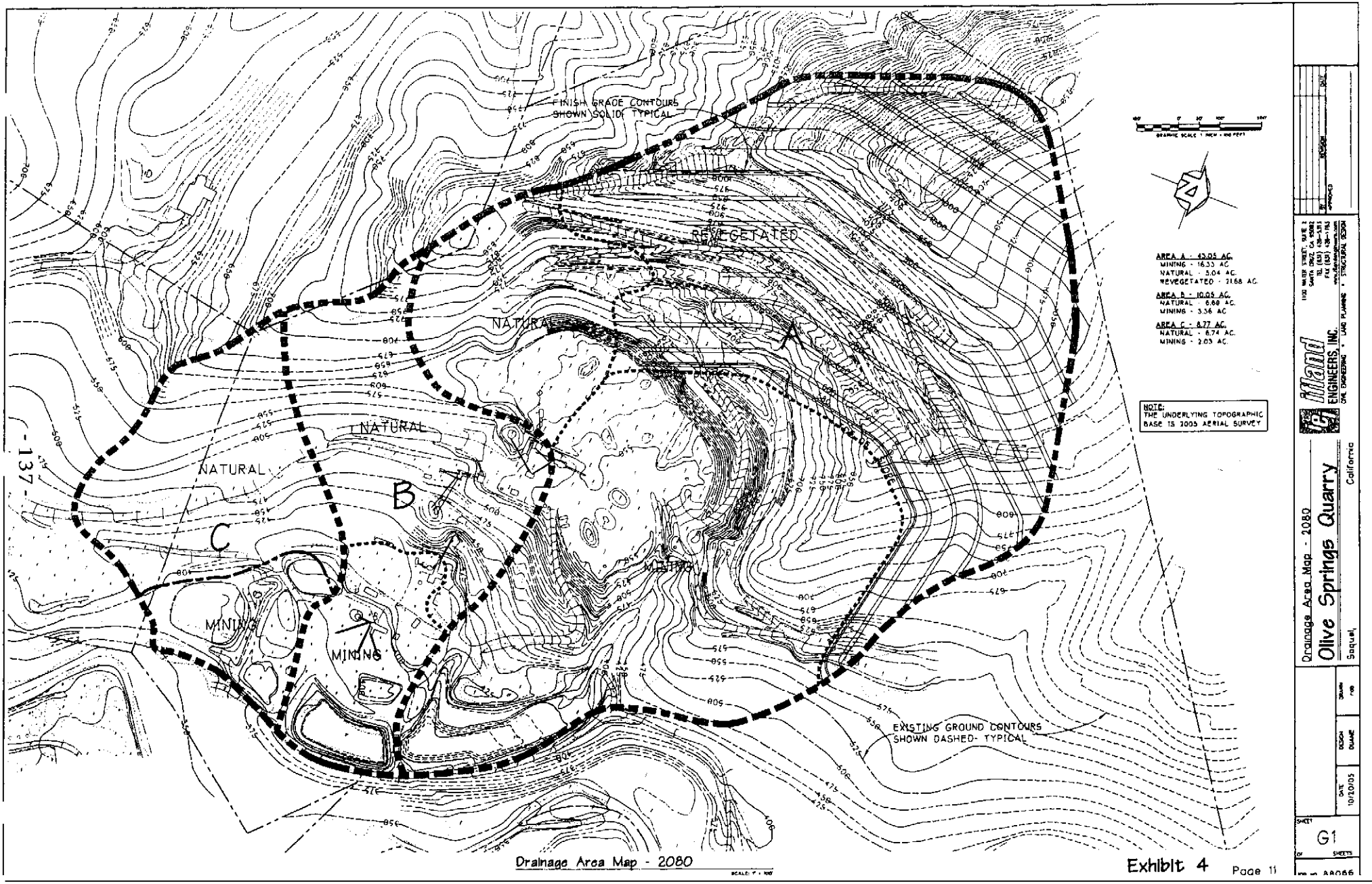
## B. PONDB

1. The same procedure may be used to determine discharge to Soquel Creek from Pond B. Using a standard culvert nomograph, Exhibit 3, the discharge for variable head conditions for the 30" CMP are tabulated below.

**POND B OUTFLOW**

| Elevation | 30" CMP Culvert |
|---|---|
| 383.71 | O |
| 384.96 | 6.75cfs. |
| 386.11 | 19.4 (2005) |
| 386.21 | 21.00cfs. |
| 386.34 | 22.2 (2080) |
| 387.0 | 28.00cfs. |

For the 2005 combined oufflow of 19.4c.f.s. the headwater elevation will be 386.11, providing a freeboard of approximately 0.34' (4") and for the 2080 combined outflow a freeboard of 0.11' (1-1/2"). As recommended earlier additional fill should be placed on the levee to provide a minimum of 6 inches of freeboard.

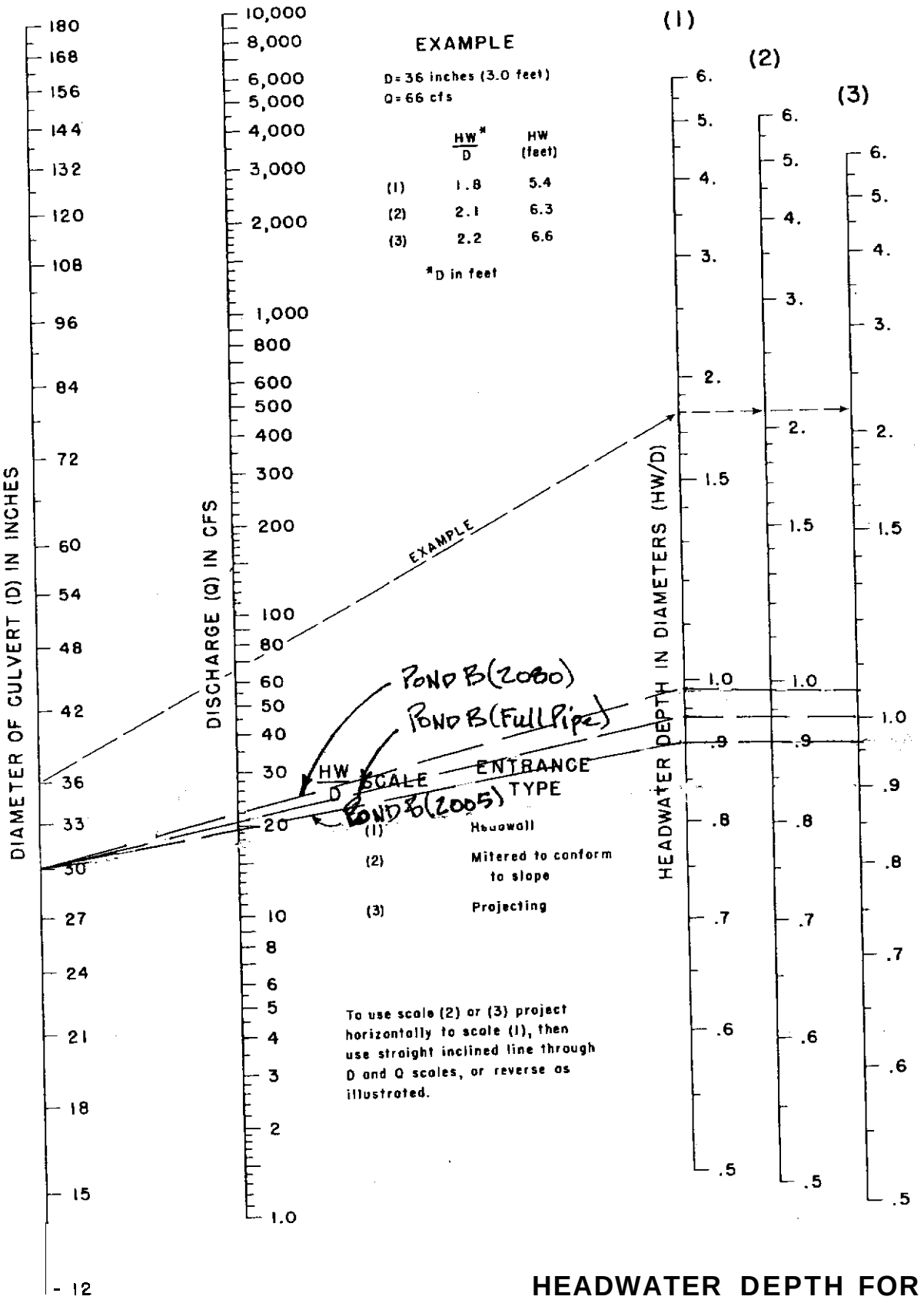



Drainage Area Map - 2080

SCALE: 1" = 100'



Exhibit 4 Page 11




BUREAU OF PUBLIC ROADS
OCTOBER 1960

## HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL



EXHIBIT 5

## V. RECOMMENDATIONS:

**A.** No enlargement of Pond **A** is required in order to sustain compliance with the Mining Ordinance. The existing combined volume for Ponds **A** & B is 775,575 cu. ft., while the volume required by the current Mining Permit is 396,696 cu. **fl.** (261,598 + 135,098).

B. **For** the year 2080, the combined design volume requirement is 455,409 **cu.** ft., again substantially less than the current available storage volume of 775,575 cu. ft.

**C.** Pond **A** sediment shall be removed annually during the summer/fall periods. Water in Ponds **A** and B will be used for plant operations to the extent practical. Removed sediment will be processed on-site as marketable products.

**D.** It is recommended that the outboard levee of Pond **B** be raised and maintained at an elevation of 387.5 or higher or that the 30" culvert outlet elevation be lowered by a minimum of 1.0 feet.

# APPENDIX A

*S.E. RANTZ*

***PRECIPITATION DATA***

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
**Water Resources Division**

# MEAN ANNUAL PRECIPITATION *AND* PRECIPITATION DEPTH-DURATION-FREQUENCY DATA FOR THE SAN FRANCISCO BAY REGION, CALIFORNIA

By

**S. E. Rantz**

**Prepared in cooperation with the U.S. Department of Housing and Urban Development as part of the San Francisco Bay Region Environment and Resources Planning Study**

BDC # 32

**OPEN-FILE REPORT**

Menlo Park, California
October 26, 1971

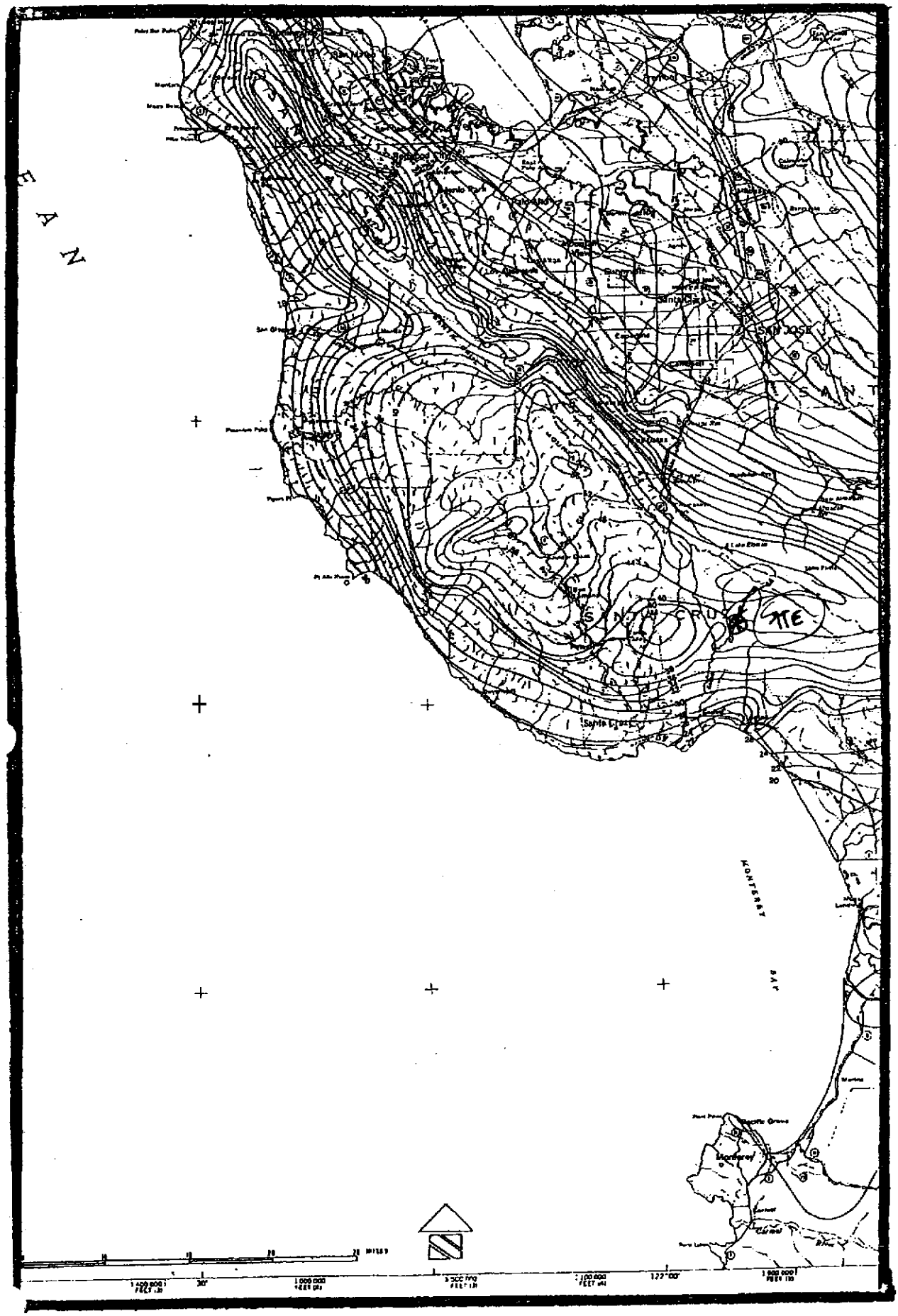

SAN JOSE
SANTA CRUZ
MONTEREY BAY

TABLE 4.--Depth-duration-frequency data for the San Francisco Bay region--Continued

| Duration | Recurrence interval (years) \ $P_{MA}$ | Storm precipitation, in inches, corresponding to indicated values of mean annual precipitation ($P_{MA}$), in inches | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 12 | 14 | 16 | 18 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| 3 hours | 2 | 0.63 | 0.68 | 0.72 | 0.77 | 0.81 | 0.86 | 1.09 | 1.32 | 1.55 | 1.78 | 2.01 | 2.24 |
| | 5 | .78 | .84 | .89 | .95 | 1.00 | 1.06 | 1.34 | 1.62 | 1.90 | 2.18 | 2.46 | 2.74 |
| | 10 | .91 | .97 | 1.03 | 1.10 | 1.16 | 1.22 | 1.53 | 1.84 | 2.15 | 2.46 | 2.77 | 3.08 |
| | 25 | 1.03 | 1.10 | 1.16 | 1.23 | 1.29 | 1.36 | 1.69 | 2.02 | 2.35 | 2.68 | 3.01 | 3.34 |
| | 50 | 1.14 | 1.21 | 1.28 | 1.34 | 1.41 | 1.48 | 1.82 | 2.16 | 2.50 | 2.84 | 3.18 | 3.52 |
| | 100 | 1.25 | 1.32 | 1.39 | 1.46 | 1.53 | 1.60 | 1.95 | 2.30 | 2.65 | 3.00 | 3.35 | 3.70 |
| 6 hours | 2 | .91 | .99 | 1.07 | 1.16 | 1.24 | 1.32 | 1.73 | 2.14 | 2.55 | 2.96 | 3.37 | 3.78 |
| | 5 | 1.14 | 1.25 | 1.36 | 1.46 | 1.57 | 1.68 | 2.22 | 2.76 | 3.30 | 3.84 | 4.38 | 4.92 |
| | 10 | 1.30 | 1.42 | 1.54 | 1.66 | 1.78 | 1.90 | 2.50 | 3.10 | 3.70 | 4.30 | 4.90 | 5.50 |
| | 25 | 1.46 | 1.59 | 1.72 | 1.86 | 1.99 | 2.12 | 2.78 | 3.44 | 4.10 | 4.76 | 5.42 | 6.08 |
| | 50 | 1.60 | 1.74 | 1.88 | 2.02 | 2.16 | 2.30 | 3.00 | 3.70 | 4.40 | 5.10 | 5.80 | 6.50 |
| | 100 | 1.73 | 1.88 | 2.02 | 2.17 | 2.31 | 2.46 | 3.19 | 3.92 | 4.65 | 5.38 | 6.11 | 6.84 |
| 12 hours | 2 | 1.04 | 1.18 | 1.33 | 1.47 | 1.62 | 1.76 | 2.48 | 3.20 | 3.92 | 4.64 | 5.36 | 6.08 |
| | 5 | 1.44 | 1.61 | 1.78 | 1.94 | 2.11 | 2.28 | 3.12 | 3.96 | 4.80 | 5.64 | 6.48 | 7.32 |
| | 10 | 1.70 | 1.88 | 2.06 | 2.24 | 2.42 | 2.60 | 3.50 | 4.40 | 5.30 | 6.20 | 7.10 | 8.00 |
| | 25 | 1.90 | 2.10 | 2.30 | 2.50 | 2.70 | 2.90 | 3.90 | 4.90 | 5.90 | 6.90 | 7.90 | 8.90 |
| | 50 | 2.15 | 2.36 | 2.57 | 2.78 | 2.99 | 3.20 | 4.25 | 5.30 | 6.35 | 7.40 | 8.45 | 9.50 |
| | 100 | 2.35 | 2.57 | 2.79 | 3.01 | 3.23 | 3.45 | 4.55 | 5.65 | 6.75 | 7.85 | 8.95 | 10.05 |

## REFERENCES CITED

Rantz, S. E., 1971, Precipitation depth-duration-frequency relatione for the San Francisco Bay region, California. *in* Geological Survey Research 1971: U.S. Geol. Survey Prof. Paper 750-C, p. 237-241.

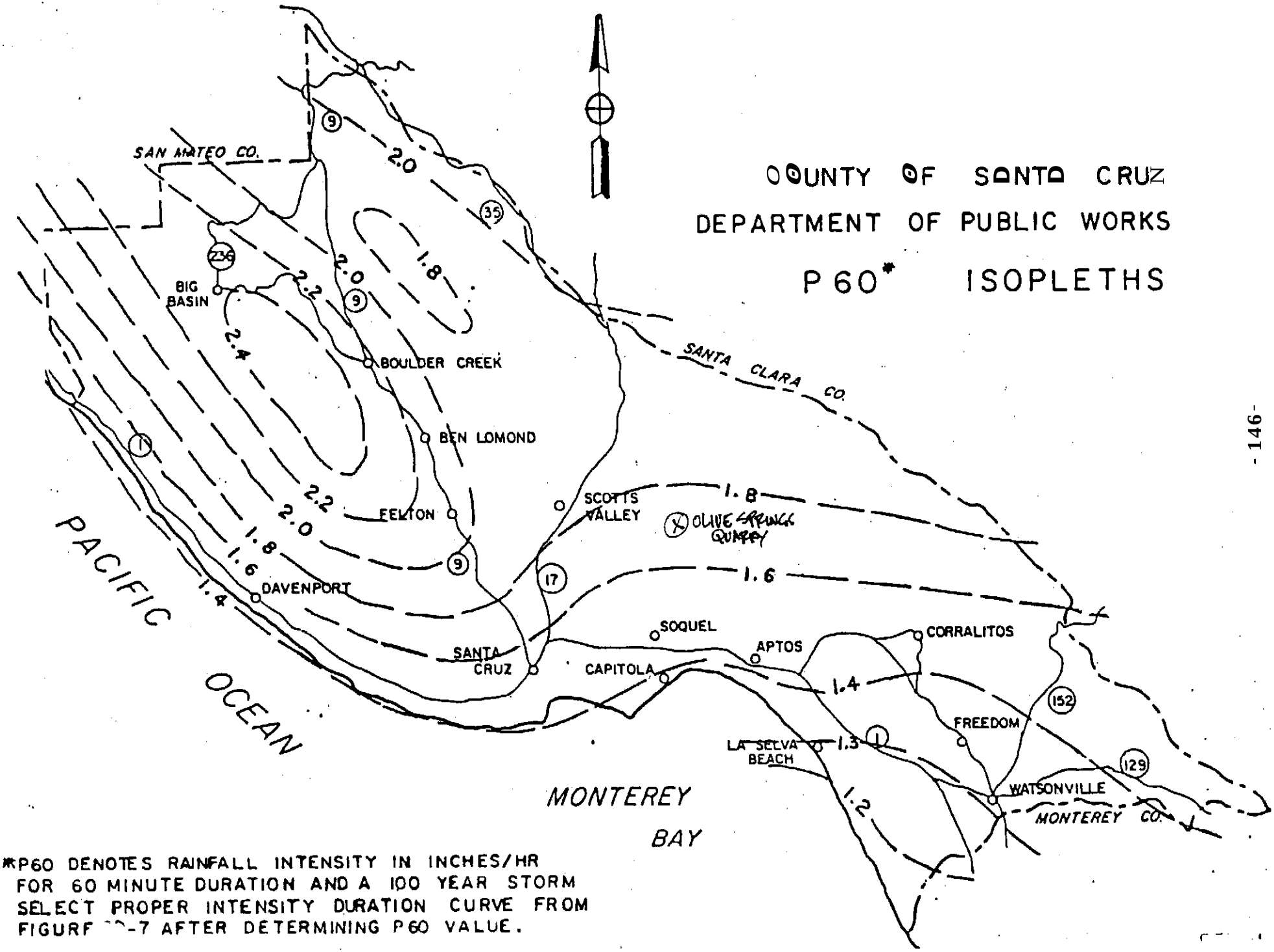
U.S. Weather Bureau, 1956. Rainfall intensities for local drainage design in western United States: Tech. Paper 28, 46 p.

_____1961, Rainfall frequency atlas of *the* United States for durations from 30 minutes to 24 hours and return periode from 1 *to* 100 years: Tech. Paper 40, 115 p.

_____1466, Two-to-ten-day precipitation for return periode of 2 to 100 years in tbe contiguous United States: Tech. Paper 49, 29 p.

# APPENDIX B

*RAINFALL INTENSITY DATA*




*P60 DENOTES RAINFALL INTENSITY IN INCHES/HR FOR 60 MINUTE DURATION AND A 100 YEAR STORM SELECT PROPER INTENSITY DURATION CURVE FROM FIGURE [illegible]-7 AFTER DETERMINING P60 VALUE.

Rainfall Intensity - Duration Curves
10 Yr. Return Period
((4.29112)*(1.1952)^P60_VALUE)/(DURATION^((0.60924)*(0.78522)^P60_VALUE))
Intensity (in./hr.)
Duration or Tc (min.)
10.00
1.00
0.10
1
10
100
1,000
10,00
Return Period Factors
2 Yr. 0.64
5 0.85
10 1.00
15 1.09
20 1.20
25 1.35
50 1.50
100
To convert intensities to return periods other than 10 years, multiply by the following factors:
See Figure SD-6 to select P60 values
2.4
2.2
2.0
1.8
1.6
1.4
1.2

COUNTY OF SANTA CRUZ
PLANNING DEPARTMENT

Planning Commission
Meeting Date: 11/8/06
Agenda Item: # 8
Time: After 9:00 a.m.

