NOTICE OF PREPARATION

ENVIRONMENTAL IMPACT REPORT FOR THE WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS AMENDED RECLAMATION PLAN

On the basis of the Initial Study prepared for the Western Aggregates LLC Yuba County Operations Amended Reclamation Plan (the proposed project), the State Mining and Geology Board, acting as the lead agency pursuant California Environmental Quality Act Guidelines (CEQA Guidelines) Section 15050, has determined that the proposed project may have a significant impact on the environment. Therefore, the lead agency hereby gives notice that an Environmental Impact Report (EIR) for this project will be prepared in accordance with the requirements of CEQA.

Project Location

The Amended Reclamation Plan area is approximately 1,960 acres (project site) located in an unincorporated portion of Yuba County, California, south of the Yuba River, north of Hammonton-Smartville Road, and approximately equidistant (20 miles) between Marysville and Smartsville (see Figure 1). The site is situated at the western edge of the Sierra Nevada foothills, approximately 1 mile south of the south bank of the Yuba River, and north of Beale Air Force Base.

Site Description

The majority of the approximately 1,960-acre project site is characterized by active mining operations, a processing facility, numerous dredge tailing ridges interspersed with waterways and areas of native riparian and wetland vegetation, and small to large siltation and freshwater ponds created by past and ongoing mining activities. Access to the project site is via an access road (generally referred to as Hammonton Road), which intersects with Hammonton-Smartville Road approximately 1 mile south of the mine processing plant. The project site is located within the area commonly referred to as the Yuba Goldfields.

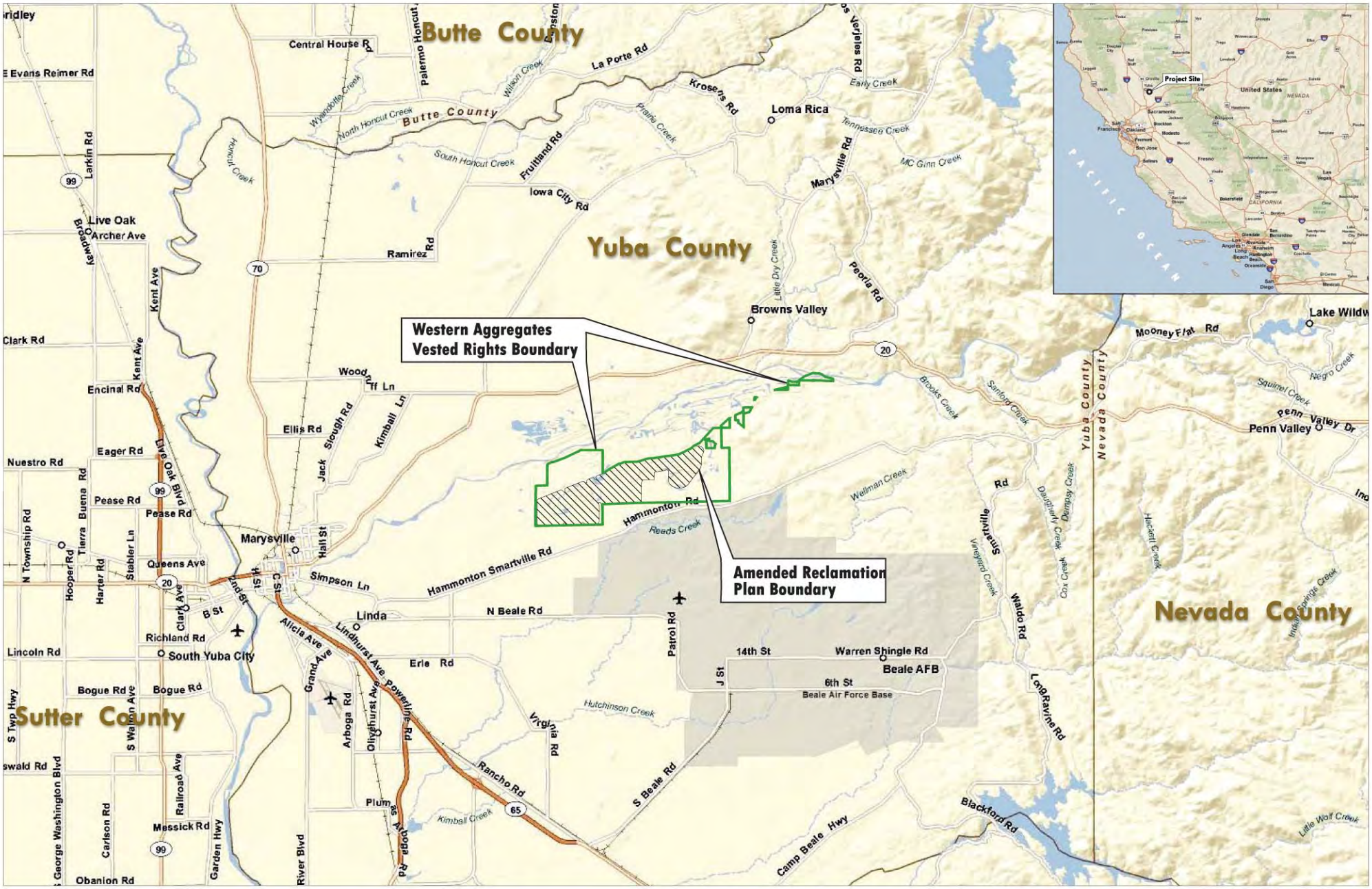
The project site has been historically excavated for materials from above and below the groundwater table. In recent years, mining has primarily occurred in the central and south-central portion of the project site, where above-ground tailing piles have been removed and material has been excavated below the water table creating areas of open water.

Western Aggregates' processing plant is located in the southern portion of the project site where the company maintains processing equipment (crushers, screens, and conveyors, maintenance structures, fuel storage area, and product stockpiles), a scalehouse, a shop building, an above-ground fuel island, and administrative offices. The primary equipment storage area is situated in the southwestern portion of the processing plant area. A large Designated Disposal Area (DDA) which serves as the sediment settling pond is situated in the northeast portion of the processing area. Product stockpiles are located adjacent to the processing area. While a majority of the site currently contains or historically contained large tailings piles created by extensive dredging operations, approximately 30 acres adjacent to the processing area and a larger area in the southeast corner of the project site (west of Hammonton Road) were unaffected by prior dredging operations and currently support open annual grassland that are currently used primarily for livestock grazing.

Project Description

Under the Amended Reclamation Plan, site reclamation would be carried out in three phases to coincide with three remaining phases of ongoing vested aggregate mining and processing operations within the 1,960-acre area. Implementation of the plan will ultimately create a series of lakes, varying in size, and open space areas supporting a variety of wildlife habitat types including aquatic lake, marsh, woodland and upland habitats.

Activities specific to site reclamation will be the focus of the EIR's impact evaluation. While the EIR, in keeping with the requirements of CEQA, will not directly address the impact of vested mining activities, implementation of the reclamation plan is tied to these activities. Existing on-site conditions created by mining operations and future conditions that are anticipated to be created by vested mining operations over the life of the project will



Area Map

Western Aggregates LLC
Yuba County, California

Figure 1

LEGEND

Vested Rights Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

N

0 3
Miles

Source: Lilburn Corp., 03/2011 (TAG)

LILBURN CORPORATION

serve as environmental baseline conditions from which reclamation plan impacts will be measured. Mining operations as described in the *Amended Reclamation Plan for Western Aggregates LLC Yuba County Operations* (May 2012) will remove sand and gravel deposits (aggregates) to a depth of -20 feet below msl (100 feet below the average lake surface level). However, mining depths may vary in certain areas, and may reach 85 feet below msl (165 feet below the average lake surface level) based on local ground conditions, geology, changes in market conditions, and changes in mining technology, where such changes may be implemented without materially disrupting the shorelines, marshes, or other habitats contemplated by the Amended Reclamation Plan.

Approximately 1,960 acres of the 3,900-acre Vested Rights Area will be affected by Western's surface mining operations which are projected to terminate within the 1,960-acre area in approximately 45 years pursuant to the Amended Reclamation Plan. The actual time frame for termination, however, is dependent on economic factors (e.g., demand and competition), reserves, ultimate mining depths and quality of mined materials. The total aggregate reserve within the Amended Reclamation plan area is estimated at about 414 million tons.

As stated in the Amended Reclamation Plan, the vested mining operations will remove dredge piles or excavate previously undredged lands in a manner supportive of aquatic and terrestrial wildlife habitat. The proposed Amended Reclamation Plan will use fines available from mining operations, including residual dredge fines, fines from the settling pond(s), and overburden, to implement site revegetation as specified in the Amended Reclamation Plan. Commercially available broadcast seeding will be applied to these areas for erosion control purposes and to enhance natural revegetation. No off-site importation of fines is proposed. In areas where topsoil will be disturbed, the soil will be salvaged and stockpiled for use in revegetation to the extent necessary.

Upon final completion of mining, the aggregate processing plant will be razed and all equipment will be dismantled and removed. As detailed in the Amended Reclamation Plan, the plant site and roads and utilities serving the site will be prepared, revegetated, and reclaimed.

Potentially Significant Environmental Impacts Identified in the Initial Study

The Initial Study prepared for the proposed project addresses the broad range of potential environmental impacts listed in the CEQA Guidelines Appendix G environmental checklist. The proposed project was found to have potentially significant impacts in the following areas:

Biological Resources

Even though site reclamation will result in a net long-term increase in wildlife habitat on the project site, proposed reclamation activities could result in potentially significant impacts on biological resources in and adjacent to the project site as a result of site preparation and revegetation operations. Therefore, this impact will be further addressed in the Draft EIR.

Hydrology and Water Quality

The proposed project will result in the long-term maintenance of five large lakes and the creation vegetated shorelines around those lakes. Because the primary source of water supply to these lakes is subsurface water, the long-term maintenance of these lakes could have a significant effect on groundwater supply and/or movement either alone or in combination with other existing and planned reclamation projects in the Yuba Goldfields region. This impact will be further addressed in the Draft EIR.

In addition, proposed site reclamation could have a potentially significant impact on water quality because of the potential presence of mercury in reclaimed areas. This impact on surface and groundwater quality will be further addressed in the Draft EIR.

Land Use

The proposed long-term maintenance of open water, wetlands and marsh habitat on the Western Aggregates site could attract resident and migratory waterfowl. Because the project site is within the flight path of aircraft taking off and landing at Beale Air Force Base, activities that would result in a significant attraction of birds could present a hazard and may be inconsistent with the Beale AFB Joint Land Use Study. This impact will be further addressed in the Draft EIR.

Air Traffic Hazard

For reasons discussed above under "Land Use," the proposed project could indirectly result in a potential hazard to air traffic using Beale Air Force Base. This impact will be further addressed in the Draft EIR.

Required Discretionary Actions

The Applicant (Western Aggregates LLC) cannot implement the proposed project unless the State Mining and Geology Board, which is the CEQA lead agency, grants a series of discretionary approvals. The actions necessary for project approval include, but are not limited to the following:

- **Certification of the EIR**—Certification that the Final EIR adequately identifies the significant environmental effects of the proposed project, pursuant to CEQA and the CEQA Guidelines.
- **Project Approval**—Approval of the Amended Reclamation Plan; and
- **Mitigation Monitoring**—Adoption of a Mitigation Monitoring Plan to reflect the measures required to mitigate significant impacts of the project.

In addition, the following regulatory agencies may be Responsible Agencies:

- **California Department of Fish and Wildlife**
- **State Water Resources Control Board**
- **Central Valley Regional Water Quality Control Board**
- **Feather River Air Quality Management District**

Comments Requested

The Western Aggregates LLC Amended Reclamation Plan NOP and Initial Study will be circulated for public review and comment beginning on April 3, 2013 for a period of 30 days. All comments on the Initial Study should be submitted in writing to the State Mining and Geology Board, at the following address no later than May 2, 2013:

Mr. Will Arcand, Senior Engineering Geologist
State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, California 95814-3528

Upon its completion, the Draft EIR will be circulated for public review and comment for a period of at least 45 days. All written comments on the Draft EIR will be presented in a Final EIR along with written responses to each comment as required by CEQA. After consideration of the Final EIR, the State Mining and Geology Board will hold a public hearing at which time the Board will consider certification of the Final EIR and approval of the Western Aggregates LLC Yuba County Operations Amended Reclamation Plan.

Public Scoping Session

A public scoping meeting will be held at the following time and location:

Date/Time: **April 18, 2013 / 6:30 PM**

Location: **Yuba County Government Center**
915 8th Street
Marysville, California 95901

All interested parties are encouraged to attend. All substantive written comments submitted on the NOP/Initial Study and those presented during the scoping meeting will be taken into consideration during the preparation of the Draft EIR.

WESTERN AGGREGATES LLC

Yuba County Operations

AMENDED RECLAMATION PLAN

Initial Study

Prepared for
State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, California 95814-3528

Prepared by
Atkins
1410 Rocky Ridge Drive, Suite 140
Roseville, California 95661

April 2013

WESTERN AGGREGATES LLC
YUBA COUNTY OPERATIONS
AMENDED RECLAMATION PLAN
Initial Study

Prepared for
State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, California 95814-3528

Prepared by
Atkins
1410 Rocky Ridge Drive, Suite 140
Roseville, California 95661

April 2013

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SECTION 1. **Introduction**

This initial study (IS) was prepared pursuant to the California Environmental Quality Act (CEQA) of 1970 (as amended) (California Public Resources Code Sections 21050 et seq.) and in accordance with the CEQA Guidelines. The proposed project addressed herein is the implementation of the *Amended Reclamation Plan for Western Aggregates LLC Yuba County Operations* (May 2012). The Amended Reclamation Plan is included as Appendix A of this IS and addresses the reclamation of a 1,960-acre surface mining site in Yuba County, California, south of the Yuba River, North of Hammonton-Smartville Road, and approximately 4 miles northeast of the city of Marysville, CA. Under the proposed plan, site reclamation would be implemented in three phases to coincide with three contemplated phases of ongoing vested aggregate mining and processing operations on the project site. Upon approval by the State Mining and Geology Board (SMGB), the Amended Reclamation Plan will comply with the California Surface Mining and Reclamation Act (SMARA) of 1975. The SMGB is the CEQA lead agency for this document.

As determined by the SMGB, the project applicant, Western Aggregates LLC (Western), holds a valid vested right to mine aggregates on the project site, and ongoing and proposed mining operations under this right are not subject to review in this IS. This IS addresses the potential direct, indirect, and cumulative impacts of implementing the Amended Reclamation Plan.

I. INITIAL STUDY CONTENTS

This IS contains the following sections:

- **Section 1: Introduction**—This section provides an overview of the initial study, a description of the CEQA review process and schedule for the proposed project, and CEQA lead agency contact information.
- **Section 2: Project Description**—This section describes the background of the proposed reclamation plan and ongoing vested mining operations, proposed project objectives, project elements, and required entitlements for project completion.
- **Section 3: Determination and Environmental Checklist**—The environmental checklist identifies environmental issue areas that could be affected by the proposed project and lists the determination of whether the project's effects on those areas are significant, less than significant with mitigation, less than significant, or no impact. The checklist also contains the rationale and support for each determination.

  Section 3 also presents the determination that, based on the results of the environmental review, the SMGB has concluded that preparation of an Environmental Impact Report (EIR) is appropriate to meet the environmental review requirements for the proposed project under CEQA.

II. LEGAL AUTHORITY

This IS for the proposed project has been prepared in accordance with CEQA. CEQA Guidelines Section 15063(c) lists the following purposes of an initial study:

(1) Provide the lead agency with information to use as the basis for deciding whether to prepare an EIR or negative declaration;

(2) Enable an applicant or lead agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a negative declaration;
(3) Assist in the preparation of an EIR, if one is required;
(4) Facilitate environmental assessment early in the design of a project;
(5) Provide documentation of the factual basis for the finding in a negative declaration that a project will not have a significant effect on the environment;
(6) Eliminate unnecessary EIRs; and
(7) Determine whether a previously prepared EIR could be used with the project.

According to CEQA Guidelines Section 15063(b) (Results):

(1) If the agency determines that there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, the Lead Agency shall do one of the following:
    (A) Prepare an EIR, or
    (B) Use a previously prepared EIR which the Lead Agency determines would adequately analyze the project at hand, or
    (C) Determine, pursuant to a program EIR, tiering, or another appropriate process, which of a project's effects were adequately examined by an earlier EIR or negative declaration.

As CEQA Lead Agency for Western's Amended Reclamation Plan, the California State Mining and Geology Board (SMGB) has prepared this IS to determine the level of environmental review necessary for the proposed project. SMGB has determined that the proposed project may have a significant effect on the environment and that no previously prepared EIR is sufficient to use to adequately address those impacts under CEQA. Therefore, an EIR will be prepared for the proposed project.

III. PUBLIC REVIEW

In accordance with CEQA and the CEQA Guidelines, a 30-day public review period for this IS commenced on April 3, 2013, and will conclude on May 2, 2013. This IS has specifically been distributed to interested or involved public agencies, organizations, and private individuals for review. In addition, the IS is available for general public review at:

State Mining and Geology Board
801 K St, Suite 2015
Sacramento, CA 95814
916.322.1082
http://www.conservation.ca.gov/smgb/Pages/Index.aspx

Yuba County Planning Department
915 8th Street, Suite 123
Marysville, CA 95901
530.749.5470

During the public review period, the public will have an opportunity to provide written comments on the information contained within this IS. The public comments on the IS and responses to public comments will be incorporated into the Draft EIR. The SMGB will use the EIR for all environmental decisions related to this project.

In reviewing this IS, affected public agencies and interested members of the public should focus on the sufficiency of the document in identifying and analyzing potential project impacts on the environment. This is particularly true for impacts found to be "less than significant" or "less than significant with mitigation" or where Initial Study finds "no impact" for a particular issue area. Impacts that fall into these categories will not be evaluated further in the Draft EIR. Impacts found in this IS to be "potentially significant" will be receive additional evaluation in the Draft EIR.

Comments on this IS should be submitted in writing prior to the end of the 30-day public review period and must be postmarked by May 2, 2013. Please submit written comments to:

Mr. Will Arcand, Senior Engineering Geologist
State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, CA 95814-3528
Will.Arcand@conservation.ca.gov

SECTION 2. **Project Description**

I. PROJECT TITLE

Western Aggregates LLC Yuba County Operations Amended Reclamation Plan

II. LEAD AGENCY NAME AND ADDRESS

State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, CA 95814-3528

III. CONTACT PERSON AND PHONE NUMBER

Mr. Will Arcand
Senior Engineering Geologist
916.322.1082

IV. PROJECT LOCATION

Yuba County, California

V. PROJECT SPONSOR'S NAME AND ADDRESS

Western Aggregates LLC
P.O. Box 829
Marysville, California 95901

VI. GENERAL PLAN DESIGNATION

Natural Resources

VII. ZONING

Extractive Industrial (M-2)

VIII. DESCRIPTION OF PROJECT

Project Background

The Yuba Goldfields is an area along the Yuba River, encompassing approximately 10,000 acres and named for gold dredging operations that commenced in the early 1900s. Dredging the ancient river channel for gold resulted in thousands of acres of tailing mounds found throughout this section of the Yuba River. Due to the plentiful supply of these tailings, the project site has been mined for aggregate using various techniques since the early 1900s.

In 1980, Western Aggregates LLC ("Western") predecessor-in-interest applied for and was granted approval for a reclamation plan (RP 80-01) by Yuba County, in accordance with the requirements of the Surface Mining and Reclamation Act (SMARA). RP 80-01 covered 2,000 acres, of which 1,420 acres applied to Western's aggregate operation. The California Geological Survey (CGS, formerly Division of Mines and Geology) assigned Mine ID #91-58-0001 to the project site. In 1993, the Office of Mine Reclamation (OMR) reviewed reclamation plans in Yuba County to determine if mines were operating under approved and updated reclamation plans. Subsequently, OMR determined that Yuba County (the SMARA lead agency) had approved a reclamation plan and notified Western. Mine ID #91-58-0001 was listed in OMR's July 1, 1993, Compliance List (commonly known as the Assembly Bill [AB] 3098 List), and has been on this list since that time.

In May 2000, Yuba County issued a written determination letter confirming that Western held vested rights on 3,430 acres of land in the Yuba Goldfields. In November 2002, the annual SMARA mine inspection for Mine ID #91-58-0001 was conducted by the State Mining and Geology Board (SMGB). Based on the results of the SMARA mine inspection performed in November 2002, it was revealed that the original reclamation plan, although adopted in accordance with the SMARA standards in 1980, did not meet current SMARA standards. Western subsequently prepared a reclamation plan, completed in April 2005, to include all of the area subject to the vested right confirmation (3,430 acres) within the boundaries of the new reclamation plan. In the process of conforming its new reclamation plan to the 2000 vested right determination, Western also sought to substantially upgrade the existing plan. SMGB initiated a CEQA review of that plan and publicly circulated a Notice to Prepare an EIR/ Initial Study in June 2006. A public scoping session for the EIR was held in Marysville in July 2006. Preparation of a Draft EIR on the April 2005 Reclamation Plan began in July 2006 but was suspended due to litigation, initiated in 2000, challenging the validity Western's vested right to mine.

In January 2007, the California Court of Appeal, Third Appellate District, held that in 2000 the County of Yuba failed to provide a proper notice and hearing in its consideration of vested rights for the Western surface mining operation. The court ruling provided Western Aggregates could either (1) prove its claim of vested rights in a public adjudicatory hearing before the SMGB, or (2) obtain a permit to conduct surface mining from Yuba County. On February 8, 2007, Western submitted a notice to the SMGB that it intended to seek a confirmation of its vested rights.

The SMGB's responsibilities while serving as the SMARA lead agency in Yuba County include approval of reclamation plans and financial assurances, conduct of site inspections, and determination of vested rights. As such, the SMGB recognized its authority to conduct a vested rights determination at its regular business meeting held on February 8, 2007, and adopted Resolution 2007-04, which defined the SMGB's authority as a SMARA lead agency to conduct a vested rights determination.

Between March 8, 2007, and September 14, 2007, the SMGB conducted several public hearings and received stakeholder input regarding promulgation of regulations for making vested rights determinations. The SMGB adopted the new regulations at its regular business meeting held on February 14, 2008. On August 14, 2008, the Office of Administrative Law approved the proposed regulations, and such regulations were codified in Title 14 of the California Code of Regulations (CCR), Section 3950 et seq., on September 13, 2008.

Western filed a vested right Request for Determination for its Yuba County operations with the SMGB on November 5, 2008. From November 2008 to March 2010 the SMGB undertook several administrative procedural actions as required by CCR Section 3950 in order to make a vested rights determination as requested by Western. Ultimately, on March 11, 2010, the SMGB adopted its findings and determinations, and adopted Resolution 2010-04, in recognition of the confirmation of Western's vested rights in connection with its Yuba Goldfield surface mining operation.

Unless otherwise noted, the text contained in the following description of the proposed project was submitted to the SMGB by the project applicant for inclusion in this IS.[1] The description is consistent with project information contained in the May 12, 2012, Amended Reclamation Plan but provides additional project detail and clarification.

Regional Setting

Western operates an active aggregate mining operation pursuant to vested rights, which were confirmed in 2010 by the SMGB to cover an approximately 3,900-acre area situated in the historic Yuba Goldfields mining area (Figure 2-1 [Area Map]). The site has previously been greatly disturbed by gold and aggregate mining activities of predecessor companies that dramatically altered the landscape. The Yuba Goldfields is zoned M-2 (Extractive Industrial) and is designated as Natural Resources under the Yuba County 2030 General Plan. The project site is characterized by numerous dredge tailings with interspersed waterways and small ponds created by mining activities (Figure 2-2 [Typical Existing Conditions]). The M-2 zoning was established primarily for the extraction, processing and distribution of minerals occurring naturally such as sand and gravel.

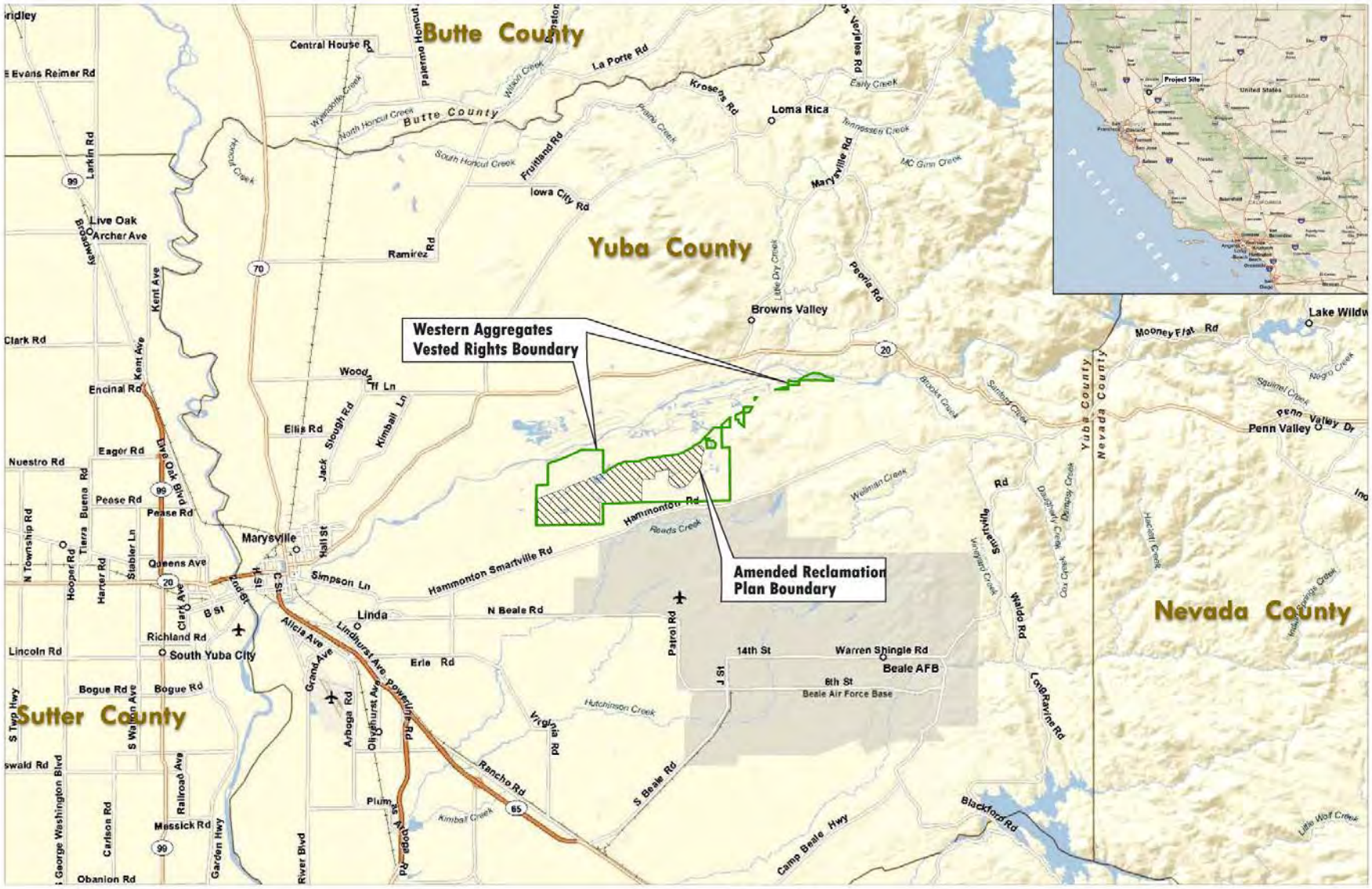
The mining site is located within the Yuba City-Marysville Minerals Production-Consumption (PC) Region, as defined in California Department of Conservation Division of Mines and Geology (DMG) Special Report 132 (Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City Marysville Production Consumption Region [1988]) ("Special Report 132"). The current Western mining site is classified under the SMARA mineral resource classification scheme as a Mineral Resource Zone 2 (MRZ-2), containing significant mineral deposits.[2]

The operations site is located approximately 45 miles north and slightly east of Sacramento, California in the County of Yuba. It lies south of the Yuba River, north of the Hammonton-Smartville Road approximately equal distance between Marysville and Smartsville (approximately 20 miles). It is north of Beale Air Force Base (see Figure 2-1). Western's Vested Rights Area is approximately 3,900 acres located in: Section 1, T15N, R4E; Section 2, T15N, R4E; Section 11, T15N, R4E; Section 12, T15N, R4E; Section 4, T15N, R5E; Section 5, T15N, R5E; Section 6, T15N, R5E; Section 26, T15N, R5E; Section 27, T15N, R5E; Section 32, T15N, R5E; Section 33, T15N, R5E; and a portion of the NW quarter of Section 34, T15 N, R5E. The area considered in the Amended Reclamation Plan is approximately 1,960 acres located in Sections 1, 2, 11, and 12, T15N, R4E; Sections 4, 5, and 6, T15N, R5E; and Section 32 T16N, R5E (see Figure 2-3a [Current Reclamation Plan Area] and Figure 2-3b [Proposed Reclamation Plan Area]); the fact that the Amended Reclamation Plan addresses operations in some, but not all, of the Vested Rights Area is not intended as a waiver, abandonment, or relinquishment of any rights in other portions of the Vested Rights Area.

---

[1] M. Jones, electronic communication from Lilburn Corporation (1905 Business Center Drive, San Bernardino, CA, 92408), representing Western Aggregates LLC, to State Mining and Geology Board via Project FTP site (December 4, 2012).

[2] California Department of Conservation, Division of Mines and Geology, Special Report 132: Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City Marysville Production Consumption Region (1988), pp. 8–10.



Source: Lilburn Corporation, 2012.

100030294 | Western Aggregates

Figure 2-1
Area Map

ATKINS

Existing conditions typical of the Goldfields operations

Existing conditions typically consist of sand and gravel stockpiles as a product of earlier gold dredging. Dredge piles consist of sand, and gravel with varying degrees of natural vegetation by grasses. Some pile areas have been seeded by Cal Sierra. The dredge piles border small valleys that have varying degrees of silts.

0 300
Feet

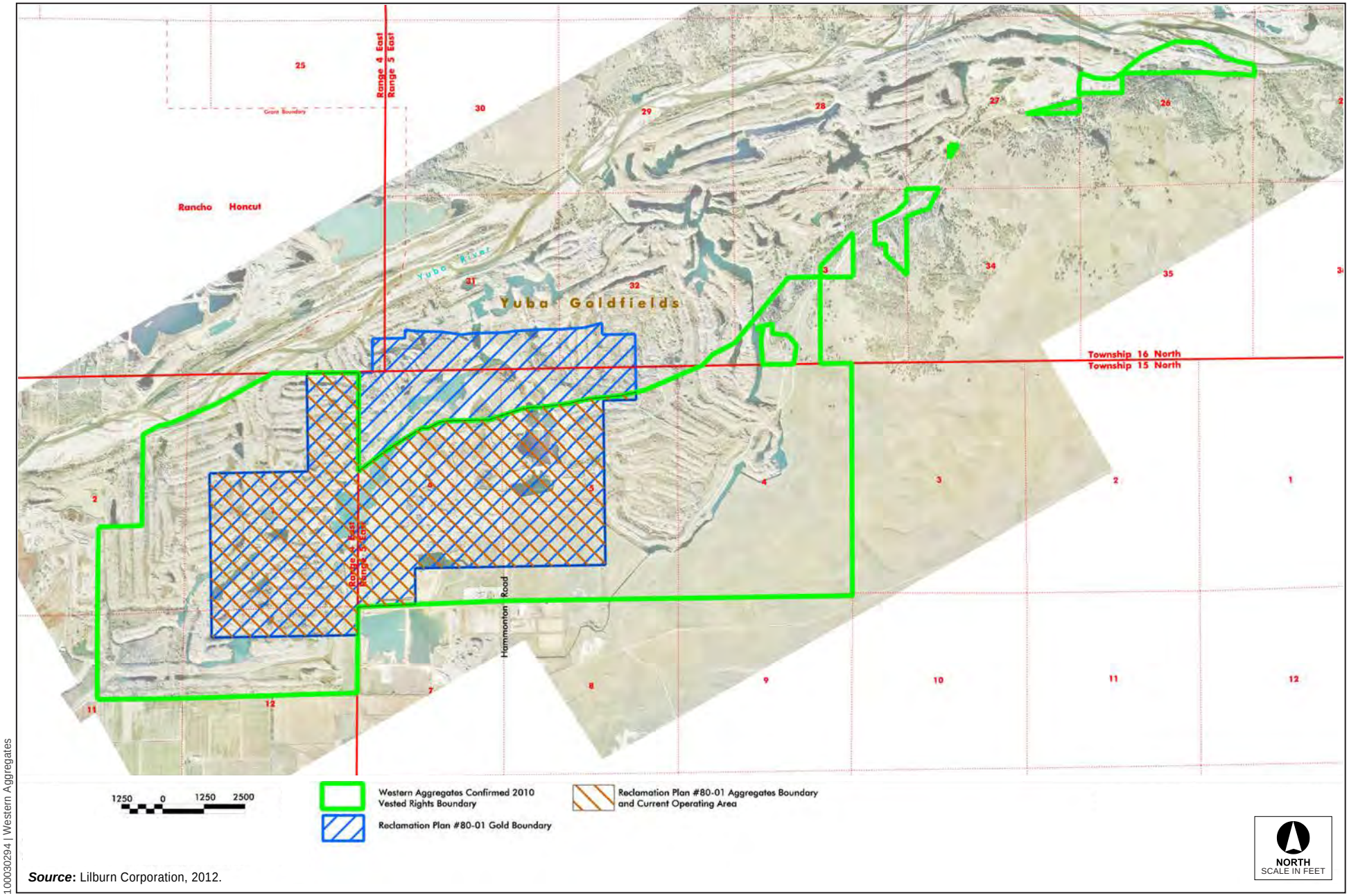
NORTH
SCALE IN FEET

Source: Lilburn Corporation, 2012.

100030294 | Western Aggregates

Figure 2-2
Typical Existing Conditions

ATKINS



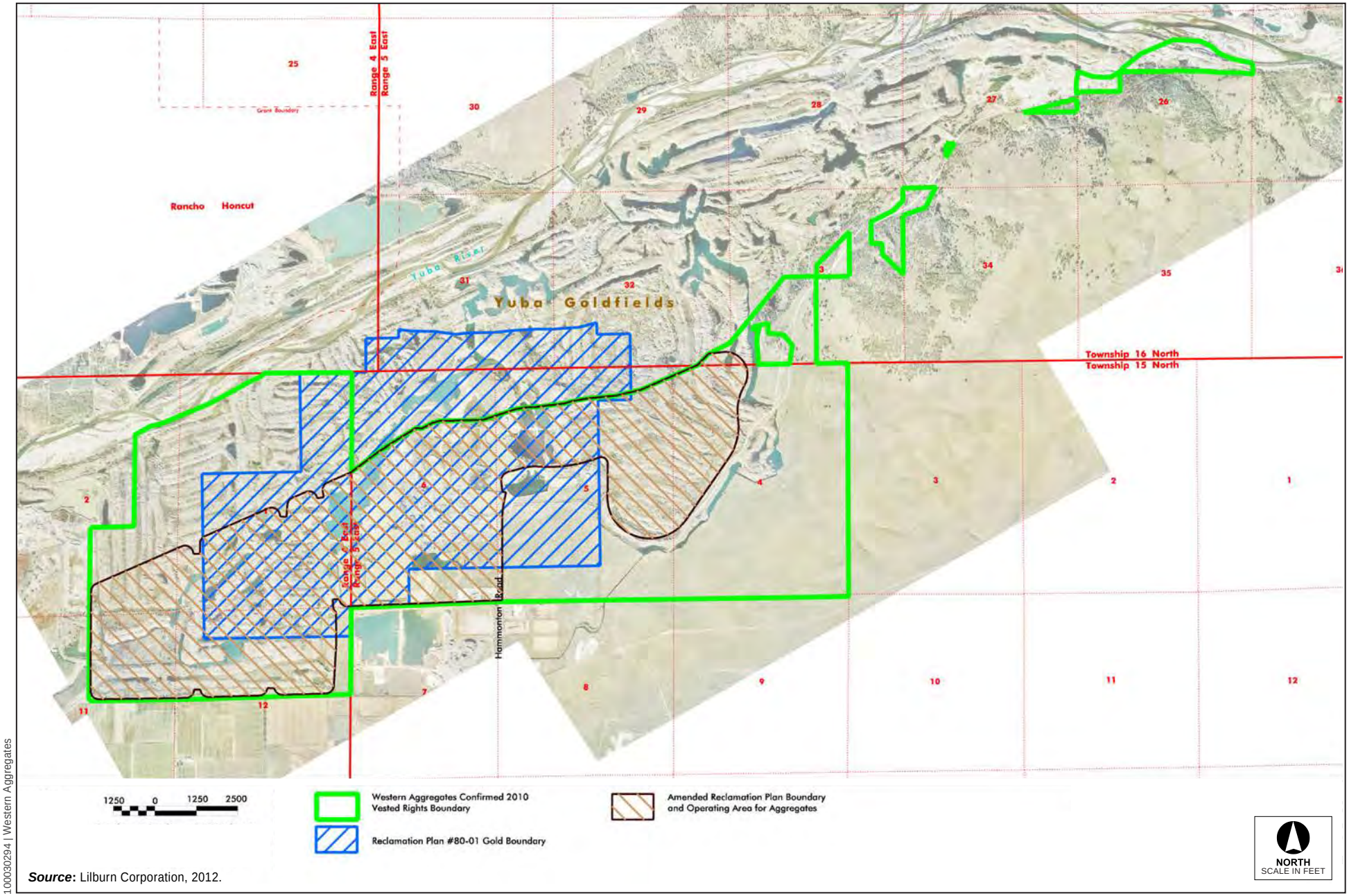
Source: Lilburn Corporation, 2012.

100030294 | Western Aggregates

Figure 2-3a

Current Reclamation Plan Area

ATKINS



***Source*:** Lilburn Corporation, 2012.

100030294 | Western Aggregates

Figure 2-3b

Proposed Reclamation Plan Area

ATKINS

The lands surrounding the Yuba Goldfields south of the Yuba River are zoned M-2 or A/RR5[3], the latter of which allows mixed agricultural, ranching and low density residential uses. To the north of Western's operations is the Yuba River, which is used primarily for recreational activities such as fishing and rafting. Lands immediately north of the Yuba River support aggregate mining (by other companies). The lands to the east of the Goldfields are vacant and are used for cattle grazing. The lands to the south and west of the Goldfields, and north of Hammonton-Smartville Road, support aggregate mining (by other mining companies), agricultural production and cattle grazing. Beale Air Force Base is located to the south of the Goldfields and south of Hammonton-Smartville Road.

Project Objectives

The intent of the California Surface Mining and Reclamation Act (SMARA) is to "maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that *(a)* adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition that is readily adaptable for alternative uses; *(b)* the production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment; and *(c)* residual hazards to the public health and safety are eliminated."[4]

Article 9, Section 3700 of SMGB Reclamation Regulations states the following: "Reclamation of mined lands shall be implemented in conformance with standards in this Article (Reclamation Standards)." The standards shall apply to each surface mining operation to the extent that:

(1) They are consistent with required mitigation identified in conformance with CEQA; and
(2) They are consistent with the planned or actual subsequent use or uses of the mining site.

Western proposes to reclaim the mine site to create a series of lakes varying in size. Their objectives for this Reclamation Plan are to:

- Provide for reclamation of vested right aggregate operations within a greater portion of the Vested Right Area (1,960 acres) than allowed under the existing reclamation plan and otherwise comply with the 2010 vested right decision of the State Mining and Geology Board.
- Upgrade Western's reclamation plan to current SMARA standards.
- Eliminate or reduce effects from mining.
- Reclaim to a usable condition for post-mining end uses.
- Contour mining features and revegetate disturbed areas to minimize aesthetic, biological, and hydrological effects.
- Reclaim the site as necessary to eliminate hazards to public health and safety.
- Reserve Western's right to mine vested areas outside of Reclamation Plan boundaries subject to future Reclamation Plan amendments.
- Establish a stand-alone reclamation plan for aggregate operations (Cal Sierra Development, Inc, will continue under existing reclamation plan RP 80-01).

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[3] Yuba County Information Technology Division, Yuba County Zoning and Specific Plan Designations Map. http://gis.co.yuba.ca.us/images/maps/ZoningMap.pdf (accessed 12/15/2012).
[4] *Surface Mining and Reclamation Act*, Section 2712.

As stated by the project applicant,[5] the Amended Reclamation Plan employs the standards of SMARA (PRC Section 2773) for both content and performance standards, including specifically Article 9 (Reclamation Standards), as contained in CCR Sections 3700 through 3711. Standards applicable to this application include Sections 3702, 3704(c–g), 3705, 3706, 3709, 3710(a), and 3711. Those standards defined as inapplicable include Sections 3703, 3704(a–b), 3704.1, 3707, 3708, 3710(b–d), 3712, and 3713.

Mine Operations

Since the early twentieth century, gold and aggregate mining, production and related operations have been continuously active on Western's 3,900-acre Vested Rights Area, as described above, as well as adjacent lands to the north subject to property interests of Western and/or Cal Sierra. Pursuant to its vested rights, Western has the right to conduct surface mining operations within the area covered by the Amended Reclamation Plan. Although production is expected to increase in response to market dynamics, total anticipated production over the next few years is estimated to be consistent with production over the previous 8 to 10 years, which has peaked at approximately 3.5 million tons per year of sand and gravel. It is expected that in the longer term, production rates will increase substantially to meet market demand, changes in market dynamics, and/or technological improvements occurring in the due course of business. Production within this approximately 1,960-acre Amended Reclamation Plan area is projected to take place for approximately 45 years from the date the SMGB approves the Amended Reclamation Plan. The Amended Reclamation Plan is based on mining depth anticipated to be approximately -20 feet below mean sea level (msl) (100 feet below the average lake surface level). However, mining depths may vary in certain areas, and may reach -85 feet below msl (165 feet below the average lake surface level) based on local ground conditions, geology, changes in market conditions, and changes in mining technology, where such changes may be implemented without materially disrupting the shorelines, marshes, or other habitats contemplated by the proposed project. Based on mining to a depth of -20 feet below msl (100 feet below the average lake surface level), the reserves within the area covered by the proposed project are estimated at 414 million tons. However, slope stability to maximum mining depth (85 feet below msl or 165 feet below the average lake surface level) is demonstrated by slope stability analysis.

Western's operation is currently subject to RP 80-01, which was approved by the County of Yuba in 1980, originally for Yuba Consolidated's gold and aggregate operations. Gold mining operations, conducted by a separate company called Cal Sierra Development, Inc. ("Cal Sierra"), occur concurrently with operations of Western, on the same Yuba Goldfields property. The operations and assets of Western and Cal Sierra were, through 1987, owned and controlled by a common entity, Yuba Goldfields, Inc. (together, with its predecessors, "Yuba Consolidated"). While Cal Sierra owns gold, precious metals estate, and other related assets in the Yuba Goldfields, Western owns the surface estate and the rights to sand, gravel, rock, stone, cobbles, hardrock, decorative rock, silica, riprap and asphalt rock and other aggregates (collectively referred to herein as either "aggregates" or "sand and gravel") in the Yuba Goldfields (and, certain limited gold, precious metals and other related assets in a small portion of the Goldfields). Cal Sierra's administrative offices are located in the approximate center of Section 5

[5] M. Jones, electronic communication from Lilburn Corporation (1905 Business Center Drive, San Bernardino, CA, 92408), representing Western Aggregates LLC, to State Mining and Geology Board via Project FTP site (December 4, 2012).

(Figure 2-3a and Figure 2-3b). Thus RP 80-01 now applies to both Western's aggregate operations, and Cal Sierra's gold operations. RP 80-01 covers approximately 2,000 acres, all of which apply to Cal Sierra's gold operations. Of the total 2,000 acres, approximately 1,420 acres apply to Western's aggregate operations, and are located in Sections 1 and 12, Township 15 North, Range 4 East, and Sections 5 and 6, Township 15 North, Range 5 East, as shown in Figure 2-3a. Western's aggregate plant operations are currently located in Section 6. This 1,420-acre area is oriented northeast-southwest; and is within an irregularly shaped area. Much of the perimeter of the active mining area site is characterized by old dredged tailings that exist as narrow ridges separated by intervening topographic lows. Historically, most of the area has been mined with bucket-line dredges, with these areas having been dredged at least twice and in some parts of the property three to four times, each time to a greater depth with more efficient recovery equipment. The proposed Amended Reclamation Plan covers approximately 1,960 acres of the 3,900-acre Vested Rights Area; including such portion of the 1,420-acre area within RP 80-01 as applies to aggregate operations. If approved, the Amended Reclamation Plan will supersede the 1,420-acre portion of RP 80-01 that applies to aggregate operations. However, the entire 2,000-acre area of RP 80-01 that applies to gold operations will remain valid and still intact (see Figure 2-3b).

In the southern portion of the RP 80-01 site is the Processing Plant area where Western maintains processing equipment (i.e., crushers, screens, and conveyors, maintenance structures, fuel storage area, product stockpiles, etc.), a scale house, shop building, fuel island, administrative offices, and equipment storage. A large settling pond situated in the central portion of the site north of the processing area (referred to in Western's Waste Discharge Requirements as a "Designated Disposal Area" or "DDA") serves as the sediment settling pond. Product stockpiles are situated adjacent to the processing area (see Figure 2-4 [Current Plant Operations]).

Current Operations

Western's existing operations consist primarily of sand and gravel removal and processing. Current mining operations by Western involve excavation using a clamshell dredge, excavators, draglines and other equipment. Material is removed, transported or conveyed to a processing plant, and then sorted, and, for certain materials, crushed and/or washed and stockpiled for use in the manufacturing and/or sale of construction aggregates and road base and other aggregate material. Wash water and silts are pumped into a settling pond (Figure 2-4).

Over the past 8 to 10 years, production by Western has peaked at 3.5 million tons per year. It is expected that production over the next few years could equal or exceed this level of yearly production in order to meet market demand. It is further expected that in the longer term, Western's production will increase substantially to meet market demand, changes in market dynamics, and/or technological improvements occurring in the due course of business.

Methods of Extraction

Western has employed or currently employs several methods in its production of aggregates in the Yuba Goldfields. The methods of excavation include the use of dredges, draglines, scrapers, excavators, and any other appropriate techniques to remove the resource. See Figure 2-5 (Typical Extraction Methods A) and Figure 2-6 (Typical Extraction Methods B). The following is a brief description of each.

Dredges

Dredge designs include (refer to Figure 2-5 and Figure 2-6).

- Hydraulic—suction with or without a cutter head
- Bucket line
- Clam Shell

Each of these dredge types removes, dewaters or processes the material, then places it on a conveyor or truck and/or deposits it in a process area to be collected by a scraper and/or a front-end loader. The material is then transported to the processing plant or stockpile.

Dredges require an assortment of support equipment used to level ground, move overburden, position the dredge and maintain dust control. These include dozers, loaders, scrapers, haul trucks, water trucks, graders, conveyors and work boats.

Historically, Cal Sierra has used bucketline dredges that harvested materials from a depth of well over 120 feet below water elevation, separated the fines and precious metals from the ore and deposited the cobble tailings in its wake via a stacker or monitor. Western retrieved those tailings from the conveyor stockpile with a backhoe or front-end loader and transported them via truck to their aggregate plant for processing (Figure 2-5).

Dragline

A dragline drags a bucket across a mined surface harvesting aggregates in the process and depositing the material in a stockpile or hopper. The material is then picked up by appropriate loading equipment and placed on a conveyor or truck for transport to the processing plant. Support equipment includes dozers, loaders, scrapers, haul trucks, water trucks, graders, and conveyors (Figure 2-5).

Excavator

An excavator is positioned on dry land and used to excavate above and below the water level. Collateral equipment is the same as a drag line.

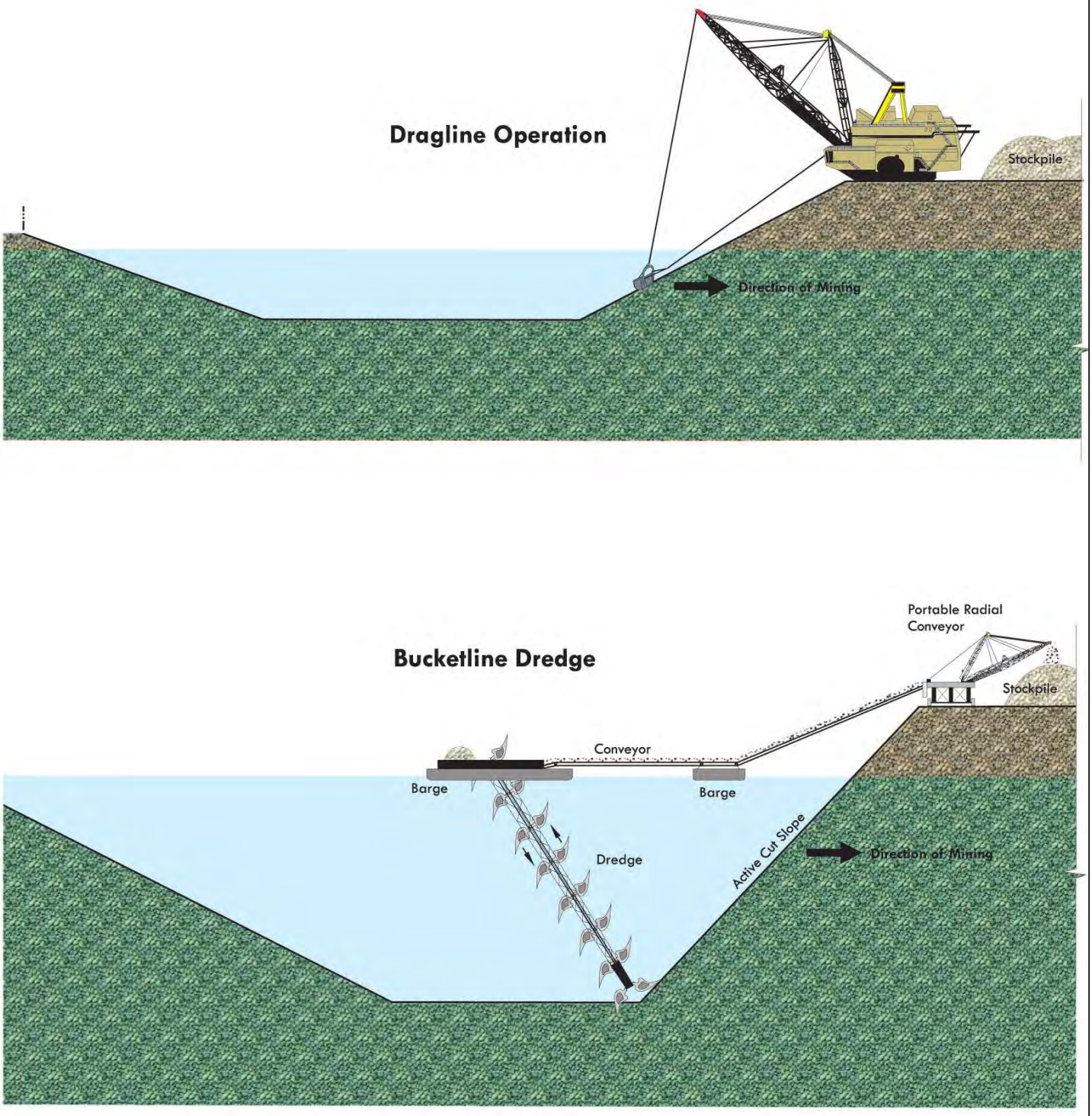
Western's current mining operation employs dry mining as well as a clamshell dredge to mine to the depth of existing dredged material, which is typically around 85 feet below water level in its current mining area. Although the depth of mining may vary from place to place, -20 feet below msl (100 feet below the average lake surface level) has been used as the approximate mining depth for purposes of the Amended Reclamation Plan due to current economic and technological conditions. Current mining employs a Rohr Clamshell dredge type RS 12.5/450B with a 16 cubic yard bucket. Excavated sand and gravel is discharged from the clamshell into a hopper that has a grizzly to prevent oversize materials and miscellaneous debris from getting into the system and damaging equipment. The sand and gravel is dewatered on the dredge by means of dewatering screen and cyclones before being conveyed by the on-board belt conveyor to a series of floating belt conveyors. These conveyors transport the material to a land conveyor and stacker that stockpiles the material over a 14' diameter tunnel with four belt feeders. These belt feeders are used to supply the existing processing plant. All equipment on board the dredge is powered and supplied by electrical cable that is supported on the floating conveyors (refer to Figure 2-6).

Current Plant Operations - May 2012

Western Aggregates LLC
Yuba County, California

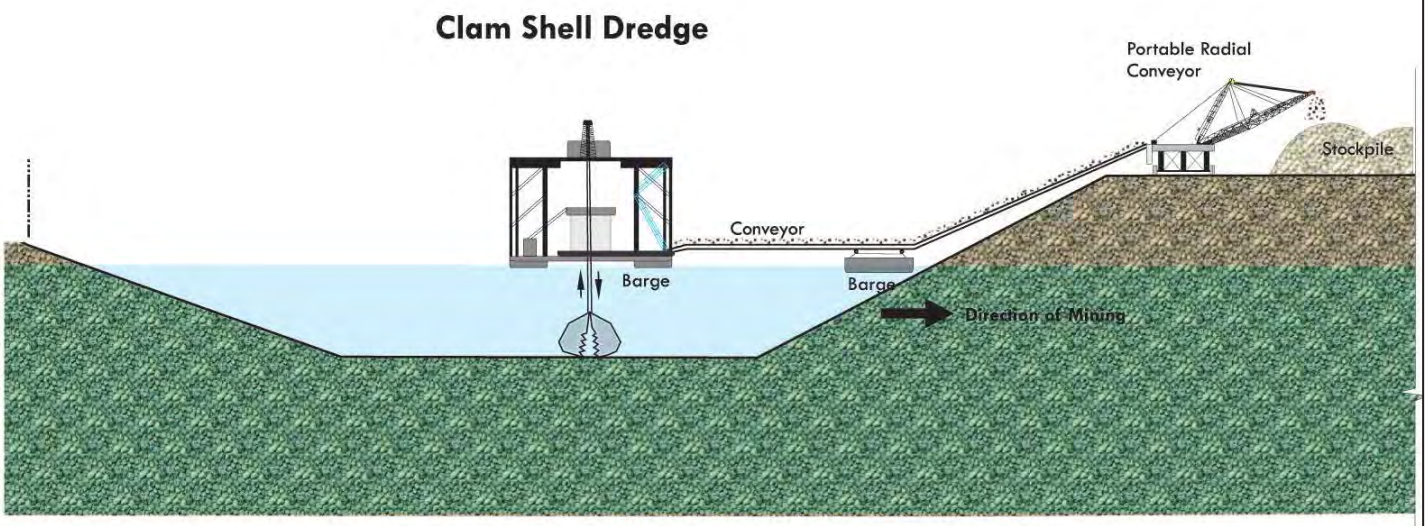
Figure 2-4

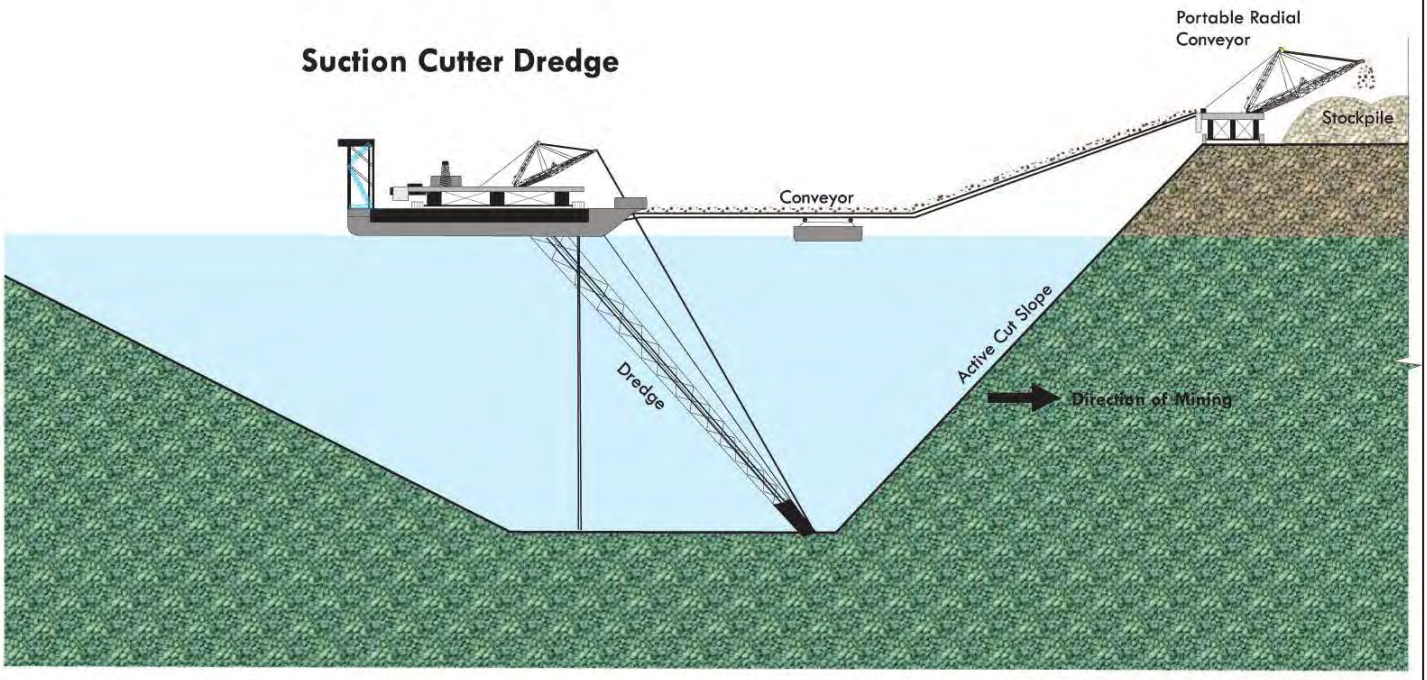
N
0 600
Feet
Source: Lilburn Corp., 03/2011 (TAG)
Aerial: Late 2009
LILBURN CORPORATION



Source: Lilburn Corporation, 2012.