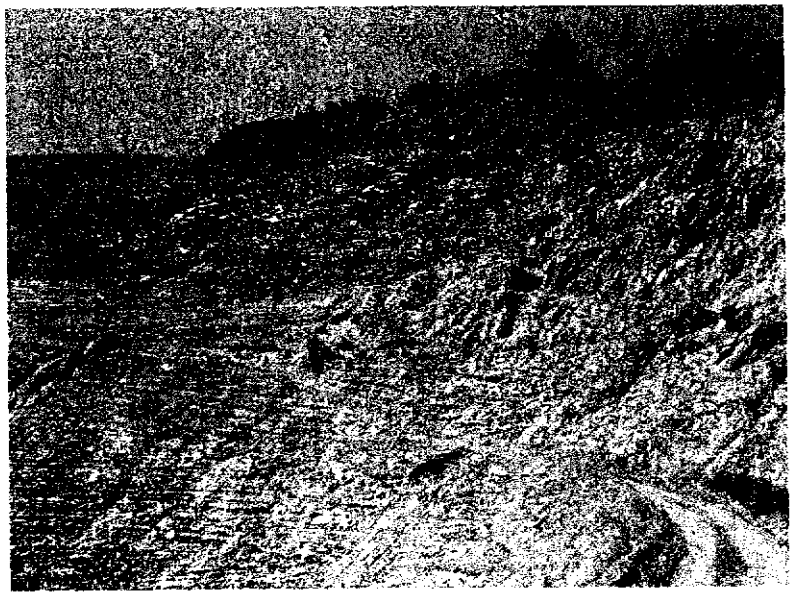
# APPLICATION NO. 01-0572

## STAFF REPORT TO THE PLANNING COMMISSION

# EXHIBIT F

# OLIVE SPRINGS QUARRY

# REVEGETATION PLAN



MAY **2006**

Greening associates

# OLIVE SPRINGS QUARRY

# REVEGETATION PLAN

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MAY 2006

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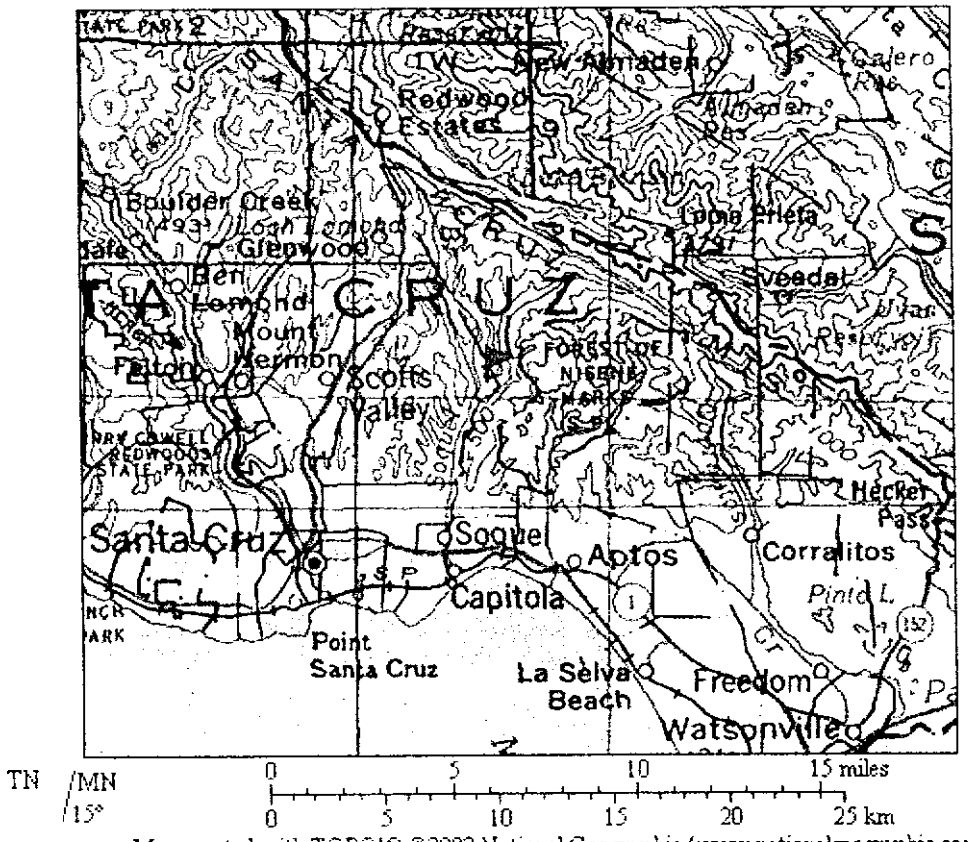
# OLIVE SPRINGS QUARRY REVEGETATION PLAN

## I. INTRODUCTION

Olive Springs Quany is located in central Santa Cruz County in the central Coast Range of California. It is situated between the east and west branches of Soquel Creek, approximately *6* miles inland from Highway 1 (Figure 1). The east branch of Soquel Creek forms part of the quarry's eastern border. Excavation and processing take place in Leasehold One, the largest and northernmost **of** three leaseholds held by Olive Springs Quany. The Soquel Demonstration State Forest is near the northern boundary of Leasehold One. Privately owned land east of the creek is designated Timber Production Zone, with the Forest of Nisene Marks State Park beyond. Other land uses in the vicinity are rural residential, on parcels of varying sizes. The quarry property is leased from the owner of adjacent timber lands.

**FIGURE 1**




Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

The County **of** Santa Cruz initiated mining at the site in 1932 to supply rock products for County use, and the quarry currently processes decomposed granite for use in the construction industry. The quarry excavates the southeast end of Sugarloaf Mountain. Mining is conducted in increments that progress to the northwest along the main axis of the mountain, creating **a**

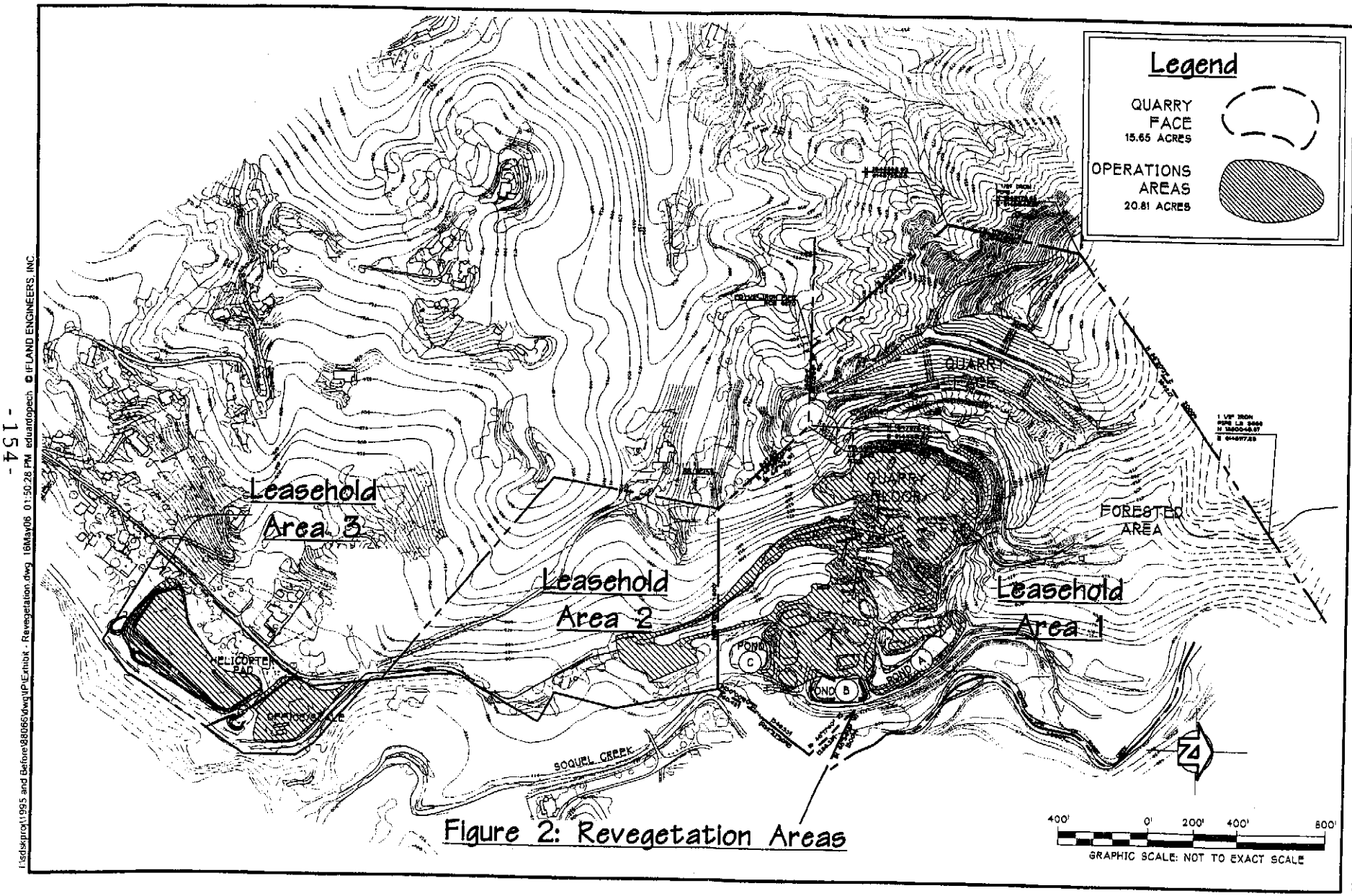



Figure 2: Revegetation Areas



JOB NO. 98066 (OLIVE SPRING QUARRY)
DESIGN DUANE DRAWN RDB & EP
SCALE: 1" = 400' DATE 05/17/06

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## II. ENVIRONMENTAL SETTING

The topography in the vicinity is mountainous and steep. Elevations at the quany range from approximately 400 feet at the scale house to 1,268 feet at the top of Sugarloaf Mountain. The soils of Sugarloaf Mountain are mapped as Ben Lomond-Catelli-Sur complex, 30 to 75 percent slopes, and Sur-Catelli complex, 50 to 75 percent slopes (USDA 1980). These soils are sandy loams and stony sandy loams which form a mantle about four feet thick over the granite being mined (Al Monser, personal communication July 2005). Quarry records indicate that annual rainfall fluctuated dramatically between 1979-80 and 1999-2000, from 19.65 inches in 1987-88 to 73.75 inches in 1997-98, with a mean of 39.67 inches during those 21 years.

### A. EXISTING VEGETATION

Vegetation in the **quarry** and the vicinity consists mainly of mixed evergreen forest and redwood forest that has been logged since the mid 1800s. **A** sizeable patch of dense chaparral is located on the western side of Sugarloaf Mountain. Where logging, cutting of firewood or other activity has not removed vegetation, the forest and chaparral plants are layered and comprise more than 100% total cover among the various layers combined.

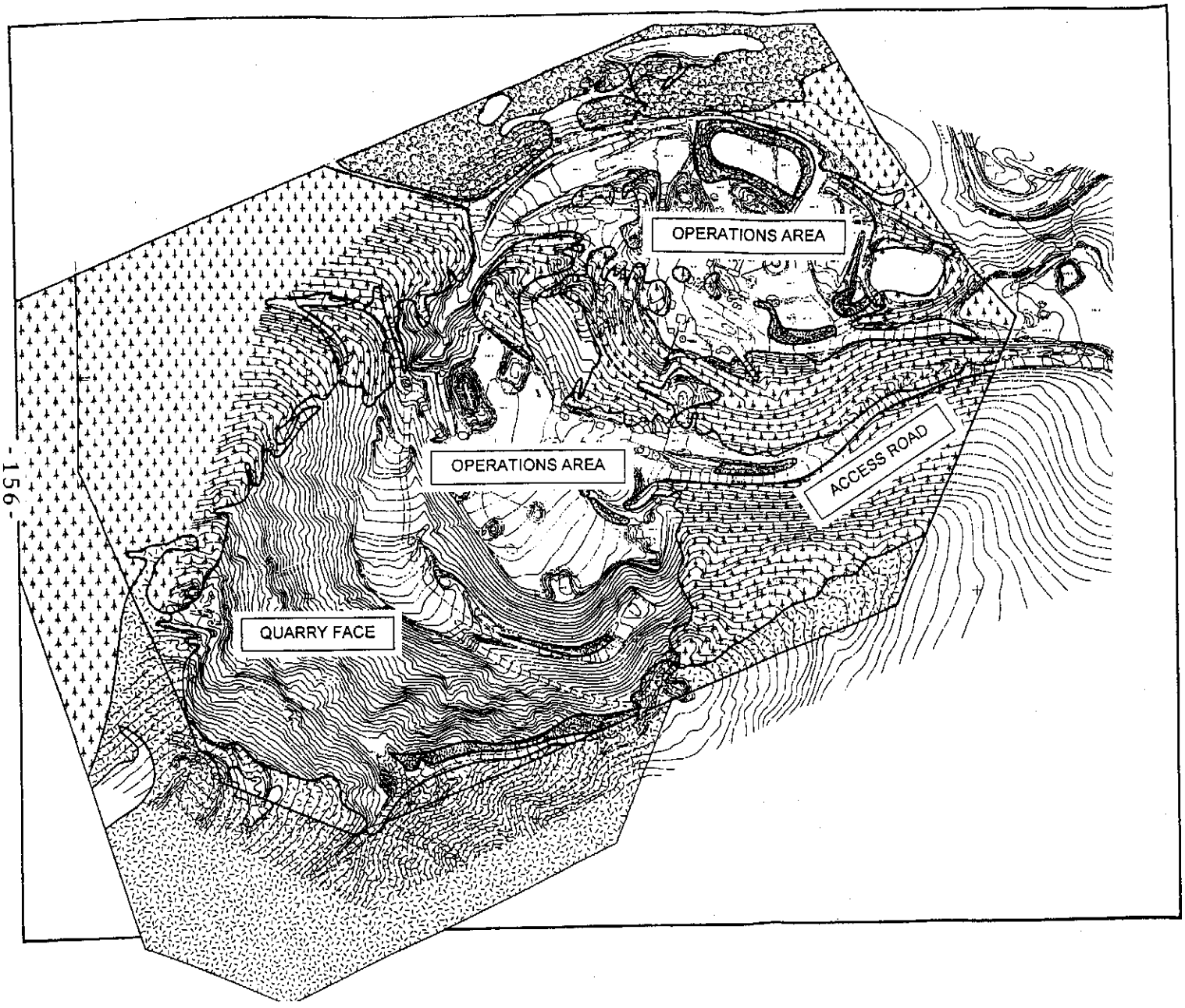
Vegetation types on the quany property were mapped in a previous revegetation plan (Davilla 1990) (Figure **3).** These include chaparral, mixed evergreen/redwood forest, riparian woodland, ruderal vegetation, and miscellaneous vegetation at developed areas. Following are descriptions **of** these vegetation types, updated from field surveys in 2005.

#### 1. CHAPARRAL

The western slope **of** Sugarloaf Mountain is characterized by dense chaparral with scattered Douglas-fir *(Pseudotsuga menziesii)* and Live Oak (*Quercus wisliienii, Q. agrifolia,* and/or hybrids). This chaparral community is dominated by a handful of species: Brittle-leaved Manzanita *(Arctostaphylos tomentosa* ssp. *crustacea),* Chamise *(Adenostomafasciculatum),* Blue Blossom *(Ceanothus thyrsiflorus*), Coyote Brush (*Baccharis pilularis*), Yerba Santa *(Eriodictyon californicum*), Sticky Monkeyflower (*Mimulus aurantiacus*), and Poison Oak *(Toxicodendron diversilobum).* Because of the dense shrub canopy there is little herbaceous cover except in areas previously cleared.

#### 2. MIXED EVERGREEN/REDWOOD FOREST

The lower and shadier slopes of the mountain are dominated by Mixed Evergreen and Redwood Forest. Trees here include Coast Redwood *(Sequoia sempervirens*), Douglas-fir, Madrone *(Arbutus menziesii*), Tanoak (*Lithocarpus densiflora*), California Bay (*Umbellularia californica*) and Live Oaks. The understory is moderately developed and consists of scattered shrubs of Blue Blossom, Coffeeberry (*Rhamnus californica*), Poison Oak, and Hazelnut (*Corylus cornutu* var. *californica*). Much of this area has been selectively cut for firewood in the past. Since 2002, trees have been harvested under a California Department of Forestry "Dead, Dying or Diseased: Fuelwood Exemption", which allows less than ten percent of the average timber volume per acre to be cut.




LEGEND

- Mixed Evergreen/Redwood Forest
- Riparian Woodland
- Ruderal/Disturbed
- Mixed Chaparral

Areas of the map without pattern cover support no vegetation.

0 100 200

Scale In Feet

FIGURE 3

Vegetation/Habitat Types on the Olive Springs Quarry Face and Materials Processing Area.

Prepared by: BioSystems Analysis, Inc.

### 3. RIPARIAN WOODLAND

Along the bank of Soquel Creek and around the quarry ponds there is moderately dense riparian vegetation. Trees here include Arroyo Willow (*Salix lasiolepis*), White Alder (*Alnus rhombifolia),* Black Cottonwood (*Populus balsamifera* ssp. *trichocarpa*), Big-leaf Maple (*Acer macrophyllum*) and Coast Redwood. The understory contains shrubs such as Blue Blossom, Coyote Brush, Poison Oak, and California Blackberry (*Rubus ursinus*). Currently, approximately half of the perimeter of Pond A supports riparian vegetation. The banks of Pond B are mostly vegetated, and the edge of Pond C is well vegetated. These three ponds will be permanent.

### 4. RUDERAL VEGETATION

Areas that are intermittently disturbed, such as along roads and working areas at the ponds, support stands of two invasive exotic plants, French Broom (*Genista monspessulana*) and Pampas Grass (*Cortaderia jubata*), as well as relatively harmless exotic grasses and annuals

### 5. MISCELLANEOUS VEGETATION AT LEASEHOLD THREE

Leasehold Three is a flat area with the scale and office at its northern end. This roughly rectangular site has been used intermittently as a stockpile area. It is mostly an open non-native grass field, with woody vegetation around the edges. A linear stand of Live Oak and Califomia Bay is located along Olive Springs Road and supports little or no understory vegetation. A small stand of Arroyo Willow is in a seep in the southeast comer of the parcel. The northwest side of the terrace is occupied by open cover of Coyote Brush, Blue Blossom, Live Oak, a few Arroyo Willows, and planted Monterey Pines (*Pinus radiata).* Near the willows, this edge of the field also contains a remnant native grassland including California Oat Grass (*Danthonia californica*) and Small-flowered Needlegrass (*Nassella lepida*). There is an extensive stand of Monterey Centaury (*Centaurium muehlenbergii,* a late-season native wildflower) in the southem half of the field. Other native grassland species not recognizable during a reconnaissance visit in late summer may be present along with the ruderal species. There is French Broom and a little Pampas Grass on the stockpiles.

### 6. PIONEER NATIVE PLANT SPECIES ON SLOPES AND BENCHES

Two additional categories of plants deserve mention, although they are not mapped. On July 19, 2005, botanists Laurie Kiguchi and Suzanne Schettler made a reconnaissance of the upper elevations of the site. Certain plants were observed to be pioneers on the uppermost cut slope face, and others were observed to be pioneer species on the uppermost bench. These species are noted on Table 1 and are likely to be the most valuable species for revegetation.

Table 1. **NATIVE REVEGETATION SPECIES OF OLIVE SPRINGS QUARRY**
Observed 7/19/05 in intact chaparral, on dozer road, on uppermost slope and on uppermost bench.
**Bold** indicates best pioneer species for revegetation use.

| NAME | | CHAPARRAL | ROAD | SLOPE PIONEER | BENCH PIONEER |
|---|---|---|---|---|---|
| ***Adenostoma fascic.*** | **Chamise** | x | | | |
| *Anaphalis*? sp. | Everlasting | | x | | x |
| ***Arbutus menziesii*** | **Madrone** | x | | x | |
| ***Arctostaph. tom. crust.*** | **Brittle-leaved Manzanita** | x | | | |
| ***Baccharis pilularis*** | **Coyote Brush** | x | | x | x |
| *Bromus* sp. (perennial) | Brome | x | | | |
| *Calystegia* sp. | Morning Glory | x | | | |
| ***Ceanothus papillosus*** | **Warty-lvd Ceanothus** | x | | | |
| ***Ceanothus thyrsiflorus*** | **Blue Blossom** | x | | | |
| *Cryptantha*? sp. | White Forget-me-not | | x | | |
| *Epilobium canum* | California Fuchsia | | | x | |
| *Epilobium* sp. (annual) | Fireweed | | | | x |
| *Eriodictyon californicum* | Yerba Santa | x | | x | |
| ***Eriogonum nudum*** | **Naked-stem'd Buckw't** | x | | x | x |
| ***Eriophyllum confertif.*** | **Lizard Tail** | x | | | x |
| *Galium* sp. | Bedstraw | x | | | x |
| *Gnaphalium* sp. | Everlasting | x | | x | |
| *Heteromeles arbutifolia* | Toyon | x | | | |
| *Heterotheca sessiliflora* | Golden Aster | x | | | |
| ***Lotus heermanii* var. *orbicularis* (common)** | Wooly Trefoil | | | x | x |
| *Lotus purshianus* (uncommon) | Pursh's Trefoil | | | x | x |
| ***Lotus scoparius*** | **Deerweed** | | x | x | x |
| ***Lupinus albifrons*** | **Silver Bush Lupine** | | | x | x |
| ***Lupinus bicolor*** | **Miniature Lupine** | | | | x |
| *Madia gracilis*? | Slender Tarweed | | x | | |
| *Madia sativa* | Coast Tarweed | | | | x |
| *Melica imperfecta* | Small-flowered Melica | x | | | |
| ***Mimulus aurantiacus*** | **Bush Monkeyflower** | x | | x | x |
| *Navarretia squarrosa* | Skunkweed | | x | | x |
| *Pentagramma triangularis* | Goldback Fern | x | | | |
| ***Pseudotsuga menziesii*** | **Douglas-fir** | | | x | |
| *Rosa californica* | California Rose | x | | | |
| *Rubus ursinus* | California Blackberry | x | | | |
| ***Salix lasiolepis*** | **Arroyo Willow** | | | x | |
| *Sambucus mexicana* | Blue Elderberry | x | | | |
| *Scrophularia californica* | Bee Plant | x | | | |
| *Solanum umbelliferum* | Blue Witch | x | | | |
| *Stephanomeria virgata* | Tall Stephanomeria | | x | x | x |
| *Toxicodendron diversilob.* | Poison Oak | x | | | |
| *Trifolium? sp.* | Clover | | | x | |
| ***Trifolium willdenovii*** | **Tomcat Clover** | | | | x |
| *Verbena lasiostachys* | California Vervain | | x | | |

## B. SENSITIVE SPECIES AND HABITATS

Literature reviews of sensitive species and habitats likely to exist at Olive Springs Quany were performed in conjunction with the Environmental Impact Reports (LSA Associates 1993). A subsequent wildlife field survey provided updated information regarding sensitive animal species (Schettler and Suddjian 1994). No sensitive plant species have been observed on the quarry property during preparation of the Draft EIR (LSA Associates 1993a) or during reconnaissance for revegetation planning (L. Kiguchi and S. Schettler, personal observations July and August 2005).

The portion of Soquel Creek adjacent to Olive Springs Quany supports Steelhead Salmon (*Oncorhyncus mykiss,* federal Threatened) and Foothill Yellow-legged Frogs (*Rana boylii,* California Department of Fish and Game Species of Special Concern). The quarry itself does not provide suitable habitat for either of these species but does support Western Pond Turtles (*Clemmys marmorata pallida*, a CDFG Species of Special Concern) (Schettler and Suddjian 1994, attached as Appendix D). In 1994 the existing management of the ponds was considered favorable for the turtles as evidenced by their significant numbers. At that time, Ponds A and B were typically pumped *dry* annually by August 1 to permit the trapped sediments four to six weeks to dry, so they could be removed by the quarry's October 15 deadline. The ponds then filled again with the rains of late fall or winter. The turtles likely moved to Soquel Creek and its riparian habitat during the period that the ponds were dry. Turtles were observed moving to the ponds from the creek when the ponds filled with rain in late 2005, and the pond management regime is planned to continue indefinitely in the future (Al Monser, personal communication January 9, 2006).

No bird species of concern were observed in 1994. However, a pair of hawks appears to have nested at the quarry in spring 2005 (Al Monser, personal communication June 8, 2005; S Schettler, personal observation June 8, 2005). Vegetation removal in the vicinity of the presumed nest was postponed until August when any young would have fledged. There is potential for peregrine falcon (*Falco peregrinus,* a California Endangered Species) to occur at or near the quarry, as one to two pairs have been observed in the vicinity for the past several years (Bryan Mori, personal communication, April 2005). If there was no disturbance on a given rock face during the previous breeding season (mid-January through June), a focused survey for peregrines should be conducted prior to initiating excavation on that face unless excavation will be confined to the non-hreeding season.

In summary, at the present time the sensitive species on the Olive Springs Quany property are Western Pond Turtle (known), nesting hawks (presumed), and peregrine falcon (potential).

Riparian habitat occurs along the eastern edge of the quarry property and is a sensitive habitat that is protected under Santa Cruz County's Sensitive Habitat Protection Ordinance and under regulations of the California Department of Fish and Game. No mining operations are planned within the riparian corridor of Soquel Creek. Potential impacts to water quality in Soquel Creek are controlled by mitigations incorporated in the quarry's operating permit (Exhibit U, section C, of the December 1993 Staff Report).

## III. GOALS OF REVEGETATION AT THE OLIVE SPRINGS QUARRY

Revegetation at Olive Springs Quarry has three goals:

- To establish vegetation that will in time resemble the existing vegetation on and near the quarry and will support native wildlife.
- To contribute to erosion control and optimize water quality for eventual discharge off-site.
- To comply with the requirements of SMARA and the Santa Cruz County Mining Ordinance.

## IV. CONSTRAINTS AND OPPORTUNITIES FOR REVEGETATION

The Olive Springs Quarry site presents both constraints and opportunities for revegetation

### A. CONSTRAINTS

#### 1. STEEPNESS

The final slopes of the quarry will be rocky and steep, 1 horizontal to 1 vertical, with a 10-foot wide bench every 50 vertical feet plus one 50-foot wide bench. It is physically impossible to conduct any re-soiling, installation of erosion controls, planting, maintenance, monitoring, or weed removal on rock slopes steeper than approximately 1.7 : 1. The only revegetation activity that can be carried out on slopes this steep is applying seed, either by hydroseeding (using the benches for equipment access before they are planted) or by broadcasting seed a short distance down the slopes from the edges of the benches.

#### 2. UNFAVORABLE SUBSTRATE

Without soil, the parent rock that remains after quarrying does not produce healthy plants; survival is low and the growth of most species is stunted.

#### 3. SLOPE ASPECT

The majority of the quany face in 2080 will face east; portions will face east-northeast, southeast, and south. The areas that face southeast and south will have high solar exposure and will be hot and dry. The east- and east-northeast-facing areas will also be hot and dry, to a lesser degree.

#### 4. DISTANCE FROM SEED RAIN

The finished quany face will be 600 feet tall and some parts of the cut face will be 800 feet from the adjacent forest and chaparral. These distances limit the potential for natural regeneration to supplement active revegetation work.

### 5. POTENTIAL FOR CONCURRENT RECLAMATION IS LIMITED

The potential for concurrent reclamation is limited by two factors: 1) excavation is conducted by pushing rock over the edge of the steep quarry face, such that the entire face is continually being disturbed; and 2) although the current mining permit allows mining to **2044,** the quarry life has been estimated to **2080** within the current leasehold area. Revegetation can begin only after the top bench is complete, and there is virtually no limit to how far the top bench may progress northwest in future permitted increments.

### 6. UNAVAILABILITY OF TOPSOIL AND ORGANIC MATERIAL

The quany does not separate topsoil from rock. The decomposed granite at Olive Springs Quarry is *so* crumbly that rocks can sometimes be picked apart using bare hands. A significant quantity of material that is *too* small to be marketable rock is intermixed with the rock, and is removed by washing. This fine material, along with any true soil, is collected in the silt pond, then dried and sold as "pond fill". The pond fill thus includes both "topsoil" and fine material from the rock face. (The silt pond is hydraulically isolated from stormwater ponds A and B except when water is pumped from pond B to add to the wash process). Space to store organic materials such as tree stumps, logs, and branches is limited and these are taken to a landfill for disposal.

## B. OPPORTUNITIES

### 1. POND FILL

Pond fill is material removed from the process water. Unlike the clay sediment at some quarries, this material is a mixture of sand, clay and loam that is used by landscapers and nurseries as a basis for planting mixes (Appendix A). An ongoing supply of this material is generated in the normal course of working the quarry face. This byproduct is planned to be a valuable resource for revegetation at the close of quarrying.

The amount of pond fill required to resoil the benches of the finished quany face and operations areas is approximately **8,488** cubic yards (Appendix B). Approximately 8,300 cubic yards of pond fill are generated annually. Pond fill generated during the last years of final grading will be sufficient to resoil the revegetation areas concurrently with final grading, and advance stockpiling will not be necessary.

### 2. COMPOST

There are a number of equestrian facilities in the vicinity of the quany. They generate quantities of manure and used sawdust, and some of them compost their waste, turning it into a saleable resource. The local compost can be beneficial for revegetation.

## V. TESTPLOTS

Test plots are requued by § 3704 (b) of SMARA and are installed and monitored in advance of the larger revegetation plantings to identify site-specific effective treatments. A location where slope and bench test plots can be placed has been identified at the eastern end of the current uppermost bench. See Figure 5. While the existing bench is more sloping than the finished benches will be and the existing slopes above and below it are steeper than 1:1, the substrate at this location is more nearly comparable to the final configuration than any other existing site at Olive Springs Quarry. This location is also out of the way of quarry operations. Test plots will be installed in fall 2006 or fall 2007.

Like the larger revegetation units, the test plots will be monitored and the findings will be documented in annual reports for ten years following installation or until they achieve the success criteria described below. The annual reports of the test plots will become part of the quarry's and county's permanent records so that historic information can guide the future revegetation work. The annual reports may include recommendations for further test plots to focus more narrowly on particular questions, and to be monitored less intensively while still providing guidance for future revegetation work.

### A. SLOPE TEST PLOTS

Test plantings on the slopes are limited by steepness and inaccessibility, and can be installed only by means of hydroseeding or by broadcasting seed onto the upper edge of a slope from the outboard edge of the bench above. The purpose of the slope test plots will be to learn: a) whether hydroseeding or broadcasting is effective to establish vegetation and control erosion on rocky 1:1 cut slopes; and b) which species perform better than others. The results will be evaluated to guide the future revegetation treatments on the larger slopes that will be created by final grading.

The presence of volunteer vegetation on the existing uppermost cut slope suggests that the cracks and crannies in the decomposed granite provide some footholds for seed to become established. It is unknown to what extent hydroseeded materials will stay in place sufficiently on the overall 1:1 slopes during rainfall to produce enough vegetative cover to justify hydroseeding. It is also unknown to what extent seed broadcast from a bench will lodge on the slopes to justify even this low-cost method of applying seed.

Test plots will be installed in fall 2006 or fall 2007

There are two slope test areas (5). One is above the test bench, and is accessible only from the test bench. The other is below the test bench; it is accessible for broadcasting fiom the outboard edge of the test bench, and is also accessible for hydroseeding from the base of the slope. Logistics limit the potential for replicating treatments on these two slopes.

The upper slope and the lower portion of the lower slope will be hydroseeded, with purchased ectomycorrhizal inoculum incorporated in the slurry for the southkouthwestem half of each

slope. The upper portion of the lower slope will be broadcast from the edge **of** the test bench One seed mix will be used **for** both hydroseeding and broadcasting.

**Table 2. QUANTITIES OF SEED FOR SLOPE TEST PLOTS**

| SPECIES | QUANTITY PER 1,000 SQUARE FEET surface measurement |
|---|---|
| *Arbutus menziesii* | 100 seeds |
| *Baccharis pilularis* | 1 cup seed with pappus |
| *Bromus carinatus* | ½ pound |
| *Ceanothus papillosus* | 200 seeds |
| *Ceanothus thyrsiflorus* | 200 seeds |
| *Elymus glaucus* | ½ pound |
| *Lotus heermanii* var. *orbicularis* | 3/4 pound |
| *Lotus scoparius* | 112 pound |
| *Lupinus albifrons* | 150 seeds |
| *Melica imperfecta* | ½ pound |
| *Mimulus aurantiacus* | ½ cup cracked capsules |
| *Pseudotsuga menziesii* | 100 seeds |
| *Vulpia microstachys* | 1/4 pound |

The two *Lotus* species and ***Lupinus*** *albifrons* may be particularly valuable, being perennial nitrogen-fixing legumes. The two *Ceanothus* species are larger, longer-lived plants that also fix nitrogen.

1. HYDROSEEDING

The amounts of seed applied by species, and the resulting growth, will be recorded to guide future seeding **of** the **slopes.** (See below for guidelines on seed sources.)

Hydroseeding will consist of a two-layer application:

| | |
|---|---|
| FIRST LAYER | seed per Table 2 above |
| | mycorrhizal inoculum- for second (south/southwest) half of each slope |
| | fertilizer (21-7-14) |
| | fiber mulch |
| SECOND LAYER | fiber mulch |
| | binder |

The mycorrhizal inoculum, fertilizer, fiber mulch and binder will be applied at the manufacturer's and/or hydroseeder's recommended rates.

Several *caveats* apply to hydroseeding:

- The hydroseeding *tank* will be triple-rinsed before it is brought to the site, to remove seed from previous work.
- The hydroseed shall be prepared by thoroughly mixing the ingredients to a homogeneous slurry of the proper consistency to adhere to the earth without lumping **or** running.
- The entire batch shall be discharged onto the earth within one hour from the time the seeds come into contact with the water in the mixer. Any batch or partial batch that is not completely discharged within one hour will be rejected.
- The slurry shall be uniformly distributed throughout the area to be seeded. The slurry shall not be applied when unsatisfactory results are likely to be obtained, such as during windy or excessively wet conditions.

2. BROADCASTING

The seed will be broadcast by mixing it with sand **or** fine gravel and tossing it by handfuls from the outboard edge of the bench above the test plot location. Mycorrhizal inoculum and fertilizer will be broadcast with the seed, at the same rates as in the hydroseeded application. While broadcasting will likely result in a disproportionate concentration of the seed on the upper portion of the slope, seed may migrate downslope with wind and rain. Also, plants on the upper zone will produce seed that may be shed farther down the **slope,** resulting in improved distribution over time.

Annual photomonitoring of the slopes will be used to evaluate the effectiveness of broadcasting the slopes. Broadcasting may be both an initial revegetation treatment and a potential remedial action.

## B. BENCH TEST PLOTS

The bench test plots will be used to evaluate several different approaches to amending the benches:

- Three inches of "pond fill" removed from the process water and dried
- Three inches of "pond fill" plus a two-inch top–dressing of composted organic material
- Three inches of composted organic material such as manure and sawdust from local stables
- No amendment (control)

There will be six replicates of each treatment, for a total of twenty-four test plots. In addition, these test plots will be used to evaluate the benefit of fertilizing, and to compare the relative effectiveness of seeding and installing plants.

The test bench is approximately 150 feet long by 20 feet wide. This area can accommodate **24** small plots of approximately 10 feet by ***6*** feet, with access lanes on all four sides of each plot. The logistics of placing the amendments will dictate a non-random layout of the plots, such that the uppermost set of four plots contains one example of each type of amendment and a more or less similar pattern of treatments is repeated sequentially in each set of four plots proceeding down the bench. The **"floor** plan" will be flipped north-south and/or east-west in each set of four plots to achieve a degree of randomness. Tarps will be used to mask the control plots while amendments are being placed in adjacent plots.

The corners of each test plot will be permanently marked and each plot will receive permanent identification. Straw wattles may be needed along the downhill side of each plot to keep the amendments from migrating into adjacent plots over time.

Twelve of the plots will receive a slow-release complete fertilizer low in phosphorus, applied at the manufacturer's recommended rate, and twelve will receive no fertilizer. Plots with and without fertilizer will be equally distributed withm each type of amendment (six pond fill with fertilizer and six pond fill without fertilizer, six controls with fertilizer and six controls without fertilizer, etc.), and the locations of the fertilized and unfertilized plots will be recorded.

Twelve of the bench test plots will receive the following installation of plants and seed. The other twelve bench test plots will receive the specified seed only, and no plants will be installed in them.

Table 3. **PLANTING FOR EACH BENCH TEST PLOT**

| NAME | NO. OF PLANTS 12 plots | VOLUME OF CLEANED SEED* 24 plots |
|---|---|---|
| *Adenostoma fasciculatum* | 1 | ¼ teaspoon |
| *Arbutus menziesii* | | 1/8 teaspoon |
| *Arctostaphylos tomentosa* ssp. *crustacea* | 1 | ½ teaspoon |
| *Baccharis pilularis* – mixed male & female | 1 | |
| *Bromus carinatus* | | 1 Tablespoon |
| *Ceanothus papillosus* | | 1/8 teaspoon |
| *Ceanothus thyrsiflorus* | | 1/8 teaspoon |
| *Elymus glaucus* | | 1 Tablespoon |
| *Eriophyllum confertiflorum* | | 1/8 teaspoon |
| *Lotus heermanii* var. *orbicularis* - inoculated | | ¼ teaspoon |
| *Lotus purshianus* - inoculated | | ¼ teaspoon |
| *Lotus scoparius* - inoculated | | ¼ teaspoon |
| *Lupinus albifrons* | | 5 seeds |
| *Lupinus bicolor* | | 1/8 teaspoon |
| *Melica imperfecta* | | 1 Tablespoon |
| *Mimulus aurantiacus* | 1 | 1/8 teaspoon crushed capsules |
| *Pseudotsuga menziesii* | 1 | 5 seeds |
| *Scrophularia californica* | | 1/8 teaspoon |
| *Trifolium willdenovii* (inoculated) | | ½ teaspoon |
| *Vulpia microstachys* | | 1 Tablespoon |
| TOTAL | 5 per plot | 5.125 Tablespoons plus 10 seeds per plot |

*The seed for each plot will be mixed together; after the plants are installed, the seed will be broadcast, lightly scratched into the surface, and lightly tamped or trampled.

The planting method for installing the plants will be as described in Section VI.F.3 below for the larger bench planting.

## VI. PLANTING PLAN FOR QUARRY FACE

### A. REVEGETATION APPROACH

On the rock slopes and benches of the quarry face it is not realistic to copy mature natural vegetation after the substrate has been dramatically altered by quarrying. It is, however, possible to establish early successional species of the adjacent forest and chaparral that function as pioneers.

Some species of the adjacent forest and chaparral currently function as pioneers on the uppermost cut slope and bench of the quarry (Table 1). The planting palette for revegetation will consist of any native species that function as pioneers at any nearby location, including additional pioneer species that may be identified in the future. The objective of the initial planting is to securely begin a long process of vegetation development. Natural succession will in time shift the species array, contribute to soil development, and increase the biomass on the site, likely producing varied results at different sites in response to varying conditions.
The benches of the quarry face will receive amendments, plants, and seed. The slopes of the quarry face, however, may be too steep to hold hydroseeded materials and are too steep for humans to work on them. If the slope test plots have indicated hydroseeding is effective, hydroseeding may be the revegetation method of choice for the slopes; otherwise the slopes will be revegetated relatively slowly through a combination of broadcasting seed and natural regeneration via seed rain from the existing adjacent vegetation.

### B. REVEGETATION PHASING

Revegetation phasing for the quarry face will begin when the topmost bench at 1,200 feet elevation is cut to lay back the overall slope to its finished angle. The phases of revegetation will proceed stepwise down the face as subsequent slopes and benches are graded to their final configuration. Under the current trucking limit of 150 tons per hour, this process will take at least ten years (AI Monser, personal communication August 2005), which translates to phases of approximately one slope and one bench per year.

### C. SITE PREPARATION

Quarry personnel will prepare the slopes and benches for revegetation. Site preparation and planting will take place in the first summer to early fall after each increment of finish grading is completed.

#### 1. CUT SLOPES

The final slopes will not be smooth, but will be cut with mini-terraces at two- to four-foot intervals on the contours. The indentations of a cormgated surface provide places where seed can lodge and where moisture from rainfall lasts longer than on the rest of the slope, creating favorable micro-sites for regeneration. Mini-terraces are particularly valuable where the slopes are too steep to install plants and where all vegetation will originate as seed.

2. BENCHES

If hydroseeding is used on the slopes, each bench will be prepared after the slope above it has been hydroseeded.

a. Resoiling. After each bench is finish-graded, a minimum of three inches of either stockpiled soil or pond fill will be spread on its entire surface, followed by at least two inches of composted organic material such as manure and sawdust from local stables. If test plots have demonstrated that other resoiling methods produce equal or better growth, those other methods may be substituted.

Working from the farthest end or the middle of the bench, the two layers of amendments will be placed in increments of approximately 50 feet along the bench so that placement of the second layer does not excessively compact the first layer.

b. Enhancement of Wildlife Cover. As recommended in the Olive Springs Quany Habitat Management and Monitoring Plan (Schettler and Suddjian 1994), logs and brush piles will be placed in the revegetation areas to enhance cover for wildlife. Such cover will develop naturally over a long period of time as the revegetation areas reach maturity, but installation of cover in the early phases of habitat development will provide an important resource in the interim. Woody debris also creates pockets of relatively favorable growing conditions for plants. Logs will be placed at densities of 5-10 per acre, and may be of varying length (minimum six feet), diameter (minimum one foot) and species. Brush piles will be placed on 40-50 foot centers throughout the area, with each pile at least five feet long by five feet wide by 2.5 feet tall. Brush piles can be of any dead woody material, and may include dead invasive plants removed during maintenance of revegetation areas as long as the material does not contain seed

The logs and brush piles will not all be placed first on a given bench, which would eliminate access to place the amendment(s). Nor will all the amendment(s) be emplaced first and become compacted by transporting the logs and brush pile materials. Rather, amendments and woody materials will be placed in alternating increments starting at the center or farthest end of each bench,

After the amendments, logs, and brush piles are emplaced, heavy equipment will be kept off the benches to prevent compaction of the prepared surface.

## D. TIMING OF SEEDING/PLANTING

If hydroseeding is used on the slopes of the quarry face, hydroseeding will take place between September 1 and October 15. Then the amendments, logs and brush piles will be placed on the benches.

Plants will be installed on the benches during November or December, as soon rain has dampened the ground to a depth of eight inches.

## E. SLOPE SEEDING

The results from the slope test plot results will be used to refine the species mix that will later be applied to the finished slopes by hydroseeding and/or by broadcasting. If the test plot results indicate that treating the slopes is futile, the final **slopes** may be left untreated.

### 1. HYDROSEEDING

It is possible to apply hydroseed to the planned 1:1 rock slopes of the work face, but with today's technology it is unknown whether seed and mulch will stay on such slopes during rains. In the event that the slope test plots demonstrate effectiveness of hydroseeding or that future technology is developed that overcomes this obstacle, the methodology used in the test plots (Section V.A. above) will be duplicated or adapted when it comes time to revegetate the final cut **slopes.** The annual reports of the test plots will be reviewed and the species that performed most effectively on the slope test plots will be used in the hydroseeding, along with other local native species that may be identified in the future.

The *caveats* of Section V.A. (above) will apply to the hydroseeding.

### 2. BROADCASTING

The annual reports of the broadcast test plots will be reviewed to determine whether broadcasting was an effective slope treatment on the quarry face; and if so, to utilize the species that provided the best vegetative cover on the slopes. The seeding rates may be modified based on the outcome of the test plots.

On the finished quarry slopes, the seed will be mixed with an equal or double volume of sand or fine gravel and then thrown over the upper portion of the slopes from the outboard edge of the bench above. Seed may be flung by handfuls or by a whirligigbelly-grinder seed spreader. Mycorrhizal inoculum and a low-phosphorus slow-release fertilizer will be incorporated with the seed mix, either at the same rates used for the slope test plots or at rates modified according to the outcome of the slope test plots. Applying seed during conditions of light wind may benefit the distribution of the broadcast seed.

## F. BENCH PLANTING

### 1. PROPAGULES

All seed of native species will originate at the site to the extent it can be obtained in the quantities needed. Larger lots of seed, and seed of the grasses, will originate at central coast sources. Seed producers currently keep track of the provenance of seed lots, and this trend is expected to continue into the future. All cuttings will originate at the site.

Propagules will be collected on the quany property or by permission on other properties in the vicinity of Sugarloaf Mountain. Some species will have to be collected more than a year in advance of planting in order to allow time for nursery production. To minimize waste of seed

and labor, seed will be collected as close as possible to the time of maximum ripeness for the species. Most seed will be dried and cleaned to remove chaff and insects. Seed of Douglas-fir, and acorns if used, will be stored in a manner to retain maximum moisture. Seed that is contained in berries (e.g., Madrone, Toyon, Coffeeberry, Elderberry) will be cleaned while the berries are fresh, and then dried. The processed seed will be stored in moisture-proof containers that keep out rodents and insects, in a location where temperatures do not fluctuate widely.