Figure 2-5
Typical Extraction Methods A





Source: Lilburn Corporation, 2012.

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Figure 2-6
Typical Extraction Methods B

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Processing

Once the removed material reaches the plant, it is processed through a primary screen. Certain sizes of material are washed through a series of screens. Larger rock is conveyed to the crushing plant. The aggregate products are stockpiled by size for shipment.

The amount of material processed is dictated by the capacity of the crushers, screens and conveying equipment and the daily hours of operation. Site facilities also include administrative offices, scalehouse, shop, fuel island, and equipment storage area. A plot plan aerial of the existing plant appears as Figure 2-4.

Settling Pond

Settling pond activities are located within the processing area and are moved as needed to accommodate operations. The processing activities separate clay or fine silt (fines), which are deposited into a settling pond (described in Western's Waste Discharge Requirements as a "DDA"). The fines settle out and the water is allowed to evaporate or recirculate into Western's plant process. The fines may be used for resoiling the site for revegetation purposes, and possibly other uses. Other uses of the fines may include sale or processing into salable products. The current settling pond is located north of the plant (see Figure 2-4).

Depth of Excavation

The depth of mining for the 1,960-acre area addressed by the Amended Reclamation Plan will be approximately -20 feet below msl (100 feet below the average lake surface level). However, mining depths may vary in certain areas, and may reach 85 feet below msl (165 feet below the average lake surface level) based on local ground conditions, geology, changes in market conditions, and changes in mining technology, where such changes may be implemented without materially disrupting the shorelines, marshes, or other habitats contemplated by the Amended Reclamation Plan.

Total Acreage

It is projected that approximately 1,960 acres of the 3,900-acre Vested Rights Area will be affected by Western's surface mining operations during the 45-year period.

Estimated Quantities

The reserves within the Amended Reclamation Plan area, assuming mining to a depth of approximately -20 feet below msl (100 feet below the average lake surface level), are estimated to be 414 million tons of aggregates. Area and volumes by individual quarries are presented in Table 2-1. The estimated termination date of the surface mining operations to which the Amended Reclamation Plan applies is projected to be 45 years following approval of the Amended Reclamation Plan, now estimated to be on or about December 31, 2056.

Mine Phasing

Mine phasing will take place in a manner preceding and consistent with reclamation phasing as described in detail in Reclamation Phasing below.

Table 2-1 Area and Volume by Quarry

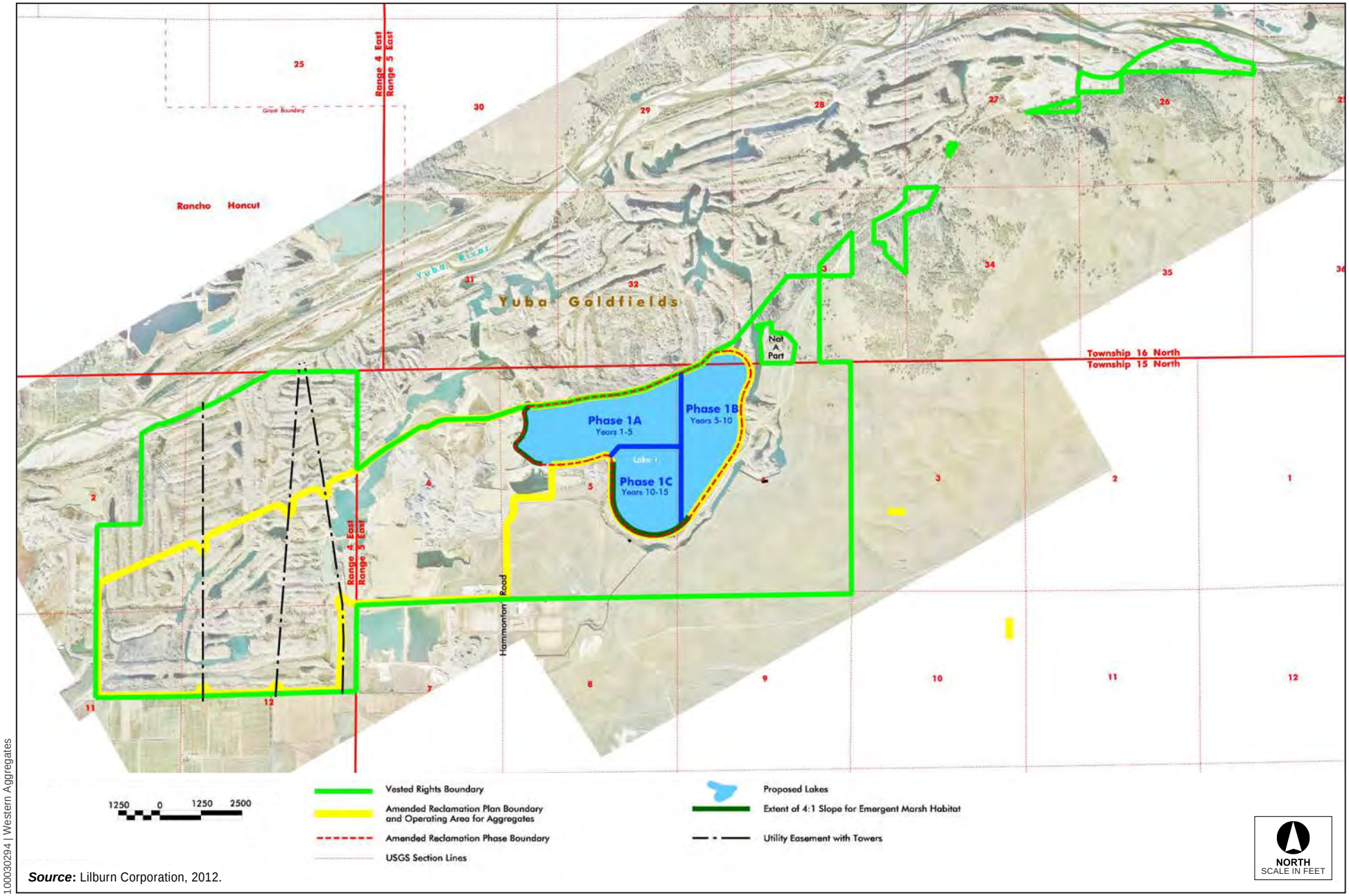
Quarry/Lake	Area (acres)	Perimeter (feet)	Volume @ 100 Feet (mcy)	Reserves (MT)
1	494.0	21,355	104.6	156.9
2	292.8	18,735	45.7	68.5
3	224.1	14,962	35.6	53.4
4	290.5	15,211	43.4	65.1
5	300.8	14,378	46.8	70.2
Operations Areas (Plants, Stockpiles, Settling Ponds, etc.)	238.5			
Open Area	119.4			
Total	***1960.1***	***84,641***	***276.1***	***414.1***

Reclamation Plan

Reclamation Overview

The Amended Reclamation Plan would use existing mining methods to remove dredge piles or excavate previously undredged lands in a manner supportive of aquatic and terrestrial wildlife habitat. The plan is consistent with the existing vegetation and habitat characteristics and in a manner compatible with ongoing aggregate operations. The contemplated approach supports wildlife and emergent marsh via the creation of habitat, which includes discrete polygons that would function as lake boundaries. In addition, the Amended Reclamation Plan includes a significant buffer from the Yuba River. Because the majority of the existing landscape is dominated by cobble piles that maintain only intermittent vegetation, reclamation activities are intended to yield a substantial improvement over existing conditions.

Western plans to remove aggregates to a depth of approximately -20 feet below msl (100 feet below the average lake surface level) over an approximately 1,960-acre area, during a phased 45-year surface mining operation, creating a series of five discrete lakes bordered by vegetated woodlands and dikes or berms. These lakes will establish permanent shoreline. The area covered by the Amended Reclamation Plan is depicted in Figure 2-7a (Conceptual Model for Final Reclaimed Configuration after 15 Years), Figure 2-7b (Conceptual Model for Final Reclaimed Configuration after 30 Years), and Figure 2-7c (Conceptual Model for Final Reclaimed Configuration after 45 Years) identifying utility easements, natural and manmade lake boundaries and individual lakes, numbered 1 through 5 for reference. The boundary lines shown on the Amended Reclamation Plan's aerial photograph and mapped exhibits representing Section lines were compiled from record information and USGS Quadrangle Maps, and thus are approximate. An in-field survey may result in slightly differing boundary locations from those depicted on the exhibits.



Source: Lilburn Corporation, 2012.

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Figure 2-7a

Conceptual Model for Final Reclaimed Configuration after 15 Years

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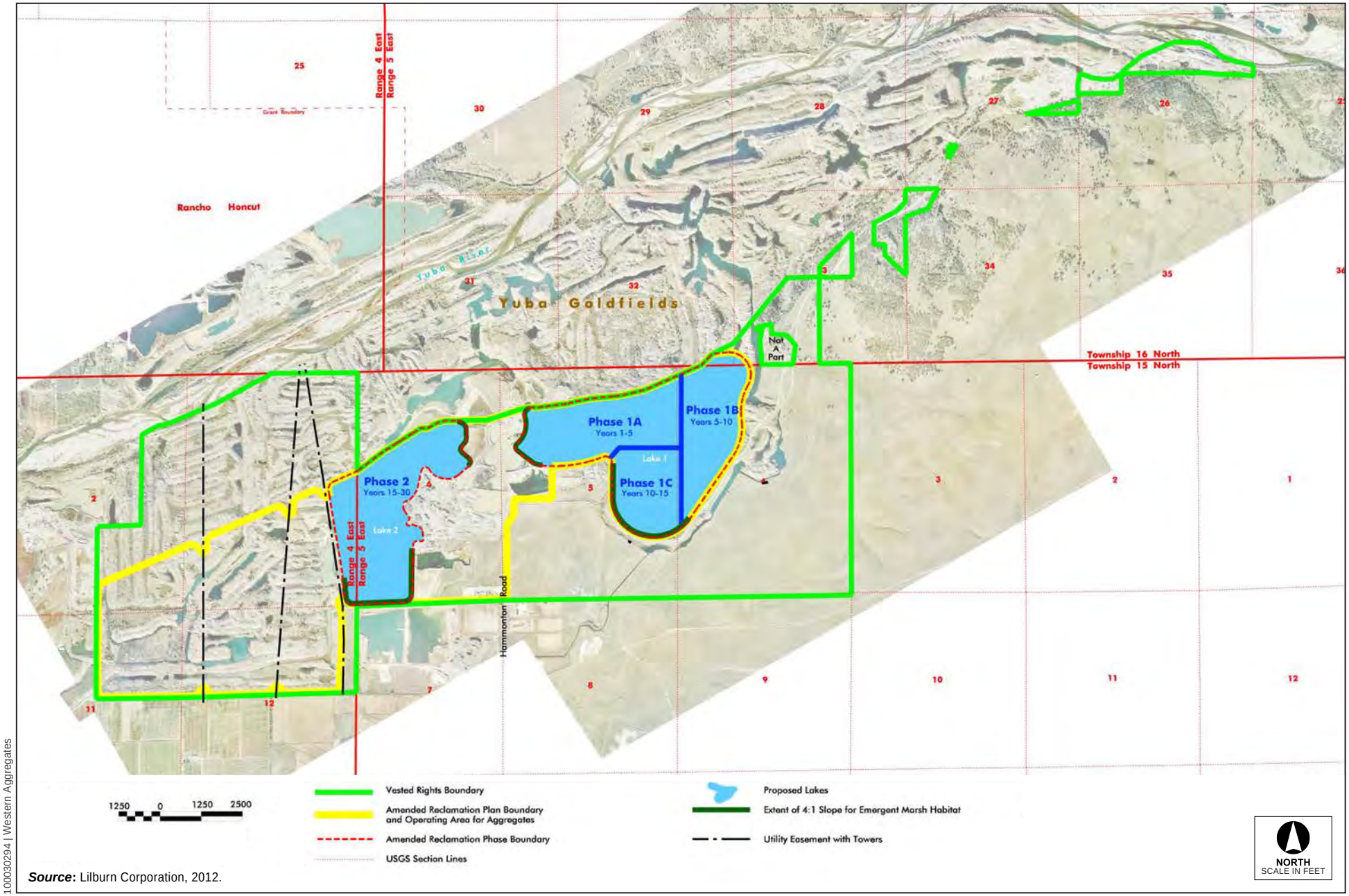

Source: Lilburn Corporation, 2012.

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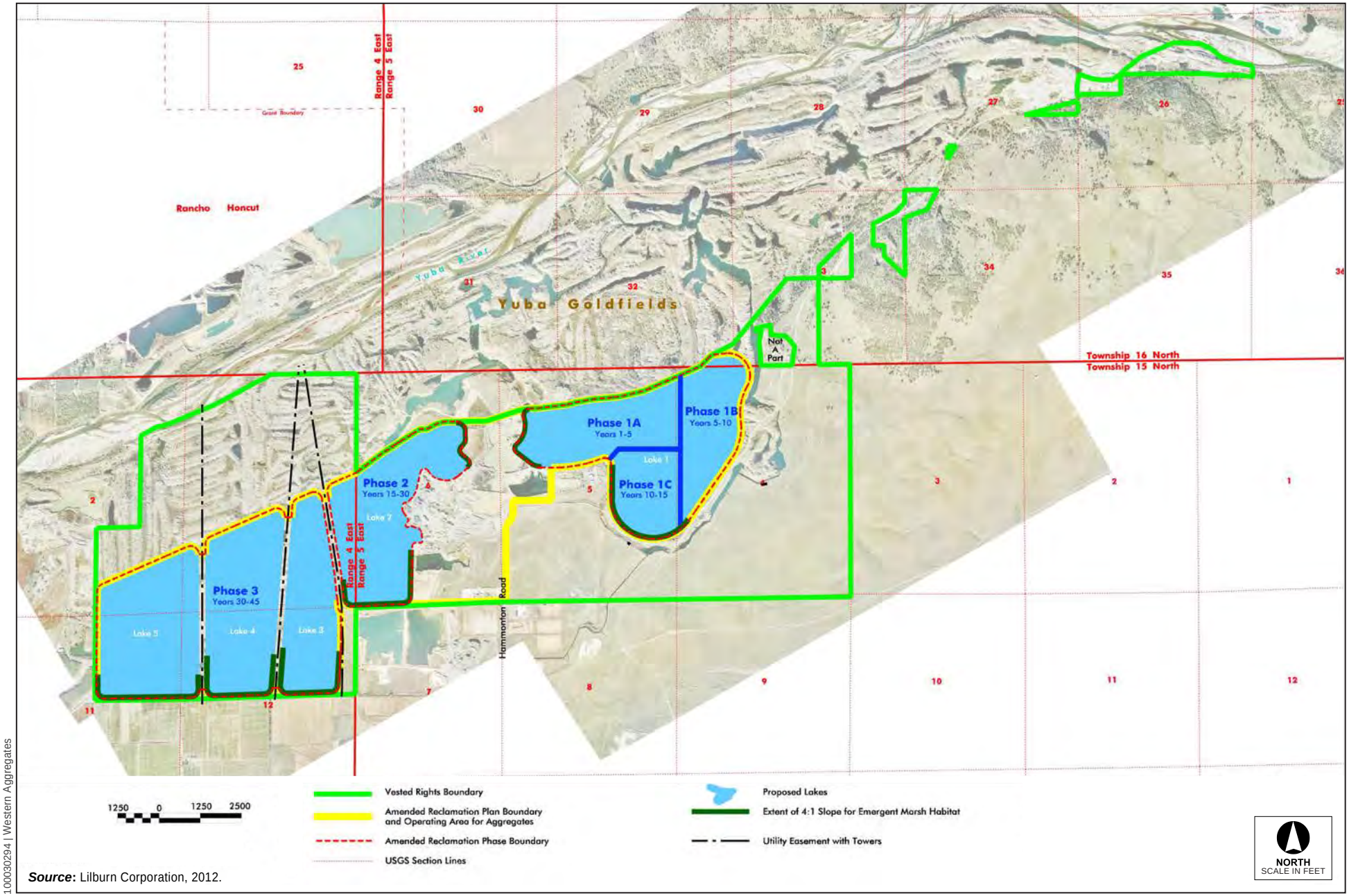
Figure 2-7b

Conceptual Model for Final Reclaimed Configuration after 30 Years

ATKINS



Source: Lilburn Corporation, 2012.

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Figure 2-7c

Conceptual Model for Final Reclaimed Configuration after 45 Years

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Lake depth will vary with location due to aggregate quality and demand, but would range between approximately 85 to 100 feet. The angle of repose or shoreline would also vary from 2:1 to 4:1 to create diverse habitats including beaches and shallows for wildlife and vegetation enhancement. The contouring of the shoreline would be completed concurrent with operations in a manner to provide the optimum habitat value. In the event that field observations indicate that strength parameters used in the design of the mined slopes are not adequate, the slopes would be inspected and reanalyzed by a registered professional engineer or geologist and modified as necessary to provide a factor of safety suitable for the proposed end use and the Amended Reclamation Plan revised as may be required prior to implementing any such modifications.

Western will create lakes with segments of irregular, meandering shorelines to support wildlife habitat and vegetation. In the event that large deposits of silts are encountered in the mining process, they may be retained and used in reclamation efforts. Three types of vegetative communities are proposed. These include emergent marsh, riparian woodland and riparian upland.

The final result within the Amended Reclamation Plan boundary will be a series of five lakes varying in size. A simulation of the lake configuration appears in Figure 2-7a through Figure 2-7c, and graphic simulations of a reclaimed lakeshore environment appear in Figure 2-8 (Existing Cobble Berm) (before) and Figure 2-9 (Lake Boundary Simulation) (after). Figure 2-8 depicts the actual existing conditions of an in-place dredge pile naturally revegetated with grasses. The process will ultimately result in a series of lakes similar to the configuration depicted in Figure 2-7c and the simulated illustration in Figure 2-9. The final anticipated end use following reclamation is open space and wildlife habitat consisting of aquatic lake, marsh, woodland and upland habitat.

Western would use fines available from mining operations, including residual dredge fines, fines from the settling pond(s), and overburden, to meet the revegetation requirements of the Amended Reclamation Plan. In addition, Western would spread a layer of fines to cover cobbles and provide an adequate rooting zone for revegetation.

Commercially available broadcast seeding would be applied to these areas for erosion control purposes and to enhance natural revegetation. No off-site import of fines is proposed. In areas where topsoil would be disturbed, the soil would be salvaged and stockpiled for use in revegetation to the extent necessary. Western may re-enter an area covered by a prior mining phase and subsequently mine to a greater depth in the lake portion of the phased area. However, to the extent possible given operational constraints, such mining in prior mining phases would not adversely affect any revegetation areas created pursuant to the Amended Reclamation Plan. To the extent it is necessary for Western to disturb any such revegetation areas, Western shall restore any such impacted areas to the condition prior to being impacted. This may include breaching lake perimeters in order to relocate dredging equipment. These perimeter breaches would be restored upon reclamation.

Western anticipates that mining will continue in the Vested Rights Area beyond the 45-year phased plan proposed herein due to the extensive amount of aggregate within the Vested Rights Area and the anticipated and projected market for aggregate resources, and may include continued mining in areas addressed by the Amended Reclamation Plan. Western anticipates the plant site will retain its usefulness

and viability beyond the culmination of the third 15-year phase; thus, subject to favorable conditions, Western may choose to retain some or all of the plant facilities.

Upon final completion of mining, the aggregate processing plant would be razed and all equipment would be dismantled and removed. As discussed in greater detail below, the plant site and roads and utilities serving the site would be prepared, revegetated and reclaimed.

Revegetation

Western would conduct revegetation with commercially available species concentrating on three vegetation types.

Emergent Marsh

Emergent marsh would consist of approximately 4 miles of shoreline over 25 feet in width of 4:1 sloped bench resulting in approximately 12 acres of emergent marsh. The settling pond area (DDA), see Figure 2-7a through Figure 2-7c, reclaimed to a vegetative state may also contribute to the total planned revegetation. Vegetation in this community is present where surface water persists and is at least occasionally inundated. Water depths typically range from 0 to 4 feet. Approximately 6 inches of process fines would be deposited on these 4:1 slopes.

Planting would occur to establish revegetation and habitat diversity. Planting specifications for the emergent marsh community are shown in Table 2-2 (Emergent Marsh).

Table 2-2 Emergent Marsh

Species	*Common Name*	*Propagule Type*	*Quantity*[a]
Carex nebrascensis	Nebraska sedge	Plug	200
Cyperus eragrostis	Nut sedge	Plug	150
Eleocharis macrostachya	Pale Spikerush	Plug	150
Juncus balticus	Baltic rush	Plug	200
Juncus effusus	Soft rush	Plug	200
Scirpus acutus var. *occidentalis*	Hard-stemmed rush	Plug	300

a. Amount or number per acre.

Riparian Woodland

The riparian woodland represents the transition area between the emergent marsh and riparian upland. The development of this area would be accomplished by spreading fines to a minimum depth of four inches. Plants tolerant of saturated soils and occasional inundation are characteristic in this community. Table 2-3 (Riparian Woodland) lists the planting specifications for riparian woodland.

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Figure 2-8
Existing Cobble Berm

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Source: Lilburn Corporation, 2012.

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Figure 2-9
Lake Boundary Simulation

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Table 2-3 Riparian Woodland			
Species	***Common Name***	***Propagule Type***	***Quantity[a]***
Acer negundo var. *californica*	California box elder	Seedling	20
Alnus rhombifolia	White alder	Seedling	20
Cephalanthus occidentalis	California button bush	Seedling	30
Fraxinus latifolia	Oregon ash	Seedling	20
Platanus racemosa	California sycamore	Seedling	20
Populus fremontii	Fremont cottonwood	Cuttings	30
Rosa californica	California wild rose	Seedling	30
Salix laevigata	Red willow	Cuttings	30
Salix lasiolepis	Arroyo willow	Cuttings	30
Muhlenbergia rigens	Deer grass	Plug	100
Leymus triticoides	Creeping wildrye	Seed[b]	10

a. Amount or number per acre
b. Pound per acre pure live seed (PLS)

Riparian Upland

The riparian upland habitat consists of the constructed slopes, roadways and lake boundaries that form the perimeters of the portions of the revegetated shoreline. The total area is unknown due to the phased nature of the lake designs. Elevations will range from 5 to 20 feet above the average lake level. Vegetation in this area is typically represented by relatively drought-tolerant riparian species. Table 2-4 (Riparian Upland) lists the planting specifications for riparian upland.

Planting Methods

Planting of commercially available species would be conducted in the fall following the first soaking rain of the season. Planting may include broadcast seeding followed by hand racking or a harrow in upland areas. Typical soil surface would consist of a minimum of four inches of fines. Willow and cottonwood cuttings would consist of live dormant stems placed in contact with saturated soils. Upon placement, these would be hand-irrigated to remove air pockets in the stem section. Trees would be placed in 3 x 3 x 3-foot excavated holes backfilled with fines and surrounded by an irrigation berm. Supplemental irrigation of upland seeding species would be provided by hand as needed for up to 2 years.

In areas that are compacted from previous use, such as roadways, stockpiles, or production areas and subsequently abandoned, the surface would be scarified to a depth of at least 18 inches prior to soiling with fines and planting.

Table 2-4 Riparian Upland			
Species	***Common Name***	***Propagule Type***	***Quantity[a]***
Aesculus californica	California buckeye	Seedling	15
Baccharis pilularis	Coyote brush	Seedling	20
Ceanothus cuneatus	Buckbrush	Seedling	25
Heteromeles arbutifolia	Toyon	Seedling	20
Pinus sabiniana	Gray pine	Seedling	15
Quercus douglasii	Blue oak	Seedling/acorns[b]	25
Quercus lobata	Valley oak	Seedling/acorns[b]	20
Quercus wislizenii	Interior live oak	Seedling/acorns[b]	20
Rhamnus tomentella	Hoary coffeeberry	Seedling	25
Achillea millefolium	Yarrow	Seed[c]	2
Poa secunda	Blue grass	Seed[c]	3
Elymus glaucus	Blue wildrye	Seed[c]	5
Eriogonum nudum	Naked buckwheat	Seed[c]	2
Leymus triticoides	Creeping wildrye	Seed[c]	3
Lupinus microcarpus	Chick lupine	Seed[c]	3
Nasella pulchra	Purple needlegrass	Seed[c]	3

a. Amount or number per acre
b. Three acorns per planting hole (e.g., *Q. douglasii*; 3 x 25 = 75 acorns/acre)
c. Pound per acre pure live seed (PLS)

Revegetation Goals and Performance Standards

Performance goals for final revegetation are shown in Table 2-5 (Performance Goals for Final Revegetation). Revegetation Monitoring would be conducted annually for a minimum of 5 years with at least 2 years without human intervention. Failure to achieve the performance standards at the end of the monitoring period would require remedial measures and further monitoring until the revegetation performance standards have been achieved.

Plant Protection

In order to prevent destruction of seedlings and cuttings, revegetation crews would use various methods of protection including paper or plastic sleeves, wire guards and wire cages. Size, material, and mesh would vary based on plant type, type of herbivore being targeted, and proven effectiveness.

Table 2-5 Performance Goals for Final Revegetation		
Coverage	***Species Richness***	***Density***
Emergent Marsh		
80 percent cover	5 native emergent species/200m^2	—
Riparian Woodland		
70 percent cover	8 native species/acre	150 native trees and shrubs/acre 60 deer grass/acre
Riparian Upland		
60 percent Absolute Cover (native woody species, grasses, and forbes)	4 native species of trees/acre 4 native species of shrubs/acre 3 native herbaceous perennial species/100m2	60 native trees/acre 55 native shrubs/acre

Weed Management

Weed control would be conducted by Western using a variety of methods as required including hand removal, mechanical removal, herbicides and biological predation. Annual spring monitoring would be conducted on the active mine area and the reclaimed areas. If weeds exceed 10 percent of vegetative cover in the reclaimed area weed control measures would be initiated. Weeds in operations area would be controlled if weed levels exceed non mining areas on adjacent property. Potential terrestrial species that would be monitored are listed in Table 2-6 (Monitored Terrestrial Species).

Table 2-6 Monitored Terrestrial Species	
Giant reed (*Arundo donax*)	Perennial pepperweed (*Lepidium latifolium*)
Italian thistle (*Carduus pycnocephalus*)	Purple loosestrife (*Lythrum salicaria*)
Klamath weed (*Hypericum perforatum*)	Star thistle (*Centaurea solstitialis*)
Medusahead (*Taeniatherum caput-medusae*)	Tree of heaven (*Ailanthus altissima*)
Pampas grass (*Cortaderia selloana*)	Tree tobacco (*Nicotiana glauca*)
White top (*Cardaria draba*)	

Potential aquatic species are listed in Table 2-7 (Monitored Aquatic Species).

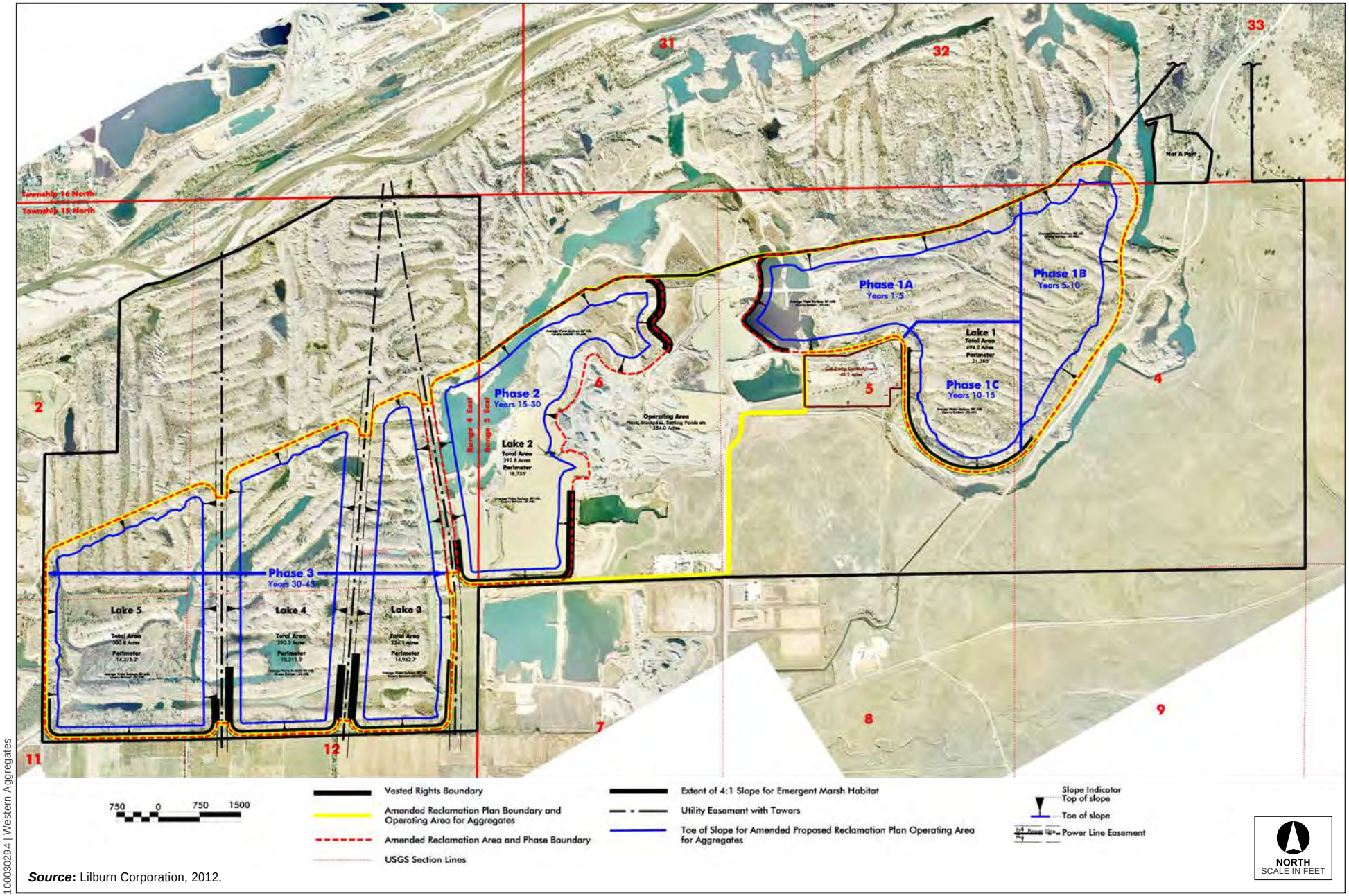
Table 2-7 Monitored Aquatic Species	
Hydrilla (*Hydrilla verticillata*)	Water hyacinth (*Eichornia crassipes*)

Hydrilla is a CDFA A-rated noxious weed. If detected, the County Agricultural commissioner would be notified. Controls would be conducted in accordance with CDFA integrated pest control branch policies and procedures.

Reclamation Phasing

As noted above, aggregate operations will occur in three 15-year phases according to an aggregate phasing plan developed by Western. Western currently estimates that the average number of acres on which it will conduct surface mining operations in any one year during the life of the Amended Reclamation Plan will be approximately 35 acres and that it will mine to an anticipated depth of -20 below msl (100 feet below the average lake surface level). However, due to the long life of the operations, the number of acres affected and the depth of mining could change as a consequence of changed market conditions, or changes in mining technology. A projected plan for aggregate removal advancement developed for planning purposes is depicted in Figure 2-10 (Phasing Plan) outlining operations for the next 15 years. For planning purposes, approximate potential future phases are also identified for years 16 to 30 and 31 to 45 (Figure 2-7a through Figure 2-7c). A total of approximately 1,960 acres of the Yuba Goldfields would be affected within the 45-year period of surface mining operations. These operations would involve removing sand and gravel to an initial depth of -20 feet below msl (100 feet below the average lake surface level) within the five planned lakes. The projected reserves are based on existing plant processing limitations and the wide variations in the aggregate layers re-deposited by the gold mining. Changes to any of these factors could decrease or accelerate the projected annual operations, as could changes in demand.

Figure 2-10 provides a plot plan for excavation phasing with a corresponding cross-section in Figure 2-11 (Typical Mining Cross Section). The shoreline would be revegetated using the seed and plant mixes outlined above. Once established, it is contemplated that during the life of the Amended Reclamation Plan, this shoreline would be unaltered by future Western operations (excluding access roads), which would gradually move away from the permanent shore. Figure 2-12 (Typical Post Mining Cross Section) illustrates a cross section of a post mining condition. Figure 2-8 is an actual photo of a naturally revegetated cobble berm. Figure 2-9 is illustrates the berm following mining and reclamation. Figure 2-13 (Conceptual Simulation of Final Reclaimed Lake Configuration) provides an oblique simulation of the final lake configuration. Figure 2-5 and Figure 2-6 illustrate the methods of extraction and equipment types. Phases may vary in size, depth and location. At a time specified by the SMARA Lead Agency, but not less than 2 years prior to completion of a 15-year phase, Western would submit to the Lead Agency, an updated 15-year phasing map reflecting any reclaimed areas and a detailed anticipated phasing scenario for the next 15 years at the same level of detail as the current phasing information. Such phasing maps may reconfigure the size and location of the mining during the phases, but shall be consistent with the reclamation standards and phasing concepts set forth in the Amended Reclamation Plan. In addition, to the extent warranted by market conditions, site geology or other factors, Western in its discretion may complete, or otherwise discontinue mining in, a particular phase in a time period of less than 5 years. Under such circumstances, prior to the completion of the abbreviated phase Western shall submit to the SMARA lead agency an updated 15-year phasing map reflecting reclaimed areas and a detailed map of the next 15 years at the same level of detail as the current phasing information.



Source: Lilburn Corporation, 2012.

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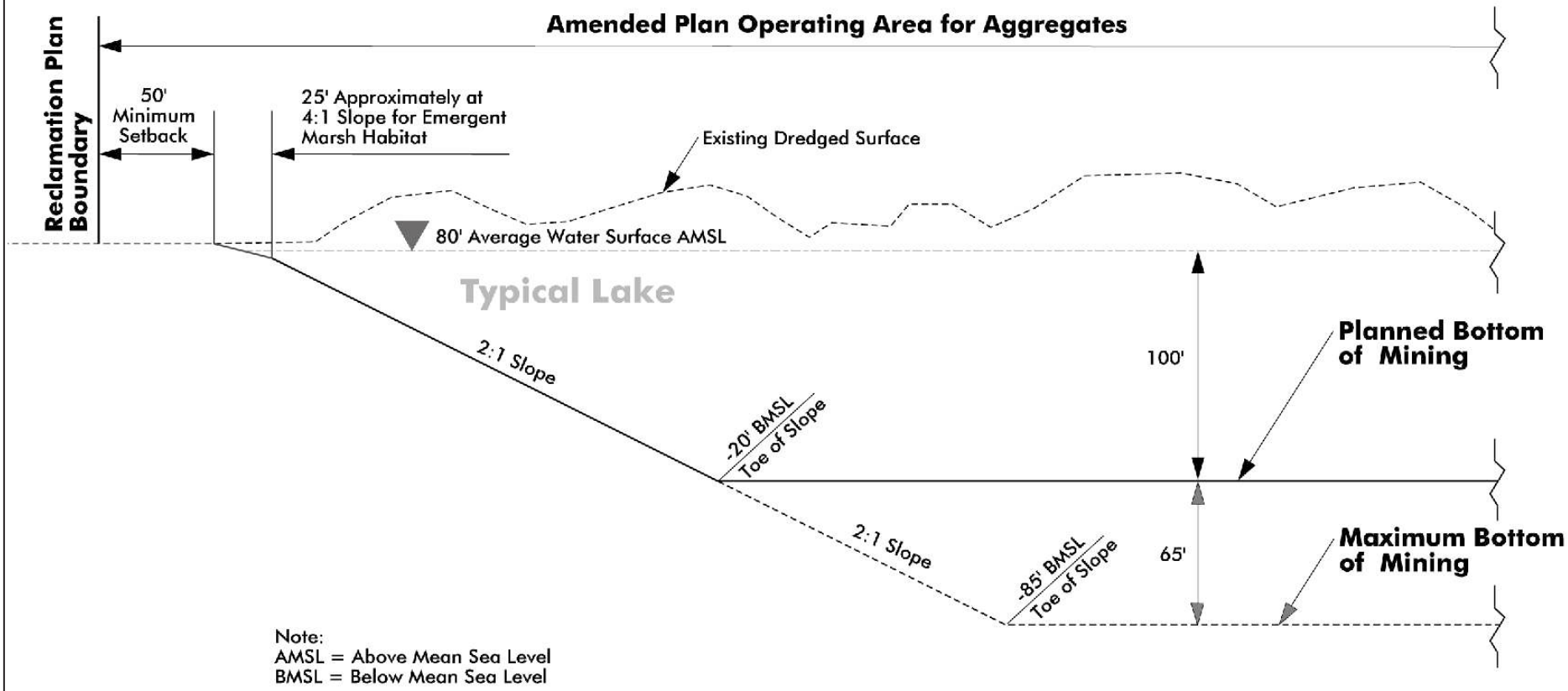
Figure 2-10
Phasing Plan

ATKINS



Source: Lilburn Corporation, 2012.

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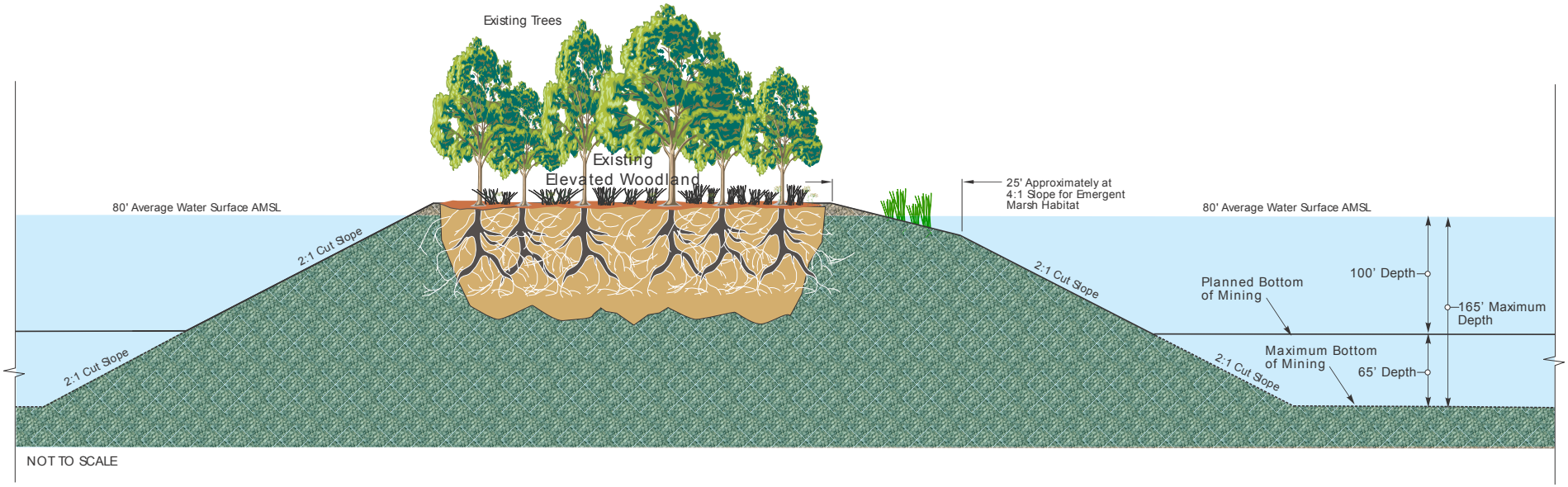
Figure 2-11

Typical Mining Cross Section

ATKINS



Source: Lilburn Corporation, 2012.

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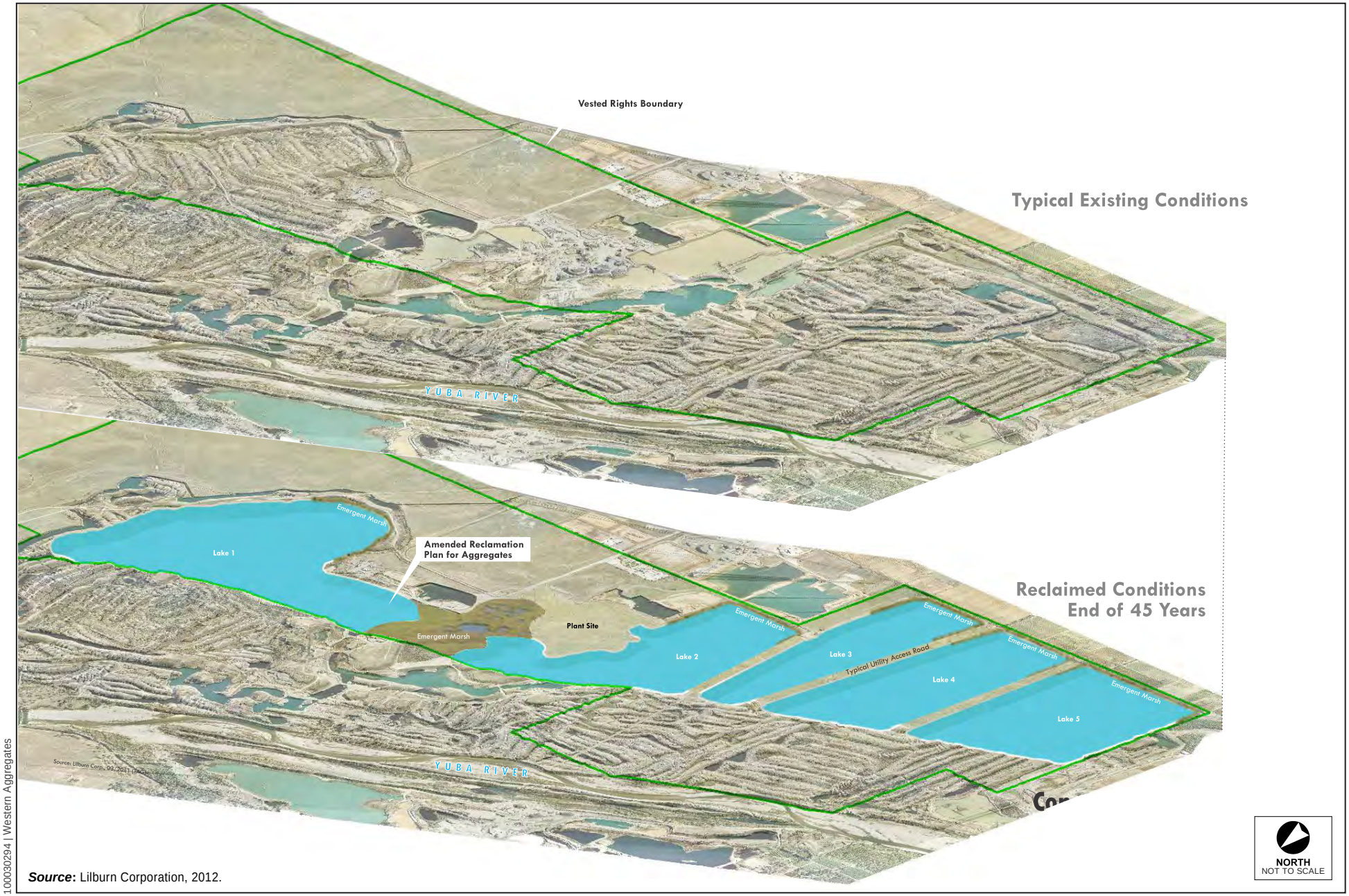
Figure 2-12

Typical Post Mining Cross Section

ATKINS



Source: Lilburn Corporation, 2012.

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Figure 2-13

Conceptual Simulation for Final Reclaimed Lake Configuration

ATKINS

Western would begin final reclamation activities necessary to establish the surface features proposed in the plan concurrent with final aggregate removal by phase, including any areas subject to phases of less than 15 years. Newly created slopes would not exceed 2:1 horizontal to vertical. Approximately 25 percent of the reclaimed lake perimeter will be mined at a 4:1 slope extending approximately 25 feet landward from the average low-water mark of 80 feet above msl. These slopes will be subject to partial inundation

by water, 1 foot at the lowest level and no more than 6 feet of water at the highest lake level. These slopes would be reclaimed into emergent marsh. Following slope creation, revegetation associated with lake perimeters would be initiated. All temporary roads used only for mining operations would be decompacted and revegetated or mined through and reclaimed as part of a lake. Roads to be retained for access or revegetation efforts shall be identified on the 15-year phase maps. A typical cross-section of lake perimeters is shown in Figure 2-11.

Processing Plant Demolition and Reclamation

After mining operations are complete, the aggregate processing plant would be razed and all equipment would be dismantled and removed. Foundations would be broken, crushed and recycled into aggregates or deposited on the site as infill. According to the Amended Reclamation Plan preparer,[6] equipment typical of the demolition and grading process would include a rock hammer, excavator, loader, and haul truck used to demolish and transport the crushed concrete and a track dozer and motor grader for land contouring. Total area of demolition would be specific to pads and footings used in the processing and administration area. Total square footage should be approximately 2,000 to 5,000 square feet. Recycled concrete and material would be used as infill on site as needed and in a location to be determined or transported off site to a designated recycler.

Roads and utilities exclusive to the plant operations would be removed. Surfaces would be cleared and scarified prior to revegetation. Appropriate revegetation per the proposed revegetation plan would then be applied to the plant footprint. Additional detail concerning activities and equipment associated with proposed plant demolition and plant site reclamation is presented in Section 4.3 of the Amended Reclamation Plan (Mine Waste Disposal) and Appendix C of the Amended Reclamation Plan: Revised Financial Assurance Cost Estimate.

Monitoring

Revegetation Monitoring would be conducted annually for a minimum of 5 years with at least 2 years without human intervention. Failure to achieve the performance standards at the end of the monitoring period would require remedial measures and further monitoring until the revegetation performance standards have been achieved.

As stated in Appendix C of the Amended Reclamation Plan,[7] after completion of reclamation activities, a relatively flat land contour with ponds would remain. Historically, volunteer riparian growth usually

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[6] S.A. Lilburn, Email communication to R. Hanson, Atkins, Subject: Western Aggregates Project Description (January 15, 2013).

[7] Lilburn Corporation, *Amended Reclamation Plan for Western Aggregates LLC Yuba County Operations* (May 2012), Appendix C (Revised Financial Assurances).

establishes within 6 to 8 months on inactivity around the circumference of ponds in the Goldfields. According to the Amended Reclamation Plan Appendix C, "(a)reas above the water table which are revegetated should not require follow-up monitoring based upon the demonstrated success of revegetation completed on the subject property by Cal Sierra Development, Inc." However, the financial assurance for the Amended Reclamation Plan includes funding the monitoring revegetation performance for 5 years following the conclusion of the reclamation phasing plan.

As noted on page 39 of the Amended Reclamation Plan, Weed control would be conducted by Western using a variety of methods as required including hand removal, mechanical removal, herbicides and biological predation. Annual spring monitoring would be conducted on the active mine area and the reclaimed areas. If weeds exceed 10 percent of vegetative cover in the reclaimed area weed control measures would be initiated. Weeds in operations area would be controlled if weed levels exceed non mining areas on adjacent property.

IX. SURROUNDING LAND USES AND SETTING

Land use surrounding the project site consists of aggregate mine operations, agricultural production and cattle grazing to the west and south. The Yuba River runs 1 mile north of the proposed project's northern boundary, beyond which are the Yuba Goldfields (historical dredger tailings). To the east are vacant cattle grazing lands. Beale Air Force Base is located to the south of the Goldfields.

X. OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

It is believed that adoption of the Amended Reclamation Plan will require the approval of no public agencies other than the State Mining and Geology Board, although it is the intention of the State Mining and Geology Board that the forthcoming EIR apply to any other approvals necessary or desirable to implement the proposed project.

SECTION 3. **Environmental Factors Potentially Affected**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture/Forestry Resources	☐ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☐ Hazards/Hazardous Materials	☒ Hydrology/Water Quality
☒ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Utilities/Service Systems	☒ Mandatory Findings of Significance

SECTION 4. **Determination**

On the basis of this initial evaluation:

☐ 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 revisions in the project have been made by or agreed to by the project proponent. 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.

☐ I find that the proposed project MAY have a "potentially significant impact" or "less than significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects *(a)* have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and *(b)* have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	April 2, 2013 Date
Mr. Stephen M. Testa Name	Executive Officer Title

SECTION 5. **Evaluation of Environmental Impacts**

EVALUATION PROCESS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less-than-significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9) The explanation of each issue should identify:
   a) The significance criteria or threshold, if any, used to evaluate each question.
   b) The mitigation measure identified, if any, to reduce the impact to less than significance.

I. AESTHETICS

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐

Discussion

CEQA Guidelines do not contain a specific definition of what constitutes a "scenic vista." What some may consider a scenic vista may not be considered that by others. Generally speaking, however, a scenic vista is defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. Given the location of the project site, viewpoints with views of the Yuba River, the riparian corridor associated with the river, and, arguably, the dredge tailing rows that define extensive portions of the Yuba Goldfields could be considered scenic vistas. Past, ongoing and future mining and processing operations on the Western site have and will modify vistas on and off the project site. These modifications will occur as a result of Western's vested right to mine and process aggregate from on-site dredge tailing piles and subsurface deposits. The effects of mining operations on vistas that exist today are not subject to review in this IS because these effects will result from vested mining operations, which are not subject to review in this document. The effects of mining operations on scenic vistas are noted here because they are critical to defining baseline environmental conditions that will exist when the proposed project (i.e. the Amended Reclamation Plan) is implemented.

As described in Section 2 (Project Description) of this IS, project mining operations will result in the removal of substantial portions of on-site dredge tailing mounds, excavation of subsurface materials, and the creation of five lakes. Implementation of the proposed project would place fines along the shorelines of the created lakes to provide substrate to support vegetation. The proposed project would revegetate these areas with plant species identified in the project's proposed revegetation plan. Lastly, implementation of the Amended Reclamation Plan would remove all roads and processing facilities dedicated to aggregate mining activities.

Given the nature of the proposed actions under the Amended Reclamation Plan, the effect of these actions on any scenic viewpoints likely to exist after the completion of vested mining operations would be limited and largely beneficial. Reclamation activities would establish vegetation in areas devoid of vegetation after mining activities are complete. This is likely to have a beneficial impact on views from any scenic viewpoints on or around the project site. In addition, the removal of processing equipment from the project site would have a beneficial effect on off-site views of the Yuba River, riparian corridor and remaining dredge tailings. The impact, therefore, is considered to be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

Discussion

Hammonton-Smartville Road (south of the project site) and SR-20 (north of the project site) are not designated as scenic routes by the California Scenic Highway Program.[8] Therefore, the proposed project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐

Discussion

Views from the Project Site

Views from the project site are limited due to the topography of the site. Currently, the project site is mined for aggregate. Mining facilities on the site include a processing and storage facility, fuel storage and containment area, administrative offices, maintenance structures, a scalehouse, a shop building, a fuel island, and stockpile areas. The project site is located in the historic Yuba Goldfields, which has experienced extensive mining activity since the early 1900s. These activities have resulted in a highly disturbed site with limited vegetation except on the border of the site and depressions between tailings "hedgerows." Views from the project site can be relatively unobscured to the south, depending on the location of the viewpoint or obscured to varying degrees by vegetation, materials stockpiles, mining/processing facilities, or vegetation. There are no residential structures that are visible from the boundary of the project site.

Views onto the Project Site

Views onto the project site are also limited due to the topography of the site. The remaining vegetation, as well as berms along the northern site boundary, limit views of the site from the Yuba River and properties surrounding the project site. Because vested mining operations remove designated dredge tailings piles on the project site, views onto the site would be less obstructed over time. However, the presence of tailings to the north and northeast of the project site (tailings that would not be removed under the current mining plan) would continue to obscure views to the Yuba River and riparian areas along the river. Berms along the south and west of the project site would limit views onto the site from viewpoints south and west of the project site. Views onto the project site from properties east of the

[8] California Department of Transportation, California Scenic Highway Mapping System, Eligible and Officially Designated Routes. http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm (accessed December 1, 2012).

project site, particularly areas with higher elevations than that of the project site would be relatively unobscured.

The Amended Reclamation Plan would alter the existing and future visual character of the site by changing it from one characterized by ongoing mining activities to one dominated by views of open water, woodlands and marsh habitat conditions. These habitats are designed and expected to enhance the aesthetic value of the project site which has, historically, been altered first by large-scale dredging operations and then by aggregate and gold mining operations. Current vested mining operations would continue through the projected 45-year life of the project with reclamation occurring in phases.

Although the proposed project would alter the visual character of the project site, this alteration is not considered a significant degradation in the character of the site because the site would ultimately be reclaimed as described above. The proposed future removal of mining equipment and processing facilities would also result in the long-term improvement of the visual character of the project site. Similarly, the lake and woodland habitat condition following reclamation activities would not "substantially degrade" the existing visual character of the project site and its surroundings, but would, instead, improve the site. Therefore, benefits to the on- and off-site visual character of the project site would result in a ***less-than-significant*** impact.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

Reclamation of the mined areas would revegetate specific areas to a natural setting. No permanent structures or artificial light sources are proposed under the plan. While lakes present on the reclaimed site may generate glare under certain conditions, these lakes will be created by ongoing, vested mining operations and are not a result of the proposed project. Therefore, there would be ***no impact***.

II. AGRICULTURE/FORESTRY RESOURCES

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	☒

Discussion

Some lands immediately south and west of the project site are designated as Prime and Unique under the Farmland Mapping and Monitoring Program[9] (FMMP). However, no lands within the project site within the project boundary are designated as prime, unique, or farmland of statewide importance. The entire proposed reclamation plan area site is designated as Other Land, which consists of land not included in any agriculturally significant FMMP categories. Therefore, the proposed project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Conflict with existing zoning for agricultural use or with a Williamson Act contract?	☐	☐	☐	☒

Discussion

Lands under the Williamson Act must be zoned for agriculture, and the Western Aggregates mining site is not zoned for agriculture. The project site is currently zoned "Extractive Industrial" (M-2), which allows mining-related activities including reclamation. Therefore, the proposed project would have ***no impact***.