Installed plants will be contract-grown in forestry-type containers that develop a deep root system while the plant has a relatively small top. This approach has proven its value for revegetating harsh sites. The minimum container capacity will be ten cubic inches, the equivalent of today's Ray Leach Super Cell.

Table 4 on the following page shows the recommended propagule type for each species.

| NAME | | HYDRO-SEED | PLANTS | BROAD-CAST |
|---|---|---|---|---|
| Adenostoma ***fasciculatum***[1] | Chamise | | x | |
| ***Arbutus menziesii*** | **Madrone** | x | x | |
| ***Arctostaphylos tomen.*** ssp. crustacea | Brittle-leaved Manzanita | | x | |
| ***... pilularis*** | **Coyote** | x | x | x |
| ***Bromus carinatus*** | California Brome | x | x | x |
| ***... pa... illos*** | Warty-leaved Ceanothus | x | x | |
| ***Ceanothus thyrsiflorus*** | **Blue Blossom** | x | x | |
| ***Elymus glaucus*** | Blue Wild-Rye | x | x | x |
| *Epilobium canum* | California Fuchsia | x? | x | x |
| *Eriodictyon californicum* | Yerba Santa | | x | |
| ***Eriogonum nudum*** | **Naked-stemmed Buckwheat** | x | | x |
| ***Eriophyllum confertiflorum*** | **Lizard Tail** | x | x | x |
| *Heteromeles arbutifolia* | | | x | |
| *Heterotheca sessiliflora* | Golden Aster | | | x |
| ***Lotus heermanii*** var. orbicularis | Wooly Trefoil | x | x | x |
| *Lotus purshianus* | Pursh's Trefoil | x | | x |
| ***Lotus scoparius*** | **Deerweed** | x | x | x |
| ***Lupinus albifrons*** | **Silver Bush Lupine** | x | x | x |
| ***Lupinus bicolor*** | **Miniature Lupine** | x | | x |
| *Melica imperfecta* | Small-flowered Melica | x | x | x |
| ***Mimulus aurantiacus*** | **Bush Monkeyflower** | x | x | x |
| ***Pseudotsuga menziesii*** | **Douglas-fir** | x | x | x |
| *Rosa californica*[2] | California Rose | | x | |
| *Rubus ursinus*[2] | California Blackberry | | x | |
| ***Salix lasiolepis***[2] | **Arroyo Willow** | | cuttings | |
| *Scrophularia californica* | Bee Plant | x | x | x |
| *Solanum umbelliferum* | | | | |
| *Stephanomeria virgata* | Tall Stephanomeria | x? | | x |
| ***Trifolium hirtum***[3] | **Rose Clover** | x | | x |
| ***Trifolium willdenovii*** | | x | | x |
| Vulpia microstachys | Nuttall's Fescue | x | | x |

[1]Seed viability is extremely low, plants

[2]Requires relatively hospitable (moist and/or friable) substrate

[3]Not native, but appropriate for revegetation at this location.

Any other local native species may be included in the revegetation work as their usefulness becomes apparent.

## 2. PLANTING LAYOUT

Plants will be spaced nine feet apart on the benches in a triangular layout, equivalent to 620 plants per acre. Unlike a naturalistic layout, a geometric layout facilitates maintenance and monitoring. The initial planting is just the beginning of revegetation; the second generation of plants will create a more natural appearance.

Where no seeps or relatively soft substrate are revealed by mining, the species will be randomly distributed. Species that need more favorable conditions (Toyon, California Rose, Elderberry, Blue Witch) will be placed near seeps or in softer ground. Willow cuttings **(4)** will be installed at any seeps that develop on the finished benches.

The initial planting palette (Table **4)** will be the same for all zones of the quany face (Figure ***5)*** and will be refined to reflect the results from the bench test plots. The differences in slope aspect are too subtle to dictate different plantings in the different zones; the zones are defined at this time for monitoring purposes only. If the final slopes are cut over a period of years, permitting concurrent reclamation to take place, and if some species in earlier plantings perform better in some zones than in others, then future planting in each zone will emphasize the species that have performed best in that zone.

**A** large array of local native species will be planted. High species diversity promotes wildlife use. It also provides a fail-safe for achieving the vegetative success criterion for species richness since not all species will thrive equally; in some years and some locations certain species may do poorly; if the planting palette is extensive, others will be present to take their place.

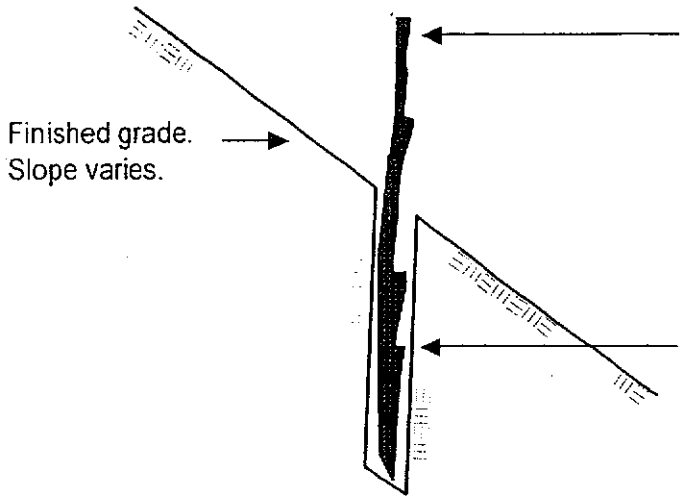
## *3.* PLANTING METHOD FOR BENCHES

a. Contract-grown Plants. Because hand-held gas powered augers are ineffective in rock, planting holes ill b d g in the rock by hand with picks and/or digging bars ı a ıor efficient method has ɔe developed or can be devised.

The contract-gown plants will be installed in individual plant protectors (collars and screens) that protect them from browsing and provide some shade and wind protection (:Figure6). When properly installed with the rim of the collar level, these protectors also form a watering basin that directs rainfall to the roots of the plant and can be used as a reservoir in the event hand-watering is needed during the first summer. The collar-and-screen protector may be omitted for plants that spread horizontally below ground (e.g., Yerba Santa) or above ground (e.g., Wooly Trefoil).

In order to restore biological activity to the substrate, each plant will be inoculated with topsoil from the adjacent forest. The inoculum will be obtained by removing the recognizable leaf litter from a small (–two feet square) area, and digging up a shallow (–three to four inches) layer of soil that contains pieces of roots. This inoculum will be collected in buckets, kept out of the sun to prevent damage to the live organisms it contains, and used within one or two days. **A** handful of inoculum will be placed beneath the base of the root ball of each plant and mixed with the substrate before positioning the plant in the planting hole.

**FIGURE 4**




18" willow cutting 3/8" or greater diam. Square cut top, slant cut bottom. instal with buds pointing up. Collect in winter *after* leaf fall. Keep mist & cool until planted

Install cutting in lead hole approx. 12' deep, tamp in place to remove air pockets.

SECTION
NTS

WILLOW CUTTING DETAIL
ON A SLOPE

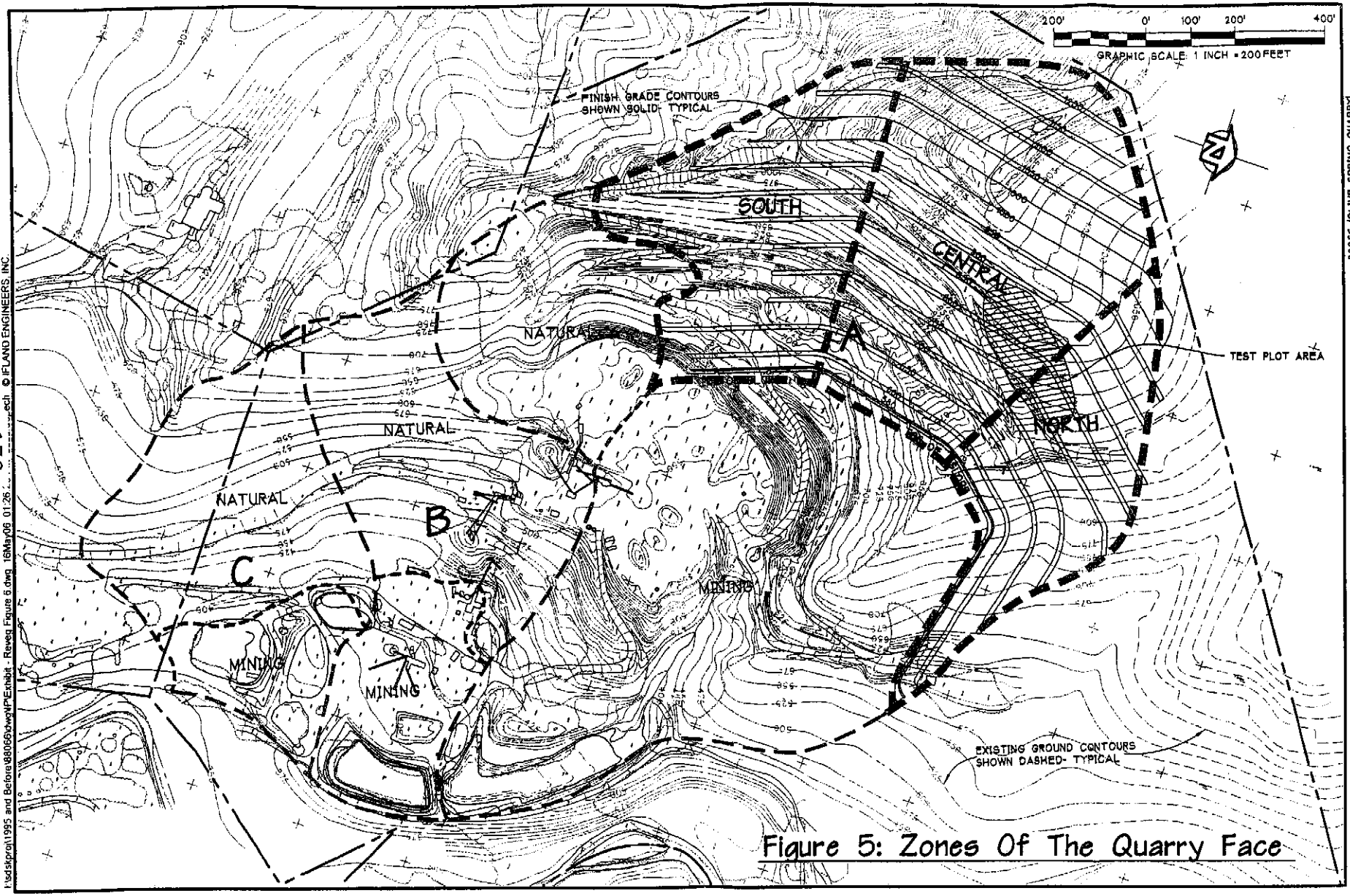
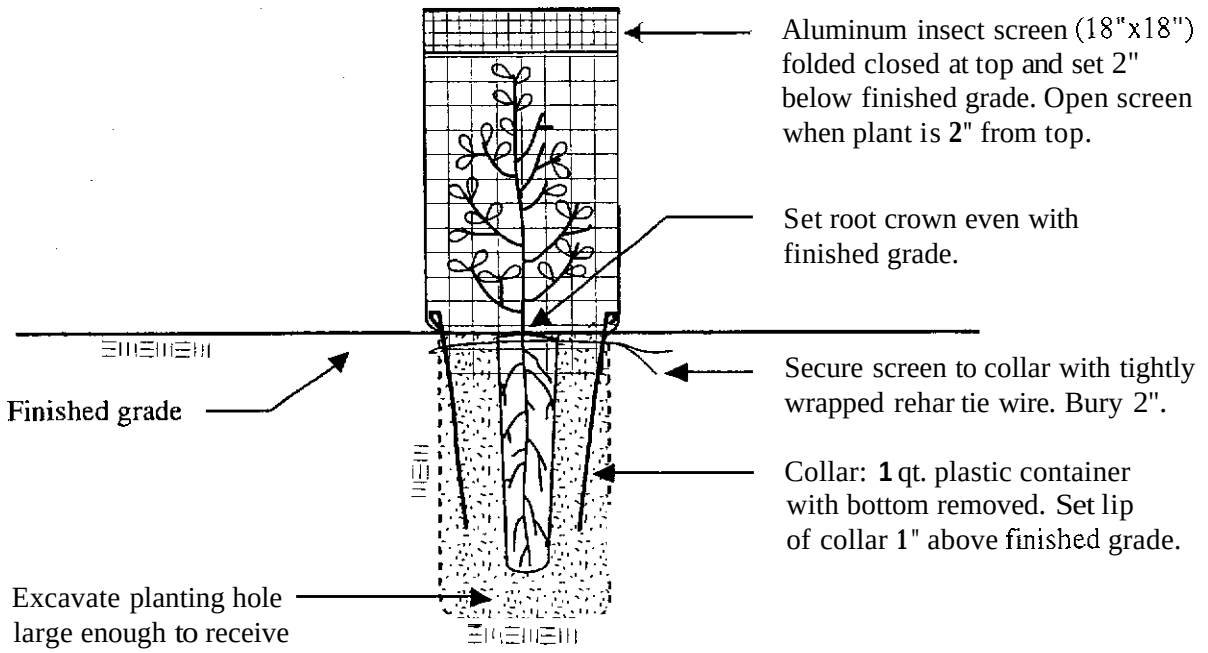



Figure 5: Zones Of The Quarry Face

**FIGURE 6**




SECTION — COLLAR AND SCREEN PLANTING DETAIL ON LEVEL GROUND

NTS

Each plant will receive 1/2 tablespoon of a fertilizer blended to promote mycorrhizae (beneficial fungi) and plant growth: 1.3 parts (by volume) of 17-6-12 or 18-6-12 slow-release fertilizer with minor nutrients, and 8 parts of blood meal. Slow release fertilizer feeds for several months, and a low phosphorus level promotes mycorrhizal activity. Nitrogen can be a limiting factor **for** development of mycorrhizae (Claassen, Zasoski, and Southard 1995), but blood meal will prolong the time period when nitrogen is available. The fertilizer mix will be stirred frequently to keep it homogeneous; it will be placed in the backfill at the mid-level of the rootball. The amount of fertilizer used for each plant will be increased proportionately if plants with rootballs larger than **10** cubic inches are installed.

Each plant will be watered-in on the day it is planted, to settle the soil around the roots and to minimize transplant shock. Each plant will receive a two-inch mulch of rice straw spread in a two-foot radius around the protector. Rice straw minimizes the potential for introducing upland weeds to the site, and no other kind of straw will be substituted.

b. Willow Cuttings. If seeps create moist areas on the benches, willow cuttings (Figure **4)** will be installed to increase habitat diversity. Willow cuttings will be installed during December or January when the leaves have fallen. A pilot hole will be excavated **to** receive each cutting; the hole will be firmly refilled around the cutting to remove air pockets.

c. Broadcast Seed. Seed to be broadcast on the benches will be mixed with compost **or** sand to facilitate even dispersal. After it is tossed on the benches, it will be lightly scratched into the surface. Then it will be lightly tamped with a lawn roller and/or trampled by workers' feet **to** create good seed-to-soil contact.

## VII. OPERATIONS AREAS (SITES MOSTLY FLATTER THAN 2 : 1)

The operations areas will be revegetated at the close of mining. These include the quarry floor, the asphalt plant, any pond banks that lack vegetation, and the flat area near the office in the north end of Leasehold **3.** Revegetation in the operations areas will begin within a year after the last slope and bench of the quany face have been planted. The operations areas total nearly 17 acres; they may be revegetated all at once or in three phases of five to six acres per year.

After the asphalt plant, processing equipment, scale, office, paving, and road base materials have been removed, all ground that has had vehicle traffic **or** heavy equipment operating on it will be ripped and cross-ripped to a depth of three feet. Ripping will he conducted when the ground is dry enough to shatter.

Two inches **of** pond fill or composted organic material will be spread throughout the operations areas after ripping, except where slopes are steeper than 1.7 : 1. The entire operations area will be hydroseeded in a two-layer application:

| | | |
|---|---|---|
| FIRST LAYER | Arbutus ***menziesii*** (Madrone) | 1 pound/acre |
| | ***Bromur carinatus*** (California Brome) | **12** pound/acre |
| | ***Ceanothus thyrsiflorus*** (Blue Blossom) | 2 pounds/acre |
| | ***Elymus glaucus*** (Blue Wild Rye) | 6 pounds/acre |
| | ***Hordeum vulgare*** (Cereal Barley) | 100 pounds/acre |
| | Lotus ***scoparius*** (Deenveed), inoculated | **4** pounds/acre |
| | ***Pseudotsuga menziesii*** (Douglas-fir) | **2** ounces/acre |
| | ****Sequoia sempervirens*** (Redwood) | 1 ounce/acre |
| | ***Vulpia microstachys*** var. ***pauciflora*** (Nuttall's Fescue) | 3 pounds/acre |
| | mycorrhizal inoculum | 60 pounds/acre |
| | fertilizer **(21-7-14)** | 300 pounddacre |
| | fiber mulch | **1,000** pounddacre |
| SECOND LAYER | fiber mulch | **1,500** pounds/acre |
| | binder | **150** pounds/acre |

The same precautions described above for hydroseeding the slope test plots (section V.A.1 above) will be observed for hydroseeding the operations area.

This species mix will in time produce vegetation that resembles the nearby forest, and it is compatible with the planned end use of the property (low-density residential). It will establish native upland vegetation along any pond banks that need planting at the time of quarry closure Natural colonization from wind-borne seed of Willows, Alders and Cottonwoods from nearby trees will subsequently shift the species mix in a riparian direction at locations where the moisture regime is appropriate for riparian vegetation.

## VIII. RECORD-KEEPING

Complete records will be kept of all revegetation activities. These will include descriptions of soil amendments; the kinds, locations and dates of work; number and species of plants installed, quantities of seed used, maintenance activities, and any other pertinent information. The purpose of record-keeping is two-fold: to provide a factual framework for annual revegetation reporting, and to provide a basis for evaluating the results and strategizing potential improvements in methods.

## IX. MAINTENANCE

The quany operator will create perimeter access routes to the benches and keep them passable to four-wheel drive vehicles to conduct maintenance activities for at least ten years after planting or until the bench has met the success criteria, whichever occurs later.

*Before weighing, Redwood seed will be air separated (winnowed) to remove the lighter non-viable seed.

## A. WATERING

Watering may be required during the first summer after each installation of plants. This is accomplished by trucking tanks of water to the site and applying approximately a coffee cup of water inside each collar. One deep watering (two passes) is more effective than two separate single-pass waterings weeks or months apart Watering will be done within 45 to 60 days after the date of the last rainy spell totalling about an inch. Thus, if the last inch or so of rain fell during the last week of April, the plants will be watered in mid to late June. Subsequent waterings during the hottest months will follow at 45 day intervals until the rains begin. Watering may be discontinued in mid-October when the days grow shorter. Water from the quany ponds is acceptable for irrigation.

## B. OPENING/REMOVING PLANT PROTECTORS

Individual screens will be opened when the plant inside approaches two to three inches below the closed top. The entire protector will be removed when the plant is twice as tall as the screen. As a given bench segment approaches the success criteria, it will be patrolled to remove all remaining collars and screens.

## C. WEEDS

Weed control is likely to be the single largest item of maintenance needed. French Broom (*Genistu monspessulana*) and Pampas Grass (*Cortaderia jubata*) are currently the two most abundant invasive species present on the quarry leaseholds; they have been the subject of effective recent controls, but a well-developed seed bank is present and ongoing control will be needed. Narrow-leaved Clover (*Trifolium angustifolium*) is currently present in light numbers and it may be possible to keep it from becoming the widespread infestation that it has become along the north coast of the county.

Any other non-native species that may appear in the next 75 years and that has the capacity to crowd out the native vegetation on the benches and other accessible areas will be included in the weeding program.

Although it is physically impossible to control weeds on the inaccessible steeper slopes, weeds will be controlled on the benches and the other accessible areas to minimize competition with desirable species. The most effective overall strategy for controlling weeds is not to let them produce seed. Weed control will begin in the late winter/early spring after planting, when the ground is damp and weeds can most readily be pulled or dug out.

Weed control will be performed throughout the 10-year monitoring period or until the success criteria have been met, whichever occurs later. Physical and chemical methods for controlling the current most invasive species are given below. As weed control technology continues to improve in the future, newer methods may supersede these.

1. FRENCH BROOM

a. Physical control. French Broom is shallow-rooted and small plants can easily be pulled. First-year seedlings of French Broom need not be pulled, because many die out naturally over the first dry season. However, Broom plants a year or more old should be pulled before they flower and produce seed. Larger plants can be pulled using the Weed Wrench, a tool developed specifically for this purpose. Alternatively, Broom plants cut near the ground level in late summer (August-September) are less likely to re-sprout from the base than plants cut earlier in the season (Taylor 2005, Bossard *et al.* 2000). If French Broom plants are pulled or cut when there are no seeds in any stage of development on the plants, they may be left on the ground to contribute to vegetative litter.

b. Chemical control. Two effective chemical methods for controlling French Broom are currently used. One is spraying with a three percent solution of glyphosate, using a surfactant for good absorption and a dye to ensure complete coverage; spraying should be done with care and on a non-windy day. The other is a basal bark application of triclopyr, in which a small quantity of herbicide is applied to the stem near the ground. This method reduces impact on non-target species and results in less re-sprouting (Bossard *et al.* 2000). Some applicators recommend using these chemical methods during periods of active growth after flower formation and seed set but before seed dehisces, while others find them most effective in late summer when the plants are drought-stressed.

Certain herbicides may not be used near water bodies and should not be used near Soquel Creek. A licensed pesticide applicator will be consulted for guidance in the use of any chemical controls. Herbicides should only be applied when rain is not likely to fall within 24 hours.

2. PAMPAS GRASS

a. Physical control. Pampas Grass has a robust root system, but small plants can be grubbed out without much trouble when the ground is damp. This grass is recognized by its sharply serrated leaf margins and by the stiff, erect growth habit of small plants. For larger plants, a Pulaski, mattock, or shovel are useful removal tools. To prevent re-sprouting, it is important to remove the entire crown and top section of the roots, because detached plants left lying on the soil surface may take root and re-establish. Access to remove the crown can be improved by first cutting the bulk of the foliage with a chainsaw or large weed-eater to expose the base of the plant, which also makes disposal of the detached plant more manageable (Bossard et al. 2000). Any flowering stalks present should be cut and bagged for removal before tackling the plants.

b. Chemical control. A two percent solution of glyphosate with surfactant is applied to wet the foliage but not to the point of runoff Plants often re-sprout and require re-treatment. Herbiciding in fall may provide more effective kill than at other times of year, but requires prior removal of the flower stalks before the seed matures. A one percent solution of imazapyr provides good control applied in spring or fall (Bossard *et* al.)

## B. MONITORING SCHEDULE

In the operations areas, the monitoring program will extend for a period of 10 years after seeding. On the quarry face, it will extend for 10 years after installation of plants at a given site Monitoring will be performed annually for the first three years in each treatment area and will occur at longer intervals thereafter.

Some of the monitoring can be discontinued if a given revegetation area achieves the criteria for cover and species richness early. If a revegetation area achieves the success criteria for cover and species richness before 10 years, further quantitative monitoring will no longer be needed and photomonitoring will be sufficient. In relatively flat treatment areas, views will likely be obscured by dense vegetation at about the time the success criterion for cover is reached, although benches of the quany face *can* potentially continue to be photomonitored from the next bench above.

Cover and species richness will be monitored in the spring. Survival of species installed as plants (or cuttings or divisions) rather than from seed will be monitored qualitatively in the late summer/fall following planting. Erosion control monitoring will be performed each year during the rainy season, during or immediately after significant rain events. Invasive species will be monitored during spring through late summer when *they* can most readily be identified.

The 10-year revegetation monitoring schedule follows

**Table 5a. MONITORING S FOR TEST PLOTS**
**OLIVE SPRINGS QUARRY REVEGETATION PROGRAM**

| YEAR | QUALITITATIVE OR QUANTATIVE | MONITORING TIME | FOCUS OF MONITORING |
|---|---|---|---|
| **BENCH TEST PLOTS** | | | |
| 1 | qualitative<br>quantitative | spring or summer<br>late summer or fall | germination<br>survival of installed plants |
| 2 | qualitative<br>quantitative | spring or summer<br>late summer or fall | cover, species richness<br>survival of installed plants |
| 3 | qualitative<br>quantitative | spring or summer<br>late summer or fall | cover, species richness<br>survival of installed plants |
| 5 | quantitative | late spring | cover, species richness |
| 8 | quantitative | late spring | cover, species richness |
| 10 | quantitative | late spring | cover, species richness |
| **SLOPE TEST PLOTS** | | | |
| 1 | qualitative | late spring | germination |
| 2 | qualitative | late spring | cover, species richness |
| 3 | qualitative | late spring | cover, species richness |
| 5 | qualitative | late spring | cover, species richness |
| 8 | qualitative | late spring | cover, species richness |
| 10 | qualitative | late spring | cover, species richness |

| | | | |
|---|---|---|---|
| 1 | qualitative<br>quantitative | spring or summer<br>late summer *or* fall | germination<br>survival (installed plants) |
| 2 | qualitative<br>quantitative | spring *or* summer<br>late summer *or* fall | cover, species richness<br>survival (installed plants) |
| 3 | qualitative<br>tit | summer<br>late summer or fall | cover, species richness<br>survival (installed plants) |
| 5 (and every 1 to 2 years art& qualitative monitoring shows 50% of the bench length falls in the moderate cover category *or* above) | tit | spring or summer | cover. species richness |
| 8 | quantitative | late spring | cover, species richness |
| 10 | quantitative | late spring | cover, species richness |
| every year | qualitative | rainy season (after significant rainfall events and at end) | erosion control |
| every year | qualitative | spring, summer | invasi s |

Table 5c. MONITORING SCHEDULE FOR OPERATIONS AREAS
OLNE SPRINGS QUARRY REVEGETATION PROGRAM

| | | | |
|---|---|---|---|
| 1 | qualitative | late spring | germination |
| 2 | qualitative | late spring | cover, species richness |
| 3 | qualitative | late spring | cover, species richness |
| 5 (and every 1 to 2 years after qualitative monitoring shows 50% of the treatment area falls in the moderate cover category or above) | quantitative | late spring | cover, species richness |
| 8 | quantitative | late spring | cover, species richness |
| 10 | quantitative | late spring | cover, species richness |
| every year | qualitative | rainy season (after significant rainfall events and at end) | erosion control |

NOTES:

All sites will be evaluated annually at a reconnaissance level during the life of the monitoring program.

Qualitative monitoring may include some transects to spot-check particular sites.

For any site that achieves the success criteria ahead of schedule, subsequent monitoring may be qualitative instead of quantitative, especially if accessing the site to perform m-situ monitoring would damage vegetation.

Quantitative monitoring may be substituted for qualitative monitoring at any time, especially if success appears to be likely.

## C. MONITORING SITES

Monitoring sites will comprise all the planted areas. Individual revegetatiodmonitoring areas will be identified based on site characteristics (topography, exposure, other significant physical factors affecting revegetation). The grading plan for the quarry face (Figure 5) shows the finished slopes and benches forming an arc with a northern, central and southern zone. The northern zone faces southwest and south, the central zone faces east, and the southem zone faces northeast. A bench segment (e.g., all of Bench 600 in the northern zone) would comprise an individual monitoring area, as would an annual increment of planting in the operations areas.

Each individual revegetation area will be monitored on its own schedule, and success will be evaluated separately for each revegetation monitoring area. The phased nature of the mining and subsequent revegetation requires a phased monitoring program, wherein sites will be monitored sequentially as revegetation efforts commence. This will result in staggered monitoring programs specific to each revegetation site, such that sites will follow a consistent monitoring schedule but each site will have its own start date.

## D. EROSION CONTROL

Sites undergoing revegetation will be monitored each rainy season to identify whether erosion problems (rills, gullies) are developing. Monitoring will be performed during or following major storm events that could create possible runoff problems.

## E. ESTABLISHMENT OF PLANT ASSEMBLAGES

Sites will be monitored to assess the establishment of plant assemblages. As previously noted, individual revegetation/monitoring areas will be defined based on site characteristics (topography, exposure, other significant physical factors affecting revegetation). On the benches and operations areas, monitoring will utilize quantitative and qualitative methods. Monitoring of steeply sloping areas will be qualitative only. If a site meets the success criteria ahead of schedule, subsequent monitoring may be qualitative instead of quantitative, especially if accessing the site to perform in-situ monitoring would damage the vegetation.

Wildlife use of revegetation sites will be monitored principally through bird censuses as described in Appendix D.

Vegetation monitoring will be accomplished by assessing the following parameters:

- survival of installed plants
- percent cover of bare ground, vegetative litter, and individual plant taxa
- species richness (total number of species/taxa)

Sampling design, methodology, and data analysis for each parameter have been developed based on established vegetative sampling techniques (Bonham 1989; Elzinga, Salzer, and Willoughby 1998; Floyd and Anderson 1987; Greig-Smith 1983; Kennedy and Addison 1987; Moore and Chapman 1986; Snedecor and Cochran 1980; Willoughby and Knox 1997) and are described

briefly below. In anticipation of the vegetation being patchy and heterogeneous within the revegetation areas, the sampling program is built around the use of line transects and ocular estimation to encompass the most habitat variability within a sampling unit.

Species identifications will be based on The Jepson ***Manual: Higher Plants of California*** (Hickman 1993) or an equivalent authority that may be developed in the future. Unknown species will be identified by examining voucher specimens collected from outside the plot or, if necessary, from judicious sampling of key morphological portions of specimens within the plot.

1. SURVIVAL

In some areas plants, cuttings and/or divisions will be planted instead of or in addition to seed. In these areas, the survival of individual plants will be monitored after each of the first three growing seasons following planting. Planting in a regular grid will facilitate locating individual plants for survival monitoring. Monitoring will include an inventory of all planted individuals within the revegetation area, with a calculation of the percent survival by each species and for all species combined. If a planting area is larger than one quarter of an acre, survival may be sampled in 5% of the treatment area rather than fully inventoried. Survival will be field monitored in late summer to early fall and described in the current monitoring report.

Survival monitoring will be used to evaluate both the vegetative trend at a given site and planting strategies for future sites. If the survival or growth of surviving plants appears deficient, i.e., if it appears that fewer than 80% of the planted plants will survive through the first three growing seasons and they are not being replaced by seeded or volunteer plants, future sites will be planted at higher density or with an adjusted plant palette to more closely achieve the success criteria for cover and species richness.

2. PERCENT COVER

Photomonitoring points will be established for each revegetation area. Photographs will be taken during each sampling period to visually record the condition of the vegetation. Points may be relocated if the view becomes obscured by vegetation. (Also see Section G, below.)

Qualitative monitoring will consist of ocular estimations of percent cover and species richness. Monitoring of percent cover may be purely qualitative (first three years and after success criteria have been met) or include estimates of cover classes for linear distances along a bench or along ten-foot-wide cross-sections of the vegetation in larger planted areas. The cover classes will be:

0-10 percent cover = poor
>10 - 3 3 percent cover = moderate
>33 - 6 7 percent cover = good
>67 percent cover = successful per success criteria (Section I below)

As vegetation develops and becomes impenetrable (or after success criteria have been met), it may be preferable to visually monitor treated sites qualitatively from vantage points above to avoid damage to the vegetation.

For quantitative monitoring, point-intercept line transects will be used to estimate percent cover of substrate and vegetation. This method samples cover by recording the substrate or taxon that is intercepted at defined points along a line transect. Due to layering of live vegetation, more than one taxon may occur at a given point such that a transect may have total cover greater than 100%. Net percent cover for the transect (amount of ground covered by vegetation, discounting layering) is calculated by counting multiple species hits at a given point as one. Vegetative litter produced naturally on the site is counted as vegetative cover (Chambers and Brown 1983). Substrate type (bare ground) is recorded only if no live vegetation or litter is present at the sampling point. Percent cover of a substrate type/taxon is calculated by dividing the number of intercepts by the total number of points. Net cover is calculated by dividing the number of points at which live vegetation or litter was encountered by the total number of points.

The transects will be randomly located within the defined revegetation area. To maximize sampling effectiveness within a particular area, 25-meter transects with 25 points each will be used. Points along the transect will be systematically positioned at meter intervals. If necessary, the length of the transect may be adjusted to fit the size and shape of the sampling area, but should be consistent throughout a given treatment area. The number of transects (replicates) at each site may vary depending on the size of the revegetation area but will be a minimum of three, based on data for the reference site (see Section I, below) or may cover 5% of treatment areas larger than ¼ acre, whichever is greater.

Raw data will be summarized for each revegetation treatment area. Initially, only descriptive summary statistics (mean, variation, range) will be calculated but as data from multiple years become available, statistical analysis of changes over time may be performed if appropriate and necessary. Data will be tested for homogeneity of variances and appropriate parametric or non-parametric tests will be employed to assess differences among means. The results of the percent cover sampling will be compared to the success criteria defined in this revegetation plan.

3. SPECIES RICHNESS

Species richness will be sampled at the time that percent cover is measured. On the benches of the quarry face, all species present on the entire bench unit will be inventoried. This is possible due to the relatively small size of the benches.

In larger areas, (i.e., the operations area), species richness will be inventoried for all the sampling plots in each defined revegetation area. Each transect will form the center line of a sampling plot 2 meters wide. All the species present within 1 meter on each side of the transect line will be identified and the total number of species in each 50 square meter plot as well as in all the combined plots of each area will be noted.

Data analysis will be similar to that for percent cover sampling. Results will be compared to the success criteria defined in this revegetation plan (Table 7 in Section I) below

## F. INVASIVE NON-NATIVE SPECIES

Monitoring of non-native species will be performed in association with the qualitative or quantitative monitoring of the establishment of plant assemblages. In addition, qualitative observations of the presence, abundance, and degree of threat of non-native species throughout the entire revegetation areas will be made. These observations will be compared to the success criteria for the revegetation program. Remedial measures will be undertaken as necessary to keep invasive non-native plants from producing seed and spreading on the benches and other areas that are physically accessible.

Currently, the invasive exotic species present on the site are Pampas Grass (*Cortaderia jubata*), French Broom (*Genista monspessulana*), and Narrow-leaved Clover (*Trifolium angustifolium*). The Pampas Grass and French Broom are large plants that are capable of out-competing young native trees and shrubs that are just getting started. The Narrow-leaved Clover may be detrimental to establishment of the smaller native species. Initially, the focus will be on these species but if additional species that are equally invasive appear in the future, they will also be controlled.

## G. PHOTODOCUMENTATION

Color photographs will be used to visually document the condition of the revegetation areas prior to and during the revegetation process. Permanent photographic monitoring points will be established for each revegetation phase when revegetation efforts commence. Points may be relocated if the view becomes obscured by vegetation; points may also be added as features of interest develop over time. Photographs will be taken each spring on an annual basis to illustrate progress over time. Photographs may be used to help evaluate erosion control, survival of planted species, establishment of plant assemblages, presence of non-native species, and other characteristics of the revegetation sites.

## H. REPORTING

Annual revegetation reports will document monitoring activities for the past year. Reports will discuss the findings regarding erosion control, percent survival, establishment of plant assemblages, and presence of invasive non-native species for each active revegetation phase. Sampling design and methodology will be documented; results will be presented and evaluated in terms of success criteria. Photographs from the permanent photographic monitoring points will be included. Recommendations will be developed to implement the results from the test plots and to address any problems that have been identified.

Annual reports will record the planting and maintenance activities conducted during the previous year, including (by species and location) numbers of plants planted and quantities of seeds collected/purchased and sown The reports will also give a brief outline of revegetation activities planned for the coming year.

If an amendment request now pending with the County of Santa Cruz is approved, the annual reporting date (currently April 1) will be changed to July 1 of each year.

## I. SUCCESS CRITERIA

Success criteria provide a measurable way to determine when revegetation is complete and the financial assurances can be released. The Surface Mining and Reclamation Act requires that "Success of revegetation shall be judged . . . by comparing the quantified measures of vegetative cover, density, and species-richness of the reclaimed mined-lands to similar parameters of naturally occurring vegetation in the area. Either baseline data or data from nearby reference areas may be used as the standard for comparison" (§ 3705 [m]).

Viewed from the top of Sugarloaf Mountain, the great majority of vegetation for miles around the quarry is Mixed Evergreen Forest. Duplicating mature Mixed Evergreen Forest on rock benches after mining, on relatively hot slopes that face east, southeast and northeast, is not a feasible target. It is not even realistic to duplicate the mature chaparral found on the west slope of the mountain, where there is typically four feet of soil over the rock.

A search was made to identify naturally occurring sites that could be used as reference areas for target cover. The sites needed to have substrate type comparable to the Olive Springs Quarry and be mostly level to be comparable to the areas expected to be planted (e.g., benches, operations area).. Twenty- to thirty-year-old landslides in the area could be comparable in terms of the amount of vegetation to expect after disturbance; however, landslides in the area have soil and have mostly regenerated with invasive French Broom (*Genista monspessulana*), making them unsuitable as reference sites.

A comparable reference site was identified off-site, at a decomposed granite quarry situated elsewhere in the county that is at a similar elevation with similar rainfall. The substrate is thus comparable, as is the topography which consists of benches along a quarry face. The reference quarry was initially hydroseeded in winter 1987-88 and the first plants were installed in fall 1988. The vegetation assemblage comprises chaparral and mixed evergreen forest species similar to those in the Olive Springs Quarry vicinity. The 20-year success criterion for that site is more than two-thirds vegetative cover. The revegetation at that site was in its 17th growing season during 2005, and sampling (see below) confirmed it has met its success criterion.

The benches identified for reference never received soil or amendments. Thus, although not a naturally occurring assemblage, the vegetation does represent feasible vegetative conditions to expect at Olive Springs Quarry at the close of mining. In a younger revegetation site at the reference quany three inches of overburden (soil removed to access the granite) were placed on the finished benches before planting, and the vegetation on those benches met the 20-year success criterion after just five growing seasons. This suggests that amending the Olive Springs Quarry planting sites may produce similar benefits by substantially shortening the timeline for revegetation monitoring.

On July 2 1,2005, a stratified random sampling design was used to measure percent cover at the reference site. Areas that were selected for sampling were away from zones of shallower excavation, were not near seeps, and were relatively distant from a seed rain from the adjoining forest, thus representing conditions expected at Olive Spring Quarry. Following methodology similar to that proposed for revegetation monitoring (Section E, above), eight 25-meter transects

were then randomly located within the sampling areas. Each transect was sampled at 25 points positioned at one-meter intervals. All transects were located on nearly level benches with a southern exposure, at elevations ranging from 1040 to 1120 feet. Species richness was determined by inventorying all native species present on each bench.

Data were analyzed for percent cover and species richness (Table 6 and Appendix C). Overall, results show very high and mostly native woody vegetative cover. Total inorganic cover (bare ground with no live vegetation or litter present) averaged **only 9.5** percent, ranging from 4 to 32 percent. Total plant cover (including layering) averaged 132.5 percent, with a low of **96** percent and a high of 156 percent. Net plant cover (discounting layering) averaged 90.5 percent, with individual transect cover ranging from 68 to **96** percent. Native taxa comprised an average of 114.5 percent cover (ranging from 88 to 144 percent cover), with an average of 74 percent cover (ranging from 60 to **92** percent) of non-woody taxa. These results indicate that the area sampled has met its 20-year success criterion of 2/3 cover or more, after 17 growing seasons.

Table 6. **SUMMARY OF REFERENCE SITE SAMPLING, SUMMER 2005**
OLIVE SPRINGS QUARRY REVEGETATION PIAN

**Field** Sampling Date: **7-21-05**

| **Measurement** | **Estimates of Percent Cover** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **INORGANIC COVER** | REF1-8A | REF2-8B | REF3-8C | REF4-7A | REF5-7B | REF6-7C | REF7-6A | REF8-9A | **Mean** |
| Bare Rock | 4 | 16 | 4 | 8 | 4 | 4 | 32 | 4 | 9.5 |
| **PLANT COVER** | | | | | | | | | |
| TOTAL PLANT COVER* | 124 | 120 | 156 | 132 | 152 | 132 | 96 | 148 | 132.5 |
| NET PLANT COVER** | 96 | 84 | 96 | 92 | 96 | 96 | 68 | 96 | 90.5 |
| % COVER NATIVE TAXA | 108 | 96 | 140 | 108 | 144 | 104 | 88 | 128 | 114.5 |
| % COVER NATV WOODY TAXA | 48 | 28 | 72 | 28 | 52 | 32 | 16 | 48 | 40.5 |

| **SPECIES DIVERSITY** | **Bench 8** | **Bench 7** | **Bench 6** | **All Benches** | | |
|---|---|---|---|---|---|---|
| **TOTAL NO. TAXA** | 32 | 28 | 24 | 38 | | 28.0 |
| **NO NATIVE TAXA** | 20 | 18 | 18 | 25 | | 18.7 |
| **NO. NATIVE WOODY TAXA** | 12 | 11 | 12 | 14 | | 11.7 |

'Includes layered taxa (more than one species or taxon encountered per point-intercept).
**Multiple taxa per point-intercept counted as one.

The permit for the reference site pre-dated the SMARA reclamation standards, when there was no criterion for species richness. Species richness data were analyzed nonetheless for total number of taxa on each of three benches (Table 6 and Appendix C-9) in order to establish a benchmark for Olive Springs Quarry.

The number of taxa per bench reflected a diverse community comprising species with patchy distributions. For all three benches combined, total taxa numbered **38,** with numbers ranging from 24 to **32** for an individual bench and averaging 28.0 taxa per bench. The number of native taxa was 25 for all benches combined, ranging from 18 to 20 per individual bench and averaging 18.7 per bench. The total number of native woody taxa was 14 for all benches combined.

A comparison of species composition shows that there is overlap between the species array at Olive Springs *Quarry* (Table 1) and the reference revegetation site (Appendix C-9) Douglas-fir, Madrone and Deenveed ***(Lotus scoparius)*** are strong pioneer species at both sites. The total number of pioneer species is similar for the two sites. Knobcone Pine (*Pinus attenuata*) and two Manzanita species are absent at Olive Springs, but the two species of Ceanothus present are stronger volunteers at Olive Springs. Silver Bush Lupine ***(Lupinus albifrons)*** is absent from the reference site but performs a pioneer function at Olive Springs.

The reference site sampling results and the similar characteristics of the reference site to Olive Springs **Quarry** support the appropriateness of using the reference site **to** define the success criteria for Olive Springs **Quarry.** The percent cover criterion for Olive Springs **will** be 66-2/3% or more net vegetative cover for each treatment area. The criterion for species richness will be 16 native species present in each treatment area, although they will not necessarily be the same ones **as** at the reference site.

Since a comparable granite **quarry** site attained **2/3** cover in 17 years without any amendment, and reached the same goal in five years where three inches of overburden was placed on the rock benches, it is reasonable to expect 66-2/3% cover on amended revegetation sites at Olive Springs **Quarry** within ten years or less.

The reference site data were also analyzed to estimate the number of transects required to achieve an 80-percent confidence level for net percent cover (following methods of Bonham [1989] and Elzinga et *al.* [1998]), providing the basis for setting a minimum of three transects per area, preferably five or more.

A summary of success criteria for each of the monitoring parameters is shown in Table ***7.*** The 10-year timeline may be longer than necessary where the substrate is amended, but it allows for the possibility of a drought period. Monitoring of a particular revegetation area may be discontinued if it achieves all criteria prior to the end of the 10-year monitoring period. Conversely, if the success criteria are not met by the end of the 10-year monitoring period, supplemental treatments and monitoring will continue until the criteria are met.

**Table 7. SUCCESS CRITERIA FOR REVEGETATION AT OLNE SPRINGS QUARRY BENCHES OF QUARRY FACE AND OPERATIONS AREAS**

| |
|---|
| **COVER: Mean net vegetative cover for all transects of a revegetation unit combined will exceed 66-2/3% by the end of the 10th year after planting.** |
| **SPECIES RICHNESS: The minimum number of native species per revegetation unit will be 16.** |
| **INVASIVE EXOTIC SPECIES: None will be present in reproductive condition at anv time on 2:1 slopes or flatter ground.** |
| **EROSION: No erosion murrina at a rate that undermines vegetation AND no concentrated runoff outside of planned drainageways that lead to sediment control structures** |

**NOTE:**
**There are no success criteria for the slopes *of* the quarry face, because no manipulation or remedial action can be performed on steep slopes** of 1 : **1**

# XI. REMEDIAL MEASURES

## A. REVEGETATION

If any vegetative success criterion (density, species richness, percent cover) is not met for any revegetation site for any year, the monitor will investigate the cause of the deficiency and will make recommendations as appropriate to remedy the deficiency. Deficient areas should receive supplemental treatments early if it appears they may not achieve a 10-year criterion. The recommended remedial action will be initiated within one calendar year to improve progress toward the success criteria.

Supplemental treatments may consist of planting additional woody species or broadcasting seed of native subshrubs and/or herbaceous species.

Remedial action may also be accomplished by a change of planting method or plant protection methods, revising mulching procedures, or changes in other procedures in order to more effectively accomplish the goals of this Revegetation Plan.

## B. EROSION

The revegetation sites will be visited during or immediately after storm events that are likely to cause damage. Any erosion problems encountered will be remedied within two weeks so that erosion is not accelerated. Remedial measures for erosion in the revegetation sites may include spreading or staking rice straw in rills or smaller gullies, instailation of straw wattles or coir logs, planting of willow cuttings, placement of riprap, and/or other measures that will arrest the erosion problem and stabilize the planting site. Small erosion problems are most effectively addressed by timely hand work before they become large.