[9] California Department of Conservation, Farmland Mapping and Monitoring Program, Yuba County Important Farmland (2010).

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Discussion

As noted above, the project site is currently zoned "Extractive Industrial" (M-2). The proposed project would not conflict with forest land or timberland zoning designation, and no rezone for the project is proposed. There would be ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Result in the loss of forest land or conversion of forest land to nonforest use?	☐	☐	☐	☒

Discussion

Implementation of the Amended Reclamation Plan would affect only areas previously disturbed by mining or mining-related activities. There would be ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to nonforest use?	☐	☐	☐	☒

Discussion

As noted above, the project site is currently zoned "Extractive Industrial." Lands zoned for agricultural and rural residential use occur adjacent to the southwest corner of the project site, but the project site itself contains no significant farmland. Implementation of the Amended Reclamation Plan would affect only areas previously disturbed by mining or mining-related activities and would not result in the conversion of any farmland or forestland. In addition, implementation of Amended Reclamation Plan would have no direct or indirect impact on neighboring agricultural operations. Therefore, the proposed project would have ***no impact***.

III. AIR QUALITY

Introduction

Air quality impacts as a result of implementing the Amended Reclamation Plan are evaluated in the *Air Quality and Climate Change Assessment for the Western Aggregates LLC Amended Reclamation Plan Technical*

Memorandum (Atkins 2013), which is included as Appendix B of this IS. The assumptions and impact determinations in the technical memorandum are summarized below.

Daily criteria air pollutant emissions from reclamation were estimated using the CalEEMod emissions model. The following describes the project elements assumed for estimating emissions, based on information provided by project applicant. The Amended Reclamation Plan indicates reclamation would occur in three phases over the remaining life of Western's mining activities at the site. Each phase would occur every 15 years for the approximately 45-year life-span of mining activities within the 1,960-acre project site. The exact timing of reclamation activities would depend on the level of intensity of future mining, which, in turn, would depend on several factors, but primarily market conditions. Approximately 304 acres of mined, process, and road areas above water levels would be reclaimed. At the completion of mining activities, the demolition/removal of the processing equipment and on-site structures would occur, and that land would also be reclaimed. The processing area encompasses approximately 90 acres and would result in the demolition of approximately 850 square feet of buildings (scale house and laboratory facilities) and the demolition of approximately 891 cubic yards of building and structure pads and foundations.

The analysis assumes the reclamation activities would be initiated following the termination of mining activities subsequent to each mining phase. While the exact timing and schedule for reclamation and demolition activities is unknown, the following assumptions were used for modeling to result in a conservative (i.e., "worst-case") estimate of emissions. The initial reclamation period is assumed to start in January 2028. Each reclamation phase is estimated to take 47 days based on information provided in the Amended Reclamation Plan. Because the equipment and duration of Phase 2 is identical to that of Phase 1, only Phase 1 was modeled. Reclamation of the third phase would include the same activities as the first two phases but would also include the demolition and reclamation of the processing areas. The total time for all activities for the third phase is estimated at eight months. It is anticipated that the third phase of reclamation would not occur until 2058; however, CalEEMod does not have the capability to estimate emissions using dates further than 2040. Based on the limitations of the CalEEMod model, the emissions for the final phase of reclamation were modeled using a conservative reclamation date of 2039.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
(a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

Discussion

The proposed project is within the jurisdiction of the Feather River Air Quality Management District (FRAQMD). FRAQMD prepares regional air quality plans to accommodate growth within their jurisdiction, to reduce the high levels of pollutants, to return clean air to the region, and to minimize the impact of reduced air quality on the economy. Projects that are considered to be consistent with the air quality plans would not interfere with attainment of the identified air quality thresholds.

The FRAQMD thresholds of significance for criteria pollutants are designed to bring the region into compliance with the applicable air quality plans and foster an overall reduction in regional air pollution. Because, as identified under Item (b), below, the proposed project emissions would not exceed any of the regulatory thresholds for criteria pollutants, the project would be in conformance with the air quality management plans. Therefore, the impact from the proposed project would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

Discussion

The proposed project would involve grading and contouring of the mined areas, revegetation, and demolition of processing plant and other structures, as described in the Project Description. These activities would generate criteria air pollutant emissions.

Table 5-1 (Construction Emissions [lb/day]) shows the total emissions by phase. As shown in Table 5-1, emissions would not be above regulatory thresholds for any time period. Because the reclamation activities would not exceed regulatory thresholds during any phase of reclamation activities, the proposed project is considered to have a ***less-than-significant*** impact. As equipment ages and is replaced by newer equipment, it is anticipated that criteria air pollutant emissions would be further reduced as equipment efficiency increases.

While no mitigation is required, the FRAQMD requires all projects implement the following measures to reduce impacts from construction activities.

- Implement FRAQMD's Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation II, Rule 3.0, Visible Emissions Limitations (40 percent opacity or Ringelmann 2.0).
- The operator shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.
- Limiting idling time to 5 minutes—saves fuel and reduces emissions. (State idling rule: commercial diesel vehicles—13 CCR Chapter 10, Section 2485, effective 02/01/2005; off road diesel vehicle—13 CCR Chapter 9, Article 4.8, Section 2449, effective 05/01/2008).
- Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generation.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly ad ensure safety at construction sites.
- Portable engines and portable engine-driven equipment units used at the same project work site, with the exception of on-road and off-road motor vehicles, may require ARB Portable Equipment Registration with the State or local district permit.

Table 5-1 Construction Emissions (lb/day)

Phase[a]	*ROG*	*NO_X*	*PM_{10}*	*$PM_{2.5}$*
Phase 1 Reclamation (47 days)	3.88	18.41	9.27	3.99
Phase 2 Reclamation (47 days)	3.88	18.41	9.27	3.99
Phase 3 Demolition and Reclamation (8 months)	5.25	17.04	35.52	3.91
FRAQMD Threshold	**25.00**	**25.00**	**80.00**	**N/A**
Significant?	No	No	No	—

SOURCE: Atkins, *Air Quality and Climate Change Assessment Technical Memo* (2013), Table 4. (Appendix B to this IS).
Emissions are before applying FRAQMD Standard Mitigation Measures.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

Discussion

Reclamation activities for each of the three reclamation phases could generate daily emissions that could result in potentially significant impacts on an individual project basis if they exceed established thresholds. If any of the phases were to overlap, the daily emissions from each phase would combine to have a cumulative effect on air quality as well.

As discussed under Item (b), above, reclamation-related emissions associated with project implementation would occur under three distinct and separate phases, and emissions from each phase would not exceed any regulatory thresholds. Based on methodology used in the air quality analysis, and because regulatory thresholds are implemented to reduce cumulative regional impacts, a project that is below the project-level significance thresholds of the FRAQMD would not be anticipated to represent a cumulatively considerable impact. Therefore, because the proposed project would not exceed any regulatory thresholds, the proposed project's contribution would not be cumulatively considerable. Cumulative impacts would, therefore, be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion

The project site is located along the Yuba River in a rural area of the Central Valley. Reclamation activities for the proposed project would not occur near sensitive receptors such as residences as there

are no such receptors on or adjacent to the site. Furthermore, emissions during reclamation would be temporary and consistent with historic and ongoing mining and processing activities on the project site. Therefore, impacts would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

The project site is located approximately 1 mile south of the Yuba River in a rural area of the Central Valley in Yuba County. Because odor-causing activities, primarily the operation of diesel-powered equipment, during reclamation would be of short duration and intermittent, users of the Yuba River in the vicinity of the project site may experience occasional odors from diesel equipment exhaust during reclamation activities. This effect would be intermittent, contingent on prevailing wind conditions, occur only during reclamation activities, and would not affect a substantial number of people. Because the generation of odors would be periodic and of short durations, and because no sensitive receptors are located within 1,000 feet of the project site, the impact is considered ***less than significant***.

IV. BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Have a substantial adverse effect, either directly or through habitat modifications, 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?	☒	☐	☐	☐
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐

Discussion

As described above, the proposed project would implement the Amended Reclamation Plan for vested mining activities on the Western site. Because activities associated with mine reclamation would primarily, if not exclusively, occur on areas previously disturbed by vested aggregate mining operations, there is a limited potential for reclamation activities to have a significant adverse effect on sensitive biological resources. Implementation of the Amended Reclamation Plan, however, would involve the operation of heavy equipment including, but not limited to, dozers, graders, backhoes and haul trucks, and activities such as earth moving, grading, the demolition and removal of processing plant facilities, and potential on-site disposal of concrete fill within the 1,940-acre reclamation plan area. Due to the

presence of undisturbed areas of open water and riparian vegetation within the Amended Reclamation Plan area, the determination of less-than-significant impact of these activities on sensitive natural communities or wildlife movement cannot be made without further evaluation. Also, the long-term maintenance of lakes and habitat as proposed in the Amended Reclamation Plan must be evaluated in relation to the cumulative impact of this end land use on biological resources relative to historic, current and future conditions within the Yuba Goldfields region. The impact of the proposed project, therefore, is considered ***potentially significant*** and subject to further evaluation in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

Discussion

The objective of the Federal Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (Corps) has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify federally protected wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or function. The Corps exempts Yuba Goldfields ponds and channels from CWA jurisdiction under its industrial process exemption. Under this exemption, the Corps has interpreted the term "waters of the U.S." to not include artificial lakes or ponds created by excavating dry land (51 Fed. Reg. 41217).[10] The proposed reclamation area occurs entirely within the area exempted by the Corps. Therefore, the proposed project would have ***no impact*** on jurisdictional wetlands.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Interfere substantially 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 wildlife nursery sites?	☒	☐	☐	☐

Discussion

As noted above, implementation of the Amended Reclamation Plan would involve the operation of heavy equipment, the demolition and removal of processing plant facilities, and potential on-site disposal of concrete fill within the Amended Reclamation Plan area. Due to the presence of undisturbed areas of open water and riparian vegetation within the Amended Reclamation Plan area, the determination of

[10] California Regional Water Quality Control Board Central Valley Region. 2001. Order No. 5-00-107 – Waste Discharge Requirements for Western Aggregates, Incorporated, U.S. Army Corps of Engineers, Yuba County. June 2000.

less-than-significant impact of these activities on migratory wildlife or wildlife corridors cannot be made without further evaluation. Also, the long-term maintenance of lakes and habitat as proposed in the Amended Reclamation Plan must be evaluated in relation to the cumulative impact of this end land use on biological resources relative to historic, current and future conditions within the Yuba Goldfields region. The impact of the proposed project, therefore, is considered ***potentially significant*** and subject to further evaluation in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

Discussion

Implementation of the proposed project would not conflict with the any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, ***no impact*** would occur.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion

Because there is no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan established for the project area, implementation of the proposed project would have ***no impact***.

The reader should note that Yuba County, in cooperation with Sutter County, the U.S. Fish and Wildlife Service, California Department Fish and Game and the Cities of Yuba City, Wheatland, and Live Oak, has approved an agreement to prepare a Natural Communities Conservation Plan and Habitat Conservation Plan (NCCP/HCP) for a broad area that includes the project site. The NCCP/HCP has not been completed but an agreement[11] between the participating agencies calls for the review of projects subject to approval by those agencies for consistency with interim plan objectives. Because the Amended Reclamation Plan is not subject to approval by any of the plan's participating agencies, no review is envisioned for the proposed project.

[11] Planning Agreement by and among the County of Yuba, the County of Sutter, the City of Yuba City, the City of Live Oak, the City of Wheatland, the California Department of Fish and Game, and the United States Fish and Wildlife Service regarding the Yuba-Sutter Natural Community Conservation Plan and Habitat Conservation Plan (November 2011).

V. CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☒	☐	☐
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Discussion

Potential cultural resource impacts of the proposed Western Aggregates Amended Reclamation Plan were evaluated in *California Historical Resources Information System (CHRIS) Records Search Results, Native American Heritage Commission (NAHC) Sacred Lands Database Search Results and Sensitivity Designations for the Western Aggregates Reclamation Plan, Yuba County, California* (March 14, 2013), which is included in Appendix C of this IS. The findings of the records search, database search, and sensitivity designations conducted for this IS are listed and explained in Appendix C. The results and recommendations of this report are summarized below.

The results of the CHRIS records search indicated that three cultural resources have been recorded within the project area; one prehistoric village site, a historic age dumpsite and a burned historic age house site. None of these resources have been evaluated to determine if they qualify for inclusion in the CRHR. One survey with negative findings was conducted within the project area boundaries; however, the survey addressed only 40 acres or approximately 2 percent of 1,960-acre project area. The project area lies along the Yuba River once occupied by the Nisenan or Southern Maidu group of Native Americans and within the historically occupied Yuba Gold Fields. An archival topographic map review revealed that several roads, sloughs and a house structure have been mapped within the project area as early as 1860. Thus, based the presence of known sites, historic maps, an evaluation of the environmental and ethnographic setting, there is a high possibility that unrecorded cultural resources exist within the project area boundaries.

Historical and Archaeological Resources

The proposed project would entail surface and sub-surface ground disturbance. Therefore, the proposed project has the potential to impact potential historical and archaeological resources. Ground disturbance associated with demolition, equipment removal, ripping and grading activities could damage or destroy previously documented and/or unidentified archaeological resources in areas not previously and substantially disturbed by mining activities (approximately 68.2 acres). Implementation of mitigation measures M-CR-1 and M-CR-2 would ensure resources are appropriately managed. Impacts are considered ***less than significant with mitigation incorporated***.

M-CR-1 *Prior to the initiation of reclamation-related ground-disturbing activities, Western shall retain a qualified archaeologist who meets the Secretary of the Interior's standards for Archaeology to locate*

and evaluate the previously recorded resources. The archaeologist shall determine, through existing records or by evaluation, if the previously recorded sites qualify as historical or archaeological resources under CEQA. If it is determined that the sites qualify as historical or archaeological resources under CEQA, the archaeologist shall determine if the sites would be damaged or destroyed by implementation of the proposed project. If it is determined that the sites would be damaged or destroyed by project implementation, the archaeologist shall recommend measures, including avoidance or data recovery, that would eliminate adverse impacts to the resources or reduce impacts to the resources to a less-than-significant level. The measures shall be consistent with the Secretary of the Interior's standards for the evaluation and treatment of archaeological resources. The project proponent shall adhere to all measures recommend by the archaeologist for the treatment of the resources.

M-CR-2 *Prior to the initiation of reclamation-related ground-disturbing activities, Western shall retain a qualified archaeologist with knowledge of prehistoric and historic-period archaeology and paleontology to prepare and implement an Archaeological Monitoring and Data Recovery Plan (AMDRP).*

The AMDRP shall require that Western retain a qualified archaeologist who will be present for all ground-disturbing reclamation activities (i.e., excavation, grading, equipment removal, and demolition) conducted by Western that occur on the project site in areas not previously and substantially disturbed by mining activities. These areas total approximately 68.2 acres, according to the project applicant, and are shown in Figure 1 in "California Historical Resources Information System (CHRIS) Records Search Results, Native American Heritage Commission (NAHC) Sacred Lands Database Search Results and Sensitivity Designations for the Western Aggregates Reclamation Plan, Yuba County, California" (March 14, 2013) included as Appendix C of the Western Aggregates LLC Yuba County Operations Amended Reclamation Plan Initial Study (April 2013).

The AMDRP shall define how archaeological monitoring will be conducted, the protocol to be followed in the event that significant resources are discovered during monitoring and where and how data recovery will be conducted for any important archaeological resources discovered. The AMDRP shall specify that all reclamation personnel will be alerted to the possibility of buried cultural resources prior to the initiation of ground-disturbing activities. The AMDRP shall specify that if any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains, or significant paleontological resources are encountered during any reclamation activities, work shall be suspended within 100 feet of the find and the State Mining and Geology Board shall be immediately notified. Once the State Mining and Geology Board is notified, work may proceed on other portions of the project site while mitigation of impacts on archaeological or paleontological resources is implemented.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

There are no known formal cemeteries present within the project area, and the results of the CHRIS records search did not indicate if human remains were present at any of the previously recorded cultural

resource sites. There is the possibility that ground-disturbing activities during reclamation may uncover previously unknown and buried human remains. With implementation of the measure shown below, the impact is considered ***less than significant with mitigation incorporated***.

M-CR-3 *If human remains are discovered during reclamation, including disarticulated or cremated remains, all ground-disturbing activities should cease within 100 feet of the remains. In keeping with California State Health and Safety Code § 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code (PRC) § 5097.98. If the remains are determined by the County Coroner to be Native American, the NAHC shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. A professional archaeologist with Native American burial experience shall conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD), if any, identified by the NAHC. As necessary and appropriate, a professional archaeologist may provide technical assistance to the MLD, including but not limited to, the excavation and removal of the human remains.*

VI. GEOLOGY/SOILS

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) 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 based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
(ii) Strong seismic groundshaking?	☐	☐	☒	☐

Discussion

The closest known faults to the project site, mapped by the California Division of Mines and Geology, are the Cleveland Hill West, Cleveland Hill East/Paynes Peak/Swain Ravine, and the Prairie Creek/Spenceville/Deadman faults of the Foothills fault system, located approximately 12 miles east of the project site. The nearest mapped active fault to the project site is the Cleveland Hill fault, located approximately 24 miles to the northeast. There are no known active faults identified on the project site, and the potential for strong seismic ground shaking is low. The project site is not located within an Alquist-Priolo Earthquake Fault Zone (previously called Special Study Zones).[12] Therefore, impacts would be ***less than significant***.

[12] California Geological Survey, Alquist-Priolo Earthquake Fault Zones. http://www.quake.ca.gov/gmaps/WH/regulatorymaps.htm (accessed 12/18/2012).

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
(iv) Landslides?	☐	☒	☐	☐

Discussion

Seismic-Related Ground Failure Including Liquefaction

An analysis of the structural integrity of the reclaimed mine slopes was conducted for the project applicant by C.H.J. Inc., a firm specializing in geotechnical engineering, materials testing, construction inspection and environmental consulting. The results of this analysis are presented in a report titled *Slope Stability Investigation Proposed Western Aggregates LLC Quarry Reclamation Marysville Area Yuba County, California*, dated April 19, 2011 and the addendum to that report, dated November 30, 2011. Both reports are included in their entirety in the Amended Reclamation Plan Western Aggregates LLC Yuba County Operations (May 2012). Based on the results of the C.H.J. Inc. analysis, the slope stability of the final reclaimed slopes proposed in the Amended Reclamation Plan meet acceptable seismic safety standards with factors of safety of all slopes evaluated ranging from 1.62 to 1.70 under static conditions and 1.11 to 1.70 under seismic conditions, assuming that all recommendations concerning final slope configuration are implemented. During their reviews of the proposed Amended Reclamation Plan and supporting documents, including the addendum to the slopes stability investigation, in May 2011 and December 2011, respectively, both OMR and SMGB staff found the conclusions of the slope stability analyses to be adequate.

Landslides

The project site is located about 1 mile to the south of the Yuba River in an area that was likely relative flat prior to the advent of gold dredging operations in the twentieth century. Yuba River dredging operations left much of the project site covered with tailings piles, some over 80 feet in height. While the historic tailings piles have achieved relatively stable aspects, members of the environmental review team observed that previous and ongoing mining operations have resulted in cuts into tailings piles that have resulted in near vertical slopes in some areas. While this may or may not result in a risk of slope failure and landslide, site reclamation would not occur in areas where such conditions exist. Site reclamation would occur only in areas in which tailings piles have been removed and processed. Regarding the stability of remnant tailing piles that would remain on site after site reclamation, the stability of these historic tailings was addressed in on page 14 of the C.H.J. Inc. report (see Appendix D of the Amended Reclamation Plan, May 2012, included in Appendix A of this IS).[13] It states:

> No evidence for landsliding on the site or in the general area was observed during the geologic field reconnaissance or on the aerial photographs reviewed. Existing slopes in the dredge tailings, up to approximately 70 feet high and inclined as steep as approximately 38 degrees, and slopes up to approximately 40 feet high and inclined as steep as approximately 45 degrees, exhibit no evidence of any deep-seated failure. These slopes are within coarse-grained tailings (fill) with a very low susceptibility to deep-seated or shallow slope failure.

[13] C.H.J Inc., *Slope Stability Investigation Proposed Western Aggregates LLC Quarry Reclamation Marysville Area, Yuba County, California*, prepared for Western Aggregates LLC (April 19, 2011).

> The proposed quarry slopes are within fill and alluvial deposits. These materials have a low susceptibility to significant slope failure (landsliding), except when slopes have been significantly over steepened.

Because the determination of slope stability presented in the C.H.J. Inc. report is contingent on implementation of its proposed recommendations, implementation of Mitigation Measures M-GS-1 through M-GS-4 would be required to mitigate potential impacts to a less-than-significant level. Therefore, this impact is considered to be ***less than significant with mitigation incorporated***.

M-GS-1 *Any large unstable boulders on mine slopes above groundwater should be removed or stabilized prior to the end of reclamation.*

M-GS-2 *Slopes should be protected with berms and/or levees as necessary to prevent slope erosion in the areas where slopes drain onto the reclaimed slopes.*

M-GS-3 *Runoff should not be allowed to flow over natural, cut, or fill areas in such a way as to cause erosion and finished slopes should be planted with drought resistant native vegetation to protect from wind and rain.*

M-GS-4 *Restrict future use to that identified in the Amended Reclamation Plan, namely open space and habitat.*

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Discussion

As stated in Section 3.9 (Drainage and Erosion Control) of the Amended Reclamation Plan, the Yuba Goldfields generally exhibit excessively well drained soils that prevent the development of erosional features. This is particularly true of the historic gold dredge fields where historic dredging operations have resulted in landscape that, in many areas is relatively devoid of soil. However, disturbed or altered features, graded areas, stored materials and reclaimed lake perimeters may be subject to erosion. As stated in the Amended Reclamation Plan (see page 21, second paragraph) Western would implement erosion control measures where erosion rills exceed five square inches in cross-section and 5 feet in length in areas where mining and reclamation has been completed. Erosion of these features would be treated by placing straw bales, straw rolls, or erosion control blankets as appropriate and necessary to intercept water in the features beginning at the upslope extent of the erosion feature.

When sheet erosion is present in excess of one-half inch over an area of 50 feet, straw mulch would be spread at a rate of 2,000 lbs per acre. Erosion control seed mixes would include quick sprouting commercially available non-invasive annual grasses and legumes. The proposed seed mix is listed in Section 3.9 of the Amended Reclamation Plan along with proposed pounds/acre application requirements. The performance control standard for erosion control plant mix would be 80 percent cover with no bare areas greater than 5 feet by 5 feet.

As discussed in Section 2 (Project Description) of this IS, implementation of the proposed reclamation plan would involve removal of mining and processing equipment from the project site, preparation of

the mine surface areas and placement of process fines on setback areas from lakes, and all other areas to support site revegetation. In order to prevent erosion following seeding, appropriate erosion control measures would be employed as described above. With implementation of measures that are contained as part of the proposed reclamation plan, impacts are considered ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

Discussion

The activities associated with the proposed project included limited regrading of shorelines created during vested mining operations, shallow resoiling of those shoreline areas to accommodate proposed revegetation, decompaction and revegetation of mining roads on the project site, removal of aggregate processing facilities and reclamation of processing areas. None of these activities would be located on unstable soils or geologic units, or result in landslides, lateral spreading, subsidence, liquefaction or collapse. This impact, therefore, is considered ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Be located on expansive soil, as defined in Section 1803.5.2 of the 2010 California Building Code, creating substantial risks to life or property?	☐	☐	☐	☒

Discussion

The proposed project would not build structures or expose people to risks from expansive soils. Therefore, the project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

The proposed project would not generate wastewater. No sewer facilities are proposed. There would be ***no impact***.

VII. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Discussion

This section analyzes the effects of the project on greenhouse gas emissions and climate change. The information provided herein is a summary of the information included in *Air Quality and Climate Change Assessment Technical Memorandum* (Atkins 2013), included in Appendix B of this IS.

GHG emissions from reclamation were calculated using the CalEEMod model, using the assumptions summarized in the Section 5.III (Air Quality), above, and as detailed in the Technical Memorandum included in Appendix B of this IS. Reclamation activities are similar to "construction" activities in that they are a temporary source of emissions. Although these emissions are temporary, they must be accounted for because the impact from the emissions of GHGs is considered cumulative. Current methodology for the evaluation of GHG emissions from construction-type activities states that construction emissions should be totaled for the project and amortized over the average life of the project. After the completion of reclamation activities, it is anticipated that the reclaimed area would remain wetland open space indefinitely. However, standard methodology for estimating CO_2e emissions assumes a 30-year lifetime for a project. Therefore, to determine the average annual emissions from the reclamation activities, the total CO_2e emissions from these activities are amortized over an assumed 30-year project lifetime. Because there are no operational emissions associated with the proposed project, annual emissions with respect to GHGs are the amortized reclamation emissions.

The proposed project would not generate enough GHG emissions to influence global climate change on its own. However, the proposed project would incrementally contribute to the global impact through its GHG emissions combined with the cumulative increase of all other anthropogenic sources of GHGs. As indicated in CEQA Guidelines Section 15064(i)(1), "cumulatively considerable" is defined to mean "that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

Reclamation activities would be a temporary source of GHG emissions. Based on the CalEEMod model, during reclamation activities, CO_2e emissions from all three phases of the project would equal 1,007 MT. As described above, the average project lifetime of 30 years (methodology standard) was used in determining amortized emissions. Reclamation activities would result in an amortized 30-year contribution of 34 MT CO_2e per year (Table 5-2 [GHG Emission (MT CO_2e/yr)]). Because both the unamortized as well as amortized emissions are below the significance threshold, the project activities are considered ***less than significant*** with respect to emission of GHGs.

Table 5-2 GHG Emission (MT CO_2e/yr)

Phase	CO_2	CH_4	N_2O	CO_2e
Phase 1 Reclamation	162.95	0.01	0.00	163
Phase 2 Reclamation	162.95	0.01	0.00	163
Phase 3 Demolition & Reclamation	680.01	0.02	0.00	681
Total				***1,007***
Amortized				34
Threshold				**1,100**
Significant?				No

SOURCE: Atkins, *Air Quality and Climate Change Assessment Technical Memo* (2013), Table 5. (Appendix B to this IS).

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

The FRAQMD does not have established significance criteria for assessing impacts from GHG emissions other than compliance with current state and federal regulations or specifically AB 32. One way to determine compliance with AB 32 is to demonstrate project compliance with an adopted climate action plan or emissions reduction strategy for the region in which the project is located. While there are no adopted climate action plans that govern the proposed project, the project has demonstrated that emissions would be minimal and well below the 1,100 MT CO_2 screening level identified for ensuring regional compliance with AB 32 goals. Therefore, the impact would be ***less than significant***.

VIII. HAZARDS/HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

Discussion

Proposed activities associated with the reclamation of mined areas, demolition of processing plant facilities, and removal of mining and processing equipment and materials from the project site may require the use, transport, and storage of hazardous materials, which could expose people or the environment to associated risks during their transport, use, storage, or disposal.

The use and storage of hazardous materials (including disposal of hazardous waste, if such waste is generated as a result of reclamation) is strictly regulated by federal and state laws and regulations. These regulations were promulgated and have been proven effective in reducing potential risks to human health and the environment from hazardous materials use. Western has been and will continue to be required by Yuba County to maintain appropriate permits and hazardous materials management controls throughout the remainder of mining and through the reclamation period. Western is responsible for ensuring compliance with applicable regulations and has programs in place to monitor its environmental compliance program. Impacts would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐

Discussion

Reclamation would involve the demolition and removal of structures and foundations at the site, along with grading and other soil movement. These activities have the potential to result the release of hazardous materials to the environment if proper precautions are not taken. As established in the Project Description, mining activities do not require analysis in the EIR; however, the following information about facility operations is provided for informational purposes to support the analysis.

Routine mining operations at the site have involved and will continue to involve the use and storage of hazardous materials. For example, fuel for equipment use at the mine is stored in above-ground storage tanks (ASTs) on concrete slabs at the fuel island. There is an on-site laboratory in which small amounts of a limited number of chemicals are used and stored. The lab sewer flows are conveyed to a septic tank that was permitted by Yuba County in 1990-91. Various hazardous materials are used in asphalt plant operations, which include two vertical above-ground tanks on concrete foundations. The ASTs are permitted by Yuba County under the county's Certified Uniform Program Agency (CUPA) program. Owner/operators of ASTs are required by state law (Aboveground Petroleum Storage Act [Health and Safety Code Section 25270]) to have a Spill Prevention and Countermeasures Control Plan (SPCCP), the main purpose of which is to ensure the potential for environmental contamination (e.g., soil or water) is minimized through leak detection and monitoring and having secondary containment in the event of a spill during tank refilling or leaks. For both the ASTs and the asphalt plant operations, Western is also required to prepare and submit to the Yuba County CUPA a Hazardous Materials Business Plan (HMBP) that identifies the hazardous materials stored on site that meet or exceed the specific quantity criteria established by state regulations. In addition, all flammable materials must be stored in accordance with the California Fire Code. As noted above, Western is responsible for ensuring compliance with applicable hazardous materials and waste regulations and has programs in place to monitor its environmental compliance program. This would include taking necessary precautions to minimize the risks for spills and leaks and cleaning up spills and leaks, should they occur.

However, over the course of routine mining and processing operations, the possibility cannot be ruled out that there may be some instances where soil may have inadvertently been contaminated in certain locations but the contamination has not yet been discovered. For example, ASTs on concrete slabs in the fueling station and areas under and around concrete and the hot plant tanks would likely preclude immediate discovery of spills or leaks. For the septic tank that receives lab waste, it is possible the tank contents may be contaminated with chemicals, which may also have entered the leach field. Minor leaks and spills in the repair shop and equipment storage area may have resulted in soil contamination.

As part of reclamation, the existing buildings, structures, and processing facilities on the site would be removed (please refer to the Project Description for a complete list). During removal of the fuel island and associated piping, concrete slabs from the repair shop, and the hot plant tanks, if contaminated soil is present, the process of excavating and removing concrete slabs and foundations would bring soil to the surface. If the soil is contaminated, this could pose a hazard for demolition workers who might inhale dust or it could cause an environmental hazard. In the latter, contaminated soil could be accidentally spread around a large area. Concrete debris mixed with contaminated soil could also be transported off site and disposed of improperly. Removal of the septic tank that received lab waste would consist of pumping out the tank contents and excavating the tank, piping, and surrounding soil. Removal and improper disposal of the tank contents could pose a health and/or environmental risk. Excavated soil containing contaminants could be inadvertently combined with piping or spread around the site during grading after excavation. At the repair shop and equipment area, as well as the other three locations, if contaminated soil is left in place, contaminants could enter surface water runoff or could migrate to groundwater.

This potentially significant impact can be reduced to a less-than-significant level through implementation of standard practices involving soil sampling and analysis and implementation of remedial measures consistent with established laws and regulations, if remediation is necessary to protect to the environment. The impact would be ***less than significant with mitigation incorporated***.

M-HM-1 Aboveground Storage Tank Fueling Station. *Western shall implement the following tasks to determine whether soil has been contaminated by AST operations, and if necessary, to remediate soil prior to re-use on site or disposal.*

(a) Western, as owner of an above-ground storage tank system shall notify the Yuba County CUPA no later than 30 days prior to permanently removing any above-ground storage tank.

(b) When the AST system has been permanently removed from service, Western shall ensure that within 180 days: (i) petroleum products are removed and vapors purges from the storage tank, piping, dispensing, and transfer equipment; and (ii) the storage tank, piping, dispensing and transfer equipment is removed by an approved hazardous materials hauler. Removal activities shall comply with California Fire Code Section 3404.2.

(c) Western shall be responsible for contracting with an independent qualified third party to develop a work plan to collect soil samples from the tank location. The owner or agent shall have the samples analyzed at a California-approved analytical laboratory using U.S. Environmental Protection Agency sampling protocols and analytical methods specific to petroleum products. Western shall report the results of soil testing to Yuba County within 30 days.

(d) If the results are indicative of contamination, as determined by Yuba County, Western shall submit a work plan prepared by an independent qualified third party to Yuba County to

remediate the contamination. A post-remedial verification sampling and closure report shall be submitted to Yuba County.

(e) All sampling and any necessary remediation shall be in accordance with California OSHA Health and Safety Plan regulations.

M-HM-2 Septic Tanks. *Western shall implement the following tasks to determine whether soil has been contaminated by laboratory liquid waste disposal to the septic tank, and if necessary, to remediate soil prior to re-use on site or disposal.*

(a) Western shall remove on-site septic tanks in accordance with Yuba County Environmental Health Department permitting and abandonment requirements.

(b) Western shall be responsible for contracting with an independent qualified third party to test the septic tank contents to determine waste characteristics and whether special removal and disposal methods are required. Tank contents shall be removed and disposed of in accordance with all applicable regulations, prior to tank removal and soil overexcavation.

(c) Western shall be responsible for contracting with an independent qualified third party to collect soil samples from the tank location, including piping, at the time of the tank removal. The owner or agent shall have the samples analyzed at a California-approved analytical laboratory using U.S. Environmental Protection Agency sampling protocols and analytical methods specific to the types of waste materials that may be present (e.g., organic and inorganic chemicals, metals). Western shall report the results of soil testing to Yuba County within 30 days.

(d) If the results are indicative of contamination, as determined by Yuba County, Western shall submit a work plan prepared by an independent qualified third party to Yuba County to remediate the contamination. A post-remedial verification sampling and closure report shall be submitted to Yuba County.

(e) All sampling and any necessary remediation shall be in accordance with California OSHA Health and Safety Plan regulations.

M-HM-3 Asphalt Plant Decommissioning. *Western shall implement the following tasks to decommission the asphalt plant and to determine whether soil has been contaminated by operation of the asphalt plant, and if necessary, to remediate soil prior to re-use on site or disposal.*

(a) Tank contents, tank removal, and disposal shall be performed by a qualified waste handler in accordance with applicable hazardous waste laws and regulations.

(b) Western shall be responsible for contracting with an independent qualified third party to develop a work plan to collect soil samples from the tank location, including piping. The owner or agent shall have the samples analyzed at a California-approved analytical laboratory using U.S. Environmental Protection Agency sampling protocols and analytical methods specific to the types of waste materials that may be present (e.g., organic and inorganic chemicals, metals). Western shall report the results of soil testing to Yuba County within 30 days.

(c) If the results are indicative of contamination, as determined by Yuba County, Western shall submit a work plan prepared by an independent qualified third party to Yuba County to remediate the contamination. A post-remedial verification sampling and closure report shall be submitted to Yuba County.

(d) All sampling and any necessary remediation shall be in accordance with California OSHA Health and Safety Plan regulations.

M-HM-4 Repair Shop and Equipment Storage Area. *Western shall implement the following tasks to determine whether soil has been contaminated at the repair shop and equipment storage area, and if necessary, to remediate soil prior to re-use on site or disposal.*

(a) Western shall be responsible for contracting with an independent qualified third party to develop a work plan to collect soil samples from the repair shop and equipment storage area. The owner or agent shall have the samples analyzed at a California-approved analytical laboratory using U.S. Environmental Protection Agency sampling protocols and analytical methods specific to the types of contaminants that may be present (e.g., total petroleum hydrocarbons and related organic compounds, and metals). Western shall report the results of soil testing to Yuba County within 30 days.

(b) If the results are indicative of contamination, as determined by Yuba County, Western shall submit a work plan prepared by an independent qualified third party to Yuba County to remediate the contamination. A post-remedial verification sampling and closure report shall be submitted to Yuba County.

(c) All sampling and any necessary remediation shall be in accordance with California OSHA Health and Safety Plan regulations.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☐	☒

Discussion

There are no schools located within 0.25 mile of the project site. Therefore, there would be ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Be located on a site that 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?	☐	☐	☐	☒

Discussion

The project site is not included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[14] There are no deed restrictions or environmental protection liens recorded for the property that indicate the site had been subject to any cleanup orders imposed by a federal, state, or local agency. Implementation of the proposed project would have ***no impact***.

[14] California Department of Toxic Substances Control, EnviroStor: Hazardous Waste and Substances Site List, http://www.envirostor.dtsc.ca.gov/public/. Search criterion: Smartsville, CA. (accessed 12/18/2012).

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) If located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
(f) If within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐

Discussion

There are no public or private airports within 2 miles of the project site. However, the project site is within the overflight zone of Beale Air Force Base (AFB). While there are aircraft overflights, reclamation activities would not result in a safety hazard for people working within the project site and would not conflict with the Beale AFB Comprehensive Land Use Plan in a manner that would present a safety hazard for workers or residents on the ground due to aircraft-generated noise. Therefore, the impact would be ***less than significant***.

While not presenting a hazard to people on the ground, the reclamation of the project site as open space and habitat could result in the attraction of higher concentrations of resident and migratory bird species to the reclaimed project site, which could pose a higher risk of bird/aircraft collisions for aircraft landing and taking off from Beale AFB. This issue is addressed in Section 5.X (Land Use/Planning) of this IS.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

Discussion

Access to the project site is from Hammonton-Smartville Road. The proposed project would not alter the design or geometrics of any public roadways. Staging for reclamation activities would be on site. Heavy equipment and reclamation vehicles would use these roads to enter or exit the project site, but traffic disruption from reclamation activities on Hammonton-Smartville Road, if any, would be temporary and short-term and not substantially different than those associated with ongoing mining and mineral processing operations. Therefore, implementation of the proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. This impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion

Reclamation of the project site would occur on an existing mined area with large ponds surrounded by agricultural fields and other mining operations, located approximately 1 mile south of the Yuba River. The Yuba River supports a broad band of riparian woodland and grassland that extends east and west of the project site. Large areas of grasslands extend to the east of the project site that could provide fuel for wildland fires in the vicinity. Compliance with existing state and local fire safety regulations and standards during reclamation and revegetation of the project site would reduce the risk of fire hazard due to inadvertent releases of flammable materials. This impact would be ***less than significant***.

IX. HYDROLOGY/WATER QUALITY

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐

Discussion

The proposed project would not result in wastewater discharges or other point-source discharges subject to waste discharge requirements because surface water flows on mined areas within the project site are not connected to the Yuba River or any other surface water body other than existing or proposed mine pits and sedimentation ponds. The conclusion is consistent with an analysis previously undertaken by the U.S. Army Corps of Engineers. The project site is surrounded on all sides but the south by tall dredger tailings that prevent stormwater from flowing off site. Stormwater drainage at the mine currently drains towards the existing mining operation pits, or percolates quickly into the underlying groundwater. Stormwater drainage for the rest of the property drains north towards the Yuba River.

Mining operations (but not reclamation) at the project site are regulated under the Central Valley Region of the California Regional Water Quality Control Board (CVRWQCB) to comply with Waste Discharge Requirements (WDR) set forth in Order No. 5-00-107 for the discharge of wash water into an on-site siltation pond. Reclamation activities would not involve discharge of process water to the mining pits. Therefore, the impact is ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐

Discussion

Implementation of the Amended Reclamation Plan would not require the direct extraction of groundwater or the construction of new groundwater wells. However, the proposed project would result in the long-term maintenance of five large lakes and the creation vegetated shorelines around those lakes. Because the primary source of water supply to these lakes is subsurface water, the long-term maintenance of these lakes could have a significant effect on groundwater supply and/or movement either alone or in combination with other existing and planned reclamation projects in the Yuba Goldfields region. The impact of the proposed project is, therefore, considered ***potentially significant*** and will be assessed further in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site?	☐	☐	☒	☐

Discussion

During the reclamation process, the grading and ripping of ground surfaces could temporarily alter drainage patterns at the project site and increase the amount of sediment in stormwater runoff. As a result, stormwater from the project site could discharge increased amounts of sediment into the existing site ponds and lakes, but would not directly discharge to the Yuba River. Inadvertent and/or uncontrolled releases of petroleum products from vehicles and equipment, or stored products such as cements, welding fluids, solvents, or other items could enter the on-site ponds and lakes affecting water quality. However, the proposed project would comply with water quality requirements in WDR Order No. 5-00-107, Water Quality Order No. 91-13-DWQ (as amended) General Permit for Discharges or Stormwater Associated with Industrial Activities, and approved SPCC Plan.

Reclamation activities would include the use of stormwater quality BMPs to prevent fines from eroding off slopes. Western would implement an erosion monitoring program to monitor slopes for erosion after heavy rains as described in Item VI (b), above.

Implementation of the proposed project would not increase the volume of stormwater runoff. As described previously, reclamation activities would be limited to minor grading activities, resoiling of shorelines created by vested mining operations, revegetation of those shorelines and other areas disturbed by mining, and reclamation of the aggregate processing plant site. None of these activities

would result in significant topographical changes or increases in impervious surface areas that could adversely affect site runoff. Therefore, the impact is considered ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?	☐	☐	☒	☐

Discussion

As noted above, the Amended Reclamation Plan includes minor grading activities, resoiling of shorelines already created by vested mining operations, revegetation of those shorelines and other areas disturbed by mining, and reclamation of the aggregate processing plant site. None of these activities would result in significant topographical changes that could affect post-mining on-site drainage patterns, or stream courses or rivers. In addition, none of the proposed reclamation activities would result in an increase in impervious surface area that could, in turn, increase site runoff. Therefore, the project impact would be ***less than significant.***

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

Discussion

As noted above, the Amended Reclamation Plan proposes no activities that would significantly affect site topography or alter site drainage patterns, stream courses or rivers. Impacts would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(f) Otherwise substantially degrade water quality?	☒	☐	☐	☐

Discussion

The northwestern Sierra Nevada region, which encompasses the Yuba, Feather, Bear, and American river watersheds, was mined extensively for lode-gold and placer-gold deposits beginning in the mid-1800s. During the late 1800s to the late 1900s, gold mining operations used mercury (quicksilver) to recover gold from dredged floodplain deposits in the Yuba Goldfields. Some mercury was lost to the environment during the processing of gold ore. Mercury concentrations have been detected in present-

day mine water and sediments, although such concentrations are often similar to background concentrations found elsewhere in California.[15]

Results of several ongoing studies that began in the late 1990s indicate that the highest average levels of mercury bioaccumulation in the northwestern Sierra Nevada region occur in the South Yuba River and Bear River watersheds. The distribution and fate of the mercury used in historic gold mining remains largely unknown, however, and is the focus of ongoing studies. These studies show a positive correlation between mercury concentration and the abundance of fine particles. In general, the finer the average particle size, the higher the concentration of total mercury.[16]

Mercury occurs in several geochemical forms, including elemental mercury, ionic (or oxidized), and in various organic compounds. It can either occur as a soluble or insoluble compound. Methylmercury (one of the organic compounds) is the form most readily incorporated into biological tissues, and it is the most toxic and bioaccumulative form of mercury. Environments that are biologically active or organically rich can be conducive to methylmercury formation, but other factors must also be present. In the context of surface water environments, mercury methylation is controlled by certain bacteria and microbes that tend to thrive in conditions of low dissolved oxygen, such as near the sediment-water interface or in algal mats. If mercury is present in sediments and is comprised largely of the soluble form, it could bind to organic compounds and become available for methylation.

There are existing ponds at the project site that would remain throughout reclamation and the post-reclamation period. Enhanced vegetation around the pond perimeters as a result of reclamation could be a source of organic materials that could increase the potential for methylmercury formation, provided sediment and other chemical conditions conducive to methylmercury formation are present. The process of moving and grading soil during reclamation could also redistribute finer-grained sediment containing mercury deposited from historic dredging activities. These activities could, in turn, increase the potential for introducing mercury into a water environment conducive to methylation.

To date, mercury testing of sediment at the site has shown that mercury occurs in amounts below human health and ecological screening levels, and is within the lower end of the background range for mercury concentration.[17] In addition, data indicates that soluble mercury is not present in on-site sediments.[18] Nevertheless, the potential for reclamation activities to degrade water quality based on those activities contributing to methylation is considered a ***potentially significant*** impact that will be addressed further in the Draft EIR.

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[15] Charles N. Alpers and Michael P. Hunerlach, Mercury Contamination from Historic Gold Mining in California, United States Geological Survey (USGS), Fact Sheet FS-061-00 (May 2000).
[16] Michael P. Hunerlach et al., *Geochemistry of Mercury and Other Trace Elements in Fluvial Tailings Upstream of Daguerre Point Dam, Yuba River, California*, USGS Scientific Investigations Report 2004-5165 (August 2001).
[17] David Brenner and Michael Burns, *Mercury Fate and Transport Investigation, Western Aggregates LLC, Yuba County California*, p. 16 (Feb. 2004); David Brenner and Michael Burns, *Addendum: Mercury Fate and Transport Investigation, Western Aggregates LLC, Yuba County California*, p. 11 (Jan. 2005)
[18] David Brenner and Michael Burns, *Mercury Fate and Transport Investigation, Western Aggregates LLC, Yuba County California*, p. 7 (Feb. 2004)

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
(h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒

Discussion

The proposed project does not include the construction of housing or structures within a 100-year flood hazard area. Therefore, the proposed project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐

Discussion

A portion of the Amended Reclamation Plan area lies within the dam failure inundation area delineated for several dams located upstream of the project site. The majority of dams located upstream are under the jurisdiction of the California Department of Water Resources Division of Safety of Dams (DSOD). According to the 2030 Yuba County General Plan, implementation of proposed policies and programs contained in the General Plan, combined with other relevant state and local regulations, minimizes the potential for effect from dam failure. [19] In addition, a portion of the Amended Reclamation Plan area is located within the 100-year flood hazard area. While implementation of the proposed project would involve potential exposure of workers to potential hazard related to flooding, site reclamation does not include the construction of structures or long-term occupancy of the project site and, therefore, the impact is considered ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

Discussion

A tsunami is a series of large waves that are caused by earthquakes that occur on the seafloor or in coastal areas. The project site is not located in an area subject to such hazard. Mudflows generally occur in areas having steep slopes of exposed soil. The project site is located in an area with gentle slopes on flat land, interspersed with dredger tailings made of highly permeable cobbles, sand, and gravel.

[19] Yuba County Community Development and Services Agency. *Yuba County 2030 General Plan Final Environmental Impact Report*, SCH No. 2010062054 (May 2011), http://www.yubavision2030.org/FEIR/4.9%20Hydrology.pdf (accessed 12/18/2012).

Therefore, mudflows would not be a potential hazard to the project site upon completion of final reclamation. Seiches are standing waves created by seismically induced groundshaking (or volcanic eruptions or explosions) that occur in large, freestanding bodies of water. The long-term maintenance of five lakes under the Amended Reclamation Plan would increase the potential that a seiche could occur on the project site. However, given the relatively small size of the lakes and given that the reclaimed site would contain no occupied structures, the impact is considered ***less than significant***.

X. LAND USE/PLANNING

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Physically divide an established community?	☐	☐	☐	☒

Discussion

The project site consists primarily of previously or currently mined land within unincorporated Yuba County. The site is bounded by the Yuba Goldfields, Yuba River (1 mile north), agriculture, grazing land, and other active mine sites. There are no developed or established residential communities within the surrounding area. Reclamation of the project site would not divide an established community. Therefore, there would be ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐

Discussion

The project site is located within lands designated as "Natural Resources" in the Yuba County 2030 General Plan.[20] The intent of this designation is to: "Conserve and provide natural habitat, watersheds, scenic resources, cultural resources, recreational amenities, agricultural and forest resources, wetlands, woodlands, minerals, and other resources for sustainable use, enjoyment, extraction, and processing."[21] The General Plan identifies a variety of allowable uses within lands designated as "Natural Resources"

[20] Yuba County Community Development and Services Agency, *Yuba County 2030 General Plan* (adopted June 7, 2011), http://www.yubavision2030.org/2030%20General%20Plan.aspx (accessed 12/15/2012).
[21] Yuba County Community Development and Services Agency, *Yuba County 2030 General Plan*, Community Development Element (adopted June 7, 2011), http://www.yubavision2030.org/GPU%20-%20DOCUMENTS/Adopted%202030%20General%20Plan/8_COMMUNITY_DEVELOPMENT_ELEMENT.pdf (accessed 12/15/2012).

including, but not limited to, mining, natural open space and nature preserves, and "other natural resource-oriented use."[22]

The Yuba County zoning designation for the project site is M-2 (Extractive Industrial).[23] The Extractive Industrial designation identifies "areas where significant and commercially viable mineral and aggregate resources are located and to protect those areas from the encroachment of incompatible uses." Examples of permitted uses include, but are not limited to: surface and underground mining; quarrying; dredging; oil and gas exploration and development; concrete and asphalt production and distribution; limited active and passive recreational uses; and agricultural uses. The project site is also designated as Mineral Resource Zone 2 (MRZ-2) by the California Geological Survey.[24]

Following completion of reclamation activities, there would be a series of lakes of varying size with vegetated shorelines and upland areas of riparian woodland and grassland. This condition would be consistent with the General Plan's Natural Resources designation and with the current zoning designation.

The proposed project would also be consistent with the "Open Space" designation in the Natural Resources Element of the 2030 General Plan[25] specific to mineral resources, which lists incompatible uses as uses that "would present conflicts related to noise, dust, traffic, or other issues, or those that would require substantial public or private investment in structures, land improvements, and landscaping and may prevent mining because of greater resulting economic value of land and improvements." Other incompatible uses for mineral resource lands include those that would interfere with flood protection or would significantly degrade water quality.

The project site is shown in the Beale Air Force Base Comprehensive Land Use Plan (Beale AFB CLUP)[26] as being within the Overflight Zone on the Beale AFB Area of Influence map and within the Noise Contours (see Figure 5-1 [Beale AFB Noise Contours]). The project site appears to be primarily located within the 60 and 80 CNEL contours. Because the Amended Reclamation Plan would not construct permanent structures or accommodate permanent occupants on the project site that could be affected by noise generated by overflights from Beale AFB, the proposed project is consistent with the Beale AFB CLUP with respect to potential noise impacts.

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[22] Yuba County Community Development and Services Agency, *Yuba County 2030 General Plan*, Community Development Element (adopted June 7, 2011), http://www.yubavision2030.org/GPU%20-%20DOCUMENTS/Adopted%202030%20General%20Plan/8_COMMUNITY_DEVELOPMENT_ELEMENT.pdf (accessed 12/15/2012).
[23] Yuba County Information Technology Division, Yuba County Zoning and Specific Plan Designations Map. http://gis.co.yuba.ca.us/images/maps/ZoningMap.pdf (accessed 12/15/2012).
[24] California State Mining and Geology Board, Special Report 132: Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City-Marysville Production-Consumption Region, Robert S. Habel and Linda F. Campion (1986).
[25] Yuba County Community Development and Services Agency, *Yuba County 2030 General Plan*, Natural Resources Element (adopted June 7, 2011), http://www.yubavision2030.org/GPU%20-%20DOCUMENTS/Adopted%202030%20General%20Plan/10_NATURAL_RESOURCES_ELEMENT.pdf (accessed 12/15/2012).
[26] Airport Land Use Commission, *Beale Air Force Base Comprehensive Land Use Plan* (June 1987, amended December 1992), Figure 12, p. 34.

The proposed project would convert the mined areas into a series of lakes bordered by marsh and riparian woodlands. Therefore, reclamation of the mine and re-designation of the zoning would not conflict with the Yuba County General Plan, the Yuba County Zoning Ordinance, or the Beale AFB CLUP. For the above reasons, these impacts would be less than significant.

The proposed Amended Reclamation Plan end use is the long-term maintenance of five lakes, vegetated shorelines, and wetlands. These features likely would result in the attraction of resident and migratory waterfowl, which could pose a hazard to aircraft approaching or taking off from Beale AFB. The issue of bird/aircraft collisions is addressed in the Beale Air Force Base Joint Land Use Study (JLUS),[27] which recommends coordination with local jurisdictions to help implement the Beale AFB Bird / Wildlife Strike Hazard (BASH) program. The BASH program is aimed at minimizing collisions between military aircraft and birds or other animals, and to minimize damage and injuries when collisions occur. The BASH program considers not only wildlife within the confines of the airfield, but also in neighboring areas. The project site is located in the area designated as Military Influence Area I (MIA I), which is the area of highest military priority identified in the JLUS.

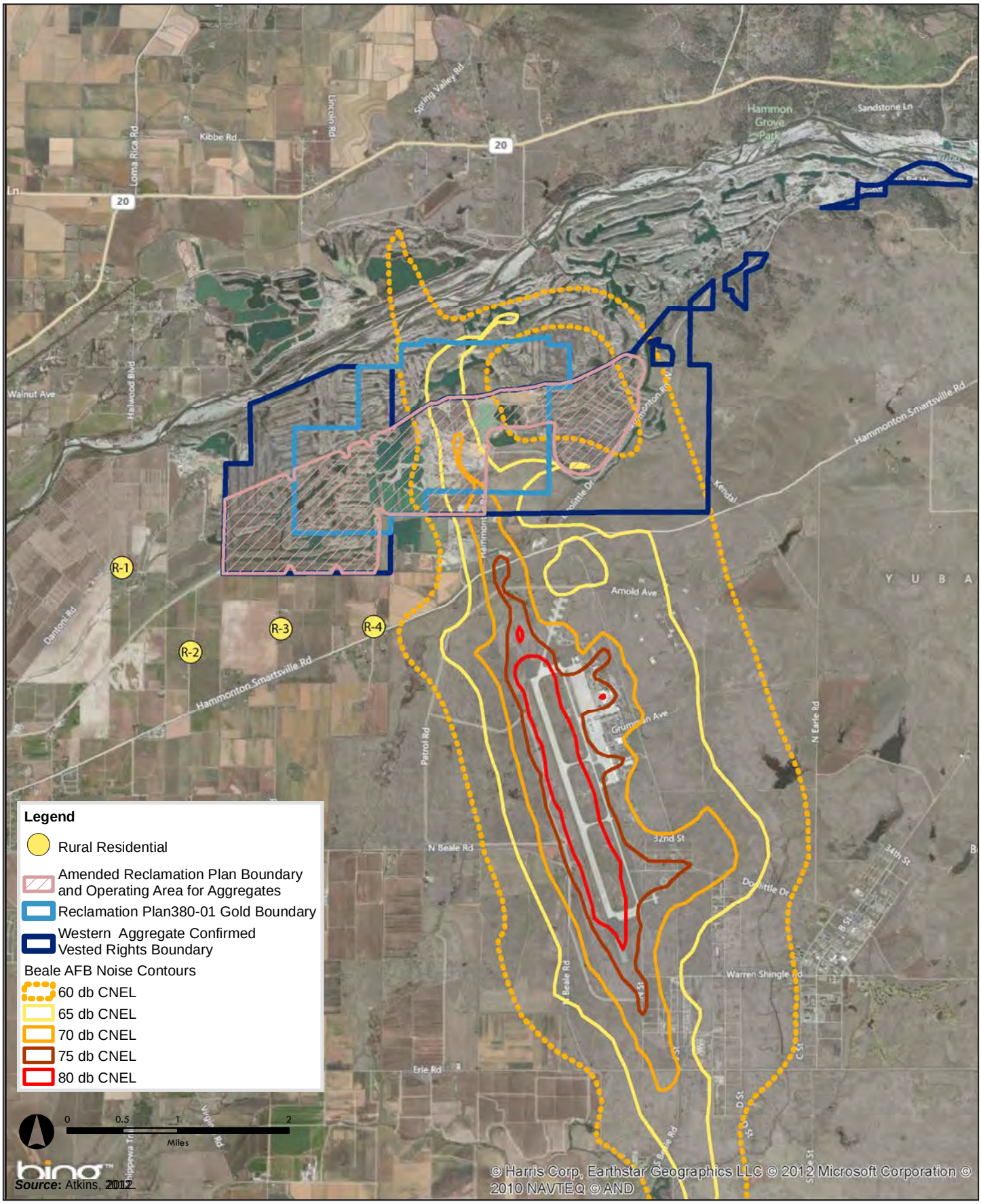
A recent study conducted at Beale AFB indicates that birds observed during the study within the Beale overflight zone predominantly originate from agricultural fields and on-base wetlands, with only 1 percent of the birds originating from mining operations north of Beale AFB. Nevertheless, the proposed long-term maintenance of open water, wetlands and marsh habitat on the Western site could be interpreted as inconsistent with the Beale AFB JLUS. The impact, therefore, is considered ***potentially significant*** and will be addressed further in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion

As discussed in Section 5.IV(f), above, Yuba County, in cooperation with Sutter County, the U.S. Fish and Wildlife Service, California Department Fish and Game and the Cities of Yuba City, Wheatland, and Live Oak, has approved an agreement to prepare a Natural Communities Conservation Plan and Habitat Conservation Plan (NCCP/HCP) for a broad area that includes the project site. The NCCP/HCP has not been completed but agreement calls for the review of projects subject to approval by participating agencies for consistency with interim plan objectives. Because the proposed reclamation plan is not subject to approval by any of the plan's participating agencies, no review is envisioned for the proposed project. Given the nature of the proposed project, i.e., the long-term maintenance of open water, riparian woodland and marsh habitat, and the current absence of an approved NCCP/HCP, the proposed project would have ***no impact***.

[27] California Governor's Office of Planning and Research, *Beale Air Force Base Joint Land Use Study Executive Summary* (May 2008), http://opr.ca.gov/docs/final_beale_1executive_summary.pdf (accessed 12/15/2012).



Source: Atkins, 2012.

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Figure 5-1

Beale AFB Noise Contours

ATKINS

XI. MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
(b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Discussion

Implementation of the proposed project would reclaim previously mined areas. As stated in the project description, it is anticipated that mining activities will cease by the year 2056 at the Western site. Furthermore, neither the current mining operations nor the possible future uses of the project site would preclude future mining on the property, should any additional recoverable mineral resources be desired for extraction from the site. Therefore, the proposed project would have ***no impact***.

XII. NOISE

Introduction

Noise impacts as a result of proposed reclamation activities relative to environmental baseline conditions are evaluated in *Noise Assessment for the Western Aggregates LLC Amended Reclamation Plan Technical Memorandum* (Atkins 2012), which is included as Appendix D of this IS. The technical memorandum describes the fundamentals of noise impact evaluation, environmental baseline conditions on the project site relative to noise, regulatory setting, assessment methods, and impact determination. The impact determinations and discussions presented below summarize the results presented in the noise assessment.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

Discussion

Reclamation activities proposed in the Amended Reclamation Plan would be less intensive than the mining activities that immediately preceded it and would involve considerably fewer pieces of heavy equipment. Reclamation would require only minor grading to achieve final site topography, on-site transport and distribution of soil to support revegetation, and revegetation itself. The equipment expected to be used for reclamation would include two heavy trucks, one backhoe, one dozer, and one

grader for earthmoving activity. This activity would generate less noise than that experienced under baseline mining conditions, which includes rock excavating, grading, and the transport and dumping of aggregate. Aside from reclamation activity being inherently quieter than mining operations, noise levels would also be lessened by virtue of the fact that there would be many fewer pieces of equipment used overall.

The third and final phase of reclamation would also include dismantling and removing the Western processing plant and reclamation of the plant site. Dismantling of the processing site would require dismantling/demolition of processing facilities and concrete foundations and pads, and the off-site transport of materials and equipment. After the removal of all materials and equipment from the plant site, the plant site would be graded, resoiled, and revegetated.

Heavy equipment to be used for during site reclamation includes a backhoe, crusher (used for concrete recycling during plant site reclamation), dozer, grader, and heavy haul trucks. Noise emission levels for this equipment are presented in Table 5-3 (Reclamation Equipment Noise Emission Levels). As shown in the table, this equipment could generate maximum noise levels of 85 dBA at 50 feet. Reclamation activities are expected to be conducted in three phases, periodically over the projected 45-year life of mining operations. This analysis took into account two reclamation activity noise scenarios: reclamation activities of surfaces above water and demolition of existing operation facilities and equipment. The nearest noise receptors are rural residential uses to the south and west of the project site, more than 0.5 mile from the closest proposed reclamation activities. At this distance, on-site reclamation activity would be barely noticeable at these receptor locations. Table 5-4 (Reclamation Equipment Noise Emission Levels at the Nearest Noise Sensitive Receptor) shows the predicted noise levels at the nearest receptor locations to the project site, the resulting noise level due to reclamation activities at the nearest Phase boundary line and the center of the Phase area. However, as stated previously, any noise from reclamation would be less than experienced under baseline mining conditions. Consequently, these receptors would actually experience improvements in ambient noise levels during reclamation relative to during active mining. Finally, it important to reiterate that any noise impact from reclamation activity would be temporary.

Table 5-3 Reclamation Equipment Noise Emission Levels

Equipment Type	*Typical Noise Level (dBA) at 50 feet*
Backhoe	80
Crusher	85
Dozer	85
Grader	85
Haul truck	84

SOURCE: Atkins, Noise Impact Assessment Technical Memo (2012), Table 6 (Appendix D to this IS).

dBA = A-weighted decibels

All equipment fitted with properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are the actual measured noise levels for each piece of heavy construction equipment.

Table 5-4 Reclamation Equipment Noise Emission Levels at the Nearest Noise-Sensitive Receptor

Receptor ID	*Reclamation Phase*	*Distance to Nearest Reclamation Area Boundary Line (feet)*	*Surfaces Above Water Line at Phase Boundary Line Noise Level (dBA L_{eq})*	*Distance to Center of Reclamation Phase (feet)*	*Surfaces Above Water Line at Center of Phase Noise Level (dBA L_{eq})*	*Distance to Demolition Area (feet)*	*Demolition Noise Level (dBA L_{eq})*
1	3	4,900	36	6,800	32	5,500	33
2	3	4,175	37	6,400	33	5,000	34
	3	5,880	34	8,100	30		
3	3	2,800	42	4,600	36	3,800	37
	3	2,800	42	4,500	37		
4	2	5,335	35	8,500	30	3,000	40
	3	2,700	42	6,800	32		
	3	5,300	35	4,200	37		

SOURCE: Atkins, Noise Impact Assessment Technical Memo (2012), Table 7 (Appendix D to this IS).

As stated in Appendix D, the proposed reclamation activities would not exceed the exterior noise standards established by Yuba County (refer to Appendix D Table 3 [Maximum Allowable Noise Exposure from Non-Transportation Noise Sources at Noise-Sensitive Land Uses], Table 4 [Performance Standards for Non-Transportation Noise Sources], and Table 5 [Maximum Noise Levels Permitted]). For reasons presented above, the impact is ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

Discussion

As noted, less heavy-duty equipment would be used during reclamation than during baseline mining activity. This less intense activity would produce lower levels of groundborne vibration. Table 8 (Vibration Source Levels for Construction Equipment) in Appendix D of this IS shows vibration levels from construction equipment as published by the Federal Railroad Administration. Equipment used during reclamation would consist of trucks for transporting material, dozer, backhoe, and a grader for earthmoving. The lighter nature of the reclamation-related equipment means that vibration levels would be less than those listed for heavy-duty equipment in Table 8. Consequently, groundborne vibration levels at the edge of the project site and at the nearest residences would be less than the Federal Railway Administration's vibration impact thresholds for sensitive buildings and residences of 80 VdB. Therefore, the impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Discussion

As described above, proposed reclamation activities would occur in three phases and would occur immediately after the conclusion mining activity for that phase. Site reclamation would result in no permanent structures or facilities or any other potential permanent sources of noise. Therefore, the proposed project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

Discussion

As discussed under Item (a) above, noise levels generated by reclamation activities would be temporary and would not exceed existing baseline conditions generated by ongoing mining activities. The impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) If located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in the exposure of people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Discussion

As discussed in Section 5.X (Land Use/Planning), above, the project site is noted in the Beale Air Force Base Comprehensive Land Use Plan (Beale AFB CLUP) as being within the Overflight Zone on the Beale AFB Area of Influence map and within the Noise Contours. The project site appears to be primarily located within the 60 and 80 CNEL contours (Figure 5-1). Because the Amended Reclamation Plan would not construct permanent structures or accommodate permanent occupants on the project site that could be affected by noise generated by overflights from Beale, the proposed project is consistent with the Beale AFB CLUP. Therefore, the impact is ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(f) If within the vicinity of a private airstrip, result in the exposure of people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

The proposed project is not in the vicinity of private air strip; therefore, there would be ***no impact***.

XIII. POPULATION/HOUSING

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

Discussion

The proposed project would result in the reclamation of an approved mining site and would not include the construction of new homes, new businesses, or modify existing infrastructure. No new streets would be constructed, widened or extended as a result of the proposed project. The proposed project would be implemented in an undeveloped portion of the north Central Valley where there are few residences. The proposed project would periodically add jobs to the area because workers would be needed to carry out site reclamation. However, the addition of jobs would be temporary and no permanent jobs would be added to the area. Therefore, the impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
(c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

All physical changes resulting from the proposed project would occur on property that would not have residential units, and the proposed project would not displace existing people or housing, or require the construction of replacement housing elsewhere. Therefore, the proposed project would have ***no impact***.

XIV. PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or in the need for new or physically altered governmental 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:				
(i) Fire protection?	☐	☐	☒	☐
(ii) Police protection?	☐	☐	☒	☐

Discussion

The Yuba County Sheriff's Department provides law enforcement services, and the California Department of Forestry (CDF) provides fire suppression services to the project area. The nearest Sheriff's Department office is located at 215 Fifth Street in Marysville. The closest CDF station to the project site is located in Smartsville.

The proposed project would not result in the development of housing or otherwise increase the population of the County. Therefore, there would not be a need to increase law enforcement or fire department staffing levels or equipment. Because the site is located adjacent to the Yuba River where there are frequently recreational users, a locked gate would remain at the site entrance to prevent accidental entry to the site. In the event that there was trespassing on the site, the Sheriff's Department would be the responding entity.

The site would be revegetated with trees, shrubs, and plants. Lightning rarely strikes in this area during storms. If a lightning strike in the project area caused a fire that would need to be suppressed, CDF would be the responding entity.

Because the proposed project would not result in the need for increased staffing levels or equipment for police protection or fire suppression, the impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(iii) Schools?	☐	☐	☐	☒
(iv) Parks?	☐	☐	☐	☒
(v) Other public facilities?	☐	☐	☐	☒

Discussion

Reclamation of the project site would not result in the development of housing or otherwise increase the population of the County. Therefore, there would be no demand for schools, parks, or other public facilities, and there would be ***no impact***.

XV. RECREATION

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
(b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

As stated in Section 5.XIII (a) and (b) of this IS, the proposed project would not cause an increase in population and, therefore, would not generate an increase in demand for neighborhood or regional parks or other recreation facilities. Also, no existing recreational opportunities exist on any portion of the project site. Following reclamation, the project site could be zoned as open space and could provide future recreational opportunities. However, the proposed project does not include structural enhancements for recreation. Therefore, ***no impact*** would occur.

XVI. TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and nonmotorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
(b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

Discussion

Traffic generated by existing mining and processing operations on the project site consists primarily of truck transport of processed materials for sale and employee transport to and from the site. It is assumed that traffic levels of activity will continue until the closure of the Western processing plant. Site reclamation under the proposed project would primarily occur concurrently with mining and processing operations. As described in Section 2 (Project Description) of this IS, reclamation activities would be periodic and temporary. These activities would occur seasonally throughout the life of the proposed

project and would involve the limited transport of reclamation personnel and equipment to and from the project site. This traffic would not include heavy equipment or large trucks. These activities are likely to generate no more than 10 trips to and 10 trips from the project site on any given day during peak reclamation activities.

According to the Amended Reclamation Plan preparer,[28] Information on project daily truck trips is closely related to annual mining production, which is considered proprietary information under SMARA. As a vested mining operation, there has been little in the way of project-specific mining-related truck trip analysis or other project mining-related traffic analysis to date. However, assuming a scenario of average annual mining production of approximately 1 million cubic yards, truck trip generation per day would be approximately 175 to 195 one-way trip trips plus 20 to 30 employee and delivery vehicles.

Regarding traffic generated by reclamation activities, using assumptions from the most recent Financial Assurance Cost Estimate, the Amended Reclamation Plan preparer estimates approximately 150 loads of equipment and 100 loads of concrete, wood, rubber, etc., for a total of 250 loads of material would be hauled off the project site over a four-month demolition period, resulting in daily truck trip generation over the 4-month period of 3 to 4 loads per day plus 10 employee trips per day.[29]

Given the low number of trips generated by the proposed project relative to existing mining operations, the limited duration of those activities, and existing use of the site for mining operations and materials transport, the proposed project would not substantially affect baseline traffic conditions or capacity of the street system. Therefore, the impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☒	☐	☐	☐

Discussion

The proposed project would not result in changes to air traffic patterns at Beale AFB because the project would not result in the construction of any structures or air traffic hazards that could affect air traffic patterns.

As noted, the Amended Reclamation Plan would result in the long-term maintenance of five lakes, vegetated shorelines, woodland and wetlands. These features likely would result in the attraction of resident and migratory waterfowl which, in turn, could provide a hazard to aircraft approaching or leaving Beale AFB. While a recent study indicates that birds observed within the Beale overflight zone predominantly originate from agricultural fields and on-base wetlands, with only 1 percent of the birds originating from mining operations north of Beale, the proposed long-term maintenance of open water,

[28] S.A. Lilburn, Email communication to R. Hanson, Atkins, Subject: Western Aggregates Project Description (January 15, 2013).
[29] S.A. Lilburn, Email communication to R. Hanson, Atkins, Subject: Western Aggregates Project Description (January 15, 2013).

wetlands and marsh habitat on the Western site could individually or in combination with other mine reclamation projects in the Yuba Goldfields, present a safety risk to aircraft. The impact, therefore, is considered ***potentially significant*** and will be addressed further in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

Discussion

The proposed project would require ingress and egress from the project site by vehicles carrying plants and seeds, landscaping materials, and personnel. In the later stages of reclamation heavy equipment and processing facilities would be removed from the site using large trucks. Reclamation activities would generate fewer trips than current and anticipated future operations at the project site associated with the transport of processed aggregate from the project site. Visibility of site entrance from Hammonton-Smartville Road is unimpaired. Given that the proposed project would not substantially increase hazards relative to baseline conditions and is not expected to exacerbate an existing identified hazardous condition, impacts would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Result in inadequate emergency access?	☐	☐	☒	☐

Discussion

Reclamation of the project site would remove and reclaim some existing and planned roadways that serve and will serve mining operations. Therefore, access to some of the project site would be reduced as a result of site reclamation. Because this access would be removed, concurrently with reclamation, the impact road removal would have on emergency access is considered to be less than significant. The County road that currently runs east from the processing plant and along the southern boundary of the project site would not be affected by implementation of the proposed reclamation plan. Therefore, the impact on emergency access would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion

The proposed project area does not contain any existing alternative transportation features, such as bus stops, fixed routes for buses, or bicycle routes. The proposed project would not remove any alternative

transportation features, or develop uses that could require the use of such facilities. Therefore, there would be ***no impact*** on alternative transportation plans or facilities.

XVII. UTILITIES/SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project:				
(a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
(b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

Discussion

Reclamation would result in the revegetation of specific areas surrounding lakes with native trees, shrubs, and plants. Reclamation would not result in the development of housing or otherwise increase the population of Yuba County. No new structures would be erected on the site. There would be no need for water or wastewater service on site. Therefore, no expansion of existing or construction of new water or wastewater facilities would be required, and wastewater treatment requirements would not be exceeded. Therefore, there would be ***no impact.***

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

Discussion

Stormwater flows along natural grades to the central part of the project site or into existing water bodies. Thus, the proposed project does not include stormwater runoff control measures to reduce runoff to receiving waters. No storm drainage facilities would be constructed on site. In addition, portions of the project site would be revegetated with native trees and plant species, which would stabilize soils and reduce the amount of stormwater runoff produced. The proposed project would not result in the introduction of impervious surfaces to the area, and, therefore, would not produce substantial amounts of runoff while retaining all stormwater runoff on site. The expansion of existing or construction of new storm drainage facilities would not be required, and the impact would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

Discussion

The proposed project would not construct uses that would require a public water supply. Irrigation of areas that are revegetated under the Amended Reclamation Plan would require a water supply as would the application of water for dust control during reclamation. However, water for these activities would be pumped from on-site ponds. Because no new or expanded water entitlements would be needed to implement site reclamation, and there would be ***no impact*** on water supply.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

Discussion

As noted above, implementation of the Amended Reclamation Plan would require no wastewater treatment services. Therefore, the proposed project would have ***no impact***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
(g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion

Reclamation would result in the revegetation of specific areas with native trees, shrubs, and plants. There would be no waste product created by revegetating the areas, because the silts or fine-grained clays and sand that are saved on site would be used to stabilize slopes and provide topsoil for the introduced plants. The only solid waste that would be created by reclamation would be the demolition and removal of the existing main plant building and other associated structures. Debris from these structures would be resold and recycled to the extent practicable with the remaining waste hauled to the Yuba Sutter Disposal, Inc. landfill in Marysville.[30] The debris from the demolition of these structures would be minimal (estimated at less than 500 cubic yards), and would not adversely affect the landfill's capacity.

[30] California Integrated Waste Management Board, Landfill Facility Database, http://www.calrecycle.ca.gov/SWFacilities/Landfills/ (accessed 12/18/2012).

The collection and disposal of this solid waste would be in accordance with federal, state, and local regulations related to solid waste.

Any hazardous materials that would be disposed of during reclamation would be required to adhere to all federal, state, and local regulations, as described in Section 5.VIII(a). No long-term solid waste would be generated by the reclamation of the site. Although solid waste disposal could involve hazardous materials, the proposed project would be required to follow all federal, state, and local regulations regarding solid waste disposal. Therefore, because solid waste generated would not adversely affect the capacity of the landfill, and the proposed project would not violate solid waste regulations, impacts would be ***less than significant***.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(h) Require or result in the construction of new energy production or transmission facilities, or expansion of existing facilities, the construction of which could cause a significant environmental impact?	☐	☐	☐	☒

Discussion

Reclamation activities would be temporary and would mainly involve mobile diesel-powered equipment. Reclamation activities would not require new or expanded energy facilities. The proposed project would have ***no impact***.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(a) 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, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐

Discussion

The proposed project would implement the Amended Reclamation Plan. Completion of mining operations and the closure of processing operations currently contained within the Amended Reclamation Plan boundary are proposed to be completed within approximately 45 years from approval of the plan. The actual time frame for completion is dependent on market conditions and other economic factors (e.g., demand and competition), actual reserves, ultimate mining depths, and quality of mined material.

Site reclamation would occur in three phases. Each phase of reclamation would immediately follow the completion of each of the three proposed mining phases. At the conclusion of the third and final phase

of mining, all unreclaimed mined areas would be graded, resoiled, and revegetated in accordance with the Amended Reclamation Plan. The final phase of reclamation would also include: the removal of processing and mining equipment from the project site; the redistribution of stockpiled "fines" from settling ponds to pond and lake shores, and other disturbed flat areas on the mine site; the ripping and grading of those areas; and site revegetation. This IS identifies potential short-term and long-term impacts associated with the Amended Reclamation Plan that require further analysis in the Draft EIR.

Short-term potential impacts associated with the proposed project could affect the possible establishment of special-status plant and animal species if they occur or could possibly occur on the project site over time. These species might be adversely affected by reclamation activities. This impact is found to be ***potentially significant*** and requires further evaluation in the Draft EIR.

This IS recognizes that the project site may contain previously undiscovered resources of cultural significance that may be adversely affected by reclamation activities. However, this IS presents measures that adequately mitigate these impacts to a level that is considered less than significant.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(b) 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, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐

Discussion

Implementation of the proposed project would require the operation of heavy equipment on site; dismantling, demolition, and removal of aggregate processing plant facilities; and the transport of equipment and waste materials off site for sale, recycling or disposal. These activities could result in short-term impacts on biological resources and hydrology. The contribution of these impacts to local and regional conditions could be considered cumulatively considerable and would require additional evaluation in the Draft EIR. In addition, the long-term impact of maintaining large bodies of open water and wildlife habitat on the project site may, in combination with other mining projects in the project vicinity, present a safety hazard to aircraft using Beale Air Force Base by attracting higher numbers of birds into the base's overflight zone. The contribution of this impact could be considered cumulatively considerable, and requires additional analysis in the Draft EIR.

	Potentially Significant Impact	Less Than Significant w/Mitigation Incorporated	Less-Than-Significant Impact	No Impact
(c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Discussion

This IS finds that potential direct and indirect impacts of the proposed project on human beings related to hydrology and land use/air safety hazards were found to be ***potentially significant***. These issues will be further analyzed in the Draft EIR.

SECTION 6. **References**

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Appendix A Amended Reclamation Plan for Western Aggregates LLC Yuba County Operations (May 2012)

Amended Reclamation Plan

for

WESTERN AGGREGATES LLC
Yuba County Operations

Submitted To:

STATE MINING AND GEOLOGY BOARD
801 K STREET, SUITE 2015
SACRAMENTO, CA 95814

Prepared For:

WESTERN AGGREGATES LLC
4711 HAMMONTON ROAD
MARYSVILLE, CA 95901

Prepared By:
LILBURN CORPORATION
1905 BUSINESS CENTER DRIVE
SAN BERNARDINO, CALIFORNIA 92408
(909) 890-1818

May 2012

Western Aggregates LLC

Amended Reclamation Plan

Project Application

Submitted To:

State Mining and Geology Board
801 K Street, Suite 2015
Sacramento, CA 95814

Prepared For:

Western Aggregates LLC
4711 Hammonton Road
Marysville, CA 95901

Prepared By:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408
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MAY 2012

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Attachment 1: Legal Description
Attachment 2: SMARA & CCR (Title 14) Requirements for Mining & Reclamation Plan Submittals Cross-Reference Matrix

LIST OF ACRONYMS

ACOE	U.S. Army Corps of Engineers
AMSL	Above Mean Sea Level
bgs	below ground surface
BACT	Best Available Control Technology
BMPs	Best Management Practices
BMSL	Below Mean Sea Level
CCR	California Code of Regulations (Title 14)
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CUP	Conditional Use Permit
DOC	California Department of Conservation
MRZ-2	Mineral Resource Zone (Containing Significant Mineral Deposits)
MSHA	Mine Safety and Health Administration
MSL	Mean Sea Level
NGVD	National Geodetic Vertical Datum
OHSA	Occupational Safety and Health Administration
OMR	Office of Mine Reclamation
PRC	California Public Resources Code
RWQCB	Regional Water Quality Control Board
AQMD	Air Quality Management District
SEA	Significant Ecological Area
SMARA	Surface Mining and Reclamation Act, 1975 (PRC § 2710, et seq.)
SMGB	State Mining and Geology Board
SPCCP	Spill Prevention Control and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
USGS	United States Geological Survey

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

Western Aggregates LLC ("Western"[1]) operates an active aggregate mining operation pursuant to vested rights, which recently were confirmed by the State Mining and Geology Board ("SMGB") to cover an approximately 3,900-acre area situated in the historic Yuba Goldfields, located twelve miles northeast of Marysville, California (see Figure 1), including both lands that have and have not been previously dredged or otherwise mined (the “Vested Rights Area”). The Yuba Goldfields have historically been mined for gold and aggregates using various mining techniques. This historic mining produced a ten thousand acre area of dredge tailings consisting of sand, gravel and other aggregates adjacent to the Yuba River.

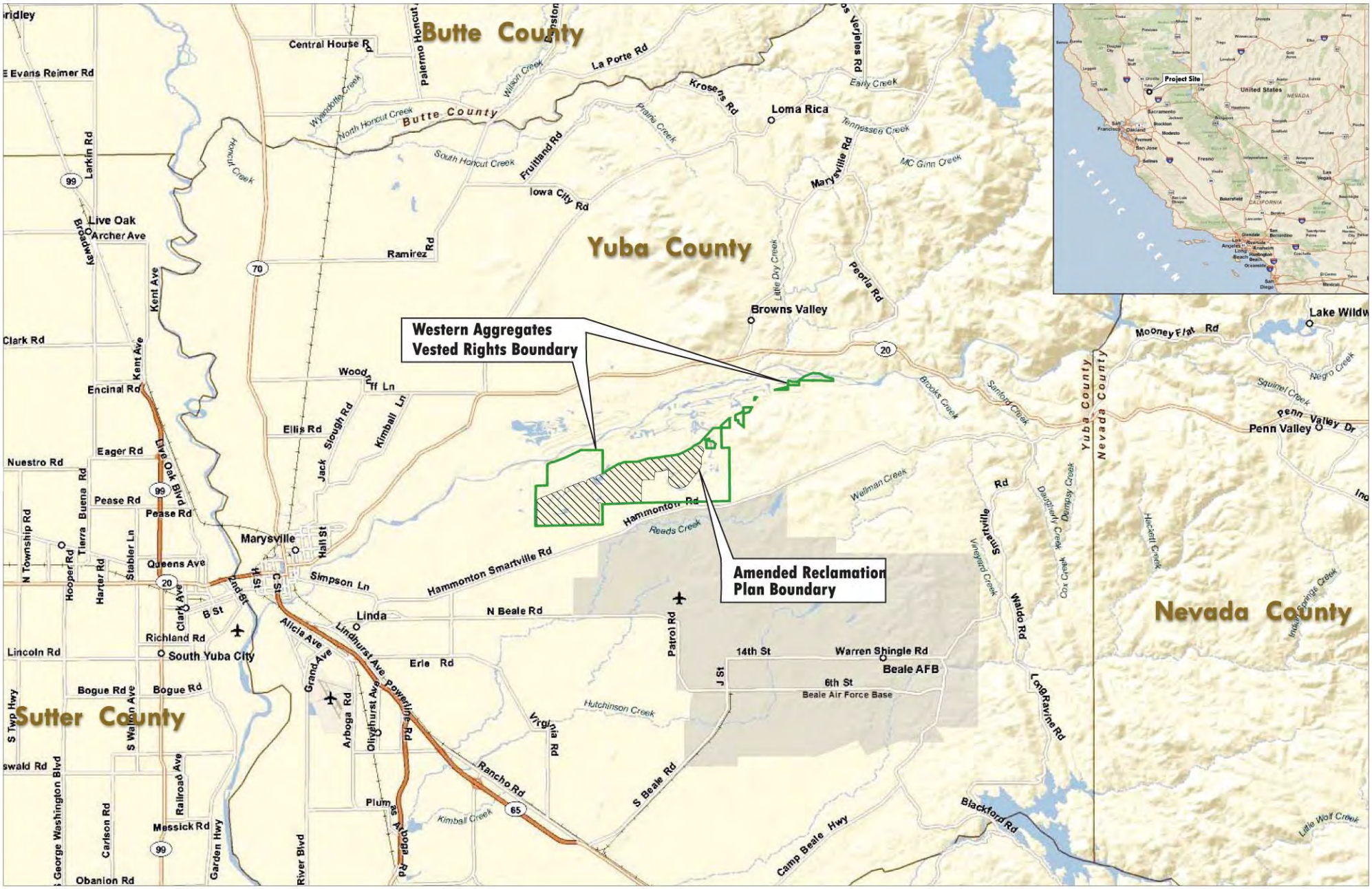
Gold mining operations, conducted by a separate company called Cal Sierra Development, Inc. (“Cal Sierra”), occur concurrently with operations of Western, on the same Yuba Goldfields property. The operations and assets of Western and Cal Sierra were, through 1987, owned and controlled by a common entity, Yuba Goldfields, Inc. (together, with its predecessors, "Yuba Consolidated"). While Cal Sierra owns gold, precious metals estate, and other related assets in the Yuba Goldfields, Western owns the surface estate and the rights to sand, gravel, rock, stone, cobbles, hardrock, decorative rock, silica, riprap and asphalt rock and other aggregates (collectively referred to herein as either "aggregates" or "sand and gravel") in the Yuba Goldfields (and, certain limited gold, precious metals and other related assets in a small portion of the Goldfields). Cal Sierra’s administrative offices are located in the approximate center of Section 5 (Figures 2a and 2b).

Western's operation is currently subject to Reclamation Plan 80-01 ("RP 80-01"), which was approved by the County of Yuba in 1980, originally for Yuba Consolidated's gold and aggregate operations. Thus RP 80-01 now applies to both Western's aggregate operations, and Cal Sierra's gold operations. RP 80-01 covers approximately 2,000 acres, all of which apply to Cal Sierra's gold operations. Of the total 2,000 acres, approximately 1,420 acres apply to Western's aggregate operations, and are located in Sections 1 and 12, Township 15 North, Range 4 East, and Sections 5 and 6, Township 15 North, Range 5 East, as shown in Figures 2a and 2b. Western's aggregate plant operations are currently located in Section 6.

This proposed Amended Reclamation Plan covers approximately 1,960 acres of Western Aggregates’ 3,900 acre Vested Rights Area. The approximately 1,900 acre area addressed by this plan is located within Section 1, T15N, R4E; Section 2, T15N, R4E; Section 11, T15N, R4E; Section 12, T15N, R4E, Section 4, T15N, R5E; Section 5, T15N, R5E; Section 6, T15N, R5E; and Section 32, T16N, R5E. When approved, this Amended Reclamation Plan will supersede the 1,420-acre portion of RP 80-01 that applies to aggregate operations. However, the entire 2,000-acre area of RP 80-01 that applies to gold operations will remain valid and still intact.

The surface mining operations that will be reclaimed in accordance with this Amended Reclamation Plan are within the Vested Rights Area. Nothing in this Amended Reclamation Plan is intended by Western to constitute any abandonment, extinguishment, diminishment or

[1] "Western" as used herein refers to Western Aggregates LLC and its predecessor companies.



Area Map

Western Aggregates LLC
Yuba County, California

Figure 1

LEGEND

Vested Rights Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

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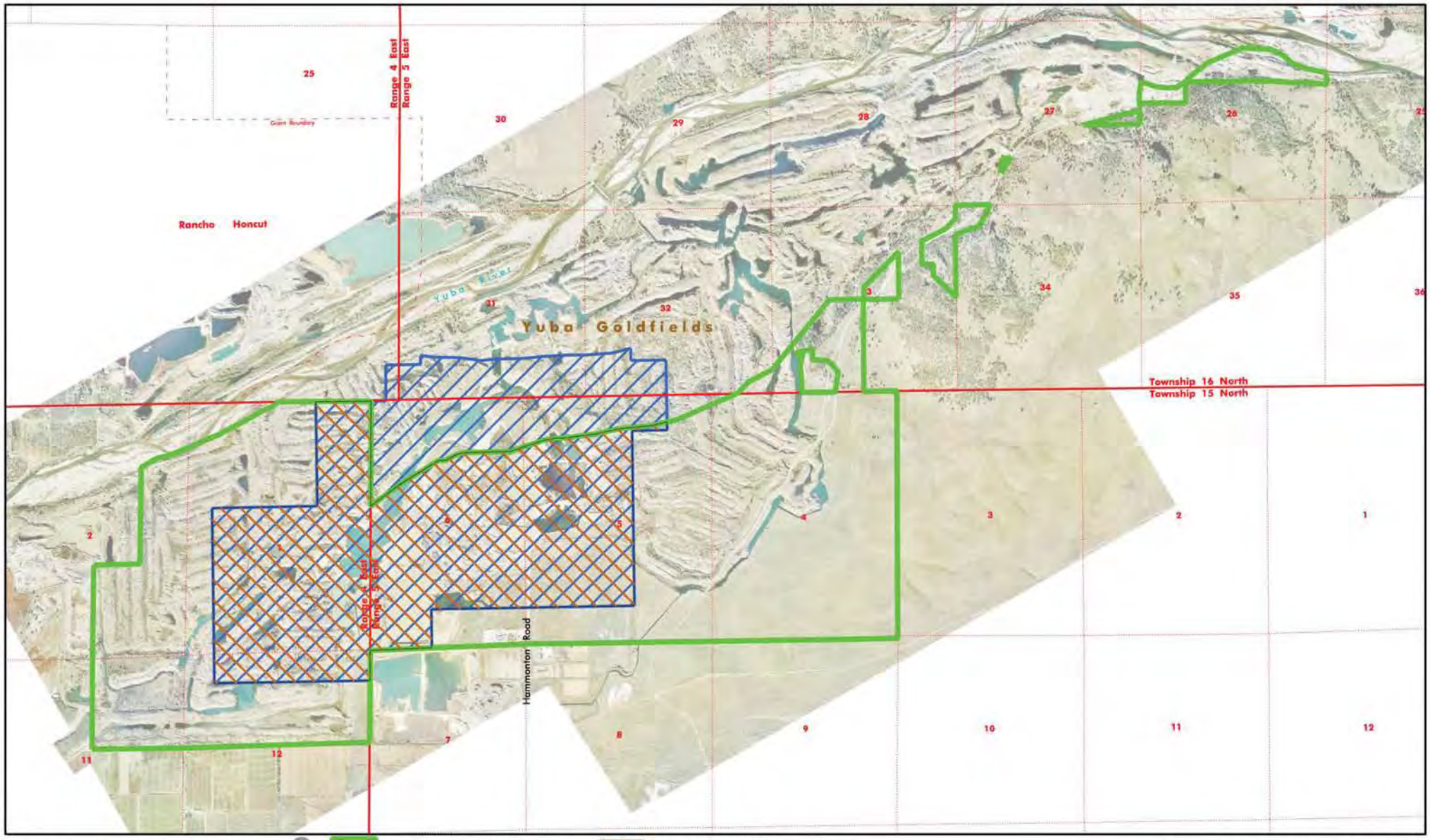
Source: Lilburn Corp., 03/2011 (TAG)

LILBURN CORPORATION



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LILBURN CORPORATION

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Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 05/2010
Aerial: Stewart, 12-22-10
Boundary: Mackay & Somps: 2010

LEGEND

Western Aggregates Confirmed 2010 Vested Rights Boundary

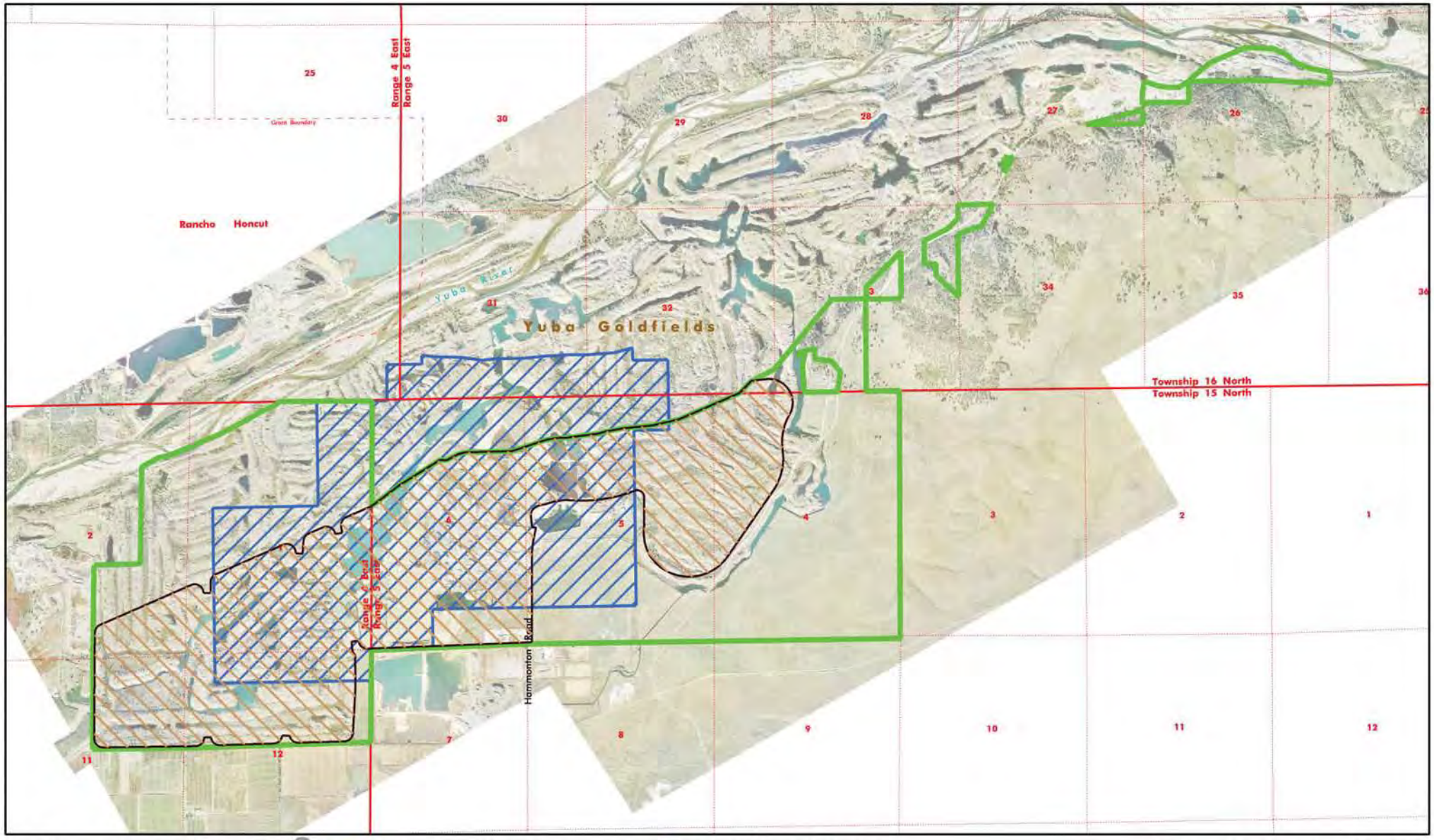
Reclamation Plan #80-01 Gold Boundary

Reclamation Plan #80-01 Aggregates Boundary and Current Operating Area

Current Reclamation Plan Area

Western Aggregates LLC
Yuba County, California

Figure 2A



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Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 03/2011 (TAG)
Aerial: Stewart, 12-22-10
Boundary: Mackay & Somps: 2010

LEGEND

Western Aggregates Confirmed 2010 Vested Rights Boundary

Reclamation Plan #80-01 Gold Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

Proposed Reclamation Plan Area

Western Aggregates LLC
Yuba County, California

Figure 2B

reduction in scope or geography, or any partial or complete waiver of such confirmed vested rights or any other vested right or non-conforming use of land to which Western may be entitled whether or not such land has been previously dredged or otherwise mined. In particular, Western reserves the right in the future to mine and conduct other surface mining operations within the Vested Rights Area outside of the area covered by this Amended Reclamation Plan. Further, Western's right to mine arises out of vested rights that entitle Western to conduct surface mining operations and to modify from time to time the scope, magnitude, timing, and methodology of such operations in response to changes in market factors, such as supply and demand, and changes in technology. Western therefore reserves the right to make adjustments to or changes in this Amended Reclamation Plan as may be required by such operational modifications.

The surface mining operations to be reclaimed in accordance with this Amended Reclamation Plan will take place within the Vested Rights Area in 3 fifteen-year phases (for a total of 45 years) affecting approximately 1,960 acres, commencing upon final approval of this Amended Reclamation Plan, and, assuming such approval is obtained in calendar 2011, terminating at the end of 2056. These phases will be carried out in accordance with an aggregate phasing plan developed by Western; details of the surface mining operations and the phasing plan, including mining locations, depths and other factors are more particularly described below in Section 4.2. Because surface mining operations will in part depend upon market factors, such as supply and demand, and the then-current state of mining technology, mining and related reclamation may take place in the area covered by this Amended Reclamation Plan after the 45-year period.

1.2 OPERATION OVERVIEW

1.2.1 Historical Operations by Western and Cal Sierra

Following the acquisition of Yuba Consolidated's assets by Cal Sierra and Western, mining operations on site have typically consisted of gold dredging conducted by Cal Sierra by means of one or more bucket line dredges and gold jigs (or recovery circuits) by which aggregate material is mined and the gold is processed from the aggregate material dredged. Western’s operations have at times previously included following the Cal Sierra dredge and excavating from the dredge tailings, as well as excavating material from in front of the gold dredges using various equipment.

1.2.2 Current Operations

Western’s existing operations consist primarily of sand and gravel removal and processing (refer to Figure 3, Plant Operations). Current mining operations by Western involve excavation using a clamshell dredge, excavators, draglines and other equipment. Material is removed, transported or conveyed to a processing plant, and then sorted, and, for certain materials, crushed and/or washed and stockpiled for use in the manufacturing and/or sale of construction aggregates and road base and other aggregate material. Wash water and silts are pumped into a settling pond.

Over the past five (5) years, production by Western has approached, and at times exceeded, 3.5 million tons per year. It is expected that production over the next few years could equal or exceed this level of yearly production in order to meet market demand. It is further expected that in the longer term, Western's production will increase substantially to meet market demand,

Current Plant Operations - May 2012

Western Aggregates LLC
Yuba County, California

Figure 3

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Source: Lilburn Corp., 03/2011 (TAG)
Aerial: Late 2009
LILBURN CORPORATION

changes in market dynamics, and/or technological improvements occurring in the due course of business.

1.3 APPLICATION AND APPLICANT/OPERATOR INFORMATION

This document has been prepared pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA, PRC § 2710 et seq.), and the State Mining and Geology Board (SMGB) Reclamation Regulations (California Code of Regulations (CCR), Title 14, Division 2, Chapter 8, Subchapter 1, §§ 3500-3800).

Chapter 3, the Mining Plan, herein, provides a description of the surface mining operations in the area addressed by this Amended Reclamation Plan, SMARA compliance, and performance standards. Chapter 4, the Amended Reclamation Plan, presents the plans and methods proposed to minimize any adverse environmental effects and residual hazards to the public health and safety from reclamation, and to reclaim the site to a usable condition. Chapter 5 concerns the applicant's certification that the stipulated site reclamation will be followed, and that all components of SMARA are addressed.

This application includes two large sheets with existing mine and reclamation plan details and cross-sections. The reclamation plan is shown on Sheet 1 and Sheet 2 including cross sections of the basins and other details.

Operator:	Western Aggregates LLC 4711 Hammonton Road Marysville, CA 95901 Tel: 530-749-6525 Fax: 530-741-8313 Contact: Lloyd Burns, President
Owner of Surface Rights:	Western Aggregates LLC 4711 Hammonton Road Marysville, CA 95901 Tel: 530-749-6525 Fax: 530-741-8313 Contact: Lloyd Burns, President
Owner of Aggregate Mineral Estate: and Lessee	Western Aggregates LLC 4711 Hammonton Road Marysville, CA 95901 Tel: 530-749-6525 Fax: 530-741-8313 Contact: Lloyd Burns, President
Owner of Precious Metal and Other Subsurface Mineral Interests:	Cal Sierra Development, Inc. 4738 Hammonton Road Marysville, CA 95901

Applicant's Counsel:	Jeffer, Mangels, Butler & Mitchell LLP Two Embarcadero Center Fifth Floor San Francisco, CA 94111-3824 Tel: (415) 398-8080 Fax: (415) 398-5584 Contact: Kerry Shapiro
Applicant's Agent:	Lilburn Corporation 1905 Business Center Drive San Bernardino, CA 92408 Ph: (909) 890-1818 Fax: (909) 890-1809 Contact: Stephen T. Lilburn / Martin R. Derus

1.4 LEAD AGENCY INFORMATION

Lead Agency/Contact:	State Mining and Geology Board 801 K Street, Suite 2015 Sacramento, CA 95814 Phone: (916) 322-1082 Fax: (916) 445-0738 Contact: Stephen Testa, Executive Officer
State Mine ID Number:	CA 91-58-0001
Reclamation Plan No.:	Reclamation Plan RP _____ (Amending Reclamation Plan RP 80-01 for aggregates)

2.0 OPERATION LOCATION & SETTING

2.1 OPERATION LOCATION

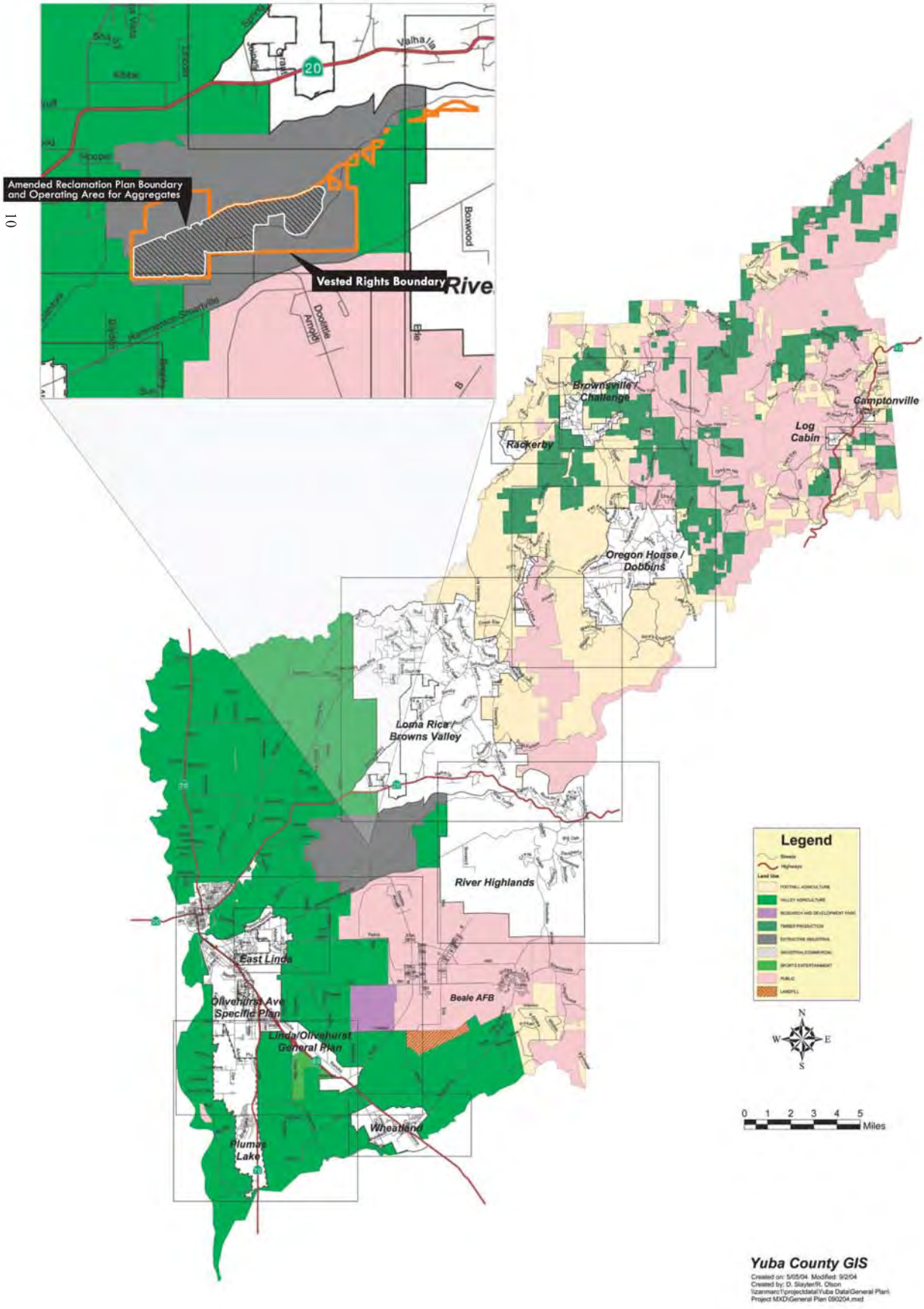
The operations site is located approximately 45 miles north and slightly east of Sacramento, California in the County of Yuba. It lies south of the Yuba River, north of the Hammonton-Smartville Road approximately equal distance between Marysville and Smartville (approximately 20 miles). It is north of Beale Air Force Base. The Western Aggregates' Vested Rights Area is 3,900 acres located in: Section 1, T15N, R4E; Section 2, T15N, R4E; Section 11, T15N, R4E; Section 12, T15N, R4E; Section 4, T15 N, R5E; Section 5, T15 N, R5E; Section 6, T15 N, R5E; Section 26, T15 N, R5E; Section 27, T15 N, R5E; Section 32, T15 N, R5E; Section 33, T15 N, R5E; and a portion of the NW ¼ of Section 34, T15 N, R5E. The area considered in the Amended Reclamation Plan is approximately 1,960 acres located in Sections 1, 2, 11 and 12, T15N, R4E; Sections 4, 5, and 6, T15N, R5E; and Section 32 T16N, R5E (see Figure 2B); the fact that this Amended Reclamation Plan addresses operations in some, but not all, of the Vested Rights Area is not intended as a waiver, abandonment, or relinquishment of any rights in other portions of the Vested Rights Area. See discussion of waiver and related matters above at pages 1 - 2.

2.2 SURROUNDING LAND USES

Western operates an existing mining operation located in the Yuba Goldfields, which is a historic mining area. The site has previously been greatly disturbed by gold and aggregate mining activities of predecessor companies that dramatically altered the landscape. The Yuba Goldfields is zoned M-2 (Yuba County General Plan Designation, Extractive Industrial) and is characterized by numerous dredge tailings with interspersed waterways and small ponds created by mining activities. The M-2 Zone was established primarily for the extraction, processing and distribution of minerals occurring naturally such as sand and gravel. The southern portion of the Yuba Goldfields contains a small tract of undisturbed land that has historically been used for limited agricultural production and cattle grazing.

The mining site is located within the Yuba City-Marysville Production-Consumption (PC) Region, as defined in DOC-Division of Mines and Geology (DMG) Special Report 132: *Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City Marysville Production Consumption Region* (1988) ("Special Report 132"). The current Western mining site is classified under the SMARA mineral resource classification scheme as a Mineral Resource Zone 2 (MRZ-2), containing significant mineral deposits. (Special Report 132, pages 8-10.)

The lands surrounding the Yuba Goldfields are zoned RR (Rural Residential) which provides for mixed agricultural, ranching and low density residential uses. To the north of Western's operations is the Yuba River which is used primarily for recreational activities such as fishing and rafting. The lands to the east of the Goldfields are vacant and are utilized for cattle grazing. The lands to the south and west of the Goldfields, and north of Hammonton-Smartville Road, support aggregate mining (by other mining companies), agricultural production and cattle grazing. Beale Air Force Base is located to the south of the Goldfields and south of Hammonton-Smartville Road (Figure 4).



Yuba County General Plan Land Uses

Western Aggregates LLC
Yuba County, California

Figure 4

LILBURN CORPORATION

2.3 EXISTING CONDITIONS

Figure 5 is a 2010 aerial photo depicting a typical dredge field after dredge mining and prior to aggregate operations. The bucketline dredge floats on a pond created in the wake of its own dredge bucket line. The dredge leaves a series of tailings piles (sand and gravel stockpiles) behind it (labeled: dredge piles in Figure 5) that vary in height, width, and depth. These piles are deposited behind the dredge into the previous dredge path. Dredge tailings therefore are deposited behind the dredges for a vertical distance from the depth of the dredge bucket line to the height of the tailings conveyor approximately 150 to 200 feet. Approximately three-fourths of the sand and gravel lies below the water line.

Existing slope angles vary from 1 horizontal:1 vertical (1:1) to 3:1 based on the type of material in place and the previous method of excavation. Typical underwater angle of natural repose for the dredged cobble is approximately 2:1. A slope stability analysis is included as Appendix D of this Plan.

Western's operations separate fines from coarser aggregates and sand as a result of the washing and screening process. The percentage of fines separated depends on the location of mining and the quality of material. Process fines are collected in a pond where they are deposited until the pond is full. The fines are then either removed to restore the pond's capacity, or a new pond is created. The fines may be occasionally removed from the pond(s) or from process equipment as necessary to be applied as soils in revegetation or as a saleable product.

Another source of fines are isolated deposits within the old dredged materials. These are large accumulations of fines and clays randomly encountered during operations. At times, these may be excavated and stockpiled for later use in reclamation. A third source of fines is insitu soils in previously unmined areas.

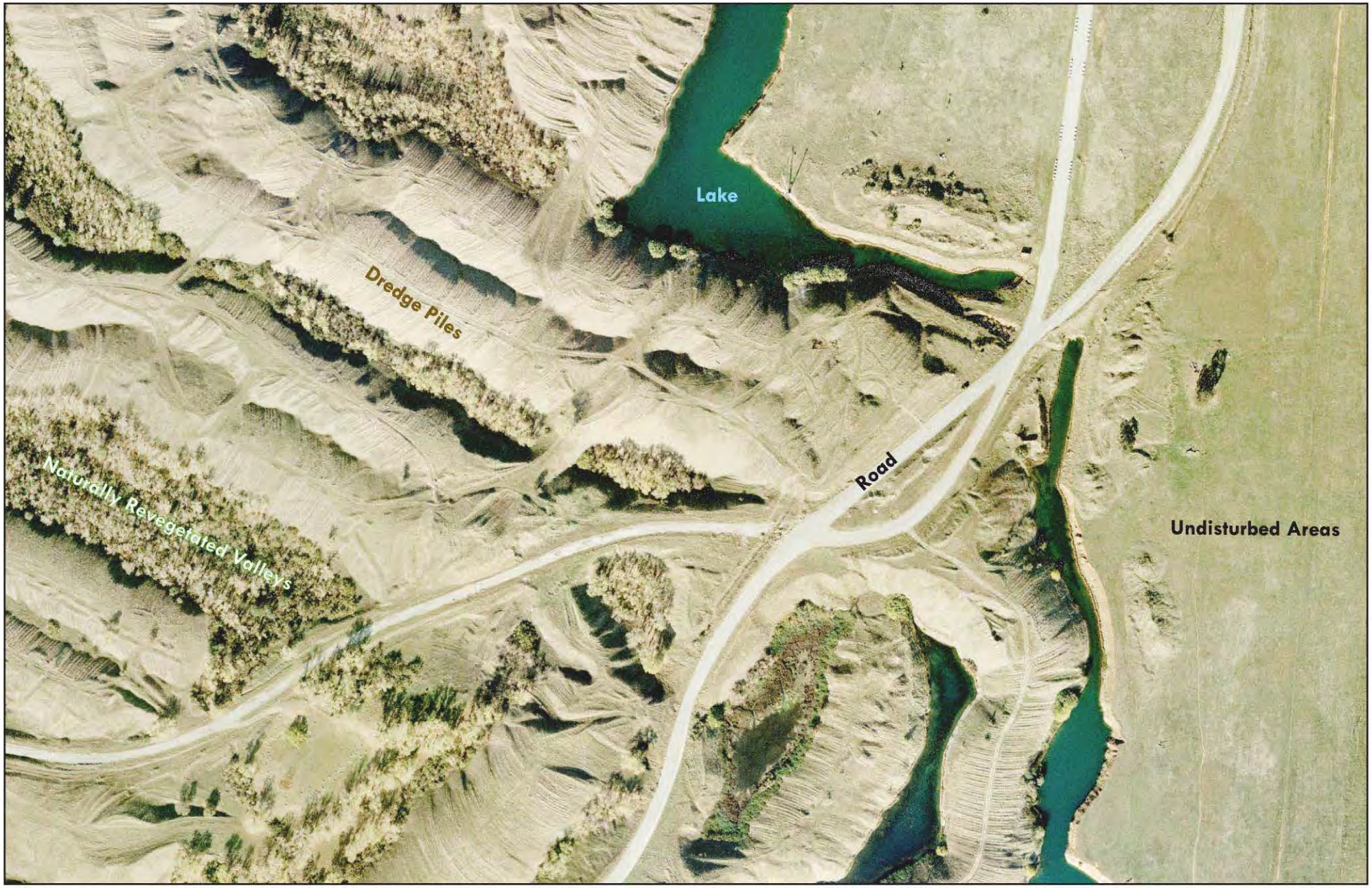
2.4 WILDLIFE SPECIES AND HABITAT POTENTIAL

The area consists essentially of what originally was river bottom land. River bottom lands generally are areas where rivers at one time flowed or regularly flooded before carving out new channels as climatic conditions changed or earth movement altered the topography. Some bottom lands are quite sandy while others consist of deposits of rocks or mixtures of rocks, sand or various soils that may have accumulated over thousands of years.