The slopes of the quarry face are too steep to work on, if erosion occurs on the steep slopes, it will be addressed on the bench below by installing shallow drainage trenches or obstructions to intercept the runoff and direct it into controlled sediment facilities. Diverters may include bales of rice straw, wattles of rice straw, coir logs, or other materials that may be developed in the future. Surface diversion structures will be keyed in, i.e., installed in a shallow trench to prevent runoff passing beneath the device.

## C. WEEDS

Any species found on the revegetation sites that is deemed to be detrimental to the revegetation plantings will be addressed in a timely fashion. While a first step may be to prevent seed production of the species identified as detrimental, the real objective is to eliminate them entirely (where access permits) so that maintenance is not an ongoing problem. Manual, mechanical, thermal, chemical, and/or other methods that may be developed in the future will be employed as appropriate to the species, the population size, and the condition of the plants.

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# APPENDIX A
# SOIL ANALYSIS OF POND FILL

BACTERIOLOGISTS
Approved by State of California

# SOIL CONTROL LAB

42 HANGAR WAY

**Tel:** 831 724-5422
FAX: 831 724-3188

**APPENDIX A-I**

195924-1-4021

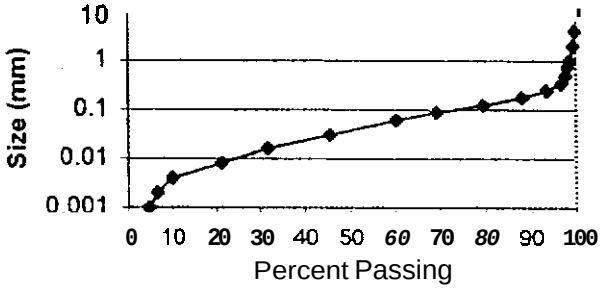
Greening Associates
P.O. **Box** 277
Ben Lomond, CA 95005
Attn: Suzanne Schettler

August 19, 2005

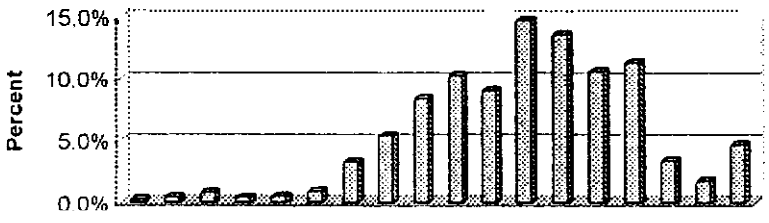
## Particle Size Distribution

LABORATORY #: 195924-1/1
IDENTIFICATION: Olive Springs **Quarry** "over burden"
DATE RECEIVED: August 11, 2005

| SIZE | | FRACTION | CUMULATIVE |
|---|---|---|---|
| > 4 MM | Sand | 0.3% | 0.3% |
| 4 to 2 | | 0.4% | 0.7% |
| 2 to 1 | | 0.8% | 1.5% |
| 1 lo 0.75 | | 0.4% | 2.0% |
| 0.75-0.50 | | 0.5% | 2.5% |
| 0.50-0.35 | | 0.9% | 3.3% |
| 0.35-0.25 | | 3.3% | 6.6% |
| 0.25-0.1 **8** | | 5.4% | 12.0% |
| 0.18-0.125 | | 8.4% | 20.4% |
| 0.125-0.088 | | 10.3% | 30.7% |
| 0.088-0.062 | | 9.0% | 39.7% |
| 0.062-0.031 | Sill | 14.8% | 54.5% |
| 0.031-0.016 | | 13.6% | 68.1% |
| 0.016-0.008 | | 10.6% | 78.7% |
| 0.008-0.004 | | 11.4% | 90.1% |
| 0.004-0.002 | | 3.4% | 93.5% |
| 0.002-0.001 | Clay | 1.8% | 95.3% |
| < 0.001 | | 4.7% | 100.0% |




| | | | |
|---|---|---|---|
| **Very** Coarse Sand % | 0.8% | | |
| Coarse Sand % | 0.9% | | |
| Medium Sand % | 4.2% | | |
| Fine Sand % | 24.1% | | |
| **Very** Fine Sand % | 9.0% | | |
| Classification: | Silty Loam | | |
| Sand | 39.7% | | |
| Silt | 53.8% | | |
| Clay | 6.5% | | |
| Effective Size (mm): | 10% | = | 0.0040 |
| | 60% | = | 0.0614 |
| Uniformity Coeff. (60%/10%) | | = | 15.21 |




Size > 4.00 mm to < 0.001 mm



Mike Galloway

BACTERIOLOGISTS
Approved by State of California

# SOIL CONTROL LAB

42 HANGAR WAY

Tel: 831 724-5422
FAX: 831 724-3188

Account Number:
195924-1-4021

**APPENDIX A-2**

## Soil Report

Greening Associates
P.O. Box 277
Ben Lomond. CA 95005
Ann: Suzanne Schettler

Date Reported: August 31, 2005
Date Received: August 11,2005

Sample ID: Olive Sp gs Quarry "over burden"

[Lab Number: 195924-111

| | Your Values (lbs/acre 6" deep) | Suggested Values | |
|---|---|---|---|
| Ammonia ($NH_3$-N) | < 2 | 10-50 | Low |
| Nitrate ($NO_3$-N) | 7.6 | 20-100 | Low |
| T-Available N | 9.4 | 75-150 | Low |
| Phosphorous ($P_2O_5$) | 75 | **100-300** | Low |
| Potassium ($K_2O$) | 270 | 573-956 | Low |
| Calcium (Ca) | 6800 | 4889-6111 | High |
| Magnesium (Mg) | 640 | 488-977 | OK |
| Sulfate ($SO_4$-S) | 1700 | 100-200 | High |
| Sodium (Na) | 160 | < 250 | OK |
| Chloride (Cl) | 180 | 1-100 | High |
| ECe (dS/m) | 3.4 | 0.2-4 | OK |
| Copper (Cu) | NA | 1 + | |
| Zinc (Zn) | NA | 3 + | |
| Iron (Fe) | NA | 8 + | |
| Manganese (Mn) | NA | 4 + | |
| Boron (B) | NA | 1-4 | |
| SAR | NA | 0-6 | |
| CEC (meq/100gms) | 20 | 10-20 | **OK** |
| ESP (%) | 1.7 | 0-10 | OK |
| pHs Value | 7.4 | 6.5-7.5 | **OK** |

RECOMMENDATIONS
ALL VALUES lbs/acre 6" deep

| | |
|---|---|
| 125 | Nitrogen (N) |
| 200 | Phosphorous ($P_2O_5$) |
| **450** | Potassium ($K_2O$) |
| 0 | Gypsum ($CaSO_4$) |
| 0 | Lime ($CaCO_3$) |
| 0 | Dolomite ($CaCO_3$ & $MgCO_3$) |
| 0 | Sulfur |

Gypsum adds Ca and doesn't affect pH; Lime adds Ca and raises pH; Dolomite adds Ca & Mg & raises pH

Lime Requirement:
Tons of 100% $CaCO_3$ Lime per Acre 6" deep needed to raise pH of soil to:

| | |
|---|---|
| pH 6.0 needs | NA |
| pH 6.5 needs | NA |
| pH 7.0 needs | NA |

Gypsum Requirement (needed for clay treatment)
NA tons per acre 6" deep
Gypsum helps the soil structure by "loosening" the soil

| Data: | | Method |
|---|---|---|
| $NO_3$-N | 3.8 mg/Kg | KCl |
| $NH_3$-N | < 1 mg/Kg | KCl |
| P | 17 mg/Kg | Olsen |
| SP | 61 % | Sal |
| pHs | 7.4 unit | Sat |
| ECe | 3.4 dS/m | Sal |
| Ca | NA meq/L | Sat |
| Mg | NA meq/L | Sal |
| Na | NA meq/L | Sat |
| K | NA meq/L | Sat |
| Cl | 4.1 meq/L | Sat |
| $SO_4$-S | 44 meq/L | Sal |
| SAR | NA ratio | Calc |
| E | NA mg/Kg | CaCl2 |
| Cu | NA mg/Kg | DTPA |
| Zn | NA mg/Kg | DTPA |
| Fe | NA mg/Kg | DTPA |
| Mn | NA mg/Kg | OTPA |

| lata | | Method |
|---|---|---|
| | | |
| )rgMat | NA % | WalkBk |
| )rg-C | NA % | WalkBk |
| $H_1$ | 7.55 unit | SMP |
| GypReq | NA meq/100g | GypSol |
| :a | 3400 mg/Kg | $NH_4OAc$ |
| Mg | 320 mg/Kg | $NH_4OAc$ |
| la | 78 mg/Kg | $NH_4OAc$ |
| | 110 mg/Kg | $NH_4OAc$ |
| | | |
| :EC | 20 meq/100gm | Calc |
| :xch% | | |
| $NH_3$-N | 0 C % | Calc |
| :a | 838 % | Calc |
| Mg | 131 % | Calc |
| la | 1 7 % | Calc |
| | 1 4 % | Calc |
| 4 | 0 0 % | Calc |

ab Analyst

# APPENDIX B
# VOLUMES OF SOIL AMENDMENTS

# APPENDIX B

**A. Soil Bench Amendment Volumes**

| Bench | Area (sq.ft.) | /olume Top Soil (Ax3") (cu.ft.) | Volume Mulch (Ax 2 ) (cu.ft.) | otal Volume (Vts + Vm) (cu ft ) |
|---|---|---|---|---|
| 1200 | 2532.71 | 633.18 | 422.12 | 1055 30 |
| 1150 | 4404.53 | 1101.13 | 734.09 | 1835 22 |
| 1100 | 6673.06 | 1668 27 | 1112.18 | 2780 44 |
| 1050 | 8257.83 | 2064.46 | 1376.31 | 3440 76 |
| 1000 | 52221.40 | 13055.35 | 8703.57 | 21758 92 |
| 950 | 12502.46 | 3125.62 | 2083.74 | 5209 36 |
| 900 | 13272.71 | 3318.18 | 2212.12 | 5530 30 |
| 850 | 11824.39 | 2956.10 | 1970.73 | 4926 83 |
| 800 | 10688.97 | 2672.24 | 1781.50 | 4453 74 |
| 750 | 10564.86 | 2641.22 | 1760.81 | 4402 03 |
| 700 | 10410.84 | 2602.71 | 1735.14 | 4337 85 |
| 650 | 13060.08 | 3265.02 | 2176.68 | 5441 70 |
| 600 | 12860.90 | 3215.23 | 2143.48 | 5358 71 |
| 580 | 5055.19 | 1263.80 | 842.53 | 2106 33 |
| **OTALS** | **174,329.93** | **43,582.48** | **29,054.99** | **72,637.47** |
| **ubic Yards** | | **1,614.17** | **1,076.11** | **2,690.28** |

**B. Operations Areas = (17.04 Ac = 742,433.07 sq.ft.)**

**Total Top Soil Volume =**

**(742,433.07 sq. ft' (3") = 185,608.47 cu. ft. = 6,874 cubic yards**

Source: Ifland Engineers, Inc., February 3,2006.

# APPENDIX C
# REFERENCE SITE DATA AND PHOTOGRAPHS

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**PPENDIX C-1**

| Quarry Area: Off-Site Reference Area | Location: Bench 8, westernmost transect |
|---|---|
| *Field Sampling Date: 7/21/05* | |
| Transect ID: REF1-8A | |

| Species or | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Substratum** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **Hits** | **Cover** |
| Sand/Rock | | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | 4 |
| Litter | 1 | | | | 1 | 1 | | | | | | | | | 1 | | | | | | | | | | | 4 | 16 |
| Arbutus menz. | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | 4 |
| Cryptogam crust | | | | | | | | | 1 | | | 1 | 1 | 1 | | | | | | | | | | | | 4 | 16 |
| Lotus scoparius | | 1 | 1 | 1 | | | | | | | | | 1 | | | | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 11 | 44 |
| *Pinus attenuata* | | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | | | 3 | 12 |
| Pseudotsuga menz. | | | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | 8 | 32 |
| **TOTAL HITS** | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 32 | 128 |

| **TOTALS** | |
|---|---|
| Total Inorganic Percent Cover | 4.0 |
| Total Plant Cover* | 124.0 |
| Net Plant Cover** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 108.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 48.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 5 |
| Total No. Native Woody Taxa Sampled on Transect | 3 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-2**

| Quarry Area: Off-Site Reference Area | Location: Bench 8, center transect, second from west |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF2-8B | |

| Species or | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Substratum | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | Hits | Cover |
| Sand/Rock | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | 4 | 16 |
| Litter | | | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | 4 |
| Arcto. nummularia | | | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 4 |
| Bacch. pilularis | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 4 |
| Cryptogam crust | | | | | 1 | | 1 | 1 | | | | | 1 | | | 1 | | | | | 1 | 1 | | | | 7 | 28 |
| [Eriogonum fascic.] | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | 4 |
| [Filago gallica] | | | | | | | | | | | | | | | | | | 1 | | | | | | | | 1 | 4 |
| [Hypochaeris glabra] | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | | | 2 | 8 |
| Lotus scoparius | | | | 1 | 1 | | | 1 | | 1 | 1 | 1 | 1 | 1 | | | | | | | | 1 | | | | 9 | 36 |
| Lotus strigosus | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | 4 |
| Pinus attenuata | | | | | | | | | 1 | | | | | | 1 | | | | | | | | 1 | 1 | | 4 | 16 |
| Quercus agrifolia | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | 4 |
| [Trifolium hirtum] | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | 4 |
| TOTAL HITS | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 34 | 136 |

| TOTALS | |
|---|---|
| Total Inorganic Percent Cover | 16.0 |
| Total Plant Cover* | 120.0 |
| Net Plant Cover** | 84.0 |
| % Cover of Native Taxa Sampled on Transect | 96.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 28.0 |
| **Species Diversity per Transect** | |
| Total No. Native Taxa Sampled on Transect | 7 |
| Total No. Native Woody Taxa Sampled on Transect | 4 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-3**

| Quarry Area: Off-Site Reference Area | Location: Bench 8, eastemmost transect, 3rd from west |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF3-8C | |

| Species or | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Substratum | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | Hits | Cover |
| Sand/Rock | | | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 4 |
| Litter | | 1 | | | | | | | | | | | | | | 1 | | | | | | | | | | 2 | 8 |
| Arbutus menz. | | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | | 2 | 8 |
| Arcto. nummularia | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | 4 |
| Arcto. tom. crus. | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | 4 |
| Bacch. pilularis | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | 3 | 12 |
| Cean. thyrsiflorus | | | | | | | | | | | 1 | 1 | | | | | | | | | | | | | | 2 | 8 |
| Cryptogam crust | | | | | 1 | 1 | | | | | | | | | 1 | | | | 1 | 1 | 1 | 1 | | | 1 | 8 | 32 |
| [Eriogonum fascic.] | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | 4 |
| [Filago gallica] | | | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | 4 |
| Lotus scoparius | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | 1 | 1 | | | 1 | 1 | 1 | | 9 | 36 |
| Pinus attenuata | | | | | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | 3 | 12 |
| Pseudotsuga menz. | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | 1 | 1 | 6 | 24 |
| TOTAL HITS | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 3 | 2 | 2 | 3 | 1 | 2 | 2 | 40 | 160 |

| TOTALS | |
|---|---|
| Total Inorganic Percent Cover | 4.0 |
| Total Plant Cover* | 156.0 |
| Net Plant Cover** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 140.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 72.0 |
| **Species Diversity per Transect** | |
| Total No. Native Taxa Sampled on Transect | 9 |
| Total No. Native Woody Taxa Sampled on Transect | 7 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-4**

| Quarry Area: Off-Site Reference Area | Location: Bench 7, easternmost transect |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF4-7A | |

| Species or | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Substratum | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | Hits | Cover |
| Sand/Rock | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | | 2 | 8 |
| Litter | | | | | | | | | | | | | | | 1 | | | | | | | | | | | 1 | 4 |
| Cryptogam crust | | | | | 1 | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | 4 | 16 |
| [Filago gallica] | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | 4 |
| Lithocarpus densi. | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 2 | 8 |
| Lotus scoparius | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | | | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 | 64 |
| Pinus attenuata | | | 1 | 1 | 1 | 1 | | | | | | | 1 | | | | | | | | | | | | | 5 | 20 |
| [Vulpia myuros] | | | | | | | 1 | | | 1 | 1 | | | | | | | | | | 1 | | | | | 4 | 16 |
| **TOTAL HITS** | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 35 | 140 |

| **TOTALS** | |
|---|---|
| Total Inorganic Percent Cover | 8.0 |
| Total Plant Cover* | 132.0 |
| Net Plant Cover** | 92.0 |
| % Cover of Native Taxa Sampled on Transect | 108.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 28.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 4 |
| Total No. Native Woody Taxa Sampled on Transect | 2 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-5**

| Quarry Area: Off-Site Reference Area | Location: Bench 7, center transect, 2nd from east |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF5-7B | |

| Species or Substratum | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total Hits | % Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | |
| Sand/Rock | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4 |
| [Aira caryophyllea] | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | 4 |
| Arbutus menz. | | | | | | | | | | | | | | | | 1 | 1 | | | | 1 | | | | | 3 | 12 |
| Arcto. nummularia | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | 4 |
| Arcto. tom. crus. | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | 4 |
| Heteromeles arbutifolia | | | | | | | | | 1 | | | | | | | | | | | | | | | | | 1 | 4 |
| [Hypochaeris glabra] | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 4 |
| Lotus scoparius | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 23 | 92 |
| Pinus attenuata | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 | | | | 4 | 16 |
| Pseudotsuga menz. | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 1 | 3 | 12 |
| **TOTAL HITS** | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 3 | 3 | 1 | 2 | 2 | 39 | 156 |

| **TOTALS** | |
|---|---|
| Total Inorganic Percent Cover | 4.0 |
| Total Plant Cover* | 152.0 |
| Net Plant Cover** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 144.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 52.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 7 |
| Total No. Native Woody Taxa Sampled on Transect | 6 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-6**

| Quarry Area: Off-Site Reference Area | Location: Bench 7, westernmost transect, 3rd from east |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF6-7C | |

| Species or | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Substratum | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | Hits | Cover |
| Sand/Rock | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | 4 |
| Litter | | | | | | | | | | | | | | 1 | 1 | 1 | | | 1 | | | | | | | 4 | 16 |
| Arbutus menz. | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 4 |
| Cryptogam crust | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 2 | 8 |
| [Filago gallica] | | | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | 4 |
| Gnaphalium sp. | | | | | | | | | | | | | 1 | | | | | 1 | | | | | | | | 2 | 8 |
| Lotus scoparius | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | | | | | | | 1 | | | 1 | 1 | 1 | 1 | | 1 | 14 | 56 |
| Pinus attenuata | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | 1 | 1 | | 6 | 24 |
| Pseudotsuga menz. | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 4 |
| [Vulpia myuros] | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | 2 | 8 |
| **TOTAL HITS** | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 34 | 136 |

| **TOTALS** | |
|---|---|
| Total Inorganic Percent Cover | 4.0 |
| Total Plant Cover* | 132.0 |
| Net Plant Cover** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 104.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 32.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 6 |
| Total No. Native Woody Taxa Sampled on Transect | 3 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)
** = Net Plant Cover counts multiple species encountered per point-intercept as one
[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**APPENDIX C-7**

Quarry Area: Off-Site Reference Area Location: Bench 6, east end

Field Sampling Date: 7/21/05

Transect ID: REF7-6A

| Species or Substratum | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total Hits | % Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | |
| Sand/Rock | | | | | | | | 1 | | 1 | 1 | | | | | | | 1 | | | 1 | 1 | | 1 | 1 | 8 | 32 |
| Cryptogam crust | | | | | | | | | | | | 1 | 1 | | 1 | | | | 1 | | | | | | | 4 | 16 |
| [Filago gallica] | | | | | | | | | | | | | | | | 1 | | | | | | | | | | 1 | 4 |
| Lotus scoparius | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | | | | | | 14 | 56 |
| Pinus attenuata | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 | 8 |
| Quercus agrifolia | | | | | | 1 | | | | | | | | | | | | | | | | | 1 | | | 2 | 8 |
| [Vulpia myuros] | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | 4 |
| TOTAL HITS | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 32 | 128 |

| TOTALS | |
|---|---|
| Total Inorganic Percent Cover | |
| Total Plant Cover* | 32.0 |
| *Net Plant Cover*** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 68.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 88.0 |
| | 16.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 4 |
| Total No. Native Woody Taxa Sampled on Transect | 2 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005

**PPENDIX C-8**

| Quarry Area: Off-Site Reference Area | Location: Bench 9, near western center |
|---|---|
| Field Sampling Date: 7/21/05 | |
| Transect ID: REF8-9A | |

| Species or Substratum | Transect Point | | | | | | | | | | | | | | | | | | | | | | | | | Total Hits | % Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | |
| Sand/Rock | | | | | | | | | | 1 | | | | | | | | | | | | | | | | 1 | 4 |
| Litter | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | 4 |
| Arbutus menz. | 1 | | | | | | | | | | | | | | | | 1 | 1 | | | 1 | | 1 | 1 | | 6 | 24 |
| Bacch. pilularis | 1 | 1 | 1 | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | 6 | 24 |
| Cryptogam crust | | | | | | 1 | | | | | | | | | | | | | 1 | | | | | | | 2 | 8 |
| [Eriogonum fascic.] | | | | | | 1 | | 1 | | | | | | | | | | | | | | | | 1 | 1 | 4 | 16 |
| Lotus scoparius | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | | 1 | 1 | 1 | | | 18 | 72 |
| TOTAL HITS | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 38 | 152 |

| TOTALS | |
|---|---|
| Total Inorganic Percent Cover | 4.0 |
| Total Plant Cover* | 148.0 |
| Net Plant Cover** | 96.0 |
| % Cover of Native Taxa Sampled on Transect | 128.0 |
| % Cover of Native Woody Taxa Sampled on Transect | 48.0 |

| **Species Diversity per Transect** | |
|---|---|
| Total No. Native Taxa Sampled on Transect | 4 |
| Total No. Native Woody Taxa Sampled on Transect | 2 |

* = Total Plant Cover includes layered species (more than one taxon encountered per point-intercept)

** = Net Plant Cover counts multiple species encountered per point-intercept as one

[ ] = taxon is not native to site

Olive Springs Quarry Revegetation Plan
Reference Site Sampling - Summer 2005
SPECIES RICHNESS

| Field Sampling Date: 8/25/05 | | | | |
|---|---|---|---|---|
| Species or | Sampling Area | | | All Benche! |
| Substratum | Bench8 | Bench7 | Bench6 | Total |
| Rock | 1 | 1 | 1 | 1 |
| [illegible] | 1 | | | |
| [Aira caryophyllea] | 1 | 1 | 1 | 1 |
| [Anagallis arvensis] | 1 | | | 1 |
| Arbutus menziesii | 1 | 1 | 1 | 1 |
| Arcto. nummularia | 1 | 1 | 1 | 1 |
| Arcto. tomentosa crust. | 1 | 1 | 1 | 1 |
| Baccharis pilularis | 1 | 1 | 1 | 1 |
| [Briza maxima] | | 1 | | 1 |
| Bromus carinatus | | 1 | | 1 |
| [Bromus diandrus] | 1 | | | 1 |
| [Bromus hordeaceus] | 1 | | | 1 |
| [Bromus rubens] | 1 | 1 | | 1 |
| Ceanothus thyrsiflorus | 1 | | | 1 |
| Chrysolepis chrysophylla minor | | | 1 | 1 |
| Conyza canadensis | 1 | | | 1 |
| Cryptogam crust | 1 | 1 | 1 | 1 |
| Epilobium paniculatum | 1 | | | 1 |
| Eriodictyon californicum | 1 | 1 | 1 | 1 |
| [Eriogonum fascic.] | 1 | 1 | 1 | 1 |
| [Filago gallica] | 1 | 1 | 1 | 1 |
| [Genista monspess.] | 1 | 1 | 1 | 1 |
| Gnaphalium sp. | 1 | 1 | 1 | 1 |
| Heteromeles arbutifolia | 1 | 1 | 1 | 1 |
| [Hypochaeris rad./glab.] | 1 | 1 | 1 | 1 |
| Lithocarpus densiflora | 1 | 1 | | 1 |
| Lotus scoparius | 1 | 1 | 1 | 1 |
| Madia sp. | 1 | 1 | 1 | 1 |
| Mimulus aurantiacus | 1 | 1 | 1 | 1 |
| Navarretia squarrosa | 1 | | | 1 |
| Pinus attenuata | 1 | 1 | 1 | 1 |
| [Poaceae cf. Timothy/Gastridium | 1 | 1 | | 1 |
| Pseudotsuga menziesii | 1 | 1 | 1 | 1 |
| Quercus wislizenii | 1 | 1 | 1 | 1 |
| Rhamnus californica | 1 | 1 | 1 | 1 |
| Sequoia sempervirens | | | 1 | 1 |
| Stephanomeria virgata | | 1 | | 1 |
| [Trifolium hirtum] | 1 | 1 | | 1 |
| Umbellularia californica | | | 1 | 1 |
| [Vulpia myuros] | 1 | 1 | 1 | 1 |
| **Total number of species** | **32** | **28** | **24** | **38** |
| **Total number native species** | **20** | **18** | **18** | **25** |
| Total native woody taxa | 12 | 11 | 12 | 14 |

**APPENDIX C-10**
**PHOTOS OF REFERENCE REVEGETATION SITE**
SEVENTEEN YEARS AFTER PLANTING – NO AMENDMENT ON BENCHES

REFERENCE TRANSECT #3, with 96% net cover. Clockwise from upper lefl: Douglas-fir, Coyote Brush, Madrone, Brittle-leaved Manzanita. Airy shrub in lower lefl center is Deer Broom.