Different wildlife species typically are found in different vegetation communities. The following are Characteristics of Specific Vegetation Communities potentially found in the area:

Dredge Fields

Dredge fields, consist of barren sand and gravel piles to sand and gravel covered with a layer of silt and naturally revegetated with grasses. Some of the sand and gravel piles have been broadcast seeded with grasses. In the valleys created at the mound interface between these piles, silts and sediments have collected at various elevations above the water table. These areas have developed into ponds and woodlands supporting vegetation and wildlife. These islands of habitat are separated by the cobble tailings piles. These may vary in area from less than an acre to many



Typical Existing Conditions

Western Aggregates LLC
Yuba County, California

Figure 5

Existing conditions typical of the Goldfields operations

Existing conditions typically consist of sand and gravel stockpiles as a product of earlier gold dredging. Dredge piles consist of sand, and gravel with varying degrees of natural vegetation by grasses. Some pile areas have been seeded by Cal Sierra. The dredge piles border small valleys that have varying degrees of silts.

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Source: Lilburn Corp., 05/2010 (TAG)
Aerial: Late 2009
LILBURN CORPORATION

acres. Most are linear in orientation. These features occur throughout the dredge field existing in various states of vegetative growth and habitat development.

Annual Grasslands

Annual grassland is an herbaceous community dominated by non-native annual grasses and forbs. Annual grasses provide foraging areas and cover for many common wildlife species.

Ponds

Ponds provide potential habitat for amphibians, warmwater fish, and waterfowl. A perimeter band of riparian vegetation provides potential habitat for birds and mammals, including song sparrows, morning doves, Virginia opossums, raccoons, and striped skunks.

Valley Oaks

Valley oaks provide shade, shelter, nesting opportunities, and forage for many wildlife species.

Agricultural Lands

Irrigated rice fields in the Central Valley provided habitat for a wide variety of wildlife species, with the greatest benefit to bird species, including waterfowl, wading birds, and shorebirds. The rice fields provide forage to grain-eating birds such as ring-necked pheasant, California quail, morning dove, and migrating waterfowl.

Harvested rice fields are the primary agricultural land used by migrating waterfowl in the Central Valley (U.S. Bureau of Reclamation 1993). Use of the rice fields by waterfowl is highest beginning in late August when Ross's geese, Canada geese, tundra swans, and greater white-fronted geese begin wintering in Sacramento Valley. In the winter after the rice is harvested, many species of waterfowl remain to feed on the abundant waste grain in the fields.

Orchards

Orchards provide limited opportunities for wildlife because they lack plant species diversity. The trees in an orchard provide some nesting and roosting opportunities for common bird species, and the annual grassland understory provides additional cover and foraging opportunities.

Of the wildlife habitats present in the valley, the Yuba Goldfields are dominated by dredge fields, annual grasslands and ponds.

2.5 SURFACE DRAINAGE AND GROUNDWATER CHARACTERISTICS

Groundwater level at the site has fluctuated an average of 8.6 feet between 1998 and 2002 (Appendix A). The average water elevation during that period was 88.7 feet above mean sea level **("**msl**")**. Surface elevations have been recorded as low as 81 feet above msl. For purposes of this report the average lake surface level was set at 80 feet above msl. The reference elevation for the site is located at latitude N39° 13' 07", longitude W121° 27' 19" at 1,864.6 feet National Geodetic Vertical Datum (NGVD). This elevation will be used to establish elevations for

constructing shorelines and to correctly situate the enhanced shoreline habitat (emergent marsh) areas at the average water elevation.

On-site wells and historic dredging records are included as Appendix A to this report. Shoreline depictions in this current amended reclamation plan are based on average predicted lake elevations of 80 feet above msl.

2.6 REGIONAL AND SITE GEOLOGY

The primary soils on undisturbed lands surrounding the Goldfields are of the Wyman, Yokohl and Valdez series (Herbert and Begg, 1969). They have permeable, well-drained sandy and loamy surface horizons and occasional subsurface horizons of clay loam. The soils average 36 percent sand, 37 percent silt, and 27 percent clay and contain nutrients of calcium and magnesium.

The site includes a dredge field that has been mined extensively throughout the prior century. The surface is predominantly covered by sand and gravel dredge tailings. Geologically, gravel tailings consist of unconsolidated, well sorted, rounded pebble and cobble gravels, composed predominantly of Cretaceous granodiorite, preCretaceous diorite, and metamorphosed basalts. The tailings are generally layered, with coarser gravels at the surface and finer tailings at depth.

Tailings average about 90 feet in width. Adjacent sectors consist of fluvial deposits consisting of layers of moderately sorted, rounded, pebble and cobble gravel, of the same lithologies as gravel tailings, and sand, silt, and clay, with the sand commonly containing heavy minerals (including “black sands”), and some gold. Underlying the fluvial deposits are fine-grained lake or marine sediments of the Ione Formation, and underlying these is bedrock which, where exposed, is predominantly metabasalt and granodiorite ranging from weathered (decomposed) to hard.

3.0 MINE PLAN

3.1 SCOPE OF OPERATION

Since the early 20th Century, gold and aggregate mining, production and related operations have been continuously active on Western's 3,900-acre Vested Rights Area, as described in Section 1.0 above, as well as adjacent lands to the north subject to property interests of Western and/or Cal Sierra. Pursuant to its vested rights, Western has the right to conduct surface mining operations within the area covered by this Amended Reclamation Plan. Although production is expected to increase in response to market dynamics, total anticipated production over the next few years is estimated to be consistent with production over the previous five (5) years, which has approached, and at times exceeded, 3.5 million tons per year of sand and gravel. It is expected that in the longer term, production rates will increase substantially to meet market demand, changes in market dynamics, and/or technological improvements occurring in the due course of business. Production within this approximately 1,960-acre Amended Reclamation Plan area (*i.e.*, the area of the five lakes) is projected to take place for approximately 45 years from the date the SMGB approves this Amended Reclamation Plan. This Amended Reclamation Plan is based on mining depth anticipated to be approximately -20 below msl (100 feet below the average lake surface level). However, mining depths may vary in certain areas, and may reach -85 feet below msl (165 feet below the average lake surface level) based on local ground conditons, geology, changes in market conditions, and changes in mining technology, where such changes may be implemented without materially disrupting the shorelines, marshes, or other habitats contemplated by this Amended Reclamation Plan. (See discussion regarding changes in Section 1.1). Based on mining to a depth of -20 feet below msl (100 feet below the average lake surface level), the reserves within the area covered by this Amended Reclamation Plan are estimated at 414 million tons. However, slope stability to maximum mining depth (-85 feet below msl or 165 feet below the average lake surface level) is demonstrated by the Slope Stability Analysis attached as Appendix D.

Western's operation is currently subject to RP 80-01, which was approved by the County of Yuba in 1980, originally for Yuba Consolidated's gold and aggregate operations. Thus RP 80-01 now applies to both Western's aggregate operations, and Cal Sierra's gold operations. RP 80-01 covers approximately 2,000 acres, all of which apply to Cal Sierra's gold operations. Of the total 2,000 acres, approximately 1,420 acres apply to Western's aggregate operations, and are located in Sections 1 and 12, Township 15 North, Range 4 East, and Sections 5 and 6, Township 15 North, Range 5 East, as shown in Figure 2. Western's aggregate plant operations are currently located in Section 6. This 1,420 acre area is oriented northeast-southwest; and is within an irregularly shaped area. Much of the perimeter of the active mining area site is characterized by old dredged tailings which exist as narrow ridges separated by intervening topographic lows. Historically, most of the area has been mined with bucket-line dredges, with these areas having been dredged at least twice and in some parts of the property three to four times, each time to a greater depth with more efficient recovery equipment.

This proposed Amended Reclamation Plan covers approximately 1,960 acres of the 3,900-acre Vested Rights Area, including such portion of the 1,420 acre area within RP 80-01 as applies to aggregate operations. When approved, this Amended Reclamation Plan will supersede the 1,420-acre portion of RP 80-01 that applies to aggregate operations. However, the entire

1,960-acre area of RP 80-01 that applies to gold operations will remain valid and still intact. (See Figures 2A and 2B.)

In the southern portion of the RP 80-01 site is the Processing Plant area where Western maintains processing equipment (*i.e.*, crushers, screens, and conveyors, maintenance structures, fuel storage area, product stockpiles, etc.), a scalehouse, shop building, fuel island, administrative offices, and equipment storage. A large settling pondsituated in the central portion of the site north of the processing area (referred to in Western's Waste Discharge Requirements as a "Designated Disposal Area" or "DDA") serves as the sediment settling pond. Product stockpiles are situated adjacent to the processing area (see Figure 3).

3.2 MINERAL COMMODITY MINED

Western operates an aggregate production operation and processing plant in the Yuba Goldfields near Marysville, California (refer to Figures 2a, 2b and 3). The Yuba Goldfields have been previously mined for gold and aggregates using various mining techniques. This effort has produced a large field of dredge tails consisting of sand and gravel deposited over a ten thousand acre area adjacent to the Yuba River. Western uses dredges, draglines, excavators, and other extraction equipment in conducting its operations. Materials are crushed and sorted on site for processing into aggregate products.

3.3 ESTIMATED QUANTITIES

The reserves within the Amended Reclamation Plan area, assuming mining to a depth of approximately -20 below msl (100 feet below the average lake surface level), are estimated to be 414 million tons of aggregates. Area and volumes by individual quarries are presented in Table 1. The estimated termination date of the surface mining operations to which this Amended Reclamation Plan applies is projected to be 45 years following approval of this Amended Reclamation Plan, now estimated to be on or about December 31, 2056.

Table 1
Area and Volume by Quarry

Quarry/Lake	Area in Acres	Perimeter in Feet	Volume @ 100 Feet mcy	Reserves MT
1	494.0	21,355'	104.6	156.9
2	292.8	18,735'	45.7	68.5
3	224.1	14,962'	35.6	53.4
4	290.5	15,211'	43.4	65.1
5	300.8	14,378'	46.8	70.2
Operations Areas (Plants, Stockpiles, Settling Ponds, etc.)	238.5			
Open Area	119.4			
Total	**1960.1 ac**	**84,641'**	**276.1 mcy**	**414.1 mt**

3.4 METHOD OF EXTRACTION

Range of Excavation Methodologies

Western has employed or currently employs several methods in its production of aggregates in the Yuba Goldfields. The methods of excavation include the use of dredges, draglines, scrapers, excavators, and any other appropriate techniques to remove the resource. The following is a brief description of each.

Dredges

Dredge designs include (refer to Figures 6 and 7).

- Hydraulic – suction with or without a cutter head
- Bucket line
- Clam shell

Each of these dredge types removes, dewaters or processes the material, then places it on a conveyor or truck and/or deposits it in a process area to be collected by a scraper and/or a frontend loader. The material is then transported to the processing plant or stockpile.

Dredges require an assortment of support equipment used to level ground, move overburden, position the dredge and maintain dust control. These include dozers, loaders, scrapers, haul trucks, water trucks, graders, conveyors and work boats.

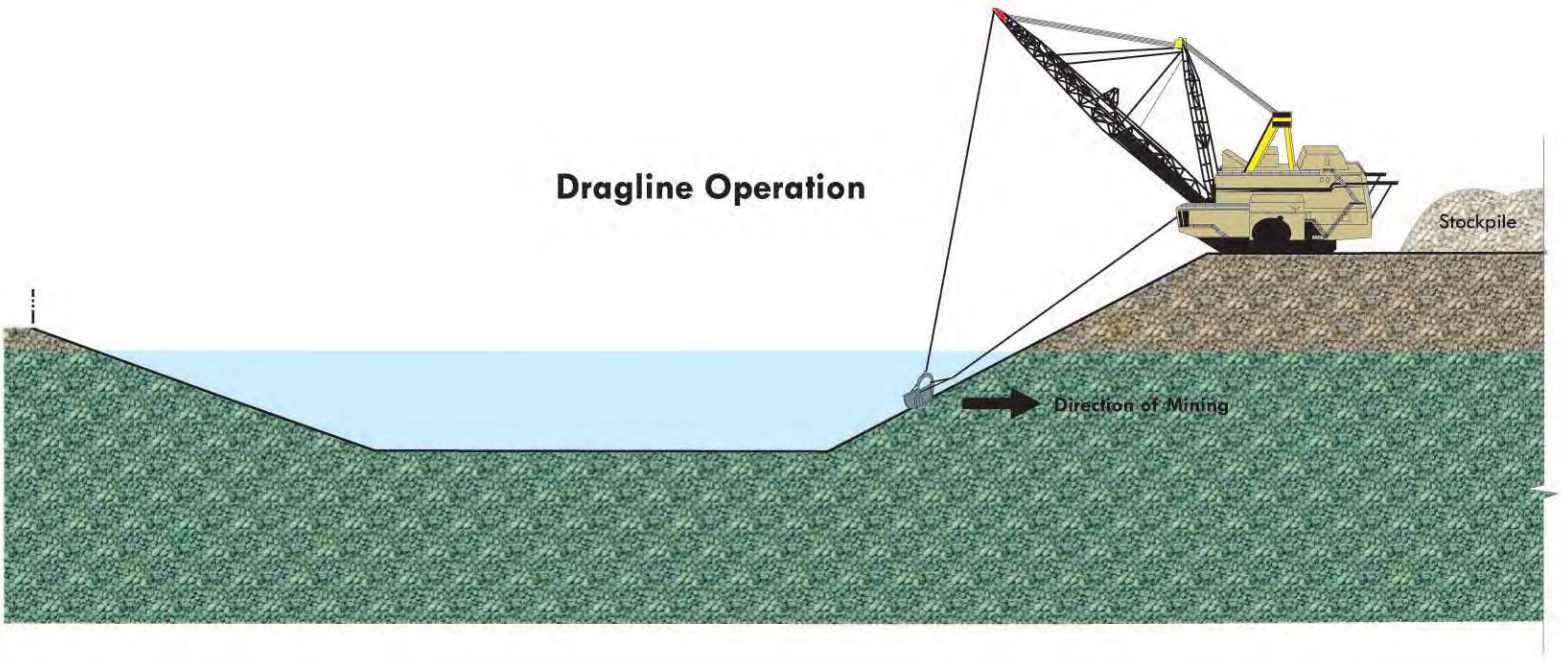
Historically, Cal Sierra has utilized bucketline dredges that harvested materials from a depth of well over 120 feet below water elevation, separated the fines and precious metals from the ore and deposited the cobble tailings in its wake via a stacker or monitor. Western retrieved those tailings from the conveyor stockpile with a backhoe or front-end loader and transported them via truck to their aggregate plant for processing (Figure 6).

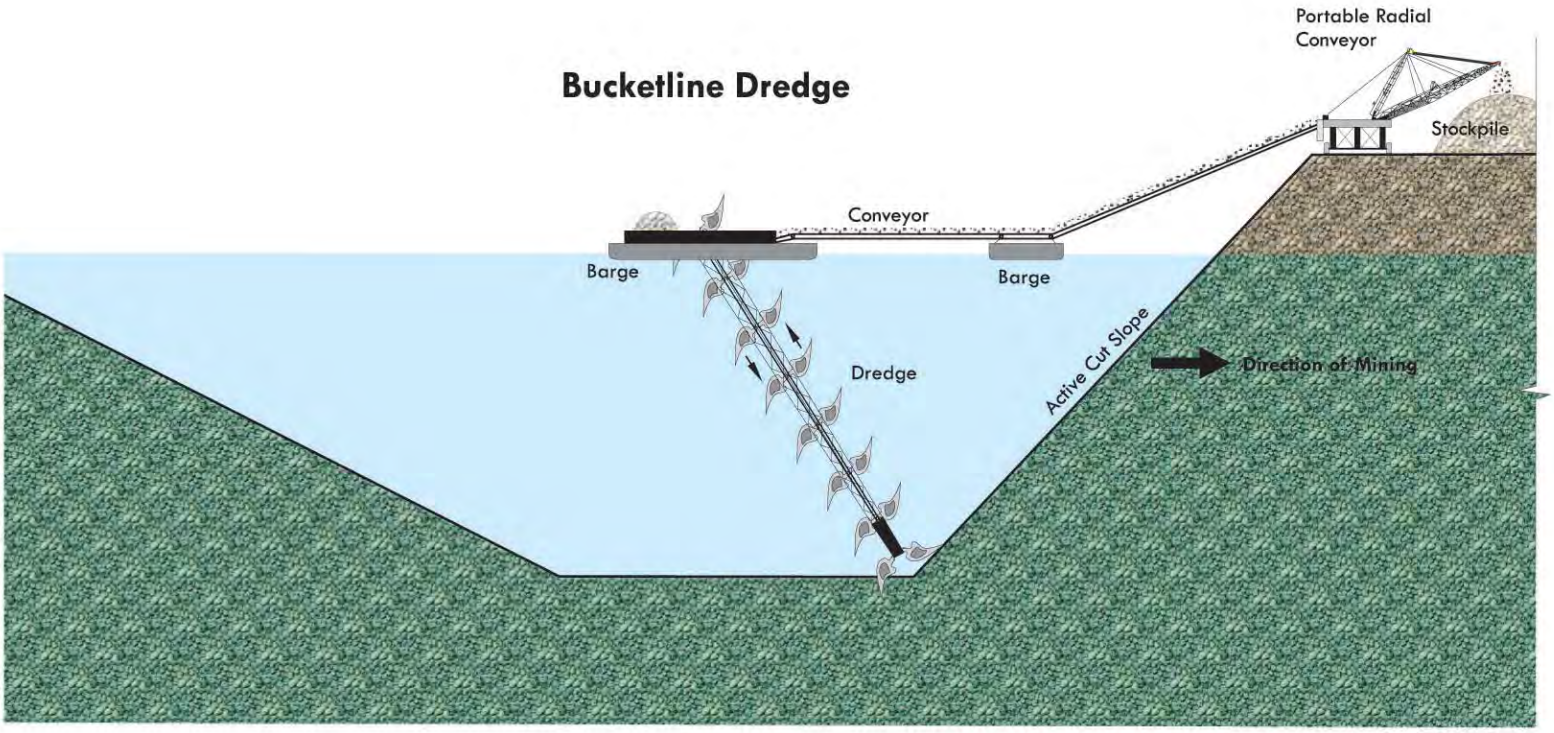
Dragline

A dragline drags a bucket across a mined surface harvesting aggregates in the process and depositing the material in a stockpile or hopper. The material is then picked up by appropriate loading equipment and placed on a conveyor or truck for transport to the processing plant. Support equipment includes dozers, loaders, scrapers, haul trucks, water trucks, graders, and conveyors (Figure 6).

Excavator

An excavator is positioned on dry land and used to excavate above and below the water level. Collateral equipment is the same as a drag scraper.





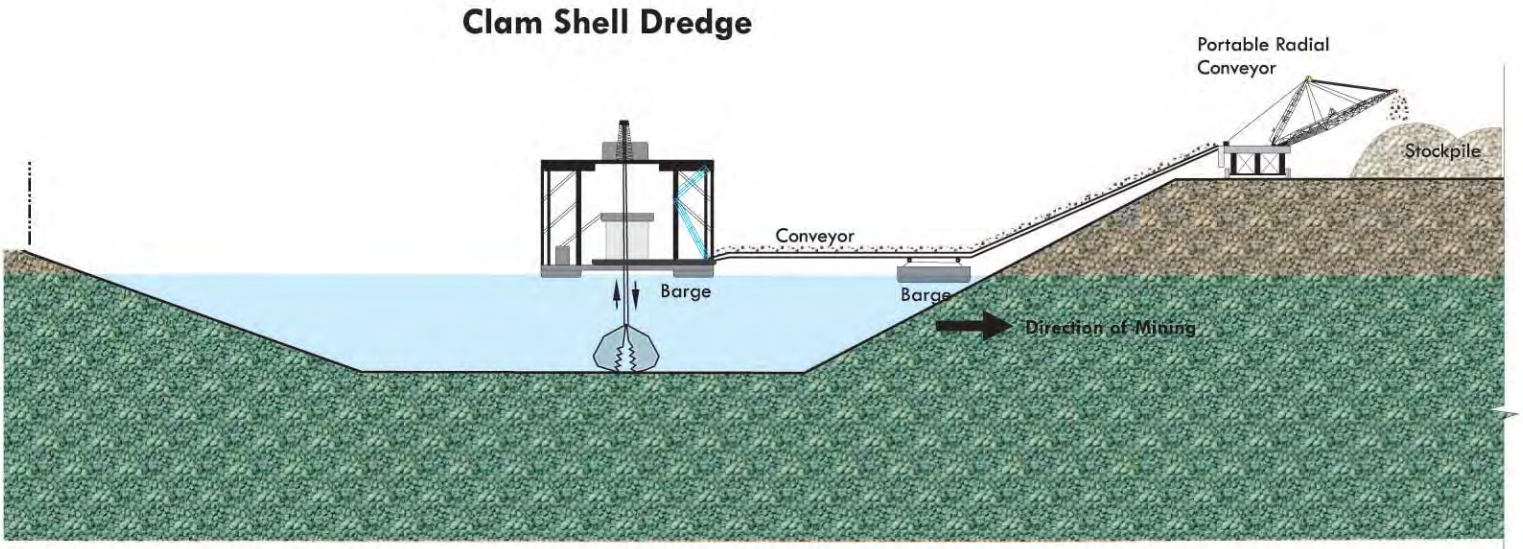
Typical Extraction Methods

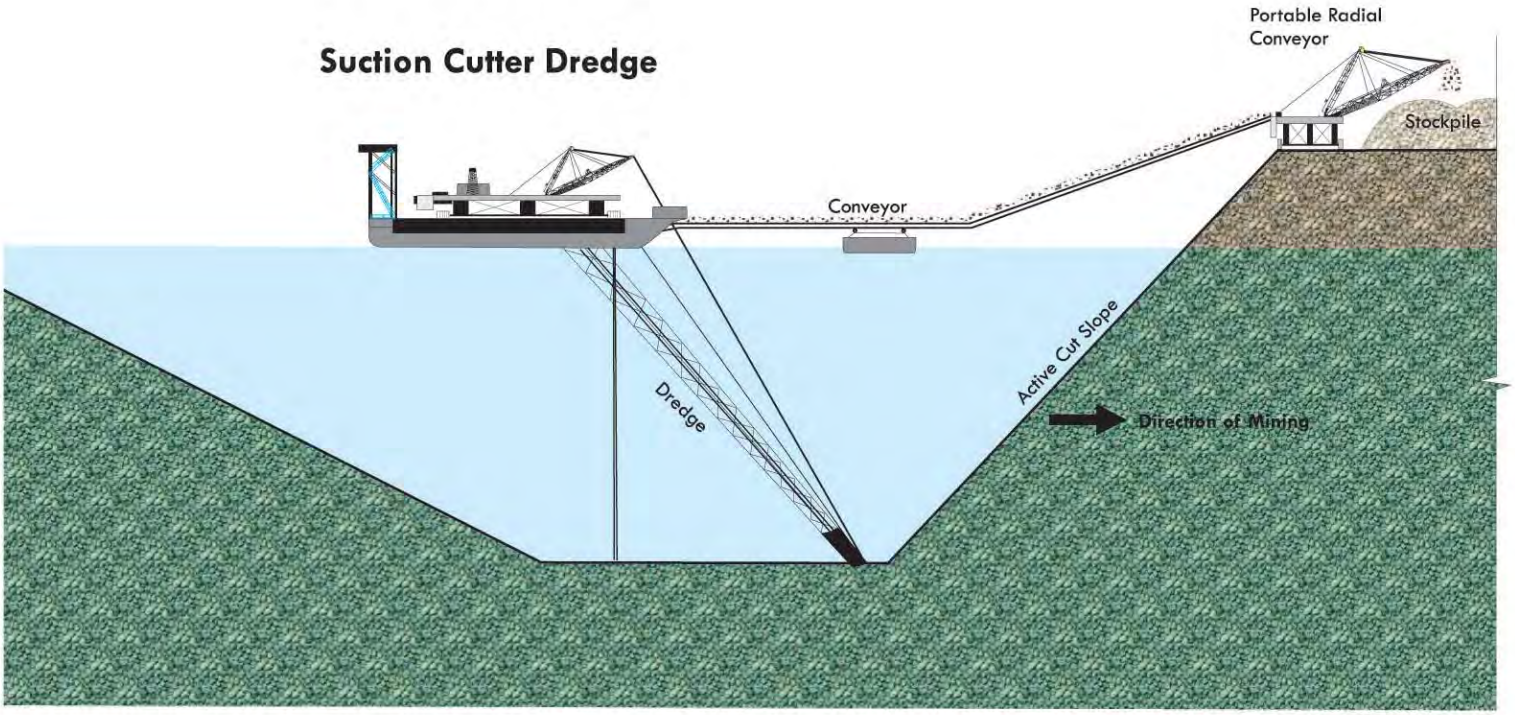
Source: Lilburn Corp., 05/2010 (TAG)

LILBURN CORPORATION

Western Aggregates LLC
Yuba County, California

Figure 6





Typical Extraction Methods

Source: Lilburn Corp., 05/2010 (TAG)

LILBURN CORPORATION

Western Aggregates LLC
Yuba County, California

Figure 7

Current Western Excavation Methodology

Western's current mining operation employs dry mining as well as a clamshell dredge to mine to the depth of existing dredged material which is typically around 85 feet below water level in its current mining area. Although the depth of mining may vary from place to place (for a discussion of mining depth, see Section 3.1), -20 feet below msl (100 feet below the average lake surface level) has been used as the approximate mining depth for purposes of this Amended Reclamation Plan due to current economic and technological conditions. Current mining employs a Rohr Clamshell dredge type RS 12.5/450B with a 16 cubic yard bucket. Excavated sand and gravel is discharged from the clamshell into a hopper that has a grizzly to prevent oversize materials and miscellaneous debris from getting into the system and damaging equipment. The sand and gravel is dewatered on the dredge by means of dewatering screen and cyclones before being conveyed by the on-board belt conveyor to a series of floating belt conveyors. These conveyors transport the material to a land conveyor and stacker that stockpiles the material over a 14' diameter tunnel with four belt feeders. These belt feeders are used to supply the existing processing plant. All equipment on board the dredge is powered and supplied by electrical cable which are supported on the floating conveyors (refer to Figure 7).

3.5 METHOD OF PROCESSING

Once the removed material reaches the plant, it is processed through a primary screen. Certain sizes of material are washed through a series of screens. Larger rock is conveyed to the crushing plant. The aggregate products are stockpiled by size for shipment.

The amount of material processed is dictated by the capacity of the crushers, screens and conveying equipment and the daily hours of operation. Site facilities also include administrative offices, scalehouse, shop, fuel island and equipment storage area. A plot plan aerial of the existing plant appears as Figure 3.

Settling Pond

The pond activities are located within the processing area and are moved as needed to accommodate operations. The processing activities separate clay or fine silt (fines) which are deposited into a settling pond (described in Western's Waste Discharge Requirements as a "DDA"). The fines settle out and the water is allowed to evaporate or recirculate into Western's plant process. The fines may be used for resoiling the site for revegetation purposes, and possibly other uses. Other uses of the fines may include sale or processing into salable products. The current settling pond is located north of the plant (see Figure 3).

3.6 TOTAL NUMBER OF ACRES TO BE DISTURBED BY SURFACE MINING

It is projected that approximately 1,960 acres of the 3,900 acre Vested Rights Area will be affected by Western's surface mining operations during the 45 year period.

3.7 PROPOSED MINE PHASING

Mine phasing will take place in a manner consistent with reclamation phasing as described in detail in Section 4.2.

3.8 DEPTH OF EXCAVATIONS

The depth of mining for the 1,960-acre area addressed by this Amended_Reclamation Plan will be approximately -20 feet below msl (100 feet below the average lake surface level) (Section 2.5) with deviations as described in Section 3.1 (Scope of Operations).

3.9 DRAINAGE EROSION CONTROL MEASURES

The Yuba Goldfields generally exhibit excessively well drained soils which prevent the development of erosional features. This is particularly true of the historic gold dredge fields. However, disturbed or altered features, graded areas, stored materials and reclaimed lake perimeters may be subject to erosion. Erosion control measures shall be implemented where erosion rills exceed five square inches in cross-section and five feet in length in areas where mining and reclamation has been completed. Erosion of these features will be treated by placing straw bales, straw rolls, or erosion control blankets as appropriate and necessary to intercept water in the features beginning at the upslope extent of the erosion feature.

When sheet erosion is present in excess of one-half inch over an area of 50 feet straw mulch will be spread at a rate of 2,000 lbs per acre.

Erosion control seed mixes will include quick sprouting commercially available non-invasive annual grasses and legumes. The performance control standard for erosion control plant mix will be 80 percent cover with no bare areas greater than five feet by five feet.

The following species are appropriate for erosion control plant mix with a minimum of four species:

Oat or wild oats	*Avena sativa, Avena fatua*	20 lbs/acre
Soft chess	*Bromus hordeaceus*	20 lbs/acre
Lana wooly pod vetch	*Vicia dasycarpa*	20 lbs/acre
Crimson clover	*Trifolium incarnatum*	20 lbs/acre
Sweetclover	*Melilotus* sp.	20 lbs/acre
Blue wild-rye	*Elymus glaucus*	5 lbs/acre
California brome	*Bromus californica*	5 lbs/acre
Lupine	*Lupinus nanus*	2 lbs/acre
Coyote brush	*Baccharis pilularis*	1 lbs/acre
Toyon	*Heteromeles arbutifolia*	2 lbs/acre

All surface drainage will be directed onto the project site.

3.10 GROUNDWATER PROTECTION MEASURES

Water used for production onsite is pumped from water supply ponds on the site. Water for dust control on the haul roads is supplied in the same manner.

The entire operation takes place in a dredged lake environment or on porous dredged tailings eliminating the need for many of the standard industry precautions for erosion. Dredge mounds consisting of sand and gravel are barren to partially vegetated where fines or silts are present. Sediment drainage is controlled onsite at all times through the placement of berms and channels. These berms and channels will be in place prior to the rainy season. Erosion control measures shall be implemented as required. The site will also be maintained in conformance with the Waste Discharge Requirements imposed by the Regional Water Quality Control Board.

The excavation and restoration methods do not require the use of toxic or hazardous substances with the sole exception of diesel fuel, oil, and lubricants required for the operation of excavators, loaders, dozers, and haul trucks, and other equipment, as well as transformer oil. The electrically-powered dredge uses only bio-degradable oils. Refueling will be performed either at the processing facility fuel island or by mobile fuel trucks. Equipment and machinery repairs requiring the use of lubricants, solvents, solutions, grease or compounds will be performed at the maintenance shops. Protection of groundwater will be assured through the following performance standards:

Performance Standards:

1. Western shall maintain the site and operations free of environmental hazards and the operator shall enforce good housekeeping standards and Best Management Practices (BMPs).
2. Western shall provide to the SMGB a copy of its Business Emergency Plan.
3. Western shall provide to the SMGB a copy of the RWQCB-issued General Activity Certificate and/or its Spill Prevention Control and Countermeasure Plan (SPCCP).

3.11 STREETS & HIGHWAYS TO BE USED BY VEHICLES ACCESSING THE SITE

Access to the site is from Hammonton Road starting at the plant entrance and extending approximately 1 mile south toward Hammonton-Smartville Road. Additional access to the Goldfields is available via Hammonton-Smartville Road to Private Road 1034 (Western access only) and Hammonton Road where it connects to Highway 20 via Timbucktoo Road to the east of the property (see Figures 2a and 2b).

3.12 ON-SITE ACCESS ROADS

Refer to Figures 2a and 2b for locations of on-site access roads associated with plant operations.

4.0 RECLAMATION PLAN

The intent of the California Surface Mining and Reclamation Act (SMARA) is to "maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that: (a) adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative uses; (b) the production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment; and (c) residual hazards to the public health and safety are eliminated" (Section 2712).

Article 9, Section 3700 of SMGB Reclamation Regulations states the following: "Reclamation of mined lands shall be implemented in conformance with standards in this Article (Reclamation Standards). The standards shall apply to each surface mining operation to the extent that:

(1) they are consistent with required mitigation identified in conformance with CEQA; and

(2) they are consistent with the planned or actual subsequent use or uses of the mining site."

Western proposes to reclaim the mine site to create a series of lakes varying in size. The objectives of this Reclamation Plan are to:

- Eliminate or reduce environmental impacts from mining operations;
- Reclaim to a usable condition for post-mining end uses;
- Contour mining features and revegetate disturbed areas to minimize aesthetic, biological, and hydrological impacts; and
- Reclaim the site as necessary to eliminate hazards to public health and safety.

This document employs the standards of SMARA (PRC § 2773) for both content and performance standards, including specifically Article 9 – Reclamation Standards, as contained in CCR § 3700 through 3711. Standards applicable to this application include 3702, 3704 (§§c-g), 3705, 3706, 3709, 3710 (§a), and 3711. Those standards defined as inapplicable include 3703, 3704 (§§a-b), 3704.1, 3707, 3708, 3710 (§§b-d), 3712, 3713.

Pursuant to SMARA, the SMGB, as the lead agency, has the responsibility to inspect the site annually and provide a written report to the operator and the DOC. As the site is mined and reclaimed, reports covering implementation, maintenance and monitoring of these areas will be prepared and submitted annually by Western to the SMGB and other responsible agencies.

Please refer to the Reclamation Plot Plan included on Sheets 1 and 2 with cross sections and details while reviewing this section.

4.1 PROPOSED RECLAMATION END USE

This Amended Reclamation Plan will utilize existing mining methods (described in Section 3.5) to remove dredge piles or excavate previously undredged lands in a manner supportive of aquatic and terrestrial wildlife habitat. Western has created this plan consistent with the existing vegetation and habitat characteristics and in a manner compatible with ongoing aggregate operations.

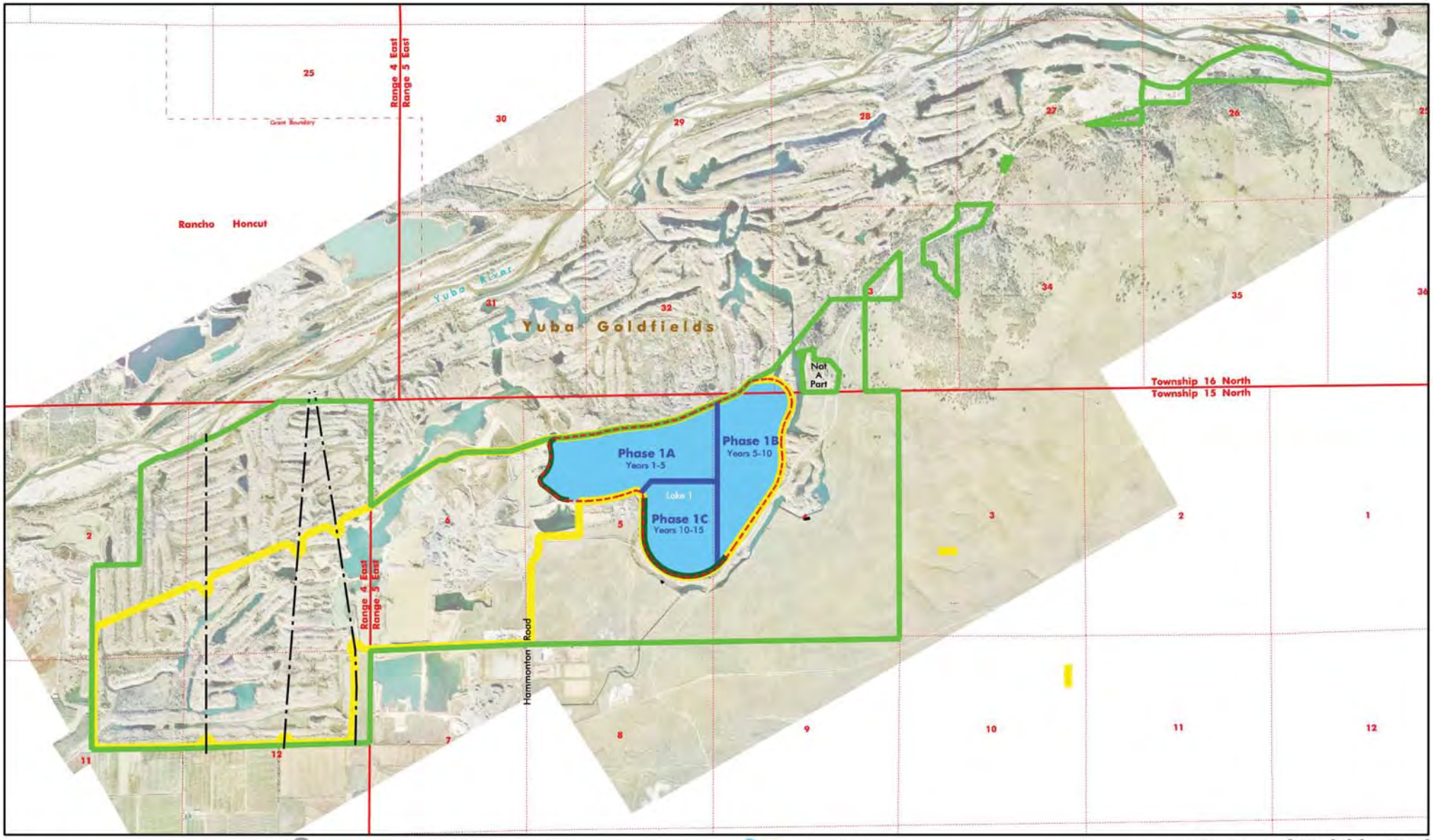
Western plans to remove aggregates to a depth of approximately -20 feet below msl (100 feet below the average lake surface level) over an approximately 1,960-acre area , during a phased 45 year surface mining operation, creating a series of 5 discrete lakes bordered by vegetated woodlands and dikes or berms. These lakes will establish permanent shoreline. The area covered by the Amended Reclamation Plan is described in Figures 8a-8c. Figures 8a-8c depict utility easements, natural and manmade lake boundaries and individual lakes, numbered 1 through 5 for reference.

Lake depth will vary with location due to aggregate quality and demand, but would range between approximately 85 to 100 feet. The angle of repose or shoreline would also vary from 2:1 to 4:1 to create diverse habitats including beaches and shallows for wildlife and vegetation enhancement. The contouring of the shoreline will be completed concurrent with operations in a manner to provide the optimum habitat value. A slope stability report prepared in support of operation and reclamation angle appears in Appendix D of this Plan. In the event that field observations indicate that strength parameters used in the design of the mined slopes are not adequate, the slopes will be inspected and reanalyzed by a registered professional engineer or geologist and modified as necessary to provide a factor of safety suitable for the proposed end use and the reclamation plan amended as may be required prior to implementing any such modifications.

Western will create lakes with irregular, meandering shorelines to support wildlife habitat and vegetation. In the event that large deposits of silts are encountered in the mining process, they may be retained and used in reclamation efforts. Three types of vegetative communities are proposed. These are described in Section 4.4.2.

The final result within the Amended Reclamation Plan boundary will be a series of 5 lakes varying in size. A simulation of the lake configuration appears in Figures 8a through 8c, graphic simulations of a reclaimed lakeshore environment appears in Figures 9 (before) and 10 (after). Figure 9 depicts the actual existing conditions of an inplace dredge pile naturally revegetated with grasses. The process will ultimately result in a series of lakes similar to the configuration depicted in Figures 8a-8c. The boundary lines shown on the reclamation plan’s aerial photograph exhibits representing Section lines were compiled from record information and USGS Quadrangle Maps, and thus are approximate. An in-field survey may result in slightly differing boundary locations from those depicted on the exhibits.

The final anticipated end use following reclamation is open space and wildlife habitat consisting of aquatic lake, marsh , woodland and upland habitat.



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1250 0 1250 2500

Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 03/2011
Aerial: Stewart, 12-22-2009
Boundary: Mackay & Somps, 2010

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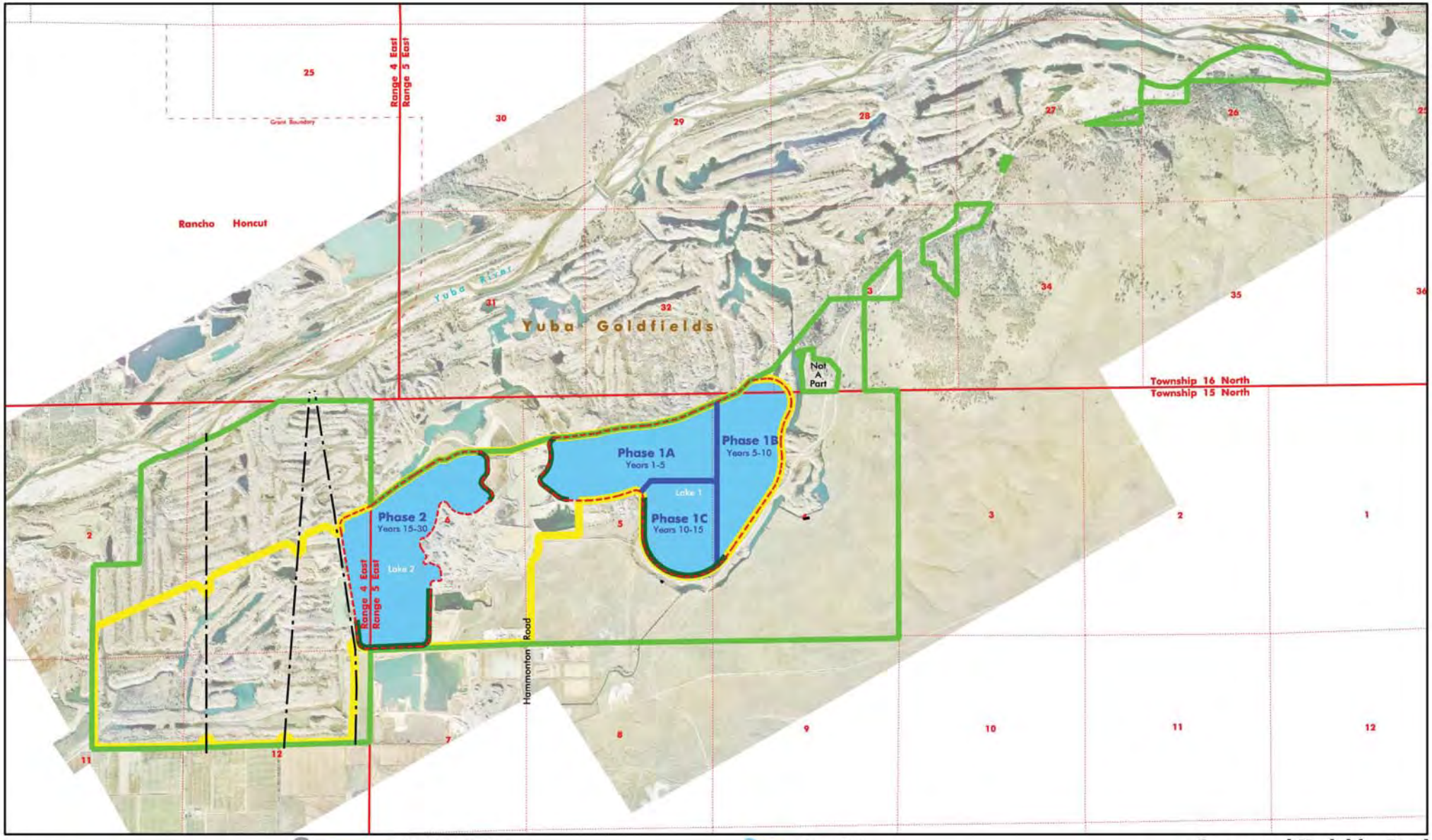
LEGEND

- Vested Rights Boundary
- Amended Reclamation Plan Boundary and Operating Area for Aggregates
- Amended Reclamation Phase Boundary
- USGS Section Lines
- Proposed Lakes
- Extent of 4:1 Slope for Emergent Marsh Habitat
- Utility Easement with Towers

Conceptual Model for Final Reclaimed Configuration after 15 Years

Western Aggregates LLC
Yuba County, California

Figure 8A



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Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 03/2011
Aerial: Stewart, 12-22-2009
Boundary: Mackay & Somps: 2010

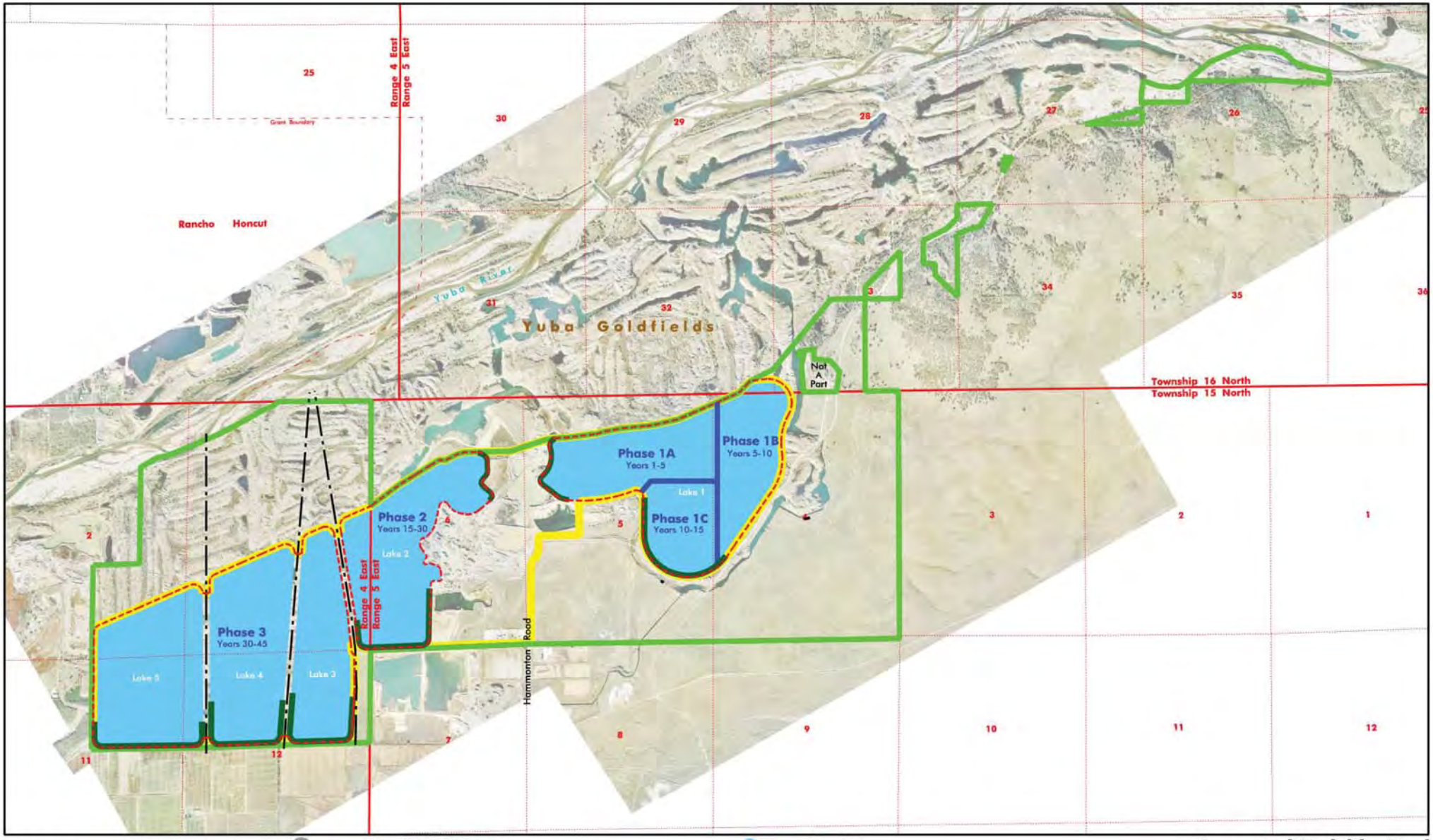
LEGEND

- Vested Rights Boundary
- Amended Reclamation Plan Boundary and Operating Area for Aggregates
- Amended Reclamation Phase Boundary
- USGS Section Lines
- Proposed Lakes
- Extent of 4:1 Slope for Emergent Marsh Habitat
- Utility Easement with Towers

Conceptual Model for Final Reclaimed Configuration after 30 Years

Western Aggregates LLC
Yuba County, California

Figure 8B



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Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 03/2011
Aerial: Stewart, 12-22-2009
Boundary: Mackay & Somps: 2010

LILBURN CORPORATION

LEGEND

- Vested Rights Boundary
- Amended Reclamation Plan Boundary and Operating Area for Aggregates
- Amended Reclamation Phase Boundary
- USGS Section Lines
- Proposed Lakes
- Extent of 4:1 Slope for Emergent Marsh Habitat
- Utility Easement with Towers

Conceptual Model for Final Reclaimed Configuration after 45 Years

Western Aggregates LLC
Yuba County, California

Figure 8C

Existing Cobble Berm

Western Aggregates LLC
Yuba County, California

Figure 9

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CORPORATION

Lake Boundary Simulation

Western Aggregates LLC
Yuba County, California

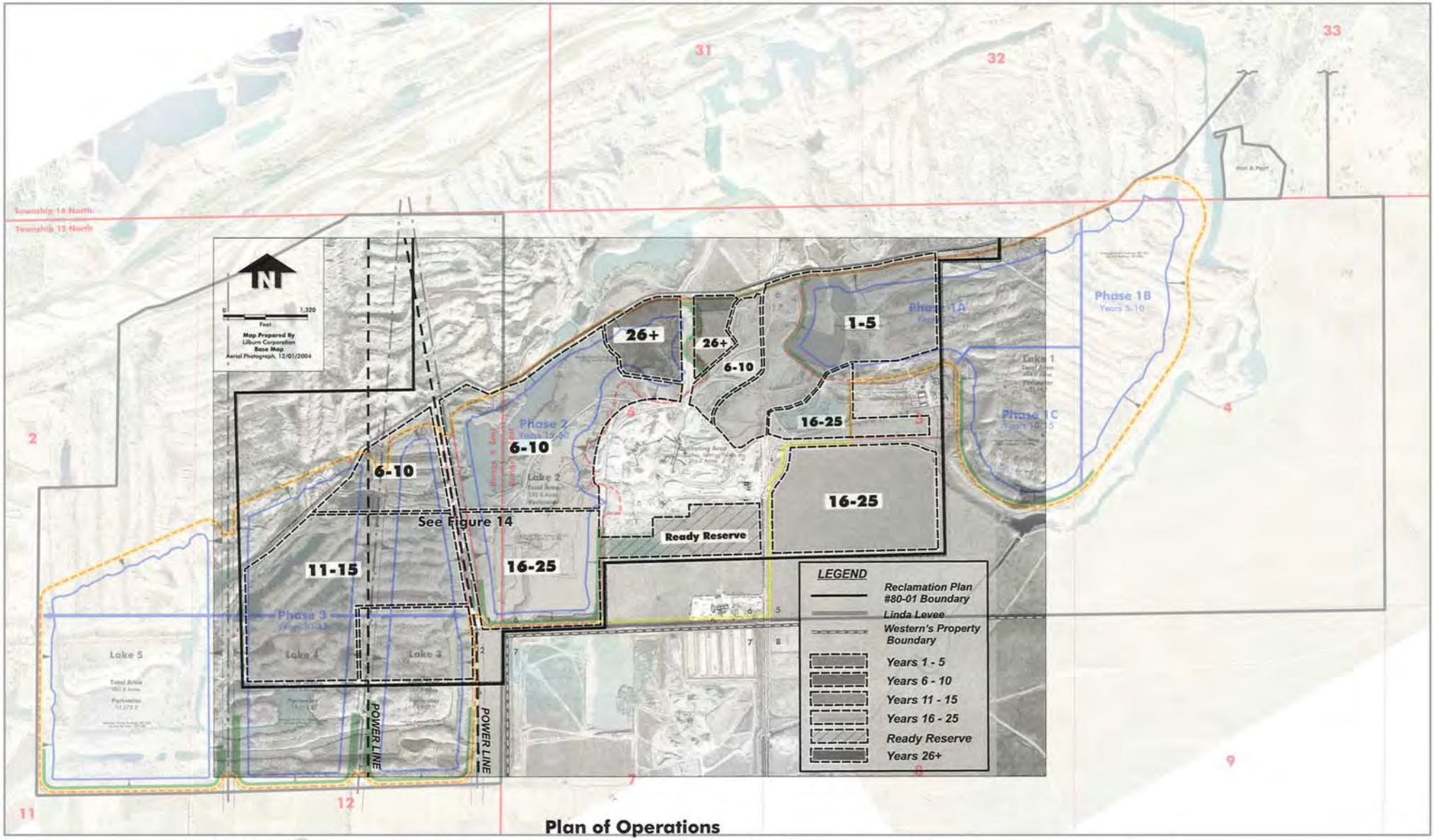
Figure 10

4.2 RECLAMATION PHASING

Aggregate operations will occur in 3 fifteen-year phases according to an aggregate phasing plan developed by Western as described below. Western currently estimates that the average number of acres on which it will conduct surface mining operations in any one year during the life of this Amended Reclamation Plan will be approximately 35 acres and that it will mine to an anticipated depth of -20 below msl (100 feet below the average lake surface level). However, as noted above, and due to the long life of the operations, the number of acres affected and the depth of mining could change as a consequence of changed market conditions, or changes in mining technology. (See discussion of mining depth in Section 3.1.) A projected plan for aggregate removal advancement developed for planning purposes is depicted in Figure 11 outlining operations for the next fifteen (15) years. For planning purposes, approximate potential future phases are also identified for years 16-30 and 31-45 (Figures 8a-8c). A total of approximately 1,960 acres of the Yuba Goldfields would be affected within the 45 year period of surface mining operations. These operations would involve removing sand and gravel to an initial depth of -20 feet below msl (100 feet below the average lake surface level) within the 5 planned lakes. The projected reserves are based on existing plant processing limitations and the wide variations in the aggregate layers re-deposited by the gold mining. Changes to any of these factors could decrease or accelerate the projected annual operations, as could changes in demand.

Figure 11 provides a plot plan for excavation phasing with a corresponding cross-section in Figure 12. The shoreline will be revegetated using the seed and plant mixes outlined in Section 4.4 of the Amended Reclamation Plan. Subject to the other provisions of this Section once established, it is contemplated that during the life of this Amended Reclamation Plan this shoreline will be unaltered by future Western operations (excluding access roads) which will gradually move away from the permanent shore. Figure 13 provides an oblique simulation of the final lake configuration. Figures 6 and 7 illustrate the methods of extraction and equipment types. Phases may vary in size, depth and location. At a time specified by the SMARA Lead Agency, but not less than two years prior to completion of a 15 year phase, Western will submit to the Lead Agency, an updated 15 year phasing map reflecting any reclaimed areas and a detailed anticipated phasing scenario for the next 15 years at the same level of detail as the current phasing information. Such phasing map may reconfigure the size and location of the mining during the phases, but shall be consistent with the reclamation standards and phasing concepts set forth in this Amended Reclamation Plan. In addition, to the extent warranted by market conditions, site geology or other factors, Western in its discretion may complete, or otherwise discontinue mining in, a particular phase in a time period of less than five years. Under such circumstances, prior to the completion of the abbreviated phase Western shall submit to the SMARA lead agency an updated 15-year phasing map reflecting reclaimed areas and a detailed map of the next 15 years at the same level of detail as the current phasing information.

Western would begin final reclamation activities necessary to establish the surface features proposed in the plan concurrent with final aggregate removal by phase, including any areas subject to phases of less than fifteen years. Newly created slopes will not exceed 2:1 horizontal to vertical. Approximately 25 percent of the reclaimed lake perimeter will be mined at a 4:1 slope extending approximately 25 feet landward from the average low-water mark of 80-feet above msl. These slopes will be subject to partial inundation by water, one foot at the lowest level and no more than 6 feet of water at the highest lake level. These slopes will be reclaimed into emergent marsh (see Section 4.4.2 Revegetation). Following slope creation, revegetation associated with lake perimeters will be initiated. All temporary roads utilized only for mining



Plan of Operations

Western Aggregates LLC
Yuba County, California

Figure 14

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750 0 750

Scale: 1 inch = 1500 feet

Map Prepared By: Lilburn Corporation 03/2011
Aerial: Stewart, 12-22-2009
Boundary: Mercher & Swaye, 2010

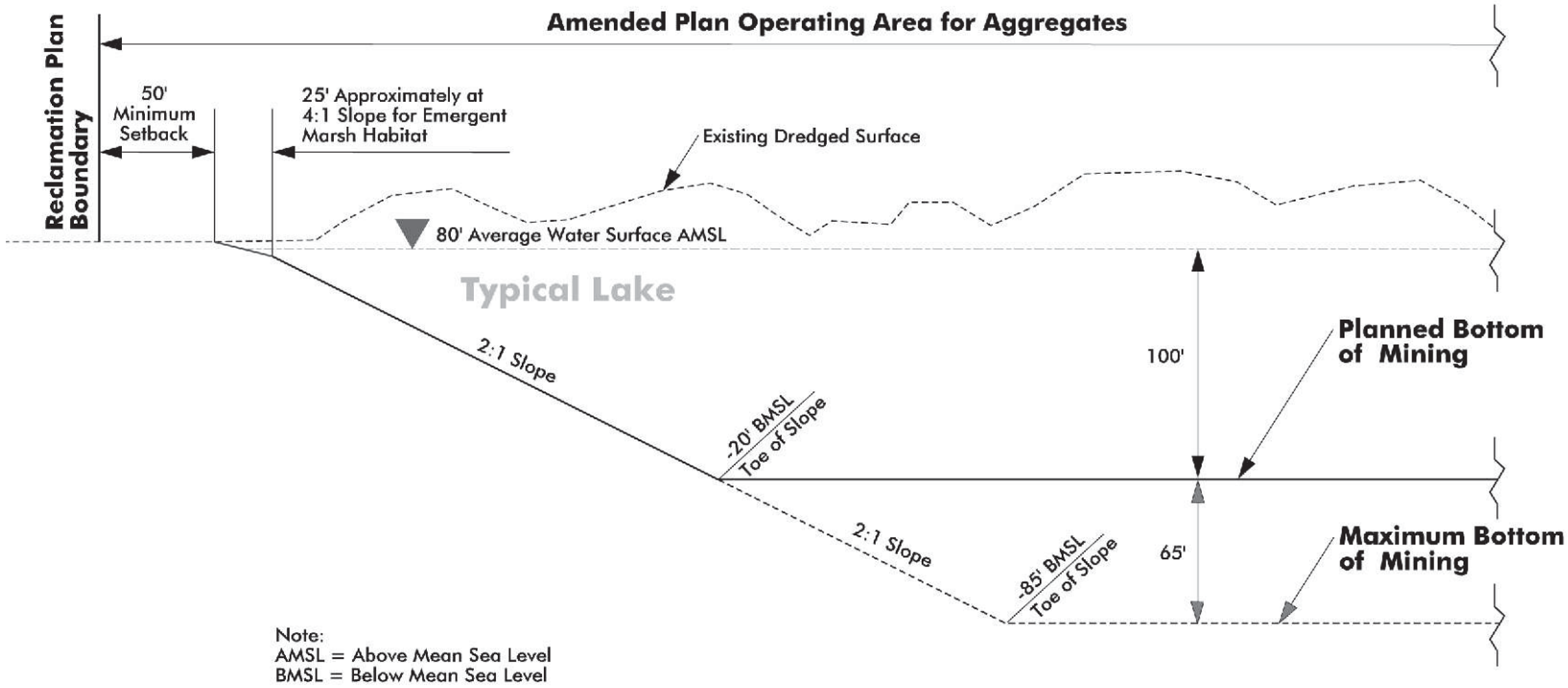
LEGEND

- Vested Rights Boundary
- Amended Reclamation Plan Boundary and Operating Area for Aggregates
- Amended Reclamation Area and Phase Boundary
- USGS Section Lines
- Extent of 4:1 Slope for Emergent Marsh Habitat
- Utility Easement with Towers
- Toe of Slope for Amended Proposed Reclamation Plan Operating Area for Aggregates
- Slope Indicator Top of slope
- Toe of slope
- Power Line Easement

Phasing Plan

Western Aggregates LLC
Yuba County, California

Figure 11



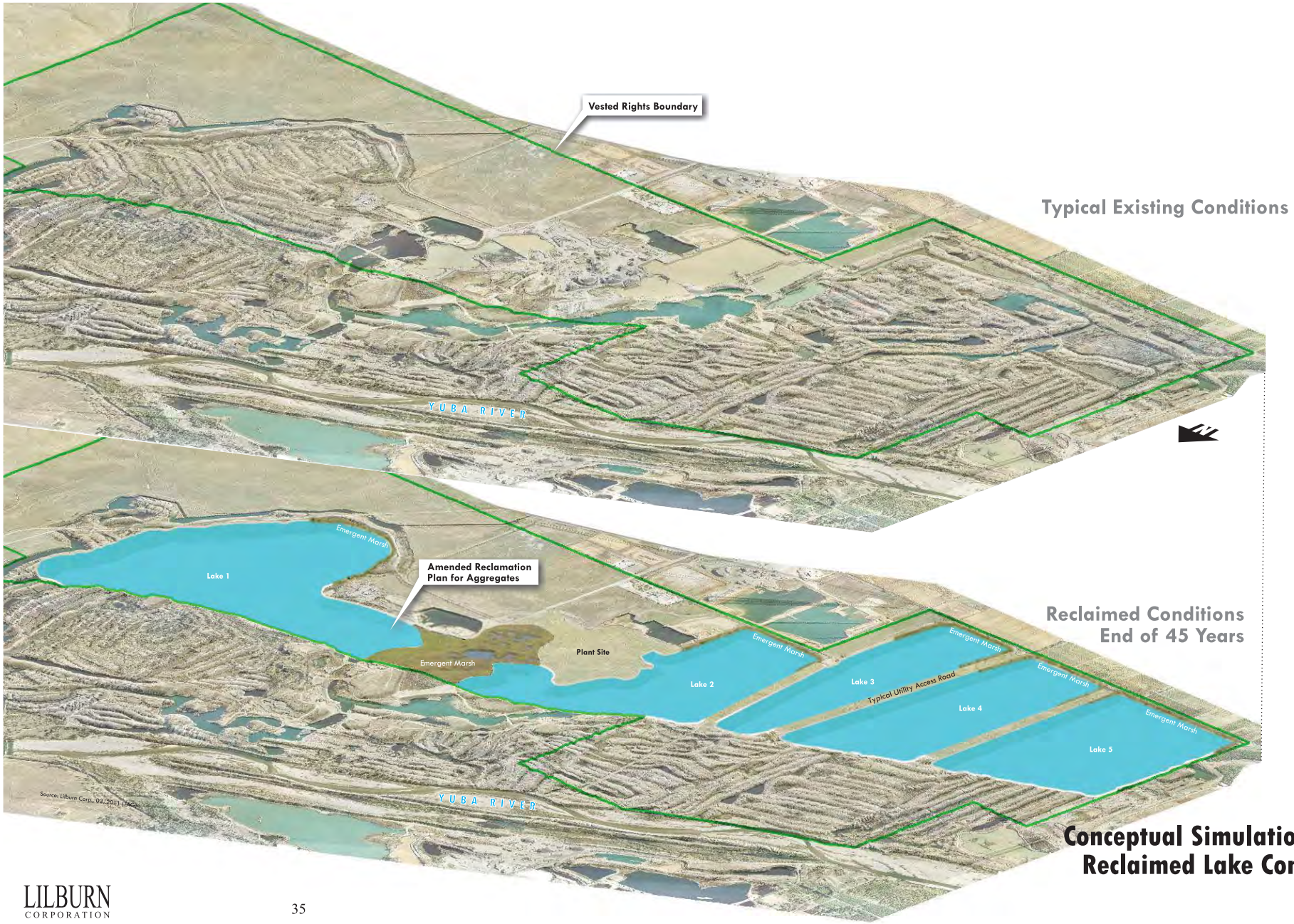
Typical Mining Cross Section

Western Aggregates LLC
Yuba County, California

Figure 12

Source: Lilburn Corp., 12/2011 (TAG)

LILBURN CORPORATION



Conceptual Simulation for Final Reclaimed Lake Configuration

Western Aggregates LLC
Yuba County, California

Figure 13

LILBURN CORPORATION

operations will be decompacted and revegetated or mined through and reclaimed as part of a lake. Roads to be retained for access or revegetation efforts shall be identified on the 15-year phase maps. A typical cross-section of lake perimeters is shown in Figure 14.

Western shall utilize fines available from mining operations, including residual dredge fines, fines from the settling pond(s), and overburden, to meet the revegetation requirements of Section 4.4. In addition, Western shall also utilize said fines to meet the following revegetation requirement: spreading a layer of fines to cover cobbles and provide an adequate rooting zone for revegetation.

Commercially available broadcast seeding would be applied to these areas for erosion control purposes (see Section 3.9) and to enhance natural revegetation. No off-site import of fines will occur. In areas where topsoils will be disturbed, the soil will be salvaged and stockpiled for use in revegetation to the extent necessary. Western may re-enter an area covered by a prior mining phase and subsequently mine to a greater depth in the lake portion of the phased area. However, to the extent possible given operational constraints, such mining in prior mining phases will not adversely affect any revegetation areas created pursuant to the Amended Reclamation Plan. To the extent it is necessary for Western to impact any such revegetation areas, Western shall restore any such impacted areas to the condition prior to being impacted. This may include breaching lake perimeters in order to relocate dredging equipment. These perimeter breaches will be restored upon reclamation.

Western anticipates that mining will continue in the Vested Rights Area beyond the 45 year phased plan proposed herein due to the extensive amount of aggregate within the Vested Rights Area and the anticipated and projected market for aggregate resources, and may include continued mining in areas addressed by this Amended Reclamation Plan. Western anticipates the plant site will retain its usefulness and viability beyond the fifteen-year phases. Upon final completion of mining the plant will be razed and all equipment will be dismantled and removed. Foundations will be broken, crushed and recycled into aggregates or deposited on the site as infill. Roads and utilities exclusive to the plant operations will be removed. Surfaces will be cleared and scarified prior to revegetation. Appropriate revegetation per Section 4.2.2 will then be applied to the plant footprint.

4.3 DISPOSAL OF MINE WASTE

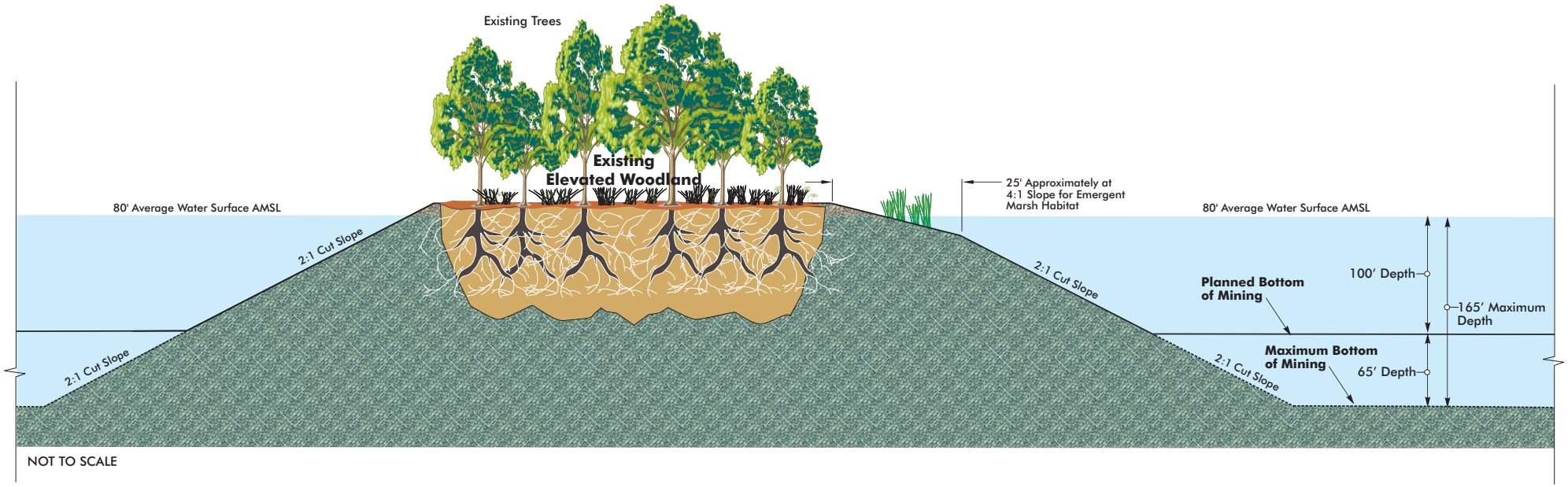
Mine waste, consisting of earthen fines material, will be retained on-site to the extent necessary for final reclamation.

4.4 RECLAMATION STANDARDS

Details of the planned revegetation of the site are included in the “Revegetation Plan” in Appendix B and are summarized below.

4.4.1 Handling of Salvaged Surface Material/Disposition of Equipment

Upon final reclamation in any phase, all structures and equipment specific to aggregate mining and under the control of Western Aggregates will be dismantled and removed from the site covered by that phase (subject to re-entering the site covered by a phase to mine to a greater



Typical Post Mining Cross Section

Source: Lilburn Corp., 12/2011 (TAG)

LILBURN
CORPORATION

Western Aggregates LLC
Yuba County, California

Figure 14

depth, as described in Section 4.2). Any concrete foundations will be broken up and recycled or properly disposed of. Processing areas, stockpiles areas, and areas where structures were located will be decompacted and revegetated.

Monitoring wells and water wells will be abandoned in accordance with applicable local ordinances and standards.

4.4.2 Revegetation

Western will conduct revegetation with commercially available species concentrating on three vegetation types.

Emergent Marsh

Emergent marsh will consist of approximately 4 miles of shoreline over 25 feet in width of 4:1 sloped bench resulting in approximately 12 acres of emergent marsh. The settling pond area (DDA), see Figure 8a-8c, reclaimed to a vegetative state may also contribute to the total planned revegetration. Vegetation in this community is present where surface water persists and is at least occasionally inundated. Water depths typically range from 0 to 4 feet. Approximately 6 inches of process fines will be deposited on these 4:1 slopes.

Planting will occur to establish revegetation and habitat diversity. Planting specifications for the emergent marsh community are:

EMERGENT MARSH			
Species	**Common Name**	**Propagule Type**	**Quantity[1]**
Carex nebrascensis	Nebraska sedge	Plug	200
Cyperus eragrostis	Nut sedge	Plug	150
Eleocharis macrostachya	Pale Spikerush	Plug	150
Juncus balticus	Baltic rush	Plug	200
Juncus effusuf	Soft rush	Plug	200
Sciurpus actus var. *occidentalis*	Hard-stemmed rush	Plug	300

[1]Amount or number per acre

Riparian Woodland

The riparian woodland represents the transition area between the emergent marsh and riparian upland. The development of this area would be accomplished by spreading fines to a minimum depth of four inches. Plants tolerant of saturated soils and occasional inundation are characteristic in this community.

Planting specifications for riparian woodland are:

RIPARIAN WOODLAND			
Species	**Common Name**	**Propagule Type**	**Quantity[1]**
Acer negundo var. *californica*	California box elder	Seedling	20
Alnus rhobifolia	White alder	Seedling	20
Cephalanthus occidentalis	California button bush	Seedling	30
Fraxinus latifolia	Oregon ash	Seedling	20
Platnus racemosa	California sycamore	Seedling	20
Populus fremontii	Fremont cottonwood	Cuttings	30
Rosa californica	California wild rose	Seedling	30
Salix laevigata	Red willow	Cuttings	30
Salix lasiolepis	Arroyo willow	Cuttings	30
Muhlembergia rigens	Deer grass	Plug	100
Leymus triticoides	Creeping wildrye	Seed[2]	10

[1]Amount or number per acre
[2]Pound per acre pure live seed (PLS)

Riparian Upland

The riparian upland habitat consists of the constructed slopes, roadways and lake boundaries that form the perimeters of the portions of the revegetated shoreline. The total area is unknown due to the phased nature of the lake designs. Elevations will range from 5 to 20 feet above the average lake level. Vegetation in this area is typically represented by relatively drought-tolerant riparian species.

Planting specifications for riparian upland are:

RIPARIAN UPLAND			
Species	**Common Name**	**Propagule Type**	**Quantity[1]**
Aesculus californica	California buckeye	Seedling	15
Baccharis pilularis	Coyote brush	Seedling	20
Ceanothus cuneatus	Buckbrush	Seedling	25
Heteromeles arbutifolia	Toyon	Seedling	20
Pinus sabiniana	Gray pine	Seedling	15
Quercus douglasii	Blue oak	Seedling/acorns[2]	25
Quercus lobata	Valley oak	Seedling/acorns[2]	20
Quercus wisllizenii	Interior live oak	Seedling/acorns[2]	20
Rhamnus tomentella	Hoary coffeeberry	Seedling	25
Achillea millefolium	Yarrow	Seed[3]	2
Poa secunda	Blue grass	Seed[3]	3
Elymus glaucus	Blue wildrye	Seed[3]	5
Eriogonum nudum	Naked buckwheat	Seed[3]	2
Leymus triticoides	Creeping wildrye	Seed[3]	3
Lupinus microcarpus	Chick lupine	Seed[3]	3
Nasella pulchra	Purple needlegrass	Seed[3]	3

[1]Amount or number per acre
[2]Three acorns per planting hole (e.g. *Q. douglasii*; 3 x 25 = 75 acorns/acre)
[3]Pound per acre pure live seed (PLS)

Planting Methods

Planting of commercially available species will be conducted in the fall following the first soaking rain of the season. Planting may include broadcast seeding followed by hand racking or a harrow in upland areas. Typical soil surface will consist of a minimum of four inches of fines. Willow and cottonwood cuttings will consist of live dormant stems placed in contact with saturated soils. Upon placement these will be hand irrigated to remove air pockets in the stem section. Trees will be placed in 3 x 3 x 3 foot excavated holes backfilled with fines and surrounded by an irrigation berm. Supplemental irrigation of upland seeding species will be provided by hand as needed for up to two years.

In areas that are compacted from previous use like roadways stockpiles or production areas and subsequently abandoned the surface will be scarified to a depth of at least 18 inches prior to soiling with fines and planting.

4.4.3 Revegetation Goals and Performance Standards

Performance goals for final revegetation are as follows:

Emergent Marsh:	80 percent cover	
	Species Richness:	5-native emergent species/200m^2
Riparian Woodland:	70 percent cover	
	Species Richness:	8-native species/acre
	Density:	150 native trees and shrubs/acre
		60 Deer grass/acre
Riparian Upland:	60 percent Absolute Cover (native woody species, grasses and forbes).	
	Species Richness:	4 native species of trees/acre
		4 native species of shrubs/acre
		3 native herbaceous perennial species/100m^2
	Density:	60 native trees/acre
		55 native shrubs/acre

Revegetation Monitoring will be conducted annually for a minimum of 5-years with at least 2-years without human intervention. Failure to achieve the performance standards at the end of the monitoring period will require remedial measures and further monitoring until the revegetation performance standards have been achieved.

Plant Protection

In order to prevent destruction of seedlings and cuttings revegetation crews will utilize various methods of protection including paper or plastic sleeves, wire guards and wire cages. Size, material and mesh will vary based on plant type, type of herbivore being targeted and proven effectiveness.

Weed Management

Weed control will be conducted by Western using a variety of methods as required including hand removal, mechanical removal, herbicides and biological predation. Annual spring monitoring will be conducted on the active mine area and the reclaimed areas. If weeds exceed 10 percent of vegetative cover in the reclaimed area weed control measures will be initiated. Weeds in operations area will be controlled if weed levels exceed non mining areas on adjacent property. Potential terrestrial species that will be monitored include:

Terrestrial	
Giant reed (*Arundo donax*)	Perennial pepperweed (*Lepidium latifolium*)
Italian thistle (*Cardus pycnocephalus*)	Purple loosestrife (*Lythrum salicaria*)
Klamath weed (*Hypericum perforatum*)	Star thistle (*Centaurea solistitialis*)
Medusahead (*Taeniantherum caput-medusae*)	Tree of heaven (*Ailanthus altissima*)
Pampas grass (*Cortaderia selloana*)	Tree tobacco (*Nicotiana glauca*)
White top (*Cardaria draba*)	

Potential Aquatic species include:

Aquatic	
Hydrilla (*Hydrilla verticillata*)	Water hyacinth (*Eichornia crassipes*)

Hydrilla is a CDFA A-rated noxious weed. If detected the County Agricultural commissioner will be notified. Controls will be conducted in accordance with CDFA integrated pest control branch policies and procedures.

4.5 ESTIMATE OF RECLAMATION COSTS

Refer to Appendix C, Financial Assurance.

4.6 FINANCIAL ASSURANCE

Refer to Appendix C, Financial Assurance.

5.0 CERTIFICATION

5.1 LEAD AGENCY CERTIFICATION

I, the undersigned, hereby certify that this reclamation plan complies with the applicable requirements of Articles 1 and 9 (commencing with Sections 3500 et seq. and 3700 et seq., respectively) of Chapter 8 of Division 2 of Title 14 of the California Code of Regulations, and with the requirements of the Surface Mining and Reclamation Act, Sections 2710 et seq.

Sign this _____ day of _____, 2011

5.2 STATEMENT OF RESPONSIBILITIES

I, the undersigned, hereby agree to accept full responsibility for reclamation of all mined lands as described and submitted herein and in conformance with the applicable requirements of Articles 1 and 9 (commencing with Sections 3500 et. seq. and 3700 et. seq., respectively) of Chapter 8 of Division 2 of Title 14 of the California Code of Regulations, the Surface Mining and Reclamation Act commencing with Section 2710 et. seq., and with any modifications requested by the administering agency as conditions of approval.

Signed this_____ day of_____, 2011

_____
Western LLC.

_____ _____
Approved
Lead Agency Representative(s) Date

6.0 LIST OF PREPARERS AND REFERENCES

Planning, Environmental, and SMARA Consultant:

Lilburn Corporation:
- Stephen T. Lilburn, Chairman, Board of Directors
- Martin R. Derus, President
- Cheryl A. Tubbs, Vice President
- Frank Amendola, Environmental Analyst
- Troy Goodwalt, Senior CADD Designer
- Mary Jones, Word Processor

CHJ Incorporated:
- Jay J. Martin, E.G. Vice President

Joseph S. Bonadiman Engineers:
- Joseph S. Bonadiman, P.E.

Jeffer, Mangels, Butler & Mitchell LLP:
- Kerry Shapiro, Partner

Western Aggregates:
- Lloyd Burns, President
- Thomas Hamp, Plant Manager

REFERENCES

Herbert, F.W. and Begg, E.L., 1969, Soils of the Yuba Area, California: U.C. Davis and County of Yuba California.

Reclamation Plan 80-01

SR 132, Mineral Land Classification, Portland Cement Concrete, Grade Aggregate in the Yuba City, Marysville Production, Consumption Region, 1988.

Surface Mining and Reclamation Act (SMARA) of 1975 and Related Statute.

Teichert Yuba Aggregate Mining Environmental Impact Report SCH 2005052136 FEIR, October, 2007.

Yuba County General Plan – Land Use, Circulation, Open Space and Conservation Elements, December, 1996.

APPENDIX A
CAL SIERRA DEVELOPMENT, INC. LETTER

CAL SIERRA DEVELOPMENT, INC. (530) 742-7164
4738 Hammonton Road•Marysville•CA•95901-9203 fax (530) 743-6370

Western Aggregates LLC
320 First Street
Marysville, CA 95901

Attention: **Jim Liddiard**
President

Gentlemen:

The purpose of this letter is to respond to your request for documentation regarding pond water levels in the Western Aggregates' mining areas on the Yuba Goldfields property. Cal Sierra Development, Inc. has monitored the daily pond water levels in Sections 5 and 6, T15N, R5E, in connection with bucket line dredging operations between 1992 and January 2003.

Based upon our daily dredge operation reports, the average annual water level fluctuation has been approximately 6 feet, varying from about 84 feet MSL[1] to 90 feet MSL.

The following is a summary of the annual water level fluctuations from 1998 to 2002:

YEAR	WATER LEVEL FLUCTUATION (MSL)
2002	90 feet to 81 feet
2001	90 feet to 82 feet
2000	93 feet to 85 feet
1999	96 feet to 86 feet
1998	96 feet to 88 feet

Please advise if you require copies of sample dredge operating reports documenting the water level fluctuations.

Very truly yours,

CAL SIERRA DEVELOPMENT, INC.

By: Tony Massey
Tony Massey
Vice President

[1] Mean Sea Level.

APPENDIX B
REVEGETATION GUIDELINES

Revegetation

Western will conduct revegetation with commercially available species concentrating on three vegetation types.

Emergent Marsh

Emergent marsh will consist of approximately 4 miles of shoreline over 25 feet in width of 4:1 sloped bench resulting in approximately 12 acres of emergent marsh. The settling pond area (DDA), see Figure 8a-8c, reclaimed to a vegetative state may also contribute to the total planned revegetration. Vegetation in this community is present where surface water persists and is at least occasionally inundated. Water depths typically range from 0 to 4 feet. Approximately 6 inches of process fines will be deposited on these 4:1 slopes.

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In areas that are compacted from previous use like roadways stockpiles or production areas and subsequently abandoned the surface will be scarified to a depth of at least 18 inches prior to soiling with fines and planting.

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Performance goals for final revegetation are as follows:

Emergent Marsh:	80 percent cover	
	Species Richness:	5-native emergent species/200m^2
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	Species Richness:	4 native species of trees/acre
		4 native species of shrubs/acre
		3 native herbaceous perennial species/100m^2
	Density:	60 native trees/acre
		55 native shrubs/acre

Revegetation Monitoring will be conducted annually for a minimum of 5-years with at least 2-years without human intervention. Failure to achieve the performance standards at the end of the monitoring period will require remedial measures and further monitoring until the revegetation performance standards have been achieved.

Plant Protection

In order to prevent destruction of seedlings and cuttings revegetation crews will utilize various methods of protection including paper or plastic sleeves, wire guards and wire cages. Size, material and mesh will vary based on plant type, type of herbivore being targeted and proven effectiveness.

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Weed control will be conducted by Western using a variety of methods as required including hand removal, mechanical removal, herbicides and biological predation. Annual spring monitoring will be conducted on the active mine area and the reclaimed areas. If weeds exceed 10 percent of vegetative cover in the reclaimed area weed control measures will be initiated.

Weeds in operations area will be controlled if weed levels exceed non mining areas on adjacent property. Potential terrestrial species that will be monitored include:

Terrestrial	
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Klamath weed (*Hypericum perforatum*)	Star thistle (*Centaurea solistitialis*)
Medusahead (*Taeniantherum caput-medusae*)	Tree of heaven (*Ailanthus altissima*)
Pampas grass (*Cortaderia selloana*)	Tree tobacco (*Nicotiana glauca*)
White top (*Cardaria draba*)	

Potential Aquatic species include:

Aquatic	
Hydrilla (*Hydrilla verticillata*)	Water hyacinth (*Eichornia crassipes*)

Hydrilla is a CDFA A-rated noxious weed. If detected the County Agricultural commissioner will be notified. Controls will be conducted in accordance with CDFA integrated pest control branch policies and procedures.

APPENDIX C
FINANCIAL ASSURANCES

WESTERN AGGREGATES LLC

CA MINE ID#91-58-0001

REVISED FINANCIAL ASSURANCE COST ESTIMATE

August 2010

PREPARED BY:

WESTERN AGGREGATES LLC
P.O. BOX 829
320 1st STREET
MARYSVILLE, CA. 95901

FILE: EXH10127.WAI; Rev. 2

INTRODUCTION

The Western Aggregates LLC ("Western") mining operation is located in the Yuba Goldfields in Yuba County, California. Mining operations are conducted under a vested right to mine, which was confirmed by the State Mines and Geology Board on March 11, 2010.

This Financial Assurance Cost Estimate ("FACE") is a revision of Western's 2008 FACE approved by the State Mining and Geology Board on February 5, 2010. This revised FACE has been updated to reflect changes in equipment rental rates and prevailing labor rates, as well as documenting mining and operations sites.

I. PRIMARY RECLAMATION ACTIVITIES

Description of Task:

MINING/OPERATIONS AREAS ABOVE WATER LEVEL (see Enclosure No. 1 for an aerial photograph exhibit of mining locations) : The listed locations are areas mined or disturbed independently by Western. Areas in which Cal Sierra Development, Inc. ("Cal Sierra") is currently mining or previously mined, and from which Western obtained material in conjunction with Cal Sierra's mining activities are to be reclaimed by Cal Sierra. If Western ever remines areas that have been reclaimed by Cal Sierra, Western will reclaim these areas. Surfaces of mined and disturbed areas above water level will be graded to gentle slopes of less than 2:1 with bulldozers. It is anticipated that resoiling will not be necessary due to the presence of fine sand and clay materials in the areas to be reclaimed. In the event the mined areas consist of only coarse rock and are devoid of finer materials, sand and mud tailings will be hauled from active mining areas by off road heavy haul vehicles and will be distributed over the surface to a depth of approximately four (4) inches by bulldozer or motor grader. A variety of annual grass and forbs seed will be broadcast over the areas to be reclaimed. Planting will take place in Autumn, allowing the winter rainfall to produce growth without any additional irrigation.

MINED AREAS BELOW WATER LEVEL: Areas which have been mined below water level will not be subject to any reclamation, since in similar areas previously mined, riparian vegetation as well as willow and cottonwood trees have self-vegetated along the shorelines as a natural process.

OPERATIONS LOCATIONS AND ACREAGE TO BE RECLAIMED:

OPERATIONS AREA (see Enclosure No. 1)	*ACREAGE*
#1	8.0± acres
#2	0.5± acres
#3	1.0± acres
#4	20.0± acres
#5	5.5± acres
#6	6.0± acres
#7	20.0± acres
#8	1.9+ acres
#9	23.0+ acres
#10	5.0+ acres
#11	75.0± acres
#12	20.0± acres
#13	12.5± acres
#14	7.7± acres
#15	3.1± acres
Main haul roads	4.3+ acres

TOTAL OPERATIONS AREA TO BE RECLAIMED ..... 213.5± acres

NOTE: AREA #4 consists of a large stockpile of fine materials to be used in resoiling other mining areas. AREA #9 was not previously mined and appears to have adequate fines to support revegetation without additional soil amendments, however, the cost to haul and spread fines for resoiling, if required, is included herein. AREA #11 consists of approximately 75 acres, which includes a 30± acre sediment settling pond. The settling pond contains substantial quantities of fine materials, but the remaining 45± acres of AREA #11 will require importation of 24,200 cubic yards of fine materials from AREA #4. AREA #14 consists of a temporary stockpile area of 7.7± acres that is located in the southern portion of the property extending south and east of the approved Reclamation Plan (RP 80-01) boundary. The stockpiles have been removed from this area.

RESOILING (SAND AND MUD TAILINGS):

At this time it is not known whether or not all of the mined or disturbed areas will require resoiling, due to the large amount of fine materials present. However, in the event that the entire mined and disturbed areas require resoiling (worst case scenario), as detailed below, a total of approximately 98,867 cubic yards of sand and mud tailings will be required to provide 4 inches of soil, which would be hauled to each of the sites from storage areas located at the approximate distances as noted below.

A. EQUIPMENT: A hydraulic backhoe will load off-road haul trucks with a capacity of 35 cu. yds./truckload from sediment stockpile areas to be delivered to the following locations based upon 1/2 hour round trip per truck[1] for a haul distance of 6,000 feet:

AREA #1 requires	4,305 cu. yds. to be hauled	4,000 feet =	41 hours haul truck time.
AREA #2 requires	270 cu. yds. to be hauled	1,000 feet =	2 hours haul truck time.
AREA #3 requires	540 cu. yds. to be hauled	2,000 feet =	3 hours haul truck time.
AREA #4 requires	10,755 cu. yds. to be hauled	0 feet =	0 hours haul truck time.
AREA #5 requires	2,960 cu. yds. to be hauled	1,500 feet =	11 hours haul truck time.
AREA #6 requires	3,230 cu. yds. to be hauled	2,500 feet =	20 hours haul truck time.
AREA #7 requires	10,755 cu. yds. to be hauled	4,500 feet =	116 hours haul truck time.
AREA #8 requires	1,025 cu. yds. to be hauled	6,000 feet =	15 hours haul truck time.
AREA #9 requires	9,670 cu. yds. to be hauled	8,000 feet =	185 hours haul truck time.
	2,687 cu. yds. to be hauled	3,600 feet =	22 hours haul truck time.
AREA #10 requires	2,690 cu. yds. to be hauled	2,500 feet =	17 hours haul truck time.
AREA #11 requires	24,200 cu. yds. to be hauled	1,000 feet =	58 hours haul truck time.
AREA #12 requires	10,755 cu. yds. to be hauled	3,500 feet =	116 hours haul truck time.
AREA #13 requires	6,725 cu. yds. to be hauled	6,300 feet =	103 hours haul truck time.
AREA #14 requires	4,320 cu. yds. to be hauled	0 feet =	0 hours haul truck time.
AREA #15 requires	1,665 cu. yds. to be hauled	3,500 feet =	14 hours haul truck time.
Haul Roads require	2,315 cu. yds. to be hauled	4,000 feet =	22 hours haul truck time.
TOTALS	98,867 cu. yds.		745 hours haul truck time.

1 Includes loading and unloading.

One (1) Caterpillar Model 245 hydraulic backhoe for loading of trucks with soils for revegetation.
373 hours @ $277.46[2] per hour ..... $ 103,493.00

Two (2) International Model B Payhauler heavy haul end dump trucks for hauling soils for revegetation.
745 hours total time @ $273.22[3] per hour ..... $ 203,549.00

SURFACE CONTOURING/SOIL SPREADING: A D-9 Bulldozer[4] will move about 480 cubic yards of material per hour for a 300 foot excavation distance. This volume is increased by a factor of 1.2 for loose, unconsolidated materials for a total of 576 cubic yards per hour. Applying an efficiency factor of 0.83 and an Operator Average Rating of 0.75 yields a total about 360 cubic yards per hour. The D-9R Bulldozer time required would be;

AREA #1	8.0± acres @	4,305 cu yds	12.0 hours of bulldozer time.
AREA #2	0.5± acres @	270 cu yds	1.0 hours of bulldozer time.
AREA #3	1.0± acres @	540 cu yds	2.0 hours of bulldozer time.
AREA #4	20.0± acres @	10,755 cu yds	30.0 hours of bulldozer time.
AREA #5	5.5± acres @	2,960 cu yds	8.5 hours of bulldozer time.
AREA #6	6.0± acres @	3,230 cu yds	9.0 hours of bulldozer time.
AREA #7	20.0± acres @	10,755 cu yds	30.0 hours of bulldozer time.
AREA #8	1.9± acres @	1,025 cu yds	3.0 hours of bulldozer time.
AREA #9	23.0± acres @	12,357 cu yds	35.0 hours of bulldozer time.
AREA #10	5.0± acres @	2,690 cu yds	7.5 hours of bulldozer time.
AREA #11	45.0± acres @	24,200 cu yds	67.5 hours of bulldozer time.
AREA #12	20.0± acres @	10,755 cu yds	30.0 hours of bulldozer time.
AREA #13	12.5± acres @	6,725 cu yds	19.0 hours of bulldozer time.
AREA #14	7.7± acres @	4,320 cu yds	12.0 hours of bulldozer time.
AREA #15	3.1± acres @	1,665 cu yds	5.0 hours of bulldozer time.
Haul Roads,	4.3± acres @	2,315 cu yds	6.5 hours of bulldozer time.

TOTAL BULLDOZER TIME ..... 278.0 hours

TOTAL EQUIPMENT COST FOR THIS TASK:

Excavator time of 373 hours @ $277.46[2] per hour	$103,493.00
Haul trucks time of 745 hours @ $273.22[3] per hour	$203,549.00
D-9R bulldozer time of 278 hours @ $280.38[5] per hour	$ 77,946.00
Water truck time of 373 hours @ $85.00[6] per hour	$ 31,705.00
TOTAL EQUIPMENT COST	$416,693.00

2 Cat 245 B Excavator rental rate of $219.20/hour per 2010-2011 CalTrans Labor Surcharge & Equipment Rental Rates; Operator rate of $58.26/hour per February 2010 Director of Industrial Relations General Prevailing Wage Determination. Total Cat 245 B Excavator and operator rate is $277.46/hour.

3 International Model B Payhauler rate of $221.55/hour with operator at $51.67/hour for a total of $273.22/hour.

4 Volumes of material which can be moved by a D-9R Bulldozer taken from Caterpillar Tractor Company performance manual, Edition 28.

5 Cat D9R rental Rate of $224.98/hour with operator at $55.40/hour for a total of $280.38/hour.

6 Water truck (4,500 gallon) contract rental rate of $85.00/hour.

B. LABOR:

MARKING/STAKING OF 15 MINING/OPERATIONS LOCATIONS TO BE RECLAIMED:

One laborer @ $30.00/hour for 48 hours ..... $ 1,440.00

C. MATERIALS:

Surveyor's 1/2" wooden lathing; 20 bundles @ $40.00/bundle ..... $ 800.00
Surveyor's marking paint for lathing; 1 can/bundle @ $5.00/can .... $ 100.00

DIRECT COSTS FOR EQUIPMENT, ...*(ITEM "A")*..... $419,033.00
+ LABOR + MATERIALS

II. MINING/OPERATIONS AREA REVEGETATION

Description of Task: **Mining/Operations areas above water level.**

Description of Task:

A commercially available annual grass and forbs seed mix will be broadcast seeded on the identified areas above water level. The seed mix will consist of at least four species of the following Department of Conservation seed and plant mix recommended for this area:

Introduced grasses and forbs;

at 50 lbs per acre:

Oats or Wild Oats	*Avena sativa, Avena fatua*
Orchard Grass	*Dactylis glomeratus*
Solt Chess	*Bromus Hordeacea*
Lana Wooly Pod Vetch	*Vicia dasycarpa*
Crimson Clover	*Trifolium incarnatum*
Sweet Clover	*Melilotus sp.*

at 15 lbs per acre:

Blue Wild-Rye	*Elymus glaucus*
Squirreltail	*Elymus elymoides*
Coyote brush	*Baccharis pilularis*
Toyon	*Heteromeles Arbutifolia*

Enclosure No. 2 present a current price listing for the grasses and forbs above.

A total of approximately 13,881 lbs of assorted grasses and forbs will be broadcast on the site in the fall just prior to the rainy season.

A. SEED COST:

OPERATIONS LOCATION	*AREA*	*SEED (LBS)*
#1	8.0± acres	520.0
#2	0.5± acres	33.0
#3	1.0± acres	65.0
#4	20.0± acres	1,300.0
#5	5.5± acres	358.0
#6	6.0± acres	390.0
#7	20.0± acres	1,300.0
#8	1.9± acres	124.0
#9	23.0± acres	1,495.0
#10	5.0± acres	325.0
#11	75.0± acres	4,875.0
#12	20.0± acres	1,300.0
#13	12.5± acres	813.0
#14	7.7± acres	501.0
#15	3.1± acres	202.0
Main Haul Roads	4.3± acres	280.0
TOTALS	213.5± acres	13,881.0 lbs

The average price per pound of the preferred grass seed and plant mix is $21.38.
Total cost of the grass seed and plant mix is 13,881 lbs. @ $21.38/lb. = $ 296,776.00.

B. LABOR

Manual broadcast of seed using hand held seeders would be utilized. Costs are based on manual labor of $45.00 per hour plus $10.00 per hour for equipment costs. A laborer using the manual broadcast method can cover 1 acre in 1 hour.

213.5 acres x $55/acre = $11,743.00

TOTAL COST FOR MATERIALS AND LABOR .....*(ITEM "B")*..... $308,519.00

III. PROCESSING PLANT SITE RESTORATION

A) PLANT STRUCTURES AND EQUIPMENT REMOVAL (see Enclosure No. 3)

Description of Task:

BUILDINGS: Demolish the following buildings:

1] Scale House (20 foot x 20 foot stick frame construction).
2] Laboratory facility (15 foot x 30 foot stick frame construction).

PORTABLE BUILDINGS: Disconnect and remove the following buildings:

1] Main office trailer (12 foot x 60 foot).
2] Staff office trailer (12 foot x 60 foot).
3] Storage trailer (12 foot x 30 foot).

CONCRETE FOUNDATIONS: Remove the following foundations:

SCALE HOUSE

1] 20 foot x 20 foot, 4 inch thick slab w/ wiring and plumbing.

LABORATORY FACILITY

1] 15 foot x 30 foot, 4 inch thick slab w/ wiring and plumbing.
2] 60 foot x 12 foot, 6 inch thick slab.
3] 20 foot x 12 foot, 6 inch thick slab.
4] 40 foot x 12 foot, 6 inch thick slab.

WEIGH SCALES FOUNDATIONS

1] 2 each; 70 foot x 8 foot w/ 2 foot deep footings at each end and center.
2] 1 each; 60 foot x 16 foot new approach concrete apron.
2] 1 each; new 70 foot x 10 foot w/ 2 foot deep footings at each end and center.

PRIMARY FEEDER/HOPPER FOUNDATION

1] 15 foot x 30 foot x 8 inch thick slab.

WET SCREENING PLANT

1] Primary Screening tower - 30 foot x 30 foot, 18 inch thick slab w/ 4 foot deep footings.
2] Secondary Screening tower - 20 foot x 30 foot, 18 inch thick slab w/ 4 foot deep footings.
3] Sand Screen Concrete Slab - 22 foot x 15 foot x 12 inch thick slab and 2 Pillow Blocks.

DRY SCREENING PLANT

1] Primary Classifying Screen - 30 foot x 30 foot, 18 inch thick slab w/ 4 foot deep footings.
2] Primary and Secondary Crushers - 50 foot x 20 foot, 18 inch thick slab w/ 4 foot deep footings.
3] New Crusher foundation - 20 foot x 25 foot x 12 inch thick slab.
4] Cemco Screen Foundation - 20 foot x 20 foot x 12 inch thick slab.
5] Concrete Footing - 20 foot x 40 foot x 12 inch thick slab.
6] Concrete Footing - 4 foot x 4 foot x 12 inch thick slab.

CONVEYOR SUPPORT FOUNDATIONS

1] 20 each; 8 foot x 2 foot x 12 inch thick pad.

REPAIR SHOP FACILITIES

1] 40 foot x 60 foot, 8 inch thick concrete slab w/ aprons.
2] 18 foot x 16 foot, 6 inch thick new concrete slab.
3] 15 foot x 15 foot, 6 inch thick new concrete slab.

REFUELING FACILITY
1] 40 foot x 36 foot, 8 inch thick pad.
2] 2 slabs; 15 foot x 40 foot, 8 inch thick pad.
3] Remove concrete aprons around fuel island.
4] Remove roof and support beams.

TAIL PULLEY CONCRETE SLABS
1] 6 slabs; 15 foot x10 foot, 6 inch thick slab.

DREDGER GFI FOUNDATIONS
1] 2 each; 21 foot x 2 foot x 2 foot slabs.

DREDGER PILLOW BLOCK/CONVEYOR SUPPORTS
1] 1-- 10 foot x 20 foot x 16 inch thick slab.
2] 16 - 4 foot x 8 foot x 12 inch thick slab.
3] 1 - concrete slab at end of conveyor.

TOP-OFF HOPPER FOUNDATIONS
1] Remove 10 foot x 40 foot, 8 inch thick concrete foundation & misc. conduit.

LOG WASHERS 1 & 2 FOUNDATIONS
1] Remove 4 each 6 inch thick slabs; 24 foot x 20 foot, 15 foot x 15 foot, 15 foot x 15 foot and 12 foot x 10 foot.

MISCELLANEOUS SYSTEMS REMOVAL:

SEPTIC TANKS/SYSTEMS
1] 2 - 1000 gallon concrete septic tanks (Offices/Scale and Laboratory).

DREDGE FEED SUPPLY TUNNEL
1] 1 - 277 foot x 14 foot diameter corrugated tunnel with concrete bottom and outside slab.

DRAINAGE CULVERTS
1] 7 - 8 inch diameter x 40 foot long corrugated culverts.
2] 1 - 6 inch diameter x 40 foot long corrugated culvert.

MAIN WATER SUPPLY LINE (PARTIALLY BURIED)
1] 1 - 30 inch diameter steel piping x 1,500 foot long.

WASTE WATER DISCHARGE PIPING (PARTIALLY BURIED)
1] 1 - 18 inch diameter steel piping x 1,000 foot long.

OLD HOT PLANT TANKS AND FOUNDATIONS
1] Remove two vertical tanks and conveyor.
2] Remove the following concrete foundations:
   a) 8 foot x 8 foot x 6 inch thick transformer foundation.
   b) 10 foot x 20 foot x 2 foot thick tanks' foundation.
   c) 4 foot x 6 foot x 6 inch thick conveyor foundation.
3] Remove buried electrical conduit.

MAIN OFFICE TRAILER
1] Remove underground electrical conduit and plumbing lines.

MCC CONTAINERS
1] Remove 3 each, 20 foot x 10 foot MCC containers.
OTHER CONTAINERS
1] Remove 40 foot x 10 foot storage trailer.
2] Remove box storage container.
MISCELLANEOUS ELECTRICAL
1[Remove and dispose of 20 electrical power poles

Removal of all scrap iron, belting, other rubber and miscellaneous debris from the 'boneyard' area is included in this task.

TOTAL COST TO RECLAIM PLANT SITE (demolition & clean-up).... $ 718,411.00[7]
NET SALVAGE VALUE OF FOUNDATIONS & SYSTEMS ..... <4,500.00>[7]

B) FINAL RECLAMATION OF 90± ACRE PROCESSING PLANT SITE AFTER DISASSEMBLY AND REMOVAL OF PLANT EQUIPMENT:

Description of Task:

Surfaces of the plant site will be graded to a generally flat contour by bulldozers. Since the plant facilities were erected on native virgin soils, resoiling will not be required.

a) LABOR:

A Caterpillar D-9 Bulldozer will be required to:
1] level/contour foundation depressions;
2] fill in trenches from removal of water piping and electrical conduit;
3] level/contour any remaining stockpiles.

40 hours of D-9R Bulldozer time @ $280.38/hour .....***(ITEM "C")***..... $ 11,216.00

b) REVEGETATION:

Description of Task:

Commercially available annual grasses and forbs seed mix as described in Section II above will be manually broadcast seeded over the entire 90+ acre plant site at the application rate of 65 lbs. per acre for a total of 5,850 lbs. at a seed mix cost of $21.38 per lb. for a total materials cost of $125,073.00 Manual labor broadcast/equipment cost of $55.00 per hour per acre for a total of $4,950.00 for the plant site area.

Cost of revegetation of plant site .....***(ITEM "D")***.... $130,023.00

7 Refer to Enclosure No. 3; Dave Amarel Enterprises (formerly AAA Salvage, Inc.) demolition estimate.

No other plant site restoration costs are anticipated. In the event of liquidation of the plant facilities/equipment, an onsite auction is the only feasible manner by which to sell the facilities/equipment to maximize salvage value. It is not anticipated that any temporary off-site storage or transportation would be required.

1. TOTAL COST TO RECLAIM PLANT SITE (demolition & clean-up)... $ 718,411.00[7]
2. NET SALVAGE VALUE OF FOUNDATIONS & SYSTEMS ..... <4,500.00>[7]
3. NET SALVAGE VALUE OF PLANT STRUCTURES/EQUIPMENT... <4,568,160.00>[8]
4. NET SAVAGE VALUE OF ROHR CLAMSHELL DREDGE ..... <2,848,500.00>[9]
5. SUBTRACT LINES 2, 3 & 4 FROM LINE 1 .....$<6,702,749.00>

Therefore, the cost of removal of plant structures and equipment would be off-set by the salvage value.

IV. MISCELLANEOUS COSTS

No miscellaneous costs.

V. MONITORING

After completion of reclamation activities, a relatively flat land contour with ponds will remain. Historically, volunteer riparian growth usually establishes within 6 to 8 months of inactivity around the circumference of the ponds in the Goldfields. Areas above the water table which are revegetated should not require follow-up monitoring based upon the demonstrated success of revegetation completed on the subject property by Cal Sierra Development, Inc. Despite this, monitoring is proposed for five (5) years after reclamation at $2,000.00 per year for a total of $10,000.00. After initial seeding/revegetation, no irrigation is required.

VI. SUPERVISION/PROFIT & OVERHEAD/CONTINGENCIES/MOBILIZATION

Supervisory time has been included in this estimate at 4.3%, profit/overhead at 8.6%, contingencies at 7% and mobilization costs at 3%.

VII. SUMMARY OF COSTS

Total of all Primary Reclamation Activities Costs .....*(ITEMS A & C)*.....	$430,249.00
Total of all Revegetation Costs .....*(ITEMS B & D)*.....	$438,542.00
Total of all Plant Structures & Equipment Removal Costs	$ -0-
Total of all Miscellaneous	$ -0-
Total of Monitoring	$ 10,000.00
Total of Direct Costs	**$878,791.00**

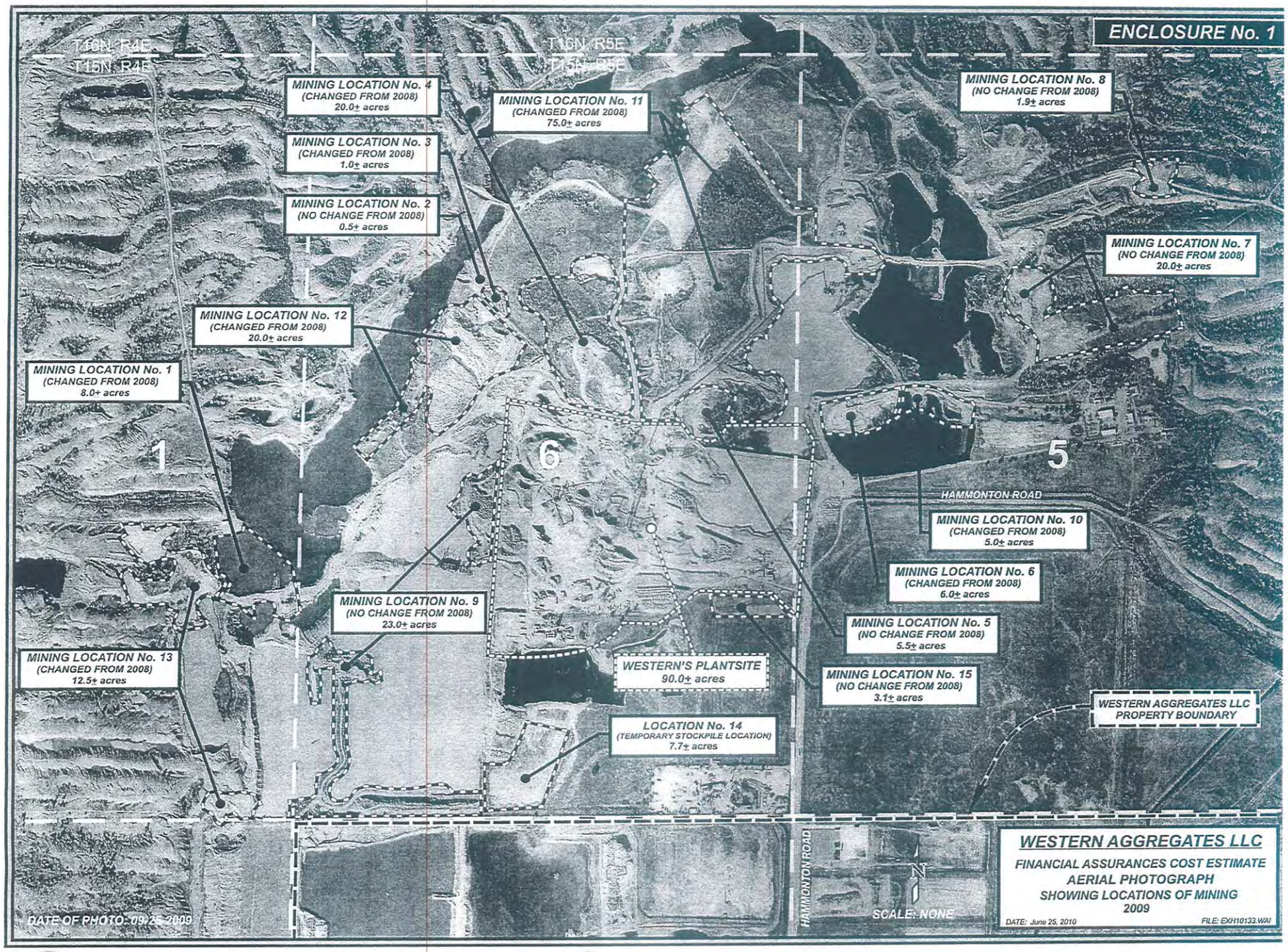
8 Refer to Enclosure No. 4; Compass Equipment, Inc. plant/equipment salvage value estimate.

9 Refer to Enclosure No. 5; Rohr Corporation clamshell dredge salvage value estimate.

Total of Direct Costs	**$878,791.00**
Supervision (4.5%)	$ 39,546.00
Profit/Overhead (9.2%)	$ 80,849.00
Contingencies (7%)	$ 61,516.00
Mobilization (3%)	$ 26,364.00
Total of Indirect Costs	**$208,275.00**
Total of Direct and Indirect Costs	$1,087,066.00
Lead Agency Administrative cost (@15%)	163,060.00
Total Estimated Cost of Reclamation	**$1,250,126.00**

ENCLOSURE No. 1

2009 Aerial Photograph of Mining Locations


ENCLOSURE No. 1
T16N, R4E
T15N, R4E
T16N, R5E
T15N, R5E
MINING LOCATION No. 4
(CHANGED FROM 2008)
20.0± acres
MINING LOCATION No. 3
(CHANGED FROM 2008)
1.0± acres
MINING LOCATION No. 2
(NO CHANGE FROM 2008)
0.5± acres
MINING LOCATION No. 11
(CHANGED FROM 2008)
75.0± acres
MINING LOCATION No. 8
(NO CHANGE FROM 2008)
1.9± acres
MINING LOCATION No. 7
(NO CHANGE FROM 2008)
20.0± acres
MINING LOCATION No. 12
(CHANGED FROM 2008)
20.0± acres
MINING LOCATION No. 1
(CHANGED FROM 2008)
8.0+ acres
1
6
5
HAMMONTON ROAD
MINING LOCATION No. 10
(CHANGED FROM 2008)
5.0± acres
MINING LOCATION No. 6
(CHANGED FROM 2008)
6.0± acres
MINING LOCATION No. 9
(NO CHANGE FROM 2008)
23.0± acres
MINING LOCATION No. 5
(NO CHANGE FROM 2008)
5.5± acres
MINING LOCATION No. 13
(CHANGED FROM 2008)
12.5± acres
WESTERN'S PLANTSITE
90.0± acres
MINING LOCATION No. 15
(NO CHANGE FROM 2008)
3.1± acres
WESTERN AGGREGATES LLC
PROPERTY BOUNDARY
LOCATION No. 14
(TEMPORARY STOCKPILE LOCATION)
7.7± acres
HAMMONTON ROAD
N
SCALE: NONE
DATE OF PHOTO: 09-25-2009
WESTERN AGGREGATES LLC
FINANCIAL ASSURANCES COST ESTIMATE
AERIAL PHOTOGRAPH
SHOWING LOCATIONS OF MINING
2009
DATE: June 25, 2010
FILE: EXH10133.WAI

ENCLOSURE No. 2

S & S Seeds, Inc.
Seeds/Forbs pricing
Dated July 15, 2010

S&S SEEDS

July 15, 2010

TO:	FAX NUMBER:
Phillip	
COMPANY:	PHONE NUMBER:
Philip C Sutherling Consultants	
RE:	EMAIL ADDRESS:
Pricing	

Dear,

Following please find the seed mix for the above referenced project:

Species	$/lb
Avena Sative	0.50
Dactylic glomeratus	3.75
Bromus hordeaceus	5.00
Vicia dasycarpa, Lana	2.50
Trifolium incarnatum, Crimson	2.50
Melilotus indicus	6.50
Elymus glaucus	12.50
Elymus elymoides	45.00
Baccharis pilularis	19.00
Heteromeles arbutifolia	15.00

Please contact us for further assistance.