REFEREIUCE TRANSECT #4, with 92% net cover. Madrone, Douglas-firs. Deer Broom.

# APPENDIX D
# 1994 HABITAT MANAGEMENT AND MONITORING PLAN

# OLIVE SPRINGS QUARRY

# HABITAT MANAGEMENT AND MONITORING PLAN

APRIL 1994

Greening associates

# OLIVE SPRINGS QUARRY

# HABITAT MANAGEMENT AND MONITORING PLAN

Prepared for

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April 1994

## CONTENTS

# OLIVE SPRINGS QUARRY
# HABITAT MANAGEMENT AND MONITORING PLAN

## I. INTRODUCTION

This is a plan for habitat management and monitoring at the Olive Springs Quany, located north of the town of Soquel, Santa Cruz County, Califomia This plan was developed to satisfy Condition III.F.1 of Olive Springs Quarry's Mining Approval (Santa Cruz County 1994).

This plan describes: (1) the occurrence of species of concern on and adjacent to the quany; (2) habitat management actions to be implemented before and after quarry closure; and (3) a wildlife monitoring program with performance standards.

Development of this plan was facilitated by review of relevant reports, consultation with persons knowledgeable about the quarry operation, and original reconnaissance-level site surveys. Documents which were reviewed included the Olive Springs Quarry Draft Supplemental Environmental Impact Report (SEIR) (LSA Associates 1993a), Final SEIR (LSA Associates 1993b), the quarry's Mining Permit Conditions of Approval (Santa Cruz County 1994), and the Olive Springs Quarry Revegetation Plan (BioSystems Analysis 1992). Mr. Lewis Nelson provided information on the quarry's current and historic management of the on-site ponds.

Reconnaissance-level field surveys were performed on April 13 and 15, 1994. These surveys covered the quarry's leaseholds and a portion of Soquel Creek from the quarry's pump upstream for a linear distance of about 2700'. The surveys were conducted to observe current habitat conditions and specifically to evaluate the occurrence and habitat of the species of concern listed in the Draft and Final SEIRs (LSA Associates 1993a; LSA Associates 1993b).

## II. OCCURRENCE OF SPECIES OF CONCERN AT THE OLIVE SPRINGS QUARRY

The Draft and Final SEIRs (LSA Associates 1993a and LSA Associates 1993b) identified one plant species and eight wildlife species of concern which "occur or potentially occur within the project site" (p. IV-65, LSA Associates 1993a). These were: California bottle brush grass (*Elymus californicus*), steelhead trout (*Onocorhynchos mykiss gairdneri*), tidewater goby (*Eucyclogobius newberryi*), California red-legged frog (*Rana aurora draytonii*), foothill yellow-legged frog (*R. boylii*), southwestern pond turtle (*Clemmys marmorata pallida*), sharpshinned hawk (*Accipiter striatus*), golden eagle (*Aquila chrysaetos*) and purple martin (*Progne subis*). Any species of concern known or likely to occur at the quarry should be considered in developing management recommendations and a monitoring plan The known or potential occurrence of these species on and adjacent to the quarry is discussed below. The current regulatory status of these species was taken from CDFG 1992, CDFG 1994a, CDFG 1994b, and Skinner 1994.

### A. CALIFORNIA BOTTLE BRUSH GRASS

When the Draft SEIR (LSA Associates 1993a) was prepared the Califomia bottle brush grass was a Federal Candidate List 2 for listing as threatened or endangered, and was on List 4 of the California Native Plant Society (Smith and Berg 1988). This species has subsequently been "downgraded" to a Federal Candidate List 3c, reflecting a determination that this species is too widespread and/or not sufficiently threatened to warrant listing. It is still on List 4 (a "watch list" of plants of limited distribution) of the CNPS (Skinner 1994).

This species is a tall perennial grass that grows in openings of redwood forest, including several locations in central Santa Cruz County. It was not observed during site visits performed for the SEIR (LSA Associates 1993a).

### B. STEELHEAD TROUT

The steelhead trout is a California Department of Fish and Game (CDFG) "Species of Special Concern". The steelhead is an anadromous form of the rainbow trout. Soquel Creek is used by steelhead for breeding and rearing. Adults enter the stream in the winter months. Eggs are laid in gravel riffles in late winter and hatch in spring. Steelhead fry and fingerlings remain in the stream until the following spring, then migrate as smolts to the ocean. Steelhead fingerlings and smolts were observed in the creek during the April 1994 field surveys, and spawning habitat is present in the reach of the creek adjacent to the quany. The quarry itself does not have habitat for this species.

### C. TIDEWATER GOBY

The tidewater goby is a Federally Endangered Species. This small fish occurs at coastal stream mouth lagoons and the lower, tidally-influenced reaches of coastal streams (Moyle 1977, McGinnis 1984). It is known to occur at the mouth of Soquel Creek, but is not expected to occur upstream of Capitola, or anywhere in the vicinity of Olive Springs Quarry.

## D. CALIFORNIA RED-LEGGED FROG

The California red-legged frog is a Federally Proposed Endangered Species and a CDFG "Species of Special Concern". Red-legged frogs occupy habitat combining aquatic and riparian components (Hayes and Jennings 1988), occurring in freshwater ponds, marshes and streams. **Adults** require dense shrubby or emergent riparian vegetation or other wetland vegetation closely associated with deep (>2.25'), still **or** slow moving water (Miller 1994; Stebbins 1985). The largest densities of frogs are associated with deepwater pools and ponds with dense **stands** of overhanging vegetation and an intermixed fringe of cattails (*ibid.*). Well-vegetated areas in riparian corridors may provide important sheltering habitat during winter. This species lays its eggs in late winter, attaching egg masses to vertical emergent vegetation, such as cattails. The larvae mature into frogs in **3.5** to seven months (Miller 1994).

California red-legged frogs have been found in Soquel Creek as close as **-3.5** miles downstream of the quarry (D. Suddjian pers. obs.; R. Morgan pers. obs.). There is no available information on other localities for this species **in** the Soquel Creek watershed, although suitable habitat occurs elsewhere downstream of the quany and at ponds located in the Forest of Nisene **Marks** State Park and in the Soquel Demonstration State Forest.

The **April** 1994 surveys indicated the reach of Soquel Creek adjacent to the quany does not offer good habitat for this species. Deep pools are very rare and small, stream flow is generally swift, and emergent aquatic vegetation is lacking. No red-legged frogs were observed

The ponds on the **quarry** in Leasehold One and Three appear to offer poor conditions for this species. The "silt pond" is continually dredged, **has** very **poor** aquatic habitat conditions and is unsuitable for this frog. The "recirculatingpond" is dredged twice each year and also has very poor aquatic habitat conditions due to extreme amounts of silt. Although stands of cattail are present in the pond, the water's high silt content and disturbed condition make it highly unlikely the recirculating pond supports this species. No frogs of any species where observed there. "Pond **A**" and "pond B are suitably deep with good water conditions, but they lack emergent vegetation. The only flooded vegetation observed in April 1994 was very small patches of weeds limited to a total of about 30 feet of pond shoreline in pond B. No red-legged frogs or tadpoles were observed in pond **A** or pond B, and the lack of emergent vegetation indicates this species is unlikely to occur in these ponds. Amphibian species which were observed in pond **A** and pond **B** included tadpoles of Pacific Treefrog (*Hyla regilla*) and Western Toad (*Bufo boreas*) and egg masses of California newt (*Taricha torosa*). The small detention ponds located in Leasehold Three are too ephemeral to **support** red-legged frogs and they lack emergent vegetation.

In *summary*, given the poor quality of habitat for this species in ponds on the site and in the adjacent part of Soquel Creek it appears unlikely that the California Red-legged Frog occurs at or adjacent to the **quarry.**

## E. FOOTHILL YELLOW-LEGGED FROG

The foothill yellow-legged frog is a CDFG "Species of Special Concern". This is a stream-dwelling frog, preferring shallow (<2'), partly shaded perennial streams with riffle habitat and at least cobble-sized substrate (Hayes and Jennings **1988,** Stebbins 1985). This species is typically not found in ponds (*ibid.*). Adults are largely diurnal and are usually found in flowing waters of streams (in riffles and runs), or sunning on rocks or the bank near the water's edge. This species lays its eggs from mid-March to June, attaching egg masses to the downstream side of cobbles in slow flowing water along the stream's edge.

This species was found on the April 1994 surveys throughout the reach of Soquel Creek adjacent to the Quarry. The stream habitat conditions appear to be excellent for this species. Nine adult frogs and eight *egg* masses were found in the stream. The frogs were associated with runs and riffles, and many were first spotted as they sunned themselves on **rocks** in the stream. The egg masses were all in runs with medium-sized cobbles. This represents the first documentation of this species in Soquel Creek, and the species' distribution is generally poorly understood in the Santa Cruz Mountains. Although the stream is close to the quarry, foothill yellow-legged frogs are not expected to use the pond habitat at the quarry because the ponds do not provide the habitat conditions sought by the frog.

## F. SOUTHWESTERN POND TURTLE

The Southwestern pond turtle is a Federal Candidate List 1 **for** endangered or threatened status (indicating sufficient information is available to support a proposal to list the species), and the U.S. Fish and Wildlife Service has recently been petitioned to propose this species for listing. It is also a CDFG "Species of Special Concern". This is an aquatic turtle of ponds, streams, rivers and marshes. It is often found at perennial sites, but also uses ephemeral sites in season. Sites with a rocky **or** muddy bottom and some vegetative cover are favored (Stebbins 1985). Pond turtles are most active in central California from February to mid-November. They are often seen sunning on the banks **of** ponds and streams or on logs, slipping into the water when disturbed This species lays its eggs from April into summer in nests dug in sand or loose soils, usually near water. Pond turtles are known to move overland for distances of up to 0.3 miles away from aquatic habitat during the winter (D. Reese, U.C. Berkeley, pers. comm.).

Southwestern pond turtles were observed on the quarry during the April 1994 surveys in pond A, pond B, and the recirculating pond, and in the adjacent reach of Soquel Creek. A total of 41 turtles were seen in the quarry ponds, probably representing only a portion of the population actually present. Most were in pond **A** (12 turtles) and pond B (27 turtles), with only two turtles evident in the recirculating pond. Turtles were mostly observed sunning on the banks of the ponds, and also seen diving to the bottom of the ponds to forage. **A** variety **of** size classes of turtles were present, indicating the species is successfully breeding in the area.

Pond turtles occur at scattered locations throughout Santa Cruz County, and they have been observed along Soquel Creek downstream of the quany (R Morgan pers. comm.). No census data is available for Santa Cruz County sites, but no more than five turtles are usually seen at most sites (D. Suddjian

pers. obs.). The large number of turtles seen at the quany on the April 1994 surveys indicates the quany ponds (particularly pond A and pond B) are currently an important habitat for this species. The only turtle observed along Soquel Creek was a juvenile apparently only one year old. Other turtles may have been present in the creek, but they would be difficult to observe there because one cannot approach any part of the creek without disturbing them. Suitable nesting substrate is present all along Soquel Creek in the riparian comdor and on the slopes of pond A and pond B.

The current management of the ponds is apparently favorable for the turtles as evidenced by their significant numbers. Pond A and pond B are typically pumped dry annually by August 1 to permit the trapped sediments four to six weeks to dry, so they may be removed by the quarry's October 15 permit deadline (L. Nelson pers. comm.). The ponds then fill again With the rains of late fall or winter. It is likely that turtles using the ponds move over to Soquel Creek and its riparian habitat during the period that the ponds are dry.

## G. SHARP-SHINNED HAWK

The sharp-shinned hawk is a CDFG "Species of Special Concern". It is a very rare breeding species in Santa Cruz County, nesting fiom April to July (Suddjian 1990). Its population is increased locally by migrant and wintering individuals from late August into April. Sharp-shinned hawks use a variety of forest and woodland habitats, and also frequent more open habitats during migration and winter. Most of the few breeding pairs in Santa Cruz County are associated with redwood or Douglas fir forest. This hawk nests in trees, usually placing its twig nest amid dense foliage of a conifer. Adult hawks are aggressive towards people near their nest.

No sharp-shinned hawks were observed in the area on the April 1994 surveys, but the surveys were not extensive enough to demonstrate this species' absence. One immature observed during preparation of the Draft SEIR (LSA Associates 1993a) was very likely a migrant or wintering bird. This species has been found nesting about six miles northeast of the quany near Loma Prieta, and about 17 miles west-northwest of the quarry at Pine Mountain (Suddjian 1990). Potential nesting habitat for this species occurs throughout the forested parts of the quany leaseholds. However, because there are very few pairs of sharpshinned hawks nesting in the county it is unlikely that a pair will nest in the quany leaseholds.

## H. GOLDENEAGLE

The golden eagle is a CDFG "Species of Special Concern". It is a very rare breeding species in Santa Cruz County (Suddjian 1990). Three to four pairs of eagles are thought to reside in the county (some with home ranges including parts of adjacent counties), although no active nest sites are currently known (Santa Cruz Bird Club unpubl. records.). Golden eagles have large home ranges including a variety of habitats, but they forage most often in grasslands and other open habitats The presence of eagles is often obvious when they are near nests due to frequent flights and display activities. Nests are large stick structures built in trees or cliffs, occasionally in transmission towers. Nests are often re-used for many years. This species nests fiom late March through July.

An eagle was seen perching on the snag-topped tree on the top of Sugarloaf Mountain during field work for the Draft SEIR (LSA Associates 1993a). *One* adult was also seen flying high overhead on two occasions during the April 1994 surveys. Golden Eagles are occasionally seen throughout the upper watershed of Soquel Creek, but no area appears to support regular daily use typical of local nesting birds (D. Suddjian pers. obs.). There is no nest in the snag on Sugarloaf Mountain, and the infrequent observation of this species near the quany suggests they are not nesting in the vicinity.

## I. PURPLE MARTIN

The purple martin is a CDFG "Species of Special Concern". Purple martins were once fairly common breeding birds in parts of Santa Cruz County (Streator 1947), apparently occurring in a variety of forest types. However their population in much of the state has more recently declined (Remsen 1978) and martins are now very rare and locally distributed breeders in Santa Cruz County (Suddjian 1990 and 1991). Nesting martins are present in central California from mid-April to August. Migrants passing through the area are seen especially in late April to Early May and in August. In the western states purple martins nest primarily in holes in snags, occasionally in holes in bridges or buildings, and only very rarely in nest boxes (Remsen 1978, Grinnell and Miller 1944, Turner and Rose 1989).

No records exist for purple martins in the vicinity of Olive Springs Quarry, and fairly extensive breeding season coverage in recent years in the surrounding area indicates they are not present (Santa Cruz Bird Club unpubl. data). In the last 20 years they have been found during the nesting season along the crest of the Santa Cruz Mountains from the vicinity of Loma Prieta to Croy Ridge, along the northeast side of Santa Rosalia Mountain, at China Grade and at Pine Mountain. This species seems to still occur in dry, mid- to upper-elevation forests, where they frequent mature knobcone pine forest and Douglas firs (Suddjian 1990). The entire county population is probably less than 10 pairs (Santa Cruz Bird Club unpubl. data.)

## III. HABITAT MANAGEMENT PLAN

Actions are proposed to manage habitat on the quarry (1) prior to its closure and reclamation, and (2) concurrent with and subsequent to its reclamation. The viability and validity of selected management actions stated as mitigations in the Final SEIR (LSA Associates 1993b) and referenced in the "Conditions of Approval" (Santa Cruz County 1994) are re-evaluated.

Portions of this management plan, particularly as it applies to actions taken after quarry closure, describe events which may occur as many as 200 years into the future. Management concerns and populations of species of concern may change substantially between the present and the time of plan implementation. Thus, it is recommended that actions proposed here be reviewed at appropriate intervals as determined by Santa Cruz County, and revised as applicable.

### A. HABITAT MANAGEMENT PRIOR TO QUARRY CLOSURE AND RECLAMATION

#### 1. Quarry Ponds

Ponds A and B support a significant population of Southwestern Pond Turtle. As a Federal Candidate List 1 species which has been petitioned for listing, there is a likelihood this species will be listed as a Federally Threatened or Endangered species in the foreseeable future. Management to maintain turtle habitat and sustain their use of the quarry ponds is appropriate. It is unlikely that the California red-legged frog is present in the ponds, but if it does indeed occur, the following actions developed for the turtle would also adequately address concerns for the frog.

**a. Annual Silt Removal at Ponds A and B.** The current pond management program is providing turtle habitat and sustaining their use of the site. Ponds A and B are currently pumped dry by August 1 each year. Accumulated sediments are left to dry for a four to six week period, then removed before October 15. Thus, in most years sediment removal occurs in September or early October. The removal of silt maintains the ponds as viable turtle habitat over time. The current program of silt removal should be continued with the provision that the ponds not be completely dned prior to August 1 unless drought conditions cause the ponds to dry naturally at an earlier date. This action would provide aquatic habitat for as long into the summer as possible, and would be beneficial if turtles are nesting around the pond.

**b. Enlargement of Ponds A and B and Modification of Pond Levees.** As the ponds are dried each summer any turtles in the ponds would leave the ponds and move to adjacent upland habitat with vegetative cover, or would move to the aquatic habitat of Soquel Creek. Some may also move into the recirculating pond, although the aquatic conditions in that pond are poor due to the extreme silt loading. It is likely that most turtles move east into the riparian and aquatic habitat of Soquel Creek. However, some may remain near the ponds, particularly on the pond side slopes and the outboard side of pond levees where vegetation provides suitable cover. Pond A is scheduled to be "enlarged 200 cubic yards every year to a maximum design capacity" (Condition B.5.a, Santa Cruz County 1994). Pond B is scheduled to be "immediately expanded by removal of a bench within the pond and expanding the pond to the south or west (Condition B.5.b, Santa Cruz County 1994). On

or before October 15,1994, pond levees "A" and "C" will be reconfigured by grading and placement of fill (Condition D.1.a and D.3, Santa Cruz County 1994) In all cases excavation work would occur after August 1 and before October 15 when the pond sediments have sufficiently dried (L. Nelson pers. comm.). Within three days prior to any excavation or fill placement to reconfigure the ponds or levees, the areas to be affected should be examined by a qualified wildlife biologist to determine if any turtles are present in that zone. If turtles are found they should be captured by the biologist and moved to a site with suitable conditions along Soquel Creek. Turtles should not be handled directly to avoid transmission of diseases (they may be handled using nets or sterile gloves). Such searches for turtles would occur prior to each incremental expansion at pond A, and only once at pond B and the levees.

c. Other Aquatic Species of Concern. No management actions are proposed regarding the steelhead, tidewater goby or foothill yellow-legged frog. These species do not occur on the quany. Although their habitat in Soquel Creek is potentially affected by quany water releases, the quality of water released by the quarry is governed by existing standards of the Califomia Regional Water Quality Control Board and a permit of the CDFG, as addressed in the quarry's Conditions of Approval III.C.3 through III.C.9 (Santa Cruz County 1994).

*2.* Forest Management: Sharp-shinned Hawk

Any timber harvests conducted at the quany related to quarry expansion should avoid impacts to active nests of the sharp-shinned hawk, if present. This can be accomplished by (1) limiting timber harvest operations to August 1 through March 31 to avoid the hawks breeding season, or (2) surveying the timber harvest plan area to determine if nesting sharpshinned hawks are present. In the event that an active hawk nest is found, the harvest should be delayed until nesting is completed. If no active nests are present then no further action would need to be taken with regard to the hawk. All surveys for nests and determination of nesting completion (as appropriate) should be performed by a qualified wildlife biologist. As stated above (page 5) the likelihood a nest will be present on the quany is low, but the potential remains.

**3.** Other Species of Concern

Three other species of concern identified by the Draft and Final SEIRs as occurring or of potential occurrence at the quany are relevant to the discussion of forest management: Califomia bottle brush grass, 'golden eagle and purple martin. No specific management actions are recommended for these species for the following reasons:

a. California bottle brush grass. This species has been "downgraded in status by regulatory agencies such that no specific management actions are warranted.