Sincerely,

Gilbert Barajas
S&S Seeds
6155 Carpinteria Ave
Carpinteria, CA 93013

ENCLOSURE No. 3

David Amarel Enterprises Demolition Proposal
Dated August 5, 2010

August 5, 2010

DAVE AMAREL, ENTERPRISES
1120 Meadow Avenue
Yuba City, CA 95991
Cell Phone: 530-674-3434

Western Aggregrates LLC
4711 Hammonton Road
Marysville, CA 95901

Attn: Phil Sutherling

Dave Amarel, Enterprises hereby proposes labor and equipment services for the demolition and removal of the following items from Western Aggregates LLC Yuba Goldfields aggregate plant facility based upon the condition of the plant facilities during my inspection tour on July 27, 2010.

PLANT STRUCTURES AND EQUIPMENT REMOVAL

Description of Task:

BUILDINGS DEMOLITION $49,575.00

Demolish and remove the following buildings and miscellaneous buried conduit:

1) Scale House (20ft. x 20 ft. stick frame construction)
2) Laboratory Facility (15 ft. x 30 ft. stick frame construction)

PORTABLE BUILDINGS - Disconnect, remove, and dispose
Of the following portable buildings:

1) Main Office trailer (12 ft. x 60 ft.)
2) Staff Office trailer (12 ft. x 60 ft.)
3) Storage trailer (12x30 ft.)

SCALE HOUSE FOUNDATION $ 9 ,450.00

1) 20 ft. x 20 ft., 4 inch thick slab w/wiring and plumbing.

LABORATORY FACILITY FOUNDATION $ 8,925.00

1) 15 ft. x 30 ft., 4 inch thick slab w/wiring and plumbing

WEIGH SCALES FOUNDATION $21,000.00

1) 2 each, 70 ft. x 8 ft. foundations with 2 ft. deep footings at each end and center.
2) Remove new approach concrete apron 16 ft. x 60 ft.

NEW WEIGH SCALES FOUNDATIONS $ 4,725.00

1) 1 each, 70 ft. x 10 ft. foundations with 2 ft. deep footings at each end and center.

PRIMARY FEEDER/HOPPER FOUNDATION $ 10,185.00

1) 15 ft. x 30 ft. x 8 inch thick slab

WET SCREENING PLANT FOUNDATION $ 38,036.00

1) Primary Screening Tower - 30 ft. x 30 ft. x 18 inch thick slab w/4 ft. deep footings.
2) Secondary Screening Tower - 20 ft. x 30 ft. x 15 inch thick slab w/ 4 ft. deep footings.

DRY SCREENING PLANT FOUNDATIONS $ 27,615.00

1) Primary Classifying Screen - 30 ft. x 30 ft., 18 inch thick slab w/4 ft. deep footings.
2) Primary and Secondary Crushers - 50 ft. x 20 ft. , 18 inch thick slab w/4 ft. deep footings.

CONVEYOR SUPPORT FOUNDATIONS $ 22,050.00

1) 20 each; 8 ft. x 2 ft.; 12 inch thick slab.

REPAIR SHOP FACILITIES FOUNDATION $ 15,050.00

1) 40 ft. x 60 ft.; 8 inch thick slab w/aprons.

REFUELING FACILITY FOUNDATIONS $ 21,000.00

1) 40 ft. x 36 ft.; 8 inch thick pad.
2) 2 slabs; 15 ft. x 40 ft.; 8 inch thick pad.
3) Remove concrete aprons around fuel island.
4) Roof and Support Beams.

MISCELLANEOUS ITEMS

TOP-OFF HOPPER FOUNDATIONS	$ 3,675.00

1) Remove 10 ft. x 40 ft. concrete foundation.
2) Remove miscellaneous electrical conduit.

SEPTIC TANK/SYSTEMS	$ 23,100.00

1) 2 - 1000 gallon concrete septic tanks (Offices/Scales and Laboratory)

OLD HOT PLANT TANKS AND FOUNDATIONS	$ 8,925.00

1) Remove two vertical tanks and conveyor.
2) Remove the following concrete foundations.
   a) 8 ft. x 8 ft. Transformer foundations.
   b) 10 ft. x 20 ft. vertical tanks foundations.
   c) 4 ft. x 6 ft. conveyor foundation.
3) Remove buried electrical conduit.

DRAINING CULVERTS	$ 5,197.00

1) 6 inch x 40 ft. long corrugated culvert.
2) 8 inch x 40 ft. long corrugated culvert.

MAIN WATER SUPPLY LINE (PARTIALLY BURIED)	$ 7,297.00

1) 1- 30 inch diameter steel piping x 1,500 ft. long

WASTE WATER DISCHARGE PIPING (PARTIALLY BURIED)	$ 6,248.00

1) 1 - 18 inch diameter steel piping x 1,000 ft. long.

MAIN OFFICE TRAILER	$ 6,500.00

NEW SLAB@MAINTENANCE SHOP 15 ft. x 15 ft. x 6 inches, 18 ft. x 16 ft. x 6 inches.	$ 18,000.00

TAIL PULLEY CONCRETE SLABS (6 each)15 ft. x 10 ft. x 6 inches $3,500=$ 21,000.00

NEW 10 ft. x 20 ft. MCC CONTAINER (3 each).	$1,900.00=$ 5,700.00
10 ft. x 40 ft. TRAILER	$ 800.00
C - 104 TUNNEL 277 ft. x 14 ft. METAL PIPE WITH CONCRETE BOTTOM INSIDE W/OUTSIDE SLAB	$45,000.00
LW1 AND LW2 20 ft. x 24 ft. x 6 inches, 10 ft. x 12 ft. x 6 inches , 15 ft. x 15 ft. x 6 inches, 15 ft. x 15 ft. x 6 inches, CONCRETE SLABS	$42,000.00
BOX CONTAINER	$ 900.00
DREDGER GFI FOUNDATION 2 ft. x 2 ft. x 21 ft. (2 each)	$ 3,500,00
Other installed items to be removed:	$14,553.00

20 Power Poles to be removed.
60 ft. x 6 inch thick concrete foundation by laboratory.
20 ft. x 6 inch thick concrete foundation by laboratory.
40 ft. x 6 inch thick concrete foundation bins.

This quote includes the removal of all scrap iron, belting and rubber and miscellaneous debris from Western Aggregates LLC 'bone yard', based upon the quantity for such scrap, etc. at the time of the July 27, 2010.

Fire Hazard of the weeds and grass may create a problem at the time of removal of some items on said listing above.

This proposal does not include the removal of any processing plant equipment; only demolishing of said product.

All work will be as specified and performed in a substantial workman-like manner. Equipment cost estimates are based upon 2010-2011 Cal Trans Labor Surcharge and Equipment Rental Rates; and labor cost estimates are based upon the 2010 General Prevailing Wage Determinations made by the California Division of Labor Statistics and Research.

CAMCO SCREENING FOUNDATION	$ 11,500.00
20 ft. x 20 ft. x 12 inches thick concrete slab	
SAND SCREEN CONCRETE SLAB	$ 12,000.00
22 ft. x 15 ft. x 12 inches thick concrete slab (2) Pillow Blocks	
CONCRETE FOOTINGS	$ 20,500.00
20 ft. x 40 ft. x 12 inches thick 4 ft. x 4 ft. x 12 inches thick	
CRUSHER FOUNDATION	$ 12,500.00
20 ft. x 25 ft. x 12 inches thick	
17 PILLOW BLOCKS	$ 22,500.00
4 ft. x 8 ft. x 12 inches 10 ft. x 20 ft. x 16 inches concrete slab holds up conveyor from dredger.	
CONCRETE SLAB AT END OF DREDGER CONVEYOR	$ 13,500.00

EXCLUSIONS: OWNERS and/or AGENTS of the subject property in this proposal will be responsible for the following:

1. Closure and or capping of any and all utilities to the structures and floors and foundations.

2. Marking out the locations of the septic tanks and leach lines; if applicable.

3. Any and all permits pertaining to the demolition services quoted herein.

4. OWNERS and/or AGENTS shall be responsible to notify Dave Amarel, Ent. Of any and all toxic, contaminated or HAZARDOUS materials; including asbestos; located on said property PRIOR to the commencement of the demolition or cleanup of said property.

5. If any HAZARDOUS materials are found to exist, OWNERS and/or AGENTS will be responsible for the removal and cleanup for such materials at OWNERS and/or AGENTS expense.

Dave Amarel, Ent. has all salvage rights to any and all materials from said property.

All agreements are contingent upon weather, accidents, strikes, or delays beyond the control of Dave Amarel, Ent.

This proposal is goof for one (1) one year from August 5, 2010.

There is very little salvage in this proposal. It mostly consists of wood and concrete; with some metal pipes.

This project will take an estimated 8 months to complete, conditioned upon all plant processing equipment being removed from the property at the time the project is commenced. This project scheduled is also conditioned upon no interference from other contractors or OWNERS/AGENTS.

The salvage value of said project is estimated per market prices as of August 5, 2010.

Total Price of demolition/cleanup services----------$634,411.00

Disposal Fee for Concrete, Wood, and Rubber----------$ 84,000.00

Total $718,411.00

Minus Estimated Metal Salvage Deductible----------$ 4,500.00

Total $713,911.00

By: Dave Amarel, Sr., President

Agreed & Accepted By:

Date:

ENCLOSURE No. 4

Compass Equipment, Inc. Salvage Value Estimate
Dated July 15, 2010

COMPASS EQUIPMENT INC.
For the Aggregate Processing and Recycling Industries

July 15, 2010

WESTERN AGGREGATES, INC.
P.O. Box 829
Marysville, CA 95901

Attn: Mr. Lloyd Burns - President

Dear Mr. Burns

At the request of Phil Sutherling, I have reviewed the 2008 appraisal regarding the liquidation value of the crushing and screening equipment located at your sand and gravel plant on Hammonton Rd.

Tom Hamp and Phil Sutherling provided me an updated equipment list and advise me that there are no additions or deletions of equipment other than those included in my revised list that is included. The equipment continues to be maintained in good operating condition. Therefore, my estimation of the liquidation value of the equipment currently located and operating at the site is $4,568,160.00. This figure represents my opinion only and should not be interpreted as an offer to purchase or a guaranteed sales value. Changing market and economic conditions can greatly affect the value of this type of equipment.

If you have any questions, please feel free to call me.

Sincerely,

Ron Moras, Vice President - Secretary
Compass Equipment Inc.

WESTERN AGGREGATES LLC
AGGREGATE PLANT EQUIPMENT

WA-item #	Description	As-Is Value
C-1	42" x 525' Conveyor	$ 31,000.00
C-2	30" x 155' Conveyor	10,000.00
C-3	30" x 595' Conveyor	26,000.00
C-4	30" x 250' Conveyor	12,500.00
C-5	30" x 218' Conveyor	10,900.00
C-6	24" x 160' Conveyor	9,000.00
C-7	30" x 255' Conveyor	13,500.00
C-8	30" x 200' Conveyor	12,000.00
C-9	36" x 150' TeleStacker	165,000.00
C-10	36" x 512' Conveyor	28,160.00
C-11	36" x 290' Conveyor	18,000.00
C-12	36" x 300' Conveyor	18,000.00
C-13	42" x 130' Conveyor	9,100.00
C-14	42" x 320' Conveyor	20,000.00
C-15	42" x 50' Conveyor	8,000.00
C-16	42" X 72' Conveyor	9,000.00
C-17	30" x 470' Conveyor	23,000.00
C-18	36" x 245' Conveyor	7,000.00
C-19	36" x 102' Conveyor	9,000.00
C-20	36" x 233' Conveyor	6,000.00
C-2!	36" x 75' Conveyor	7,500.00
C-22	30" x 252' Conveyor	13,500.00
C-23	30" x 47' Conveyor	4,500.00
C-24	30"x 250' Conveyor	13,500.00
C-25	24" x 55' Conveyor	5,000.00
FD-1	Feeder	2,000.00
FD-2	Feeder	2,000.00
FD-3	Feeder	2,000.00
FD-4	Feeder	2,000.00
FD-5	Feeder	2,000.00
FD-6	Feeder	2,000.00
2-C-07	42" x 150' Conveyor	250,000.00
2-C-08	42" x 400' Conveyor	135,000.00
2-C-09	42" x 355' Conveyor	170,000.00
2-C-10	42" x 655' Conveyor	245,000.00
2-C-11	42" x 800' Conveyor	275,000.00
2-C-12	42" x 750' Conveyor	255,000.00
2-C-13	42" x 2,500' Conveyor	495,000.00
2-FD-01	36" x 12' Belt Feeder	60,000.00
2-FD-02	36" x 12' Belt Feeder	60,000.00
2-FD-03	36" x 12' Belt Feeder	60,000.00
2-FD-04	36" x 12' Belt Feeder	60,000.00

C-104	42" x 268' Tunnel Conveyor	400,000.00
C-26	36" x 106' Dust Hopper Conveyor	50,000.00
R1999A	36" x 18' Reclaim Hopper Conveyor	4,000.00
C-27	36" x 60' Conveyor	6,500.00
C-18A-B	36" x 150' Stacker w/ 36" x 65' telescope section	120,000.00
C-18C-D	36" x 150' Stacker w/ 36" x 65' telescope section	120,000.00
C-23A	30" x 20' Conveyor	3,000.00
C-23B	30" x 14' Conveyor	3,000.00
C-2B	30" x 51' LW 2 Feed Conveyor	27,000.00
CR-1	Nordberg GP300S G Cone complete with motor and support structure	225,000.00
CR-2	Nordberg HP300 Cone Crusher complete w/ 300 hp motor and support structure	115,000.00
CR-3	Nordberg HP500 Cone Crusher complete w/ 500 hp motor and support structure	235,000.00
1 Each S-1	8' x 24' Simplicity 3 Deck Screen & Structure	60,000.00
1 Each S-2	7' x 16' Allis Chalmers 2 Deck Screen & Structure	20,000.00
1 Each S-3	8' x 20' Metso 3 Deck Screen & Structure	100,000.00
1 Each S-4	8' x 20' Metso 3 Deck Screen & Structure	100,000.00
1 Each LW-1	44" x 35' Twin Shaft log Washer	40,000.00
1 Each LW-2	44" x 35' Twin Shaft log Washer	200,000.00
1 Each SS-1	44" x 32' Twin Shaft Fine material Washer w/ Eagle Classifying tank and Mark V Controls	50,000.00
4 each	10 x 8 Rubber lined pumps w/ 200 hp Motor (P-1, P-2, P-7, P-8)	7,500.00
2 Each	6 x 4 Rubber Lined pump w/20 hp Motor (P-3, P-10)	1,500.00
2 Each	Turbine Pump w/ 200hp motor and plant piping	10,000.00
1 Each P-6	10 x 8 125 hp pump	3,000.00
1 Each P-9	Sump pump	2,000.00
1 Each P-11	Tunnel Washdown Pump	2,000.00
12 Each	Belt Scales	6,000.00
1 Each	Metal detector	3,000.00
3 Each	Belt Magnets	30,000.00
2 Each	Top off Conveyors - 1 and 1A	15,000.00
1 Each	Top off Conveyor – 2	7,500.00
1 Each	Top off Conveyor – 3	10,000.00
3 Each	10 x 70 Drive over truck scales @ 12,000.00 each (Scale-1, Scale-2, Scale-3)	36,000.00

TOTAL AS-IS VALUE: **$4,568,160.00**

ENCLOSURE No. 5

Rohr Corporation
GT 1000 Clamshell Dredge Salvage Value Estimate
Dated July 20, 2010

ROHR CORPORATION

July 20, 2010

Tom Hamp
Plant Manager
Western Aggregates
4711 Hammonton Road
Marysville, CA 95901

Dear Tom,

Please see the below depreciated value of your ROHR underwater mining equipment:

Pos.	Qty.	Unit	Description	Resale Value	TotalResale Value
1	1	Ea.	ROHR GT1000 Clamshell Dredge	$2,100,000.00	$2,100,000.00
2	2	Ea.	ROHR RS 12.5 Clamshell Bucket	$150,000.00	$300,000.00
3	690	Ft.	ROHR Series II Floating Conveyor	$650.00	$448,500.00
			Total Resale Value of ROHR Equipment:		$2,848,500.00

Please let me know if you have any questions.

Sincerely,

6295 Dry Fork Road, Cleves, OH 45002 **phone** 513.202.0800 **fax** 513.202.0888 www.rohrcorp.com

APPENDIX D
SLOPE STABILITY ANALYSIS REPORT

SLOPE STABILITY INVESTIGATION
PROPOSED WESTERN AGGREGATES LLC
QUARRY RECLAMATION
MARYSVILLE AREA
YUBA COUNTY, CALIFORNIA
PREPARED FOR
WESTERN AGGREGATES LLC
JOB NO. 11137-8

C.H.J. Incorporated
1355 E. Cooley Drive, Colton, CA 92324 • Phone (909) 824-7210 • Fax (909) 824-7209
15345 Anacapa Road, Suite D, Victorville, CA 92392 • Phone (760) 243-0506 • Fax (760) 243-1225
77-564A Country Club Drive, Suite 122, Palm Desert, CA 92211 • Phone (760) 772-8234 • Fax (909) 824-7209

April 19, 2011

Western Aggregates LLC
4711 Hammonton Road
Marysville, California 95901
Attention: Mr. Lloyd Burns

Job No. 11137-8

Dear Mr. Burns:

Attached herewith is the Slope Stability Investigation report, prepared for the proposed reclamation of Western Aggregates LLC Quarry, located in the City of Marysville, Yuba County, California.

This report was based upon a scope of services outlined in our proposal, dated January 14, 2011, and other written and verbal communications.

We appreciate this opportunity to provide geotechnical services for this project. If you have questions or comments concerning this report, please contact this firm at your convenience.

Respectfully submitted,
C.H.J., INCORPORATED

Jay J. Martin, E.G.
Vice President

JJM/FY/:jm/ndt

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SLOPE STABILITY INVESTIGATION
PROPOSED WESTERN AGGREGATES
QUARRY RECLAMATION
MARYSVILLE AREA
YUBA COUNTY, CALIFORNIA
PREPARED FOR
WESTERN AGGREGATES LLC
JOB NO. 11137-8

INTRODUCTION

A slope stability investigation has been performed by this firm for the proposed reclamation of the Western Aggregates LLC Yuba County quarry in the Marysville area, Yuba County, California. The purpose of this investigation was to explore and evaluate the geotechnical conditions at the subject site, analyze the stability of the proposed reclamation slopes, and provide appropriate geotechnical recommendations for design and construction of the proposed reclamation slopes. This report includes data collected and analyzed in 2006 and 2007.

To orient our investigation at the site, a draft Reclamation Plan (one sheet), dated March 2011, prepared by Lilburn Corporation, was furnished for our use. The approximate location of the site is shown on the attached Index Map (Enclosure "A-1").

A draft copy of a Sand and Gravel Geologic Review of the site, conducted by Beck and Associates GeoConsultants, Inc. (2003), was furnished for our use. We also reviewed a geologic report (Ford, 1992) and a slope stability analysis (Kleinfelder, 2003), both prepared for the Hallwood site located on the northerly side of the Yuba River, north of the site.

The results of our investigation and slope stability analysis, together with our conclusions and recommendations, are presented in this report.

SCOPE OF SERVICES

The scope of services provided during this slope stability investigation included the following:

- Review of published and unpublished literature and maps
- Review and analysis of stereoscopic aerial photographs flown in 2004
- A geologic field reconnaissance of the site and surrounding area, and geologic mapping of the site
- Placement of five exploratory borings within the proposed quarry area
- Logging and sampling of exploratory borings for testing and evaluation
- Laboratory testing on selected samples
- Slope stability analysis for the proposed reclamation slopes
- Evaluation of the geotechnical data to develop site-specific recommendations for construction of reclamation slopes

PROJECT CONSIDERATIONS

The reclamation plan indicates that, upon reclamation, the project site will include of five quarries mined to an average depth of approximately 100 feet below average lake surface level (-20 feet msl). This results in a maximum slope height of approximately 200 feet. Groundwater is at approximately +80 feet msl, yielding a below-water slope height of approximately 100 feet.

The quarries will form a series of lakes with some land bridges (access roads). End use of most of the site is planned as open space with riparian habitat. Two areas of the site are reserved for non-habitat use (aggregate processing and Cal-Sierra facilities).

Mining to a depth of approximately 85 feet will be conducted with a clamshell dredge. Mining below the 85-foot depth may involve a suction cutter, dragline, drag scraper, or slackline cableway excavator. The reclamation plan shows proposed slopes at an inclination of 2 horizontal to 1 vertical [2(h):1(v)]. Some portions of slopes along the southerly sides of the quarry areas (green highlight on the reclamation plan used as a base for Enclosure "A-2") will be mined to approximately 4(h):1(v) to create emergent marsh habitat. The 4(h):1(v) slopes are considered stable by inspection and are not further analyzed.

The final reclamation plan should be reviewed by the geotechnical engineer.

SITE DESCRIPTION

The site includes the existing Western Aggregates, LLC Marysville quarry and is located at 4711 Hammonton Road, Marysville, Yuba County, California. The site is bordered on the north, east, west, and southeast by undeveloped land, and on the southwest by another operating aggregate plant. The mine was operating during the course of this investigation.

The site is divided into three areas as follows: relatively undisturbed areas, mine tailings disposal areas associated with dredging activities, aggregate mining and processing areas, and Cal Sierra's plant. Natural ponds and siltation ponds occur across much of the site.

The relatively undisturbed areas are present in the southeast portion of the site and consist of fields with slightly undulating topography. The vegetation at the time of our investigation was dense grasses and weeds to 4 feet high.

The mine tailings disposal areas associated with dredging activities are typified by sinuous windrows between 20 and 50 feet high and side slopes between 1(h):1(v) and 3(h):1(v) with lakes in some of the lower valleys. It is our understanding that the dredging began in the early 1900s. Vegetation in these areas is mostly moderately sparse to moderately dense grasses and weeds to 4 feet. Several

stands of mature trees and undergrowth existed mostly in the western portion of the site. Riparian vegetation, including mature trees, brush, and bamboo, was present along some of the existing ponds.

Aggregate mining and processing areas have been stripped of vegetation and have relatively flat bottoms with stockpiles of processed aggregates and near-vertical slopes at the active mining faces. Development is limited to the aggregate processing area in the south central portion of the site and Cal Sierra's plant on the central east side of the site. Ponds present throughout this area have been increased in size and number by recent mining activities.

As part of this investigation, stereoscopic aerial photographs of the site and surrounding area, dated March 9, 2004, were reviewed. These aerial photographs show the site as similar in condition to the above description.

No other surface features pertinent to this investigation were noted.

FIELD INVESTIGATION

Drilling was initially attempted utilizing a truck-mounted hollow stem auger drill rig. Due to the preponderance of gravel and cobbles, adequate penetration of the on-site soils could not be achieved with the hollow-stem auger.

The soil conditions underlying the subject site were then explored by means of five exploratory borings drilled to a maximum depth of 200 feet below the existing ground surface with a truck-mounted dual-tube reverse air rig equipped for soil sampling. The rig utilized a Becker Hammer drill bit. The approximate locations of our exploratory borings are indicated on the attached Geologic Map (Enclosure "A-2").

Continuous logs of the subsurface conditions, as encountered within the exploratory borings, were recorded at the time of drilling by a staff geologist from this firm. Relatively undisturbed samples

were obtained by driving a split-spoon ring sampler ahead of the borings at selected levels. After the required seating of the sampler, the number of hammer blows required to advance the sampler a total of 12 inches was converted to equivalent standard penetration test (SPT) data and recorded on the boring logs. The number is the equivalent SPT N-value and has been corrected for hammer type (automatic vs. manual cathead) and sampler size (California sampler vs. SPT sampler). Relatively undisturbed as well as bulk samples of typical soil types obtained were returned to the laboratory in sealed containers for testing and evaluation.

The subsurface soils included relatively coarse materials (gravel and cobbles), as well as relatively unconsolidated lenses/layers of sand and silt. The relatively unconsolidated lithologies below the groundwater surface were subject to flowing and/or heaving during the drilling and sampling process. As a result of the coarse lithologies and flowing/heaving layers, relatively few undisturbed samples could be obtained.

Our exploratory boring logs, together with our equivalent SPT data, are presented in Appendix "B". The stratification lines presented on the borings logs represent approximate boundaries between soil types, which may include gradual transitions.

Geological field reconnaissance of the site and surrounding area and geologic mapping were also performed at the time of our field exploration.

LABORATORY INVESTIGATION

Included in our laboratory testing program were field moisture content tests on selected samples returned to the laboratory and field dry density tests on all undisturbed samples. The results are included on the boring logs. Sieve analysis, hydrometer tests, and Atterberg limit tests were performed on selected samples to aid in classifications. Direct shear tests were performed on selected relatively undisturbed samples in order to provide shear strength parameters for slope stability

evaluation. Consolidated undrained triaxial shear tests (CU tests) were also performed on two selected clayey/silty soils intended to obtain strength parameters for weaker layers. Due to the availability of undisturbed samples, triaxial shear tests were performed on remolded samples. Therefore, the triaxial strengths obtained were used for reference purposes only.

Summaries of the laboratory test results appear in Appendix "C".

SITE GEOLOGY AND SUBSURFACE SOIL CONDITIONS

The site is located in the northern portion Great Valley geomorphic province of Central California near its eastern border with the Sierra Nevada geomorphic province. The Great Valley province is characterized by a large northwest-trending, asymmetrical valley, bounded by the Sierra Nevada province on the east, and the Coast Ranges province on the west. The valley floor ranges from about sea level to about 400 feet above sea level.

The Great Valley province is filled with up to 10 vertical miles of sediment in the Sacramento Valley. These sediments range in age from Jurassic to Holocene. The sediments are derived from the weathering and transport of the surrounding granitic, metamorphic, and marine sedimentary rocks of pre-Tertiary age. The basin sediments are resting unconformably atop the Sierran Crystalline and metamorphic basement complex (Page, 1986).

The site is situated on a relatively flat, alluvial plain and fan complex, formed from terrestrial fan sediments shed from the Sierra Nevada range and transported via the Yuba River. The surficial materials exposed in the southeast portion of the site have been mapped as Quaternary - age alluvial fan deposits. The rest of the site has been mapped as tailings associated with historic mining activities (Burnett and Jennings, 1965). A Geologic Index Map is included as Enclosure "A-3".

As a part of this investigation, geologic mapping of the site was conducted on a 700-scale Draft Reclamation Plan prepared by Lilburn Corporation from aerial photography flown on December 22, 2010. Surficial units delineated in our mapping include older fan deposits (Qof) and fill differentiated into two units (f_1 and f_2). The units are briefly discussed below and are indicated on the Geologic Map (Enclosure "A-2")

FILL (f_2):

Fill (f_2) associated with aggregate mining activities was observed in the central portion of the site. The fill is comprised of large gravel to cobble-sized clasts in a silty, fine- to coarse-grained sand matrix. It should be anticipated that other areas of fill and/or disturbed soils and localized areas of deeper fill may exist.

FILL (f_1):

Fill (f_1) comprised of mine tailings associated with historic dredging activities was mapped on larege portions of the site. The tailings are comprised of layers of silty to clean, fine- to coarse-grained sand matrix with some beds containing large gravel to boulder-sized clasts.

YOUNGER ALLUVIAL DEPOSITS (Qya):

Younger alluvium on the site is comprised of bedded silty to clean, fine- to coarse-grained sand with some beds containing large gravel to cobble-sized clasts. The younger alluvium was not observed in outcrop at the site but was observed in subsurface samples collected during our exploration.

OLDER ALLUVIAL FAN DEPOSITS (Qof):

Older alluvium of probable Pleistocene age (Burnett and Jennings, 1965), comprised of bedded layers of silty to clean, fine- to coarse-grained sand matrix with some beds containing large gravel to cobble-sized clasts, was observed in the southeastern portion of the site. The upper portion of the older alluvium includes moderately- to weakly-developed argillic (clayey) and cemented soil horizons, as observed in the bank of a drainage channel near the eastern site boundary. These upper portions have a reddish-brown hue. Below the upper soils the color range is olive gray, dark gray,

blue gray, and greenish gray. The development of the reddish-brown argillic soil horizons such as those observed in the older alluvium support the interpretation that the older alluvium is Pleistocene age.

MISCELLANEOUS:

Fills associated with aggregate mining activities are relatively shallow (up to approximately 10 feet deep) except in the two silt ponds where the fill could be significantly deeper. Fills associated with mine tailings were encountered in our exploratory borings to a maximum depth of 97 feet.

Groundwater was encountered within all of our exploratory borings.

No bedrock was encountered within any of our exploratory borings to the maximum depth attained.

All of our exploratory borings were grouted with a mixture of cement and bentonite to within 5 feet of the ground surface as the drill pipe was removed. This procedure precluded observation as to the degree of caving in the borings.

A more detailed description of the subsurface soil conditions encountered within our exploratory borings is presented on the attached boring logs (Appendix "B").

FAULTING

The site is not located in an Alquist-Priolo Earthquake Fault Zone designated by the State of California to include traces of suspected active faulting. No evidence for active faulting on the site was observed during the geologic field reconnaissance, on the aerial photographs reviewed or on published geologic mapping.

The tectonics of Northern California are dominated by the interaction of the North American plate and the Pacific plate, which are apparently sliding past each other in a translational manner. In the San Francisco region the translational motion between the Pacific plate and the North American plate is partitioned out across a wide zone encompassing most of the Coast Ranges Geomorphic Provence. Less than half the slip in this zone is accommodated by the San Andreas system. The rest is distributed among the other northwest-trending strike-slip faults including the Hayward, San Gregorio, Calaveras, and Greenville (Page, 1992).

FOOTHILLS FAULT SYSTEM:

The Foothills fault system is a roughly north-northwest trending arcuate zone of mapped fault strands 5 to 35 miles wide that extends from Red Bluff south to Mariposa along the western Sierra Nevada Mountain Range. These faults mark a suture where island arcs were welded to the continent in the late Jurassic (Wong and Savage 1983) and in part reactivated as high angle normal faults by late Tertiary to Holocene-age regional extension with apparent down to the west displacements (Bryant, 1983). In the regional area of the site the Foothills fault system extends from the Prairie Creek fault zone on the west located approximately 3-1/4 miles east of the site to the Melones fault zone located approximately 38 miles east of the site. Earthquakes in the magnitude range of 5 to 6 occurred within the Foothills fault system in 1888 about 15 km northeast of Nevada City, and 10 km south of Oroville, in 1909 and 1975 (Cramer et al 1978). Trenching studies have indicated extremely low slip rates and long recurrence intervals of the potentially-active segments of this fault system (Bryant, 1983).

HAYWARD FAULT:

The Hayward fault is located approximately 91 miles west-southwest of the alignment. This is another right-lateral strike slip fault displaying historic seismic creep (Lienkaemper and Borchardt, 1992). Large historical earthquakes have occurred on this fault.

SAN ANDREAS FAULT:

The San Francisco Peninsula segment of the San Andreas fault is located approximately 101 miles west-southwest of the site. This fault is the largest and best known of the right-lateral faults comprising the surface expression of interaction between the Pacific Plate and the North American Plate.

HISTORICAL EARTHQUAKES

A map of recorded earthquake epicenters accessible online from the Northern California Seismic Network is included as Enclosure "A-4". This map includes the Northern California Seismic Network database for earthquakes with magnitudes of 4.0 or greater from 1968 through 2011. In general, the site is located within an area of California that has a relatively low seismic risk.

On August 1, 1975, an M_L 5.7 earthquake with surface rupture occurred on a segment of the Foothills fault system near Oroville, California (Bryant, 1983).

Between 1982 and 1985, a sequence of earthquakes occurred along a fold belt coincident with the Coast Ranges - Sierran Block boundary zone. The largest of these earthquakes were the moment magnitude (M_W) 5.5 New Idra earthquake in 1982, the M_W 6.5 Coalinga earthquake in 1983 and the M_W 6.1 Kettleman Hills earthquake in 1985 (Stein and Ekstrom, 1992). The Coast Ranges - Sierran Block boundary zone may have been the source of six additional Richter magnitude (M_L) 6+ earthquakes since 1850, including the approximate M_W 6.8 Vacaville-Winters earthquake of 1892 (Volpe and others, 1992) and the approximate M_W 6.3 Antioch Earthquake of 1889 (Wakabayashi and Smith, 1994).

In January of 1980, two earthquakes of M_L 5.5 and M_L 5.6 occurred on the Marsh Creek segment of the Greenville fault system. Surface rupture was reported associated with these events (Patten and Wigginton, 1992; Hart, 1981).

On July 3, 1861, an earthquake with accompanying surface rupture occurred on the Calaveras fault in the San Ramon Valley Area. Magnitude estimates for this earthquake range from M_L 5.6 to M_L 6.4 (Simpson and others, 1992). Several other mid-nineteenth century earthquakes in the general region could also have occurred on the Calaveras fault. Additionally, the August 6, 1979 M_L 5.9 Coyote Lake earthquake, the April 24, 1984 M_L 6.2 Morgan Hill earthquake and the June 13, 1988 M_L 5.1 Alum Rock earthquakes occurred on the Central Calaveras fault (Du and Aydin, 1992).

Two events of approximately M_W 7 have been ascribed to the Hayward fault (Oppenheimer and others, 1992). An event on October 21, 1868 resulted in approximately 30 miles of surface rupture. A less well known but apparently similar event on June 10, 1836 could also have occurred on the Hayward fault (Toppozada and others, 1986).

The San Francisco peninsula segment of the San Andreas fault includes the epicentral area of the great April 18, 1906 earthquake. It is likely a similar earthquake in June 1838 also occurred on this segment (Working Group on California Earthquake Probabilities, 1988). The October 12, 1989 M_W 7.1 Loma Prieta earthquake was centered on the Santa Cruz Mountains segment of the San Andreas fault, south of the San Francisco Peninsula segment.

GROUND SHAKING HAZARD

Since the Surface Mining and Reclamation Act (SMARA) does not specify a ground motion for design of reclaimed slopes, we cite the ground motion specified by the 2010 California Building Code (CBC) for new construction projects. The CBC ground motion is conservative in that it applies to human occupancy structures. It is logical that end usage for reclamation (open space), where life safety (as well as fixed improvements) is not an issue, should be subject to a lower design ground motion.

Based on our laboratory data, observation of surface exposures at the site, and the geologic setting, the site is considered to be a Type "D" soil profile according to the 2010 CBC. The anticipated

exposure period (project lifetime) for the reclaimed slopes cannot be specified at this time. The 2010 CBC establishes a design earthquake hazard level of 2 percent probability of exceedance in 50 years scaled by two-thirds for most new construction. The return period corresponding to a 2 percent probability of exceedance in a 50-year exposure period is 2,475 years. A design peak ground acceleration (PGA) value of 0.26g was calculated according to the 2010 CBC using U.S. Geological Survey Java Ground Motion Parameter Calculator - version 5.0.9 (2010). This is a design value for use in the design of CBC structures. The design value for reclaimed slopes should logically be lower.

GROUNDWATER AND LIQUEFACTION

Groundwater was encountered within all of our exploratory borings at depths between 15 and 45 feet. These depths approximately corresponded to the surface elevations of the existing bodies of water nearest each of the borings as shown on the Reclamation Plan and as observed in the field.

Available groundwater data was reviewed in order to determine estimated historic groundwater levels for the general site area. Historic groundwater elevations at wells near the site are available from Yuba County Water Agency (2006). The site is located in the South Yuba Groundwater Basin. Groundwater elevations in this basin vary as a function of water demand versus the amount of surface water deliveries. Until 1980 the basin was in an overdraft condition causing the groundwater elevations to fall. Since 1980, the basin has been in a rebound condition. The basin is approaching an equilibrium condition and is close to historic high elevations (Yuba County Water Agency, 2006).

The elevation of the groundwater beneath the site is approximately equivalent to the surface levels of the bodies of water at the site, currently between 80 and 90 feet above mean sea level. Future groundwater elevations could be highly variable based on basin management but they are not anticipated to rise significantly above current levels.

Liquefaction is a process in which strong ground shaking causes saturated soils to lose their strength and behave as a fluid (Matti and Carson, 1991). Ground failure associated with liquefaction can

result in severe damage to structures. The geologic conditions for increased susceptibility to liquefaction are: 1) shallow groundwater (less than 50 feet in depth; 2) presence of unconsolidated sandy alluvium, typically Holocene in age; and 3) strong ground shaking. All three of these conditions must be present for liquefaction to occur. The general threshold for liquefaction is a peak horizontal ground acceleration (PGA) of approximately 0.15g.

The 2010 design PGA is 0.26g. This PGA is just over the threshold for liquefaction and is relatively low when compared to more seismically active areas of the state. The predominant lithology that is less than 50 feet deep is the coarse-grained mine tailings, which are considered to have a low susceptibility to liquefaction. Further, exposure of remaining native soil profiles observed on the site are reddened, suggesting an age of late Pleistocene or older. Blowcounts obtained in the borings are high and suggestive of antiquity in the soils. Based on the relatively low anticipated seismic shaking, the coarse lithology of the materials within 50 feet of the surface, the suspected late Pleistocene age of the native soils, and the intended use of the site as open space, liquefaction is not considered to be a potential hazard to the site.

FLOODING AND EROSION

The site is in the Yuba River Valley at an approximate distance of 3,500 feet from the river channel. Upstream on the Yuba River are three dams: the Daguerre Point Dam, the Englebright Dam, and the Bullards Bar Dam. A potential for flooding of the site exists should any of these dams fail. The northern portion of the site appears to be located within an area designated by the Federal Emergency Management Agency (FEMA) as a 100-year flood zone. An evaluation of the flood potential of the site and design of drainage fall under the purview of others.

The on-site materials (sands and gravels) above the water table are moderately susceptible to wind and water erosion. Wave erosion is not anticipated to be a significant hazard, as the materials expected to be exposed at the shoreline are coarse-grained mine tailings.

SLOPE STABILITY

No evidence for landsliding on the site or in the general area was observed during the geologic field reconnaissance or on the aerial photographs reviewed. Existing slopes in the dredge tailings, up to approximately 70 feet high and inclined as steep as approximately 38 degrees, and slopes up to approximately 40 feet high and inclined as steep as approximately 45 degrees, exhibit no evidence of any deep-seated failure. These slopes are within coarse-grained tailings (fill) with a very low susceptibility to deep-seated or shallow slope failure.

The proposed quarry slopes are within fill and alluvial deposits. These materials have a low susceptibility to significant slope failure (landsliding), except when slopes have been significantly over steepened.

SLOPE STABILITY ANALYSIS

ANALYSIS METHOD:

The gross stability of slopes was analyzed under both static and seismic conditions for rotational failures using the Slide (version 6.0) computer software program (Rocscience, 2010). This program provides nine different slope stability analysis methods including Simplified Bishop Method, Simplified Janbu Method, Spencer Method, and other methods. Spencer's method was utilized for slope stability analysis as recommended by the Implementation Committee of DMG Special Publication 117 (Blake and others, 2002).

STRENGTH PARAMETERS:

Due to the non-k_0 stress conditions redistributed during the shearing process, the best laboratory test method to obtain the shear strengths for slope stability analyses is the triaxial test method using relatively undisturbed samples. For the subject project, a truck-mounted dual-tube reverse air rig with a Becker Hammer was utilized to explore the subject site. Although this rig is equipped for soil sampling, it is not capable of obtaining relatively undisturbed samples for triaxial testing. Therefore,

direct shear testing was performed on relatively undisturbed ring samples. CU tests were performed on selected remolded samples for confirming the direct shear test results.

Based on the direct shear test and CU test results, the following strength parameters were utilized in our calculations. The direct shear results were corrected by referencing CU test results and our experience. The strength parameters utilized for static slope stability analyses correspond to residual strength, while the parameters utilized for seismic stability analyses correspond to peak strength. The strength parameters of sands (SP) and gravels (GP and GM) were assumed by referencing the test results for silty sands obtained from this investigation and results of unpublished work (discussed below). Apparent cohesive strength was assumed to model the interlocking effects of the gravel, cobbles and boulders. The detailed parameters for each material type are tabulated in the following table for both static and seismic conditions.

Soil Type*	**γ (pcf)**	**Seismic c (psf)**	**Seismic Φ (°)**	**Static c (psf)**	**Static Φ (°)**
GM (AW)	135	700	38	500	36
GM (BW)	135	500	38	300	36
GP (BW)	135	500	38	300	36
SP (BW)	115	100	36	25	33
SM (AW)	112	200	36	150	32
SM (BW)	116	150	36	125	33
ML (BW)	130	1,150	22	480	27
CL (BW)	124	720	24	720	24

AW = above groundwater BW = below groundwater

Assessment of strength parameters of coarse-grained soils for use in slope stability analyses is problematic due to the large grain size relative to the size of the shear box. Therefore, alternatives to direct measurement of shear strength are required. During this investigation, we utilized back-calculation of the existing subaerial slopes to estimate the strength of the coarse-grained materials

(Enclosures "D-7" and "D-8"). The results of back-calculation for the dredge tailings (approximately 40 and 70 feet in height, respectively) indicate that the strength parameters for gravels as listed above are reasonable.

We also reviewed the report prepared by Geomatrix (June 2004), in which large-scale field strength tests (load tests) were conducted on coarse-grained soils (generally well-graded gravels with sand) that are similar to the dredge tailings comprising the upper approximately 90 feet of soils at the site. The Geomatrix data pertain to various aggregate quarries in Irwindale, California with coarse-grained soils that are similar to the dredge tailings at the site.

SLOPE STABILITY ANALYSES:

A total of three cross sections were selected to evaluate the slope stability. The details of the cross sections, including the stratification lines representing approximate boundaries between soil types, are included in Enclosure "A-5". The slope stability analyses were performed on the proposed reclaimed 2(h):1(v) cut slopes.

A horizontal seismic coefficient of 0.10 was utilized based on the relatively low design PGA obtained for the site. This area is one of the areas of California with very low ground shaking potential. Dr. Nicholas Sitar, Professor of Civil and Environmental Engineering at U.C. Berkeley, recommends a seismic coefficient of 1/3 to 1/2 of PGA for seismic earth pressure analyses (personal communication, A.S.C.E. Seminar, Long Beach, April 23, 2008). Our K_h of 0.10 falls within this recommendation.

Acceptable factors of safety were calculated in all sections. The detailed results of slope stability analyses are included as Enclosures "D-1" through "D-6". Results are summarized below.

Cross Section	Cut Slope	Static FS	Seismic FS
X-X'	2(h):1(v)	1.49	1.27
Y-Y'	2(h):1(v)	1.43	1.23
Z-Z'	2(h):1(v)	1.44	1.15

It should be noted that the surficial stability of cut slopes may be controlled by the variation of the groundwater surface. Local failures near the water surface are anticipated.

To confirm the apparent strength parameters, back calculations were performed on existing onsite slopes in the dredge tailings. These slopes were shown to have a static factor of safety of 1.78 and 1.69 (Enclosures "D-7" and "D-8", respectively), agreeing with the stability analysis methods and parameters used above.

CONCLUSIONS

Based upon the findings of our geologic field observations and evaluations, as well as the results of our slope stability calculations, it is the opinion of this firm that the reclaimed final slopes as recommended in this report are stable, provided the recommendations contained in this report are implemented.

Based upon our analyses, the proposed 2(h):1(v) reclamation slopes up to approximately 200 feet in height are suitably stable against gross failure for the anticipated long-term conditions, including the effects of seismic shaking. Reclaimed slopes no steeper than 2(h):1(v) up to a maximum height of 200 feet are recommended to provide adequate stability against gross failure under the anticipated conditions of shallow groundwater and seismic shaking.

No evidence for active faulting was observed on the site during this investigation. No groundwater barriers are known to exist on the site.

The historic high groundwater elevation is considered to be approximately equal to the current elevation as expressed by the surface of the existing bodies of water at the site. Ponding exists across the site and is anticipated in all proposed quarries.

RECOMMENDATIONS

SEISMIC SHAKING HAZARDS:

Low seismic shaking of the site can be expected to occur during the lifetime of the proposed mining and reclamation. This potential has been considered in our analyses and evaluation of slope stability.

RECLAIMED (FINAL) CUT SLOPE CONSTRUCTION:

Reclaimed slopes are expected to be within and cut into dredge tailings and native alluvial materials.

The reclamation plan shows all proposed cut slopes at an inclination of 2(h):1(v) or flatter and is in accordance with our recommendations.

Any large, unstable boulders on mine slopes should be removed or stabilized prior to the end of reclamation.

SLOPE PROTECTION:

Slopes should be protected with berms and/or levees as necessary to prevent slope erosion in the areas where natural slopes drain onto the reclaimed slopes.

Surface water should be prevented from ponding above the slope and from flowing over the slope faces.

EROSION AND DRAINAGE:

Runoff should not be allowed to flow over natural, cut, or fill areas in such a way as to cause erosion. Finished soil slopes should be planted with drought resistant native vegetation to protect from wind and rain. Watering to maintain slopes is not recommended.

ALTERNATE END USES OF THE SITE:

This report and the investigation performed in order to prepare this report are intended to be suitable for mine reclamation only. Future uses of the site for anything other than reclamation of the mine as open space are beyond the scope of this investigation and report. If other uses of the site are planned or considered, then an additional investigation to address other end uses should be conducted.

LIMITATIONS

C.H.J., Incorporated has striven to perform our services within the limits prescribed by our client, and in a manner consistent with the usual thoroughness and competence of reputable geotechnical engineers and engineering geologists practicing under similar circumstances. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents, or otherwise supplied.

This report reflects the testing conducted on the site as the site existed during the investigation, which is the subject of this report. However, changes in the conditions of a property can occur with the passage of time, due to natural processes or the works of man on this or adjacent properties. Changes in applicable or appropriate standards may also occur whether as a result of legislation, application, or the broadening of knowledge. Therefore, this report is indicative of only those conditions tested at the time of the subject investigation, and the findings of this report may be invalidated in part or in full by changes outside of the control of C.H.J., Incorporated.

The conclusions and recommendations in this report are based upon observations performed and data collected at separate locations, and interpolation between these locations, carried out for the project

and the scope of services described. It is assumed and expected that the conditions between locations observed and/or sampled are similar to those encountered at the individual locations where observation and sampling was performed. However, conditions between these locations may vary significantly. Should conditions be encountered in the field, by the client or any firm performing services for the client or the client's assign, that appear different than those described herein, this firm should be contacted immediately in order that we might evaluate their effect.

If this report or portions thereof are provided to contractors or included in specifications, it should be understood by all parties that they are provided for information only and should be used as such.

The report and its contents resulting from this investigation are not intended or represented to be suitable for reuse on extensions or modifications of the project, or for use on any other project.

CLOSURE

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please do not hesitate to contact this office.

Respectfully submitted,
C.H.J., INCORPORATED

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FY/JJM/:jm/ndt

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AERIAL PHOTOGRAPHS REVIEWED

Aerial Data Inc., March 9, 2004, Black and White Aerial Photograph Numbers 1-1, 1-2 and 1-3. Scale: 1"=3,000'±.

APPENDIX "A"

GEOTECHNICAL MAPS AND CROSS SECTIONS

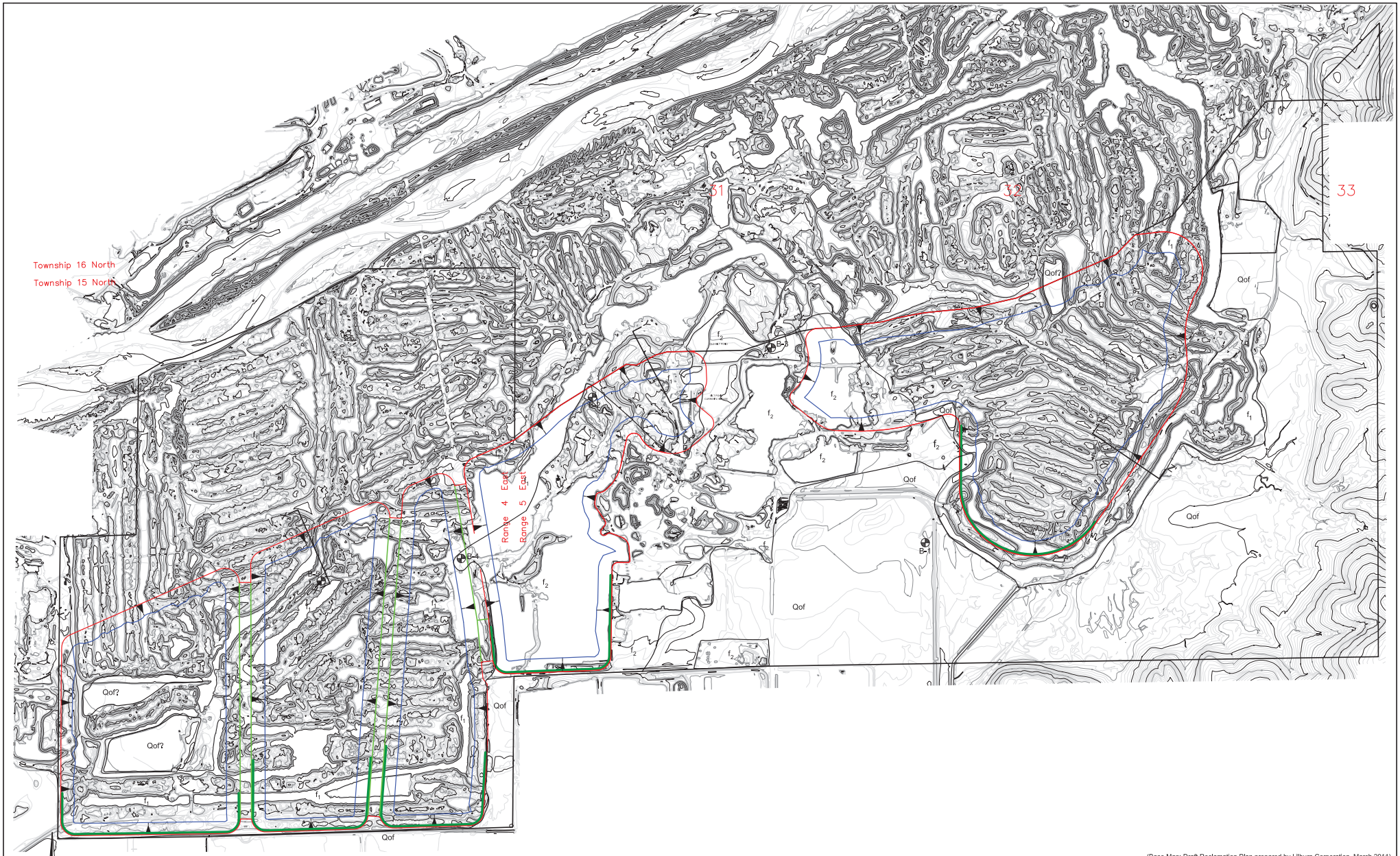
-N-

SCALE: 1"= 3,000'

INDEX MAP

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-1"
DATE: APRIL 2011		JOB NUMBER 11137-8

C.H.J. Incorporated



NOTE: Aerial photograph background is not visible on the PDF version of this map.