**b.** Golden Eagle. Golden eagle use of the quarry area is irregular and/or occasional and no eagle nests are currently present at the quarry or in the vicinity (see I. H. above). It is unlikely nests would be initiated at the quarry due to disturbance caused by quarry activity. Although the snag-topped tree was identified in the Draft SEIR as "roosting habitat" for the eagle (p. *N-69* of LSA

Associates 1993a), in fact the tree is not regularly used by eagles and there is no evidence that it is an important habitat feature for eagles in the Soquel Creek watershed. Mitigation measure D.2 in the Final SEIR proposes to compensate for loss of the existing snag by (a) girdling the tallest tree north of the summit of Sugarloaf Mountain (creating a new snag), or (b) placing an artificial perch for eagles in a nearby tall tree (P. 21 of LSA Associates 1993b). Neither action is necessary in view of the irregular use of the existing snag and the location of the quarry in a predominately forested, mountainous region with ample numbers of tall trees and a number of snags. Several other existing large snags were observed within one half mile of the quarry during the April 1994 field surveys.

**c. Purple Martin.** The same existing snag on Sugarloaf Mountain was purported to be of potential value for nesting martins in the Draft SEIR (p. IV-69 of LSA Associates 1993a) and a mitigation measure of installing nest boxes for martins was proposed in the Final SEIR to compensate for loss of the snag (Measure D.2, p. 21 of LSA Associates 1993b). However, recent field work in the region has shown that martins do not currently occur at or near the quarry (see I. I. above). Given the species' absence at the site no actions are warranted. Furthermore, nest boxes would have a very low likelihood of being used by martins because the species rarely uses nest boxes in western North America (Turner and Rose 1989; Grinnell and Miller 1944; Richmond 1953; Phillips *et al.* 1964; Shuford 1993; Roberson and Tenney 1993).

## B. HABITAT MANAGEMENT SUBSEQUENT TO QUARRY CLOSURE

### 1. Quarry Ponds

Management practices during the life of the quarry will maintain habitat conditions for pond turtles (and red-legged frogs if present), and appropriate actions should be taken after quarry closure to maintain habitat for turtles. Ponds A and B are expected to fill with sediment over time, eventually reducing their viability as turtle habitat. It is anticipated that the greatest degree of sedimentation will occur within the first twenty years following quarry closure, decreasing thereafter as the developing revegetation plantings reduce erosion on the site.

A program of periodic sediment removal should be implemented at pond A and B. Sediment can be mechanically removed in a fashion similar to the current removal practices if an access to the ponds is maintained. Sediment should be removed every three years for the first twenty years after quarry closure, or at a different interval deemed appropriate by Santa Cruz County, in consultation with a qualified wildlife biologist. Removal of sediment may require pumping of the ponds to remove water, and the process should occur on the same schedule as that described on page 6. Placement and treatment of sediment should be as per requirements of Santa Cruz County. The need for subsequent sediment removal after the twenty year period should be evaluated at that time by Santa Cruz County. If an alternative land use is proposed for the quany (other than the proposed revegetation) then pond management would become the responsibility of persons developing that land use.

## 2. Revegetation Areas

**a. Enhancement of Wildlife Cover.** Logs and brush piles should be placed in the revegetation areas to enhance cover for wildlife. Such cover will develop naturally over a long period of time as the revegetation areas reach maturity, but installation of cover in the early phases of habitat development will provide an important resource in the interim. Logs should be placed at densities of 5-10 per acre, and may be of varying lengths (minimum six feet), diameter (minimum one foot) and species. Brush piles should be placed on 40-50 foot centers throughout the area, with each pile at least five feet wide x five feet long x 2.5 feet tall. Brush piles can be of any dead woody material, and may include dead invasive plants removed during maintenance of revegetation areas. Placement of logs and brush piles in the revegetation areas should be completed no later than the fifth year of revegetation monitoring, but could occur sooner if placement does not hinder revegetation maintenance and monitoring.

**b. Remedial Revegetation Plantings.** In the event that additional plant material is to be added to revegetation areas due to substandard performance of the original planting, then additional plants should be of species which produce good sources of fruit or seeds for wildlife. Species included in the quarry's revegetation plan (BioSystems Analysis 1992) which best fit this criteria include Douglas fir, madrone, tanbark oak, live oaks, manzanita and coffeeberry. This action would increase resource values of the revegetation areas. Selection of species should also depend on their performance in the original plantings (i.e., species which performed poorly should probably be avoided in remedial plantings unless growing conditions have changed).

**e. Nest Boxes.** Tree cavities are an important resource used for nesting by several birds and as roosts by bats and other small mammals. Tree cavities are characteristic of mature forests and woodlands, and will not develop naturally in the revegetation areas for many years. In the meantime artificial cavities can be created in the revegetation area by installing nest boxes. A nest box program should be developed by a qualified biologist at the time of revegetation installation so as to be suitable for conditions and wildlife populations in the region at that time. The program should identify target species expected to use the boxes, specify box size and placement suitable for those species, identify the density of boxes per acre, and provide for maintenance of nest boxes over a reasonable time period (e.g., twenty years).

## IV. WILDLIFE MONITORING PROGRAM

The wildlife monitoring program will determine if animal species are successfully recolonizing the revegetated areas of the quarry property after closure, indicating successful reclamation of the quarry as per SMARA. The monitoring approach, field techniques, timing of monitoring, success criteria and remedial actions are described below.

This plan describes monitoring which may not begin for a very long span of time. Substantial changes in standard wildlife monitoring methodology and technology will likely occur before the plan is implemented, and new factors affecting wildlife populations in the vicinity of the quarry may also arise. If the approach and methods presented in this plan are no longer suitable when the plan is implemented, then the plan should be revised at that time as needed.

### A. APPROACH AND RATIONALE

Monitoring will occur in revegetated (treatment area) and natural (control area) habitats of the site. Wildlife populations and habitat use will be assessed using a combination of indices of overall community richness (number of species) and abundance (number of individuals), and indices for populations of selected focal species. With the exception of monitoring of Southwestern pond turtles, monitoring activities will focus on birds. Birds provide good subjects for monitoring because: (1) their populations may be taken as representative of overall wildlife habitat value; (2) they are comparatively easy to observe; (3) they are comparatively diverse; and (4) many species can be monitored in a manner that is relatively time and cost efficient. Riparian and pond habitats will be monitored concurrently but separately from forest and chaparral habitats. This is justified because: (1) riparian and pond habitats will occupy a small area on the site and support resources and species assemblages which differ notably from the forest and chaparral communities; and (2) forest and chaparral communities will occupy a larger area on the site, occur on the landscape naturally as a mosaic in the region, and share many resource and species.

#### 1. Treatment Area

The revegetation plan (BioSystems Analysis 1992) is not specific in the amount of different habitats to be installed or the proposed plant species assemblage for each habitat. Presumably the species assemblage will be based on planting area conditions and will be similar to that of appropriate natural habitats in the surrounding area. Thus, willow riparian vegetation will be placed around the ponds, and a combination of northern mixed chaparral, mixed conifer-broadleaf evergreen forest and live *oak* forest will be planted on the remainder of the site. Treatment types recognized will be the riparian/pond assemblage and the forest/chaparral assemblage. Riparian plantings will be associated with the ponds and physically disjunct from each other. However, they will be close to each other and should be treated as one census area.

## 2. Control Area

Wildlife monitoring results fiom the treatment area will be compared to baseline and concurrent results obtained from wildlife monitoring in a control area or areas. The control area for the riparian/pond assemblage will be located along Soquel Creek adjacent to the quarry. It should be similar in size to the area of riparian habitat created by the revegetation plan, and should be dominated by willows. Suitable control sites for the forest/chaparral assemblage are present within Leasehold 2 and on other land owned by The *CHY* Company adjacent to the quarry. Additional suitable areas occur in the surrounding vicinity. The control area or areas for the forest/chaparral assemblage will be selected when the program is implemented based on what is actually planted in the revegetation area. The forest/chaparral assemblage control area should be similar in size to the forest/chaparral habitat created by the revegetation plan.

## 3. Features to be Monitored

Features to be monitored will be the population of Southwestern Pond Turtles and the diurnal bird community. None of the other species of concern occurring in the region make significant use of the quarry itself, so specific monitoring of such species is not warranted.

Bird monitoring will occur during the winter season and the spring breeding season. It will record seasonal indices of total species richness and total abundance of the diurnal avifauna, as well as seasonal indices of frequency and abundance of a subset of 40 focal species (Appendix A). The focal species (1) utilize riparian, forest and chaparral habitats; (2) occur on or adjacent to the quany leaseholds; and (3) represent a variety of foraging and nesting guilds. They include ten species associated with both assemblages, 26 species associated with only the forest/chaparral assemblage, and four species associated with only the riparian/pond assemblage. Appendix A lists the common and scientific names of the focal species, along with information on their foraging and nesting guilds, seasonal presence and assemblage associations.

Monitoring of turtles will occur during the spring concurrent with spring bird monitoring, and will be based on a population index.

## 4. Selection of Monitor

Wildlife monitoring will be performed by one or more qualified wildlife biologists who are acceptable to both Olive Springs Quarry and Santa Cruz County. This person or persons must be thoroughly familiar with the identification of local birds by sight and sound, and must be familiar with detecting turtles. If more than one biologist is involved then efforts should be made to standardize census and bird identification abilities.

## B. FIELD TECHNIQUES

### 1. Bird Censuses

The small size of the revegetation area limits options for methods of bird censuses. A total count of all birds and species detected throughout the forest/chaparral assemblage and riparidpond assemblage revegetation area is proposed as the basic census approach. Routes should be determined and marked in the field by which an observer can walk through an entire census area within a set time period, recording as many individual birds as possible, but minimizing chances of double-counting the same bird. The time required for each census should be determined with field tests, and will be affected by the size of the area to be covered, ease of access and movement through the vegetation.

Bird censuses will occur during the winter and spring. Winter censuses will be conducted between January 15 and February 5, and spring censuses will be conducted between April 25 and May 10. Each revegetation assemblage and each control area will be sampled *four times* during each season. Censuses should occur between one and four hours after official sunrise in the winter, and between official sunrise and four hours after sunrise in the spring. Unless more than one observer is conducting the censuses, it would be advisable to census only one revegetation assemblage or one control area per morning. Censuses should be conducted during suitable weather conditions, avoiding rain, winds >10 m.p.h., and fog with horizontal visibility < 100'.

For each census all birds seen and heard within the plot during the ten minute period will be recorded on preformatted data sheets, noting species, number of individuals, and detection type (e.g., song, call, visual, etc.), and taking care not to double-count individuals. Birds flying over the census area should be recorded separately unless they are below the top of the tree canopy level, or are thought to have taken flight from within the census area just prior to detection. Care should be taken to only count individuals actually within a census area. Birds recorded previously on the same day in an adjacent census area should not be counted again. Additional information to be recorded for each census includes start and finish time, percent cloud cover, temperature and wind speed.

It will be advisable for observers to train themselves on-site prior to beginning the censuses each season to develop or regain their abilities to detect birds by aural and visual cues and to correctly identify species.

### 2. Turtle Censuses

Turtles will be censused during the spring bird census period of April 25 to May 10. Turtles at each pond will be censused eight times each year in which censuses occur. Censuses should occur between 10 a.m. and 3:00 p.m., and should take place during clear weather or when cloud cover of less than 50%. If inclement weather constrains adherence to the April 25 - May 10 schedule, then surveys may occur after May 10. Up to two censuses of the same pond may occur per day provided they are at least two hours apart. Censuses should only occur when a pond site has not been disturbed by people for a period of at least one hour. Information recorded for each census should include the

number of turtles, size class, activity, time and weather conditions. The location of each turtle should be plotted on a map of the pond.

Censuses should be performed by visually scanning the pond surface. and margins for turtles. Observations should be made from semi-concealed locations where the turtles will not be disturbed by the observer's presence. Each census of each pond should last 30 minutes.

Because the ponds differ greatly from aquatic habitat along Soquel Creek, no control site is proposed to be used for turtle monitoring.

### 3. **Incidental Wildlife** Observations

All wildlife species (or their sign) observed during site visits should be recorded to augment information on species occurrence in the treatment and control areas. Other observations of interest should be recorded in notes, such as nesting evidence for birds in the treatment area, or specific utilization of the vegetative resources in the treatment area (e.g., fruit or seed consumption).

## C. FREQUENCY OF MONITORING

Bird monitoring should begin as soon as the quany operation is fully completed and revegetation of all areas has begun. At that time monitoring will occur in all treatment and control areas every third year for twelve years, or until the success criteria defined below have been satisfied. If the treatment area still has not met the success criteria twelve years after quarry closure, then monitoring will be repeated every five years until the criteria are satisfied.

Turtle monitoring should begin as soon as the quany operation is completed and revegetation has been installed around the ponds. Monitoring should occur annually for five years, then every third year until twenty years after the initial year. If the population index derived from the turtle monitoring indicates a significant downward trend after the twentieth year, then monitoring should continue until the population index has stabilized (see G. Remedial Actions below).

## D. DATA ANALYSIS

### 1. Birds

Descriptive statistical analyses will be prepared separately for each season, each year. These will focus on developing indices of species richness and bird abundance. The following should be determined for each census area each season: (1) the high count for each species; (2) the summation of high counts for all species; and (3) the total number of species recorded. The following should be determined separately for both the treatment and control areas each season: (1) summation of abundance of focal species (using high counts from each area); and (2) cumulative richness of focal species. Comparisons should be made between the treatment and control areas each season for: abundance and richness of focal species, average bird abundance (all species), and average species richness (all species).

**2.** Turtles

Descriptive statistical analyses will be prepared separately for each year. The average and high counts of turtles should be determined separately for each pond and cumulatively for all ponds. Areas of the ponds utilized by turtles should be qualitatively summarized by review of the census data maps.

## E. SUCCESS CRITERIA

**1.** Birds

The success criteria for wildlife habitat establishment in the treatment area will be based on a combination of (1) bird species richness, (2) cumulative abundance of all birds, **(3)** richness of focal species, and **(4)** cumulative abundance of focal species. An assessment of success will be made individually for the forest/chaparral assemblage and the riparidpond assemblage in both winter and spring **seasons.** ***The overall assemblage will be considered successful when it scores 60% of the control areas on three out of four criteria.*** Although the success criterion of 60% fails short of potential scores for the control area, achievement of this success criterion will clearly demonstrate that the revegetated areas are well on their way to being fully comparable with wildlife values of natural areas.

Each assemblage of the treatment area will be considered to have demonstrated successful development of wildlife habitat if it meets ***three out of four*** of the following goals ***in both winter and spring seasons,*** stated as percentages of scores for the control area

| | |
|---|---|
| Bird **Species** Richness | 60% of the richness of the control area |
| Cumulative Bird Abundance | 60% of the abundance of the control area. |
| Richness of Focal Species | 60% of the richness of the control area. |
| Cumulative Abundance **of Focal Species** | 60% of the abundance of the control area. |

An assemblage does not have to meet the goals for both seasons in the same year to satisfy the goal of success.

**2. Turtles**

Maintenance of turtle populations on site will be considered successful if monitoring after twenty years indicates the population trend is stable **or** increasing. **A** further indication of success would be the presence of various size (age) classes of turtles. Because the turtle population of the site is presumably affected by the habitat conditions of Soquel **Creek,** population changes at the ponds may not be directly related to habitat conditions of the ponds (see Remedial Actions, below).

### 3. Other **Measures of Success**

Although the quantitative success criteria stated above will be the basis for assessing success of the revegetation effort in providing wildlife habitat, additional qualitative measures should be considered, as well. These could contribute to a determination of success in plots which are marginally shy of meeting the criteria stated above. Qualitative measures would include, but are not limited to: nesting by focal species, and extensive and regular wildlife utilization of fruit and seed resources provided by plants. Additional measures may be identified during monitoring.

## F. REPORTING

Results and analysis from each monitoring year will be presented as a narrative report, delivered to Olive Springs Quarry in time to be included in the quarry's annual **report** to Santa Cruz County. When feasible, the wildlife monitoring report will be combined with the vegetation monitoring report.

## *G.* REMEDIAL ACTIONS

Examination by the monitor of the Occurrence of populations of focal species with regard to their foraging and nesting guilds (Appendix **A),** and other habitat requirements, will indicate appropriate remedial actions to increase the value of the revegetation areas for wildlife. Potential remedial actions identified at this time include: (1) placement of various sizes of downed logs and brush piles to promote populations of invertebrates and provide cover; (2) installation or creation of snags (standing dead trees) to provide a resource which otherwise will require many years to develop in the revegetation areas; (4) placement of natural leaf litter collected under direction of a biologist from adjacent areas to promote invertebrate populations; and, ***(5)*** additional plantings of fruit and seed bearing plant species utilized by wildlife.

If turtle populations show a declining trend then **the** habitat conditions of the ponds should be evaluated and potential remedial actions developed. Because changes in the habitat quality of the creek could also affect turtles at the ponds, conditions at the creek should also be evaluated. Remedial actions, if necessary should be developed in coordination with resource agencies if the turtle is officially listed.

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## APPENDIX A

## FOCAL BIRD SPECIES OF THE OLIVE SPRINGS QUARRY MONITORING PLAN

| Species | Foraging[1] Guild | Nesting[2] Guild | Seasonal Occurrence[3], Breeding Status and Assemblage |
|---|---|---|---|
| California Quail (*Callipepla californica*) | 3 | A | year-round resident, breeds; f/c & r/p |
| Band-tailed Pigeon (*Columba fasciata*) | 3,7 | B | year-round resident (complex)[4], breeds; f/c |
| Mourning Dove (*Zenaida macroura*) | 3 | B,D | year-round resident (complex), breeds; f/c & r/p |
| Anna's Hummingbird (*Calypte anna*) | 8,9 | B,D | year-round resident, breeds; f/c & r/p |
| Allen's Hummingbird (*Selasphorus sann*) | 8,9 | B,D | late January to July, breeds, f/c & r/p |
| Acorn Woodpecker (*Melanerpes formicivorous*) | 6,9 | C | year-round resident, breeds; f/c |
| Hairy Woodpecker (*Picoides villosus*) | 4 | C | year-round resident, breeds; f/c |
| Northern Flicker (*Colaptes auratus*) | 2 | C | year-round resident (complex), breeds; f/c & d p |
| Pacific-slope Flycatcher (*Empidonax difficilis*) | 9 | B | late March to September, breeds, NT[5]; f/c & r/p |
| Black Phoebe (*Sayornis nigricans*) | 9 | E | year-round resident, breeds; r/p |
| Nor. Rough-winged Swallow (*Stelgidopteryx serripennis*) | 9 | E | March to August, breeds, NT; r/p |
| Steller's lay (*Cyanocitta stelleri*) | 1 | B | year-round resident, breeds; f/c |
| Scrub lay (*Aphelocoma coerulescens*) | 1 | B | year-round resident, breeds; f/c & r/p |
| Chestnut-backed Chickadee (*Parus rufescens*) | 4.5 | C | year-round resident, breeds; f/c & r/p |

A-3

| Species | Foraging[1] Guild | Nesting[2] Guild | Seasonal Occurrence[3], Breeding Status and Assemblage |
|---|---|---|---|
| Bushtit (*Psaltriparus minimus*) | 5 | B,D | year-round resident, breeds; f/c & r/p |
| Pygmy Nuthatch (*Sitta pygmaea*) | 4,5 | C | year-round resident, breeds; f/c |
| Brown Creeper (*Certhia americana*) | 4 | B | year-round resident, breeds; f/c |
| Bewick's Wren (*Thryomanes bewickii*) | 5 | B | year-round resident, breeds; f/c & r/p |
| Ruby-crowned Kinglet (*Regulus calendula*) | 5 | n/a | September to March; f/c & r/p |
| Swainson's Thrush (*Catharus ustulatus*) | 2,7 | A | late April to October, breeds, NT; f/c & r/p |
| Hermit Thrush (*Catharus guttatus*) | 2,7 | A | year-round resident (complex), breeds??, NT; f/c & r/p |
| American Robin (*Turdus migratorius*) | 2,7 | B | year-round resident (complex), breeds; f/c & r/p |
| Varied Thrush (*Ixoreus naevius*) | 2,7 | n/a | September to early April; f/c |
| Wrentit (*Chamaea fasciata*) | 5 | D | year-round resident, breeds; f/c and r/p |
| California Thrasher (*Toxostoma redivivum*) | 2 | D | year-round resident, breeds; f/c |
| Hutton's Vireo (*Vireo huttoni*) | 5 | B | year-round resident, breeds; f/c & r/p |
| Warbling Vireo (*Vireo gilvus*) | 5 | B | late March to September, breeds, NT; f/c & r/c |
| Orange-crowned Warbler (*Vermivora celata*) | 5 | A | late February to October, breeds, NT; f/c & r/p |
| Black-throated Gray Warbler (*Dendroica nigrescens*) | 5 | B | April to September, breeds, NT; f/c |
| Townsend's Warbler (*Dendroica townsendi*) | 5 | n/a | September to April, NT; f/c |

| Species | Foraging[1] Guild | Nesting[2] Guild | Seasonal Occurrence[3], Breeding Status and Assemblage |
|---|---|---|---|
| Wilson's Warbler (*Wilsonia pusilla*) | 5 | A | late March to September, breeds, NT; f/c & rlp |
| Black-headed Grosbeak (*Phuecticus melanocephalus*) | 5,6,7 | B | late March to September, breeds, NT; ffc & r/p |
| Rufous-sided Towhee (*Pipilo erythropthalmus*) | 2,3 | A | year-round resident, breeds ; f/c & rp |
| Fox Sparrow (*Passerella iliaca*) | 3 | n/a | September to early April; f/c & rlp |
| Song Sparrow (*Melospiza melodia*) | 2,3,5,6 | A,D | year-round resident, breeds; rlp |
| Dark-eyed Junco (*Juncohyemalis*) | 2,3 | A | year-round resident (complex), breeds; f/c & rip |
| Purple Finch (*Carpodacus purpureus*) | 3,6,7 | B | year-round resident, breeds; f/c & rlp |
| House Finch (*Carpodacus mexicanus*) | 3,6 | B,D | year-round resident, breeds; r/p |
| Pine Siskin (*Carduelis pinus*) | 5,6 | B | year-round resident (complex), breeds??; f/c and r/p |
| Lesser Goldfinch (*Carduelis tristis*) | 5,6 | B,D | year-round resident, breeds, f/c and r/p |

**Key:**

1. Foraging Guilds: I = generalist omnivore, 2 = ground insect, 3 = ground seed, 4 = bark insect, 5 = foliage insect, 6 = foliage seed, 7 = foliage fruit, 8 = foliage nectar, 9 = air insect. The principal foraging guilds of each species as exhibited in the local region are shown
2. Nesting Guilds: A = ground; B = tree; C = tree hole; D = shrub; E = rock face, din embankment or structure.
3. Seasonal and nesting status of the local region is shown. "??" indicates breeding status in quarry area uncertain, but nests nearby
4. The term "complex" is appended to species present year-round but for which different populations may be present in different seasons. These species are more numerous in the local region during the non-breeding season.
5. Species annotated with "NT" are Neotropical migrants.
6. Community assemblages: "f/c" = forest/chaparral, "rip" = riparian/pond.