(Base Map: Draft Reclamation Plan prepared by Lilburn Corporation, March 2011)

-N-

SCALE: 1"=700'

0 700 1400

GEOLOGIC UNITS:

f_2 - Recent fill

f_1 - fill associated with historic dredging activities; Includes some undifferentiated dredge tailings of more recent age

Qoa - old fan deposits

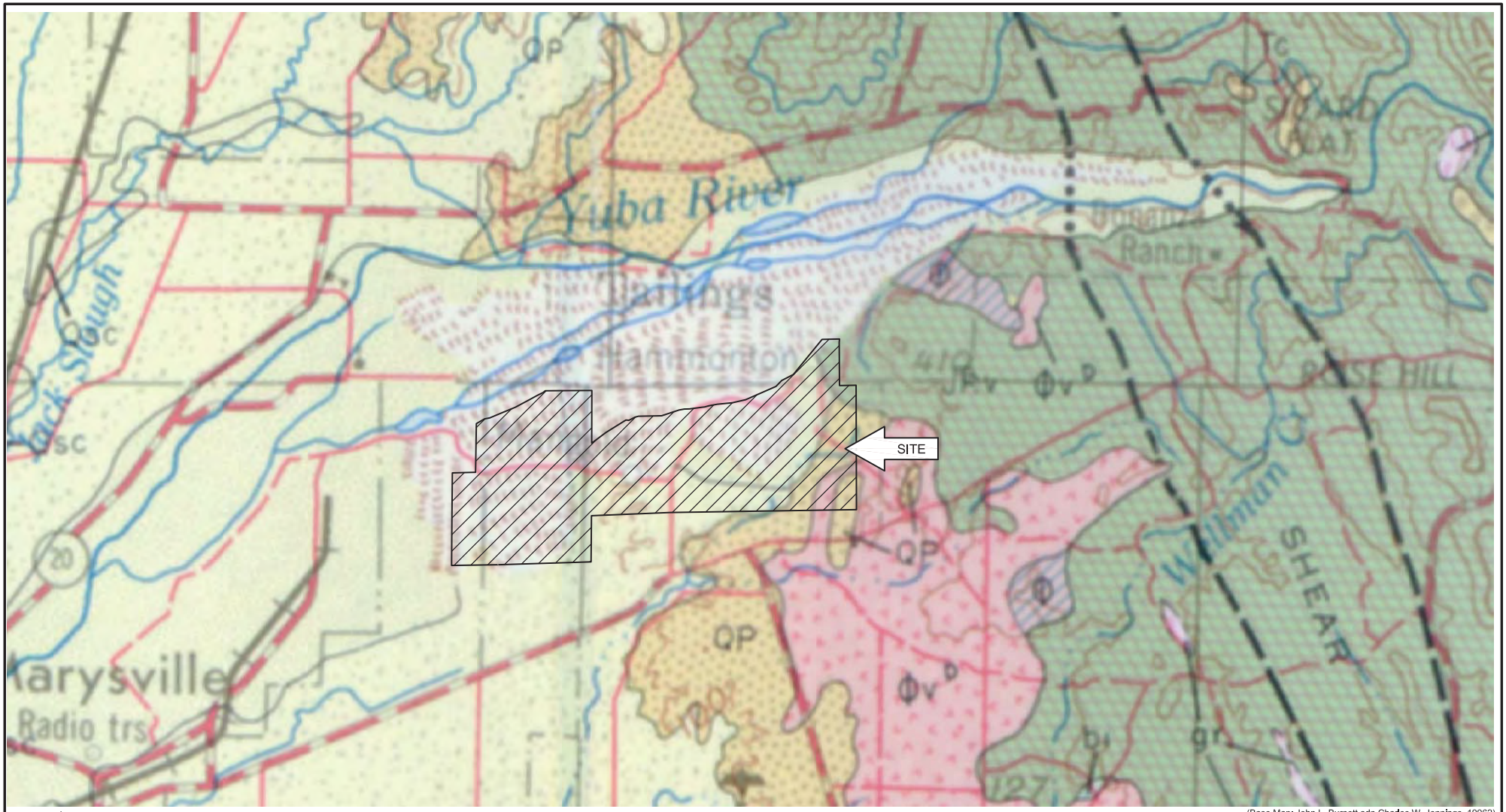
B-5 Location of Geotechnical Boring (2006)

Approximate geologic contact

Z Z' Geologic Cross Section

GEOLOGIC MAP

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-2"
DATE: APRIL 2011		JOB NUMBER 11137-8



(Base Map: John L. Burnett adn Charles W. Jennings, 19962)

N

SCALE: 1"= 1mile

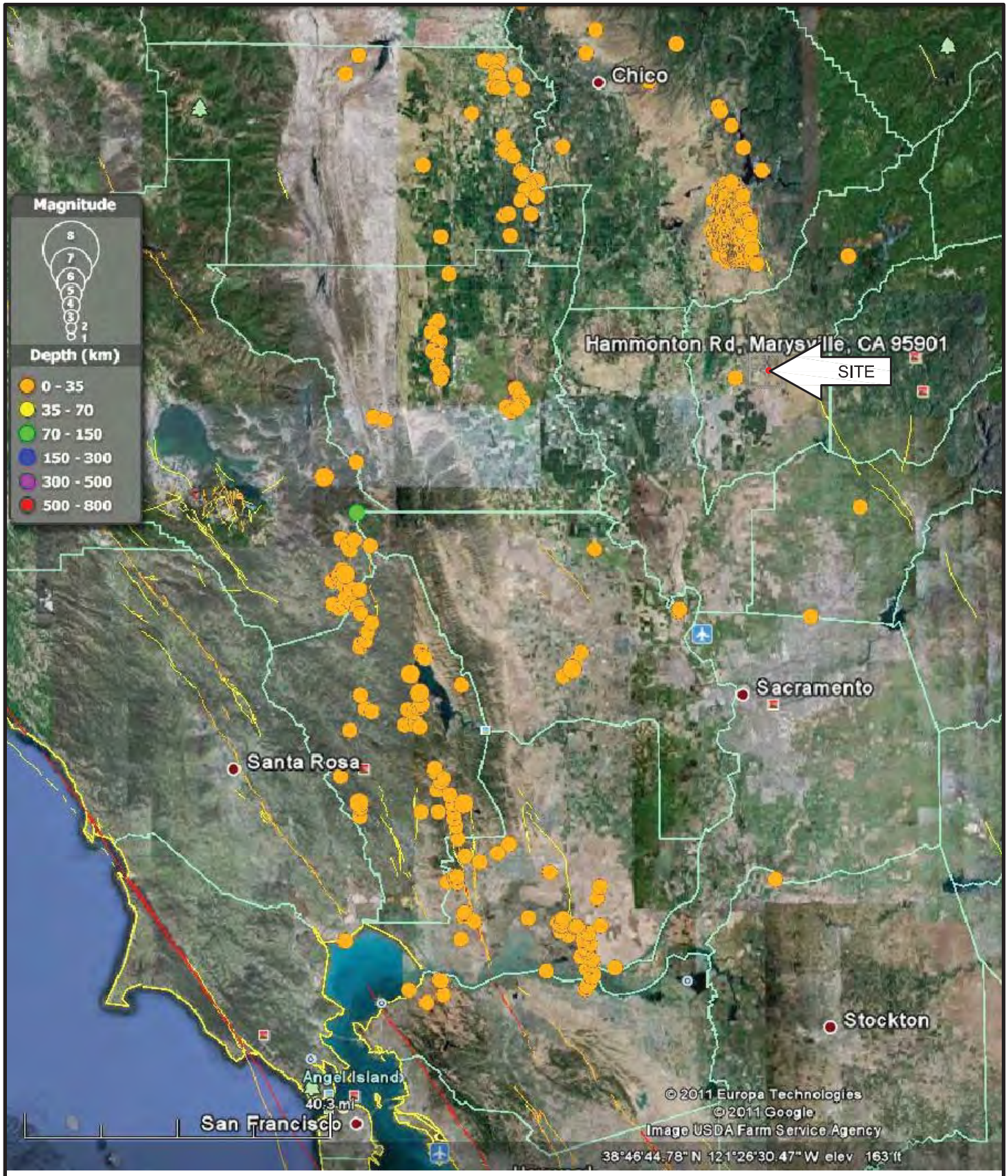
GEOLOGIC UNITS:

Qf - Quarternery fan deposits
Qp - Plio-Pleistocene nonmarine
Φ - Oligocene marine
Φv - Oligocene volcanic
JTRv - Jura-Trias metavolcanic rocks

Contact, separates mapped geologic units

Fault, dashed where approximate, dotted where concealed

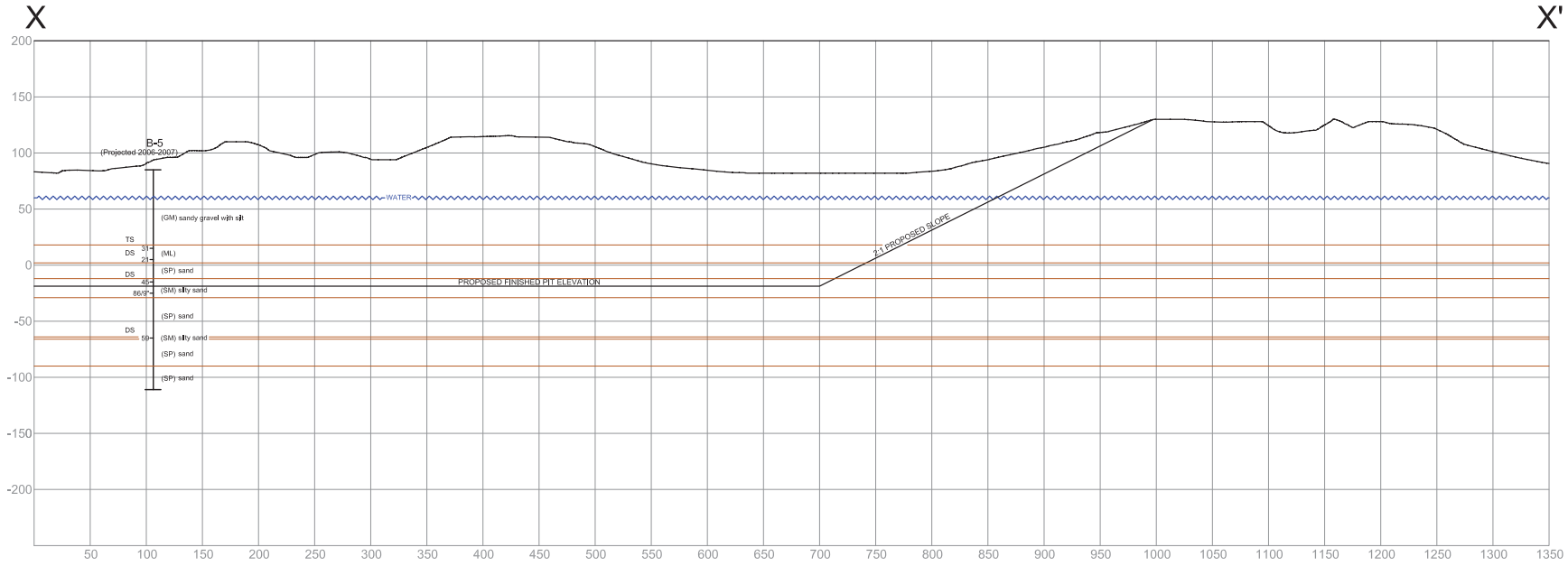
GEOLOGIC INDEX MAP		
FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-3"
DATE: APRIL 2011		JOB NUMBER 11137-8
		C.H.J. Incorporated



EARTHQUAKE EPICENTER MAP

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-4"
DATE: APRIL 2011		JOB NUMBER 11137-8

C.H.J. Incorporated



DS - Direct shear test
TS - Triaxial shear test

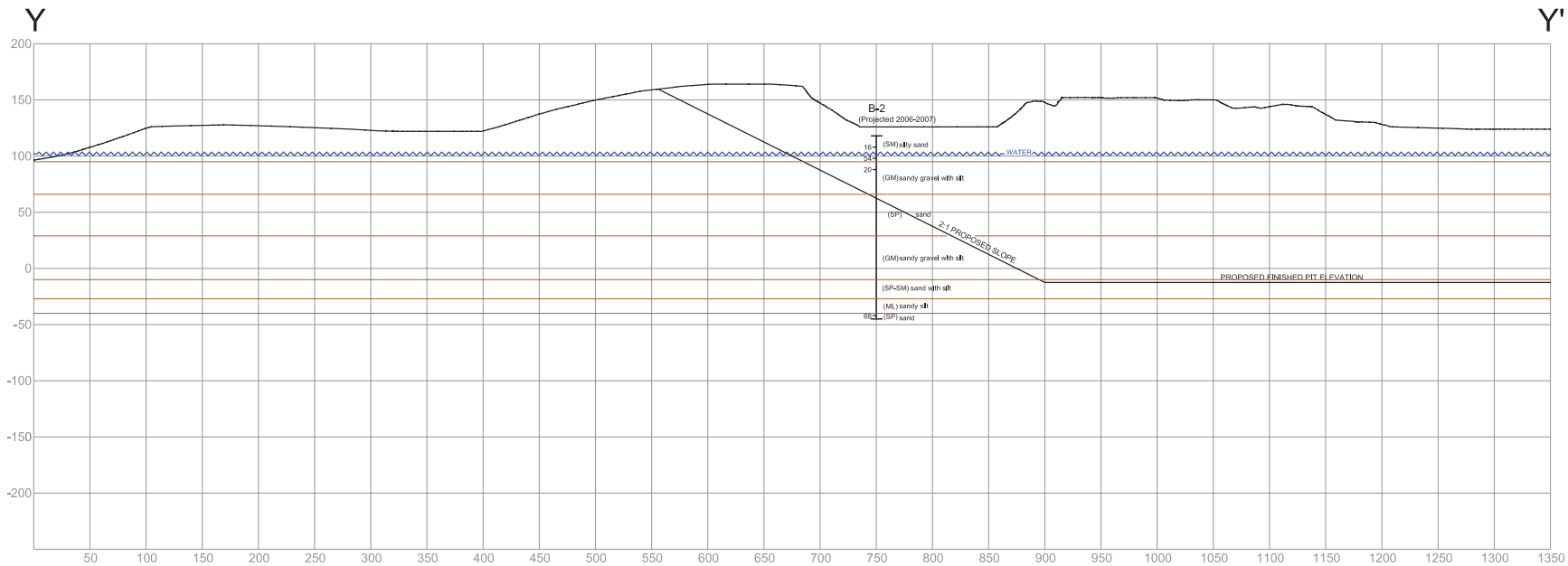
contact, separates lithologic units

SCALE 1"= 100'

GEOLOGIC CROSS SECTION X-X'

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-5"
DATE: APRIL 2011		JOB NUMBER 11137-8

C.H.J. Incorporated



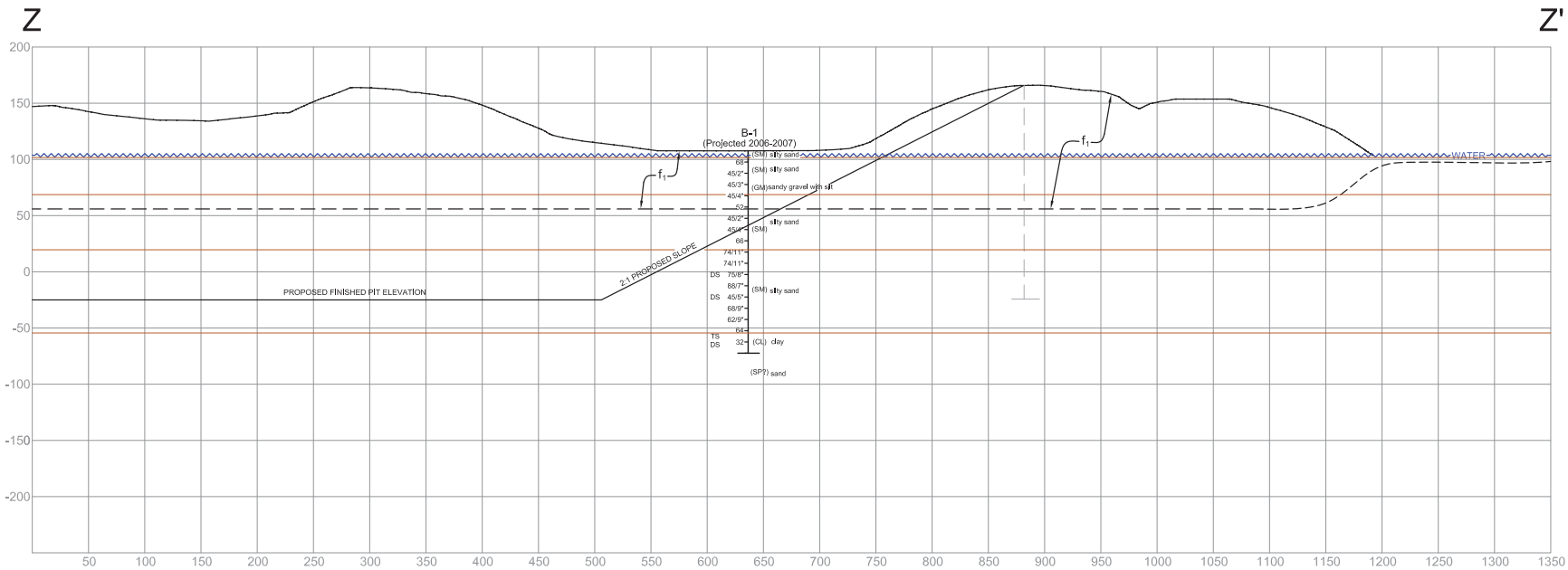
DS - Direct shear test
TS - Triaxial shear test

contact, separates lithologic units

SCALE 1"= 100'

PG. 2 OF 3

GEOLOGIC CROSS SECTION Y-Y'		
FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-5"
DATE: APRIL 2011		JOB NUMBER 11137-8
		C.H.J. Incorporated



DS - Direct shear test
TS - Triaxial shear test

contact, separates lithologic units

SCALE 1"= 100'

GEOLOGIC CROSS SECTION Z-Z'

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-5"
DATE: APRIL 2011		JOB NUMBER 11137-8

C.H.J. Incorporated

APPENDIX "B"

EXPLORATORY LOGS

KEY TO LOGS

SAMPLE TYPE:

Bulk Indicates Disturbed or Bulk Sample

Dist. Indicates Disturbed Sample

DS Direct Shear Test (ASTM D 3080)

MDC Maximum Density Optimum Moisture Determination (ASTM D 1557)

N.R. Indicates No Recovery of Sample

Ring Indicates Relatively Undisturbed Ring Sample. Relatively Undisturbed Ring Samples are obtained with a "California Sampler" (3.25" O.D. and 2.42" I.D.) driven with a 140-pound weight falling 30 inches. The blows per foot are converted to equivalent SPT values.

SA Sieve Analysis (ASTM C 136)

SPT Indicates Standard Penetration Test. The SPT value is the number of blows required to drive an SPT sampler 12 inches using a 140-pound weight falling 30 inches. The SPT sampler is 2" O.D. and 1-3/8" I.D.

ENGINEERING PROPERTIES FROM SPT BLOWS

Relationship of Penetration Resistance to Relative Density for Cohesionless Soils*
(After Mitchell and Katti, 1981)

Number of SPT Blows (N_{60})	Descriptive Relative Density	Approximate Relative Density (%)
<4	Very Loose	0-15
4-10	Loose	15-35
10-30	Medium Dense	35-65
30-50	Dense	65-85
>50	Very Dense	85-100

*At an effective overburden pressure of 1 ton per square foot (100 kPa)

Approximate Values of Undrained Shear Strength for Cohesive Soils
(Terzaghi and Peck, 1967)

Number of SPT Blows (N_{60})	Soil Consistency	Approximate Undrained Shear Strength (psf)
<2	Very Soft	Less than 250
2-4	Soft	250-500
4-8	Medium Stiff	500-1000
8-15	Stiff	1000-2000
15-30	Very Stiff	2000-4000
>30	Hard	More than 4000

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS 50% OR MORE OF COARSE FRACTION PASSING NO. 4 SEIVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRANED SOILS 50% OR MORE OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTY, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

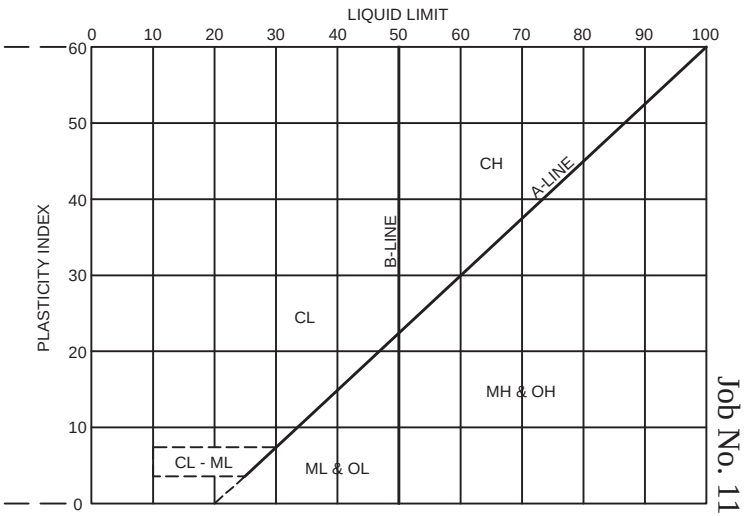
FOR LABROATORY CLASSIFICATION OF FIN-GRAINED SOILS

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE	MILLIMETERS	SIEVE SIZE
SAND				
FINE	.075	#200x	0.425	#40 x
MEDIUM	0425	#40 x	2.00	#10 x
COARSE	200	#10 x	4.75	# 4 x
GRAVEL				
FINE	4.75	# 4 X	19	3/4"●
COARSE	19	3/4"●	75	3" ●
COBBLES	75	3"	300	12"
BOULDERS	200	12	N/A	N/A

x US STANDARD ● CLEAR SQUARE OPENINGS

PLASTICITY CHART



UNIFIED SOIL CLASSIFICATION SYSTEM

C.H.J. Incorporated

Enclosure "B" (2of2)
Job No. 11137-8

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06 | Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer | Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110± | Logged by: J.R. | Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse, red brown	Native		▨				
5									
		(SM) Silty Sand, fine to medium with coarse, gravel and cobbles to 6", olive gray			▨				
10				☒		68	9.0	120	Ring
15									
20				▬		45/2"			Ring
		(GM) Sandy Gravel, fine to coarse with silt, clay, gravel and cobbles to 5", olive gray	▼ Groundwater		▨				
25									
30				▬		45/3"			Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8 | Enclosure B-1a

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse, clay, gravel and cobbles to 4", blue gray							
40						45/4"			Ring
45									
50						52			Ring
55									
60						45/2"			Ring
65									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1b

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06 Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110± Logged by: J.R. Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
				X		45/4"			Ring
75		(SM) Silty Sand, fine to medium with coarse, clay, gravel and cobbles to 4", blue gray							
80				X		66			Ring
85									
		(SM) Silty Sand, fine to medium with coarse, clay and gravel to 2", green gray			X				
90				X		74/11"			Ring
95									
100				X		74/11"	40.4	81	Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8 Enclosure B-1c

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110				X		75/8"	33.2	94	Ring, DS
115					X				
120				X		88/7"	41.2	76	Ring
125									
130				X		45/5"	16.1	113	Ring, DS
135									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1d

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06 | Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer | Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110± | Logged by: J.R. | Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
				X		68/9"	13.0	116	Ring
145									
150		(SM) Silty Sand, fine to medium with coarse, clay and gravel to 2", green gray		X		62/9"	23.6	97	Ring
155									
160				X		64	7.2	132	Ring, PI, SA, TS
		(CL) Sandy Clay, fine to medium with silt and gravel to 2", blue gray			X				
165									
170				X		32	22.9	101	Ring, Hydro, DS

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8 | Enclosure B-1e

EXPLORATORY BORING NO. 1

Date Drilled: 8/30/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 110±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
180		END OF BORING NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING GROUNDWATER AT 23.0'							
185									
190									
195									
200									
205									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1f

EXPLORATORY BORING NO. 2

Date Drilled: 9/1/06 | Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer | Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118± | Logged by: J.R. | Measured Depth to Water(ft): 15.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse and gravel to 2 1/2", brown	Fill		▨				
5									
10				☒		16	35.1	75	Ring
15			▼ Groundwater						
20				☒		54			Ring
		(GM) Sandy Gravel, fine to coarse with silt, gravel and cobbles to 4 1/2", gray			▨				
25									
30				☒		20			Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8 | Enclosure B-2a

EXPLORATORY BORING NO. 2

Date Drilled: 9/1/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 15.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
40									
45									
50									
		(SP) Sand, fine to medium with coarse and silt, gray	Native						
55									
60									
65									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2b

EXPLORATORY BORING NO. 2

Date Drilled: 9/1/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 15.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
75		(SP) Sand, fine to medium with coarse and silt, gray							
80									
85									
90		(GM) Sandy Gravel, fine with silt, gravel and cobbles to 6", gray							
95									
100									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2c

EXPLORATORY BORING NO. 2

Date Drilled: 9/1/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 15.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110									
115									
120									
125									
		(SP-SM) Sand, fine to coarse with silt and gravel to 2", gray							
130									
135									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2d

EXPLORATORY BORING NO. 2

Date Drilled: 9/1/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 15.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
145		(ML) Sandy Silt, fine to medium with coarse and clay, brown			▨				PI, SA
150		(ML) Sandy Silt, fine to medium with coarse and clay, brown							
155									
		(SP) Sand, fine to coarse with gravel to 2", gray			▨				
160				☒		68			Ring
		END OF BORING	Refusal						
165		NO BEDROCK PRACTICAL REFUSAL AT 163.0' FILL TO 52.0' SLIGHT TO HEAVY CAVING GROUNDWATER AT 15.0'							
170									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2e

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(GM) Sandy Gravel, fine to coarse with silt and cobbles to 6", brown	Fill						
5									
10				X		63			Ring
15									
20									
25									
30									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3a

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
40									
45			Groundwater						
50									
55									
60		(SP) Sand, fine to medium with coarse and gravel to 1/2", gray	Native						
65									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3b

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
75		(SP) Sand, fine to medium with coarse and gravel to 1/2", gray							
80									
85									
90									
		(SP) Sand, fine to medium with coarse, gravel and cobbles to 5", gray			▨				
95									
100									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3c

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110									
115									
120									
125									
130									
		(ML) Sandy Silt, fine to medium with coarse and gravel to 2", brown			▨				PI, SA
135									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3d

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
145									
150		(ML) Sandy Silt, fine to medium with coarse and gravel to 2", brown		X		89/8"			Ring
155									
		(SP) Sand, fine to medium, gray			X				
160				X		54			Ring
165									
		(SM) Silty Sand, fine to medium with coarse, gravel and cobbles to 6", brown			X				
170				X		84/9"	39.8	80	Ring, DS

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3e

EXPLORATORY BORING NO. 3

Date Drilled: 9/2/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 118±

Logged by: J.R.

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SP) Sand, fine to coarse with gravel and cobbles to 5", dark blue gray							
180									
185									
190									
195									
200		END OF BORING NO BEDROCK NO REFUSAL FILL TO 59.0' SLIGHT TO HEAVY CAVING GROUNDWATER AT 45.0'							
205									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-3f

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(GM) Sandy Gravel, fine to coarse with silt and cobbles to 6", brown	Fill						
5									
10									
15									
20		(SP) Sand, fine to medium with coarse and gravel to 2", gray	Groundwater						
25									
30									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4a

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
40									
45		(GP) Sandy Gravel, fine to coarse with gravel to 1", gray							
50						25			Ring
55									
60		(GM) Sandy Gravel, fine to medium with coarse and cobbles to 6", gray							
65									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4b

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(ML) Sandy Silt, fine, gray	Native	X	X	67/10"	31.1	92	Ring, DS
		(SP) Sand, fine to medium with coarse and gravel to 2 1/2", gray			X				
75		(SP) Sand, fine to medium with coarse and gravel to 2 1/2", gray							
80									
		(SM) Silty Sand, fine to medium, brown							
85									
		(GP) Sandy Gravel, fine to medium with coarse and cobbles to 5", gray			X				
90				X		89/8"	10.2	122	Ring
95									
100									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4c

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110									
115									
		(SP) Sand, fine to medium with coarse, gray							
120									
125									
130									
135									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4d

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
145		(GP) Sandy Gravel, fine to medium with coarse and cobbles to 5", gray			▨				
150		(GP) Sandy Gravel, fine to medium with coarse and cobbles to 5", gray							
155									
160									
165									
170									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4e

EXPLORATORY BORING NO. 4

Date Drilled: 9/3/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 88±

Logged by: J.R.

Measured Depth to Water(ft): 23.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
180		END OF BORING	Refusal						
		NO BEDROCK PRACTICAL REFUSAL AT 180' FILL TO 70.2' SLIGHT TO HEAVY CAVING GROUNDWATER AT 23.0'							
185									
190									
195									
200									
205									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-4f

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(GM) Sandy Gravel, fine to coarse with silt and cobbles to 10", gray	Fill		▨				
5									
10									
15									
20									
			▼ Groundwater						
25									
30									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5a

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
40									
45									
50									
55									
60									
65									
		(CL-ML) Sandy Clay, fine to medium with coarse and gravel to 2", gray	Native						PI, SA, TS

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5b

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
				X		31			Ring
75		(CL-ML) Sandy Clay, fine to medium with coarse and gravel to 2", gray							
80		(SM) Silty Sand, fine to medium, brown		X		21	22.5	113	Ring, DS, Hydro
		(SP) Sand, fine to coarse with gravel to 2 1/2", gray							
85									
90									
95									
		(SM) Silty Sand, fine to medium with coarse, dark gray							
100				X		45	36.2	87	Ring, DS

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5c

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110				X		86/9"	17.4	112	Ring
115		(SP) Sand, fine to medium with coarse, gravel and cobbles to 5", gray			X				
120									
125									
130									
135									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5d

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
145									
		(SM) Silty Sand, fine, dark gray							
150		(SP) Sand, fine to medium, dark gray		X		59			Ring, DS
155									
160									
165									
170									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5e

EXPLORATORY BORING NO. 5

Date Drilled: 9/4/06

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker Hammer

Driving Weight / Drop: 140 lbs / 30 in

Surface Elevation(ft): 98±

Logged by: J.R.

Measured Depth to Water(ft): 24.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SP) Sand, fine to medium with coarse, gravel and cobbles to 4 1/2", dark gray							
180									
185									
190									
195									
		END OF BORING	Refusal						
		NO BEDROCK PRACTICAL REFUSAL AT 196.0' FILL TO 67.0' SLIGHT TO HEAVY CAVING GROUNDWATER AT 24.0'							
200									
205									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 4/12/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-5f

APPENDIX "C"

LABORATORY TESTING

Enclosure "C-1"
Job No. 11137-8

TEST DATA SUMMARY

CONSOLIDATED UNDRAINED TRIAXIAL TEST: (Remolded)

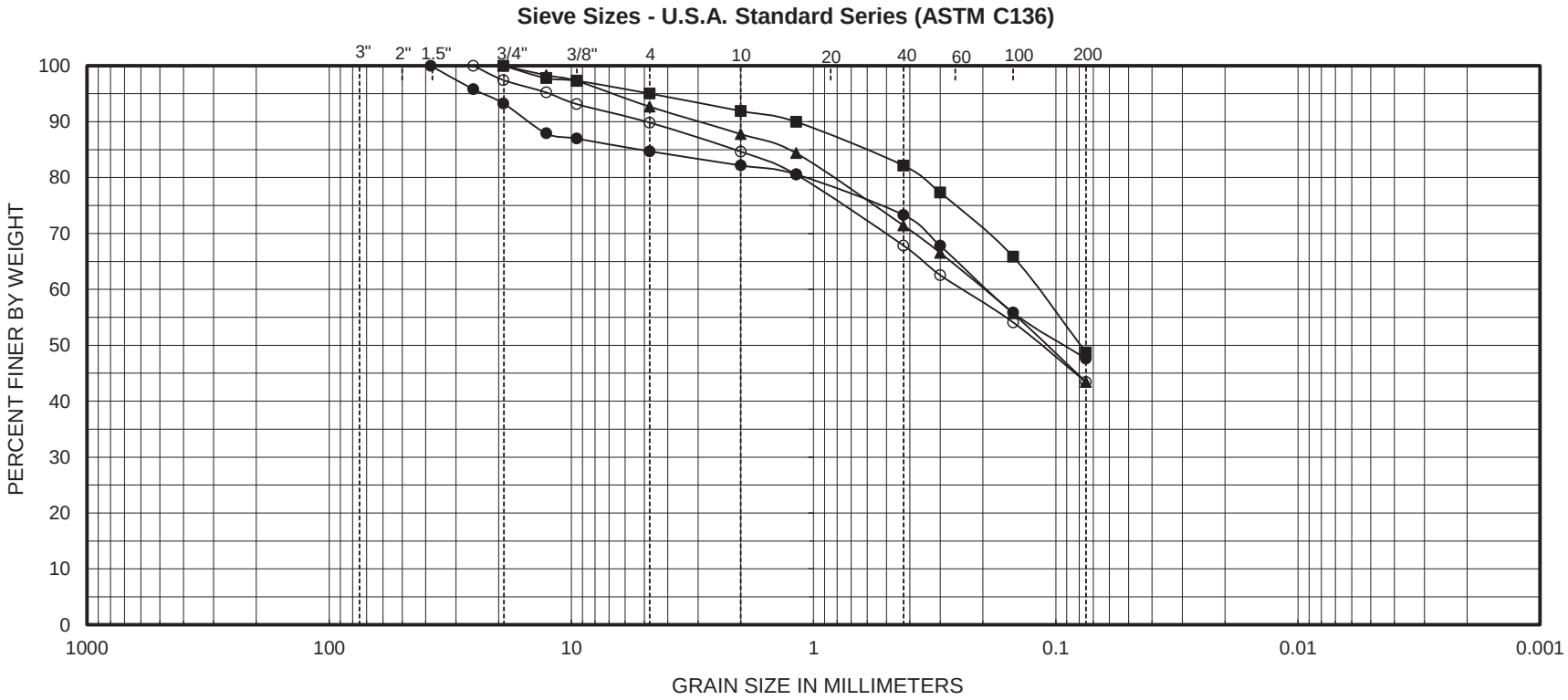
ASTM D 4767

Boring No.	Depth (ft.)	Φ' (º)	C' (psf)
1	162.0	30.8	147.7
5	67.0	34.7	417.9

DIRECT SHEAR TEST: (Relatively Undisturbed)

ASTM D 3080

Boring No.	Depth (ft.)	Φ' (º)	C' (psf)
1	110.0	40.9	0
1	130.0	28.4	156
1	170.0	24.0	720
3	170.0	32.4	258
4	70.0	27.5	480
5	80.0	34.0	0
5	100.0	34.7	150
5	150.0	31.8	96



Cobbles & Boulders	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Symbol	Boring No.	Depth (ft)	Classification	D_{10} (mm)	D_{30} (mm)	D_{50} (mm)	D_{60} (mm)	C_u	C_c	SE
●	1	162	(CL) Sandy clay, fine to medium with silt and gravel, blue gray			0.092	0.191			
■	2	145	(ML) Sandy silt, fine to medium with coarse and clay, brown			0.079	0.118			
▲	3	132	(ML) Sandy silt, fine to medium with coarse and gravel, brown			0.109	0.198			
○	5	67	(ML) Sandy silt, fine to medium with coarse and gravel, gray			0.115	0.243			

C.H.J. Incorporated

GRAIN SIZE DISTRIBUTION

Project:	Western Aggregates Quarry Reclamation		
Location:	Marysville, Yuba County, California		
Job Number:	11137-8	Enclosure:	C-2

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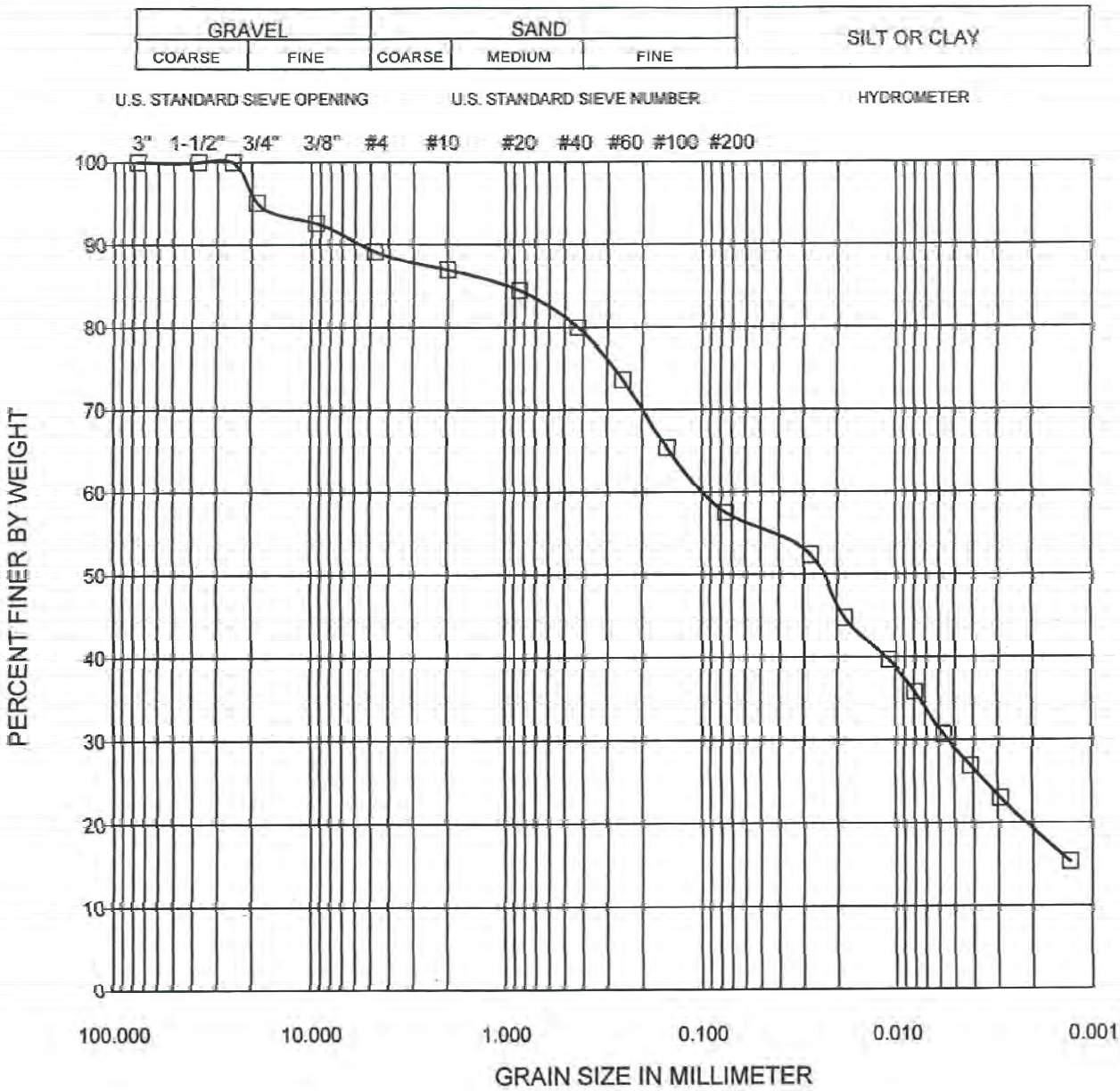
JOB NO.: 11137-8
ENCLOSURE: "C-3"



SYMBOL	BORING NO	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	SG1	SG1-17	170	RING	CL	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

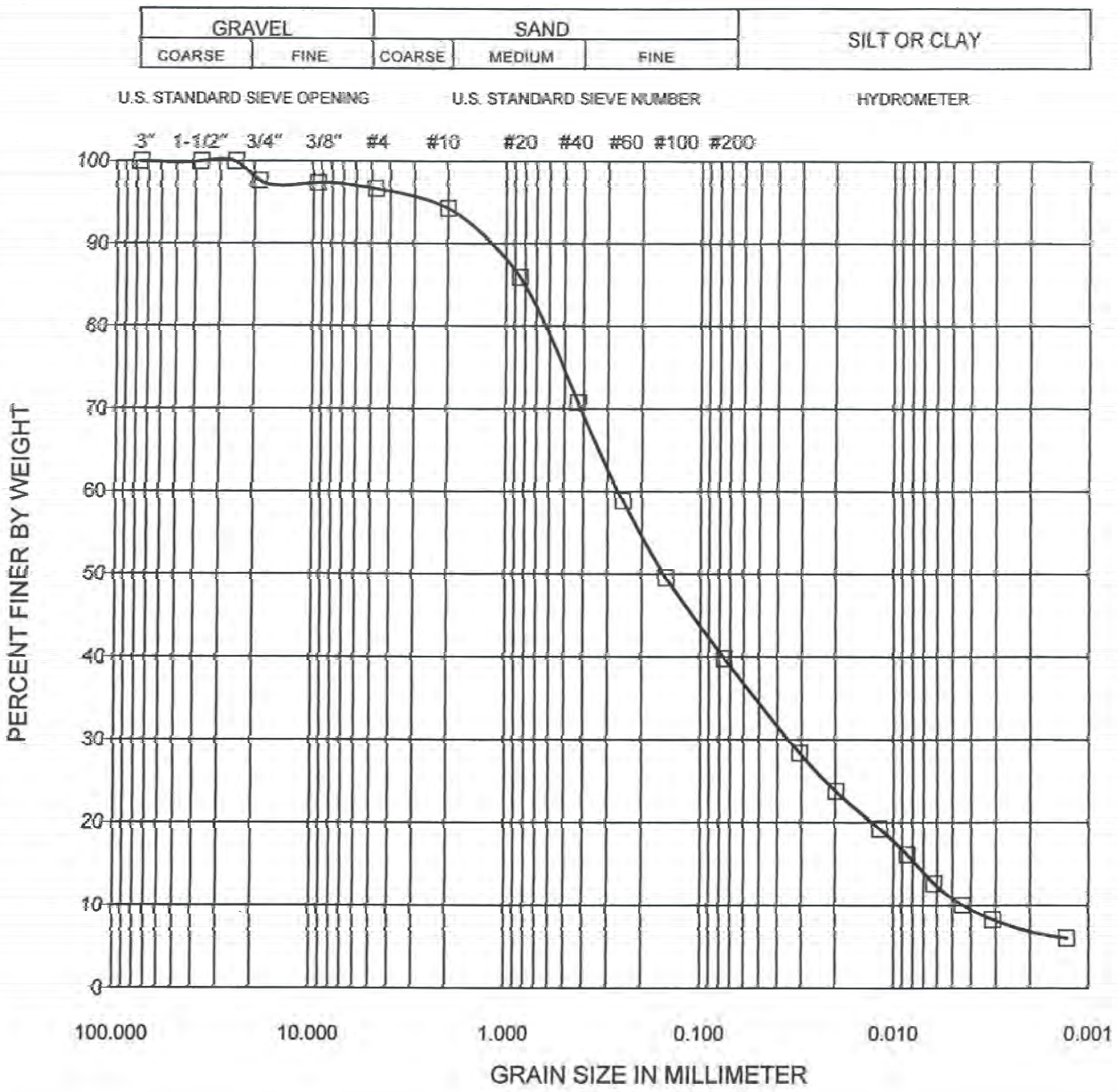
GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

10/06

FIGURE

JOB NO.: 11137-8
ENCLOSURE: "C-4"



SYMBOL	BORING NO	SAMPLE ID	DEPTH (ft)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	SG5	SG5-8	80	RING	SM	N/A	N/A

ENVIRONMENTAL GEOTECHNOLOGY LABORATORY

PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

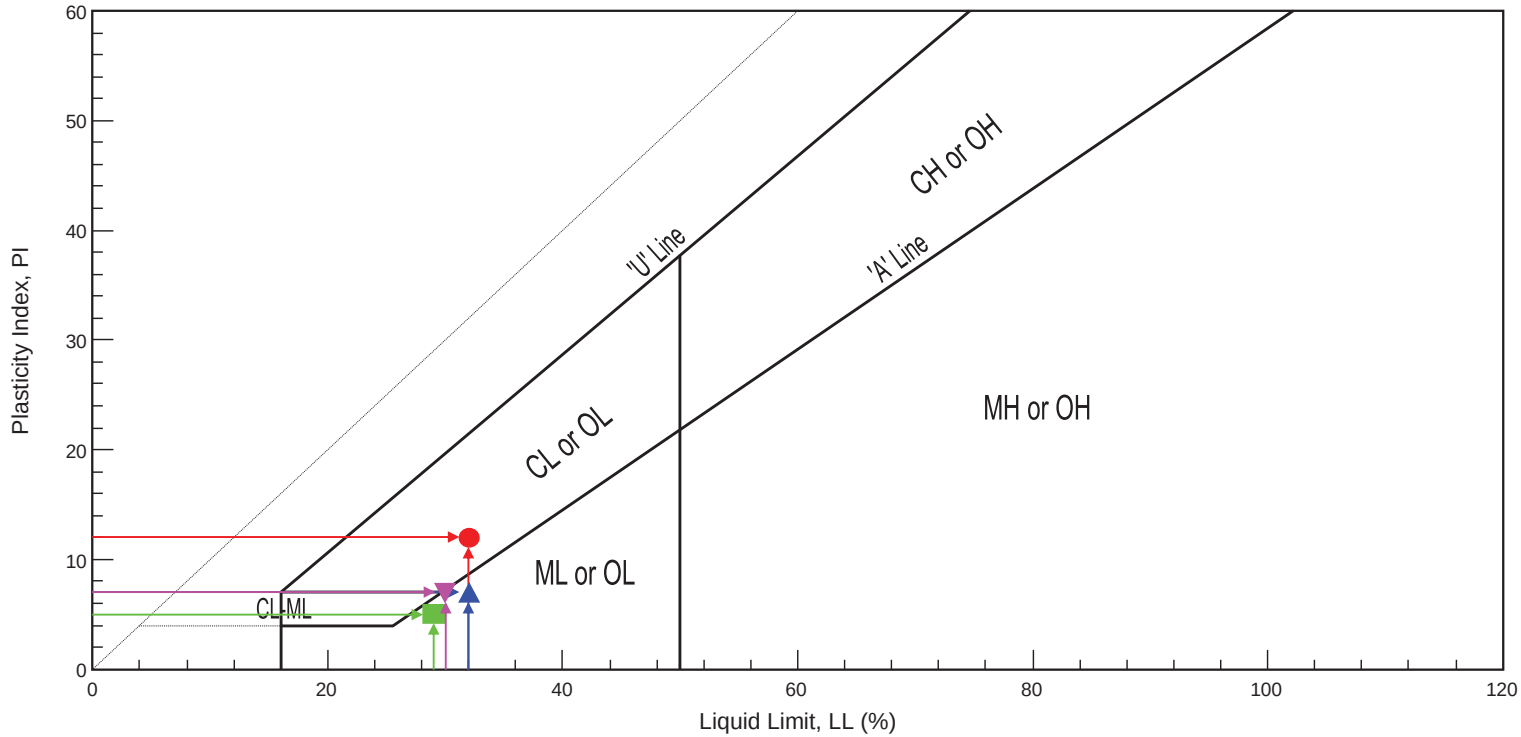
GRAIN SIZE DISTRIBUTION CURVE

(ASTM D422)

10/06

FIGURE

Plasticity Chart (ASTM D 2487)



Symbol	Boring No.	Depth (ft)	Classification	PL (%)	LL (%)	PI (%)
●	1	162	(CL) Sandy clay, fine to medium with silt and gravel, blue gray	20.0	32.0	12.0
■	2	145	(ML) Sandy silt, fine to medium with coarse and clay, brown	24.0	29.0	5.0
▲	3	132	(ML) Sandy silt, fine to medium with coarse and gravel, brown	25.0	32.0	7.0
▼	5	67	(ML) Sandy silt, fine to medium with coarse and gravel, gray	23.0	30.0	7.0

C.H.J. Incorporated

PLASTICITY TESTS

Project:	Western Aggregates Quarry Reclamation		
Location:	Marysville, Yuba County, California		
Job Number:	11137-8	Enclosure:	C-5

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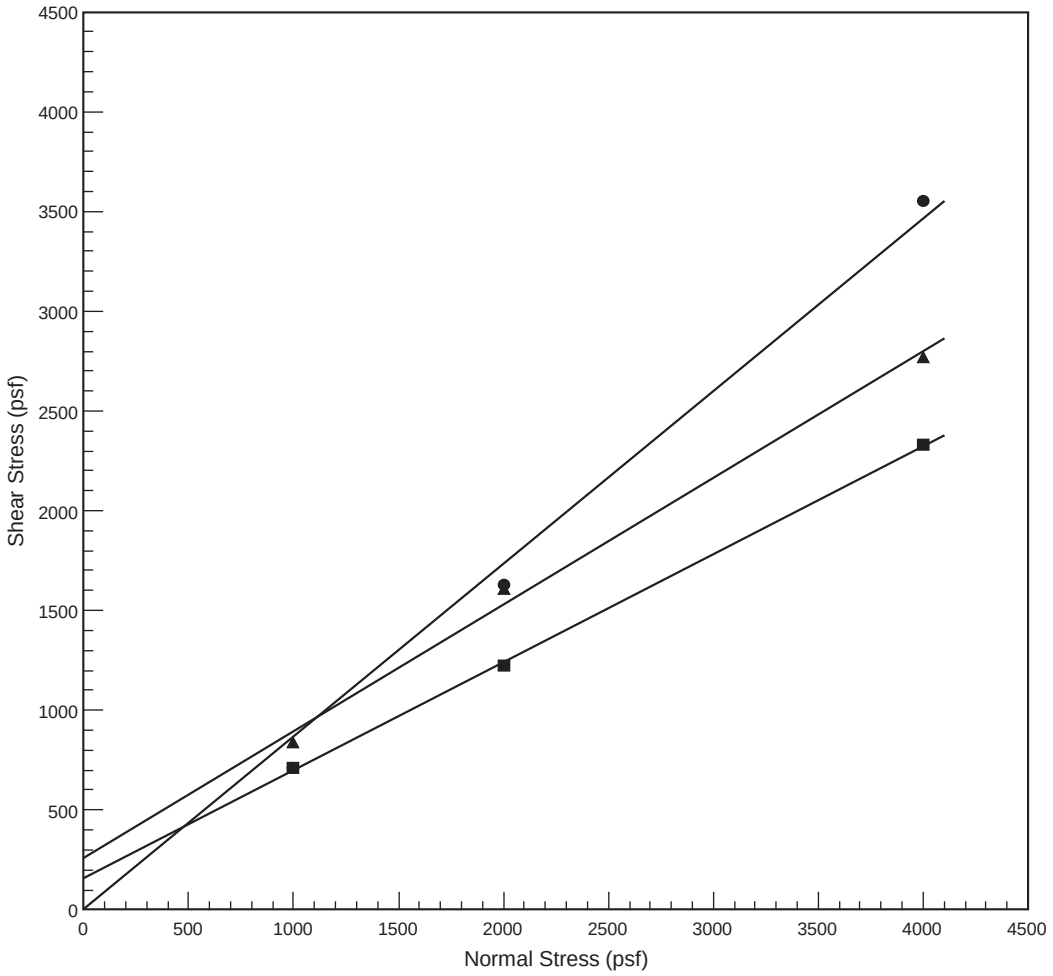
Direct Shear Test (ASTM D 3080)



	Boring #	Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	C (psf)	φ(°)
●	1	110	(SM) Silty sand, fine to medium with coarse, clay, & gravel to 2", green gray / undisturbed	94	33.2	0	40.9
■	1	130	(SM) Silty sand, fine to medium with coarse, clay, & gravel to 2", green gray / undisturbed	113	16.1	156	28.4
▲	3	170	(SM) Silty sand, fine to medium with coarse & gravel to 2", brown / undisturbed	80	39.8	258	32.4

C.H.J. Incorporated

DIRECT SHEAR TEST			
Project:	Western Aggregates Quarry Reclamation		
Location:	Marysville, Yuba County, California		
Job No.:	11137-8	Enclosure:	C-6

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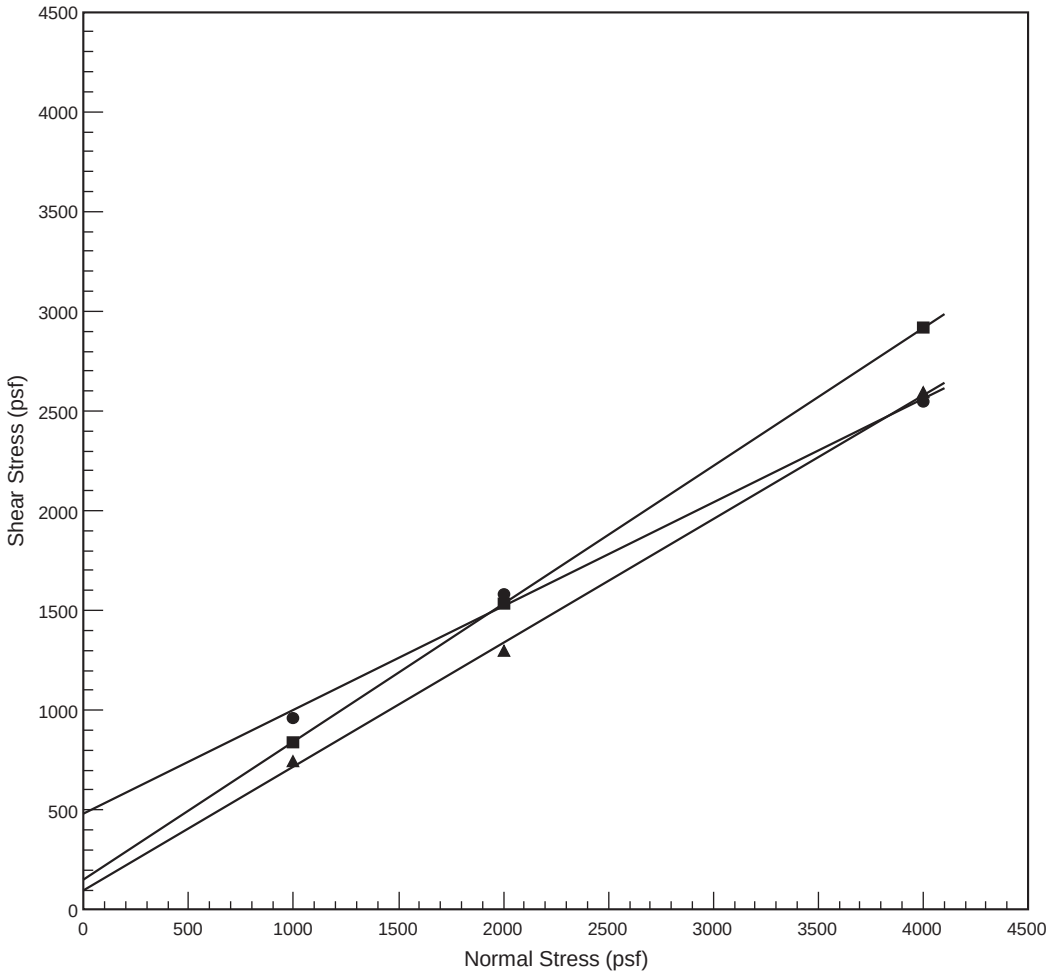
Direct Shear Test (ASTM D 3080)



	Boring #	Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	C (psf)	φ(°)
●	4	70	(ML) Sandy silt, fine, gray / undisturbed	92	31.1	480	27.5
■	5	100	(SM) Silty sand, fine to medium with coarse, dark gray / undisturbed	87	36.2	150	34.7
▲	5	150	(SM) Silty sand, fine, dark gray / undisturbed	80		96	31.8

C.H.J. Incorporated

DIRECT SHEAR TEST			
Project:	Western Aggregates Quarry Reclamation		
Location:	Marysville, Yuba County, California		
Job No.:	11137-8	Enclosure:	C-7

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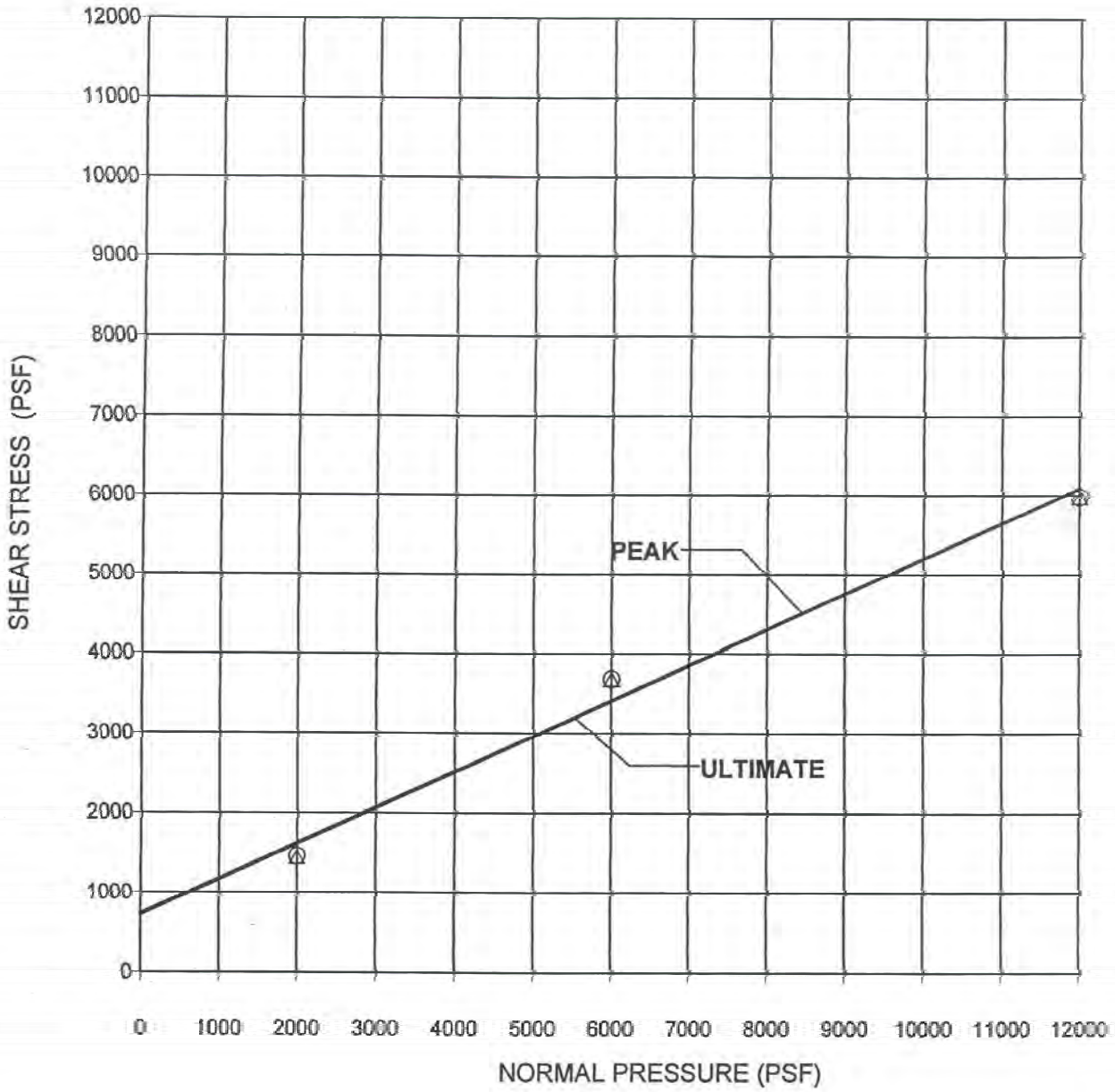


SYMBOL	BOREHOLE NUMBER	SAMPLE NUMBER	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	COHESION (PSF)	FRICTION ANGLE (DEG)
○ PEAK	SG1	SG1-17	170	RING	CL	732	24
△ ULTIMATE						720	24

Vertical Loads (PSF)	Moisture Content Before Test (%)	Moisture Content After Test (%)
2000	22.9	22.1
6000	22.9	22.2
12000	22.9	22.4

Environmental Geotechnology Laboratory

PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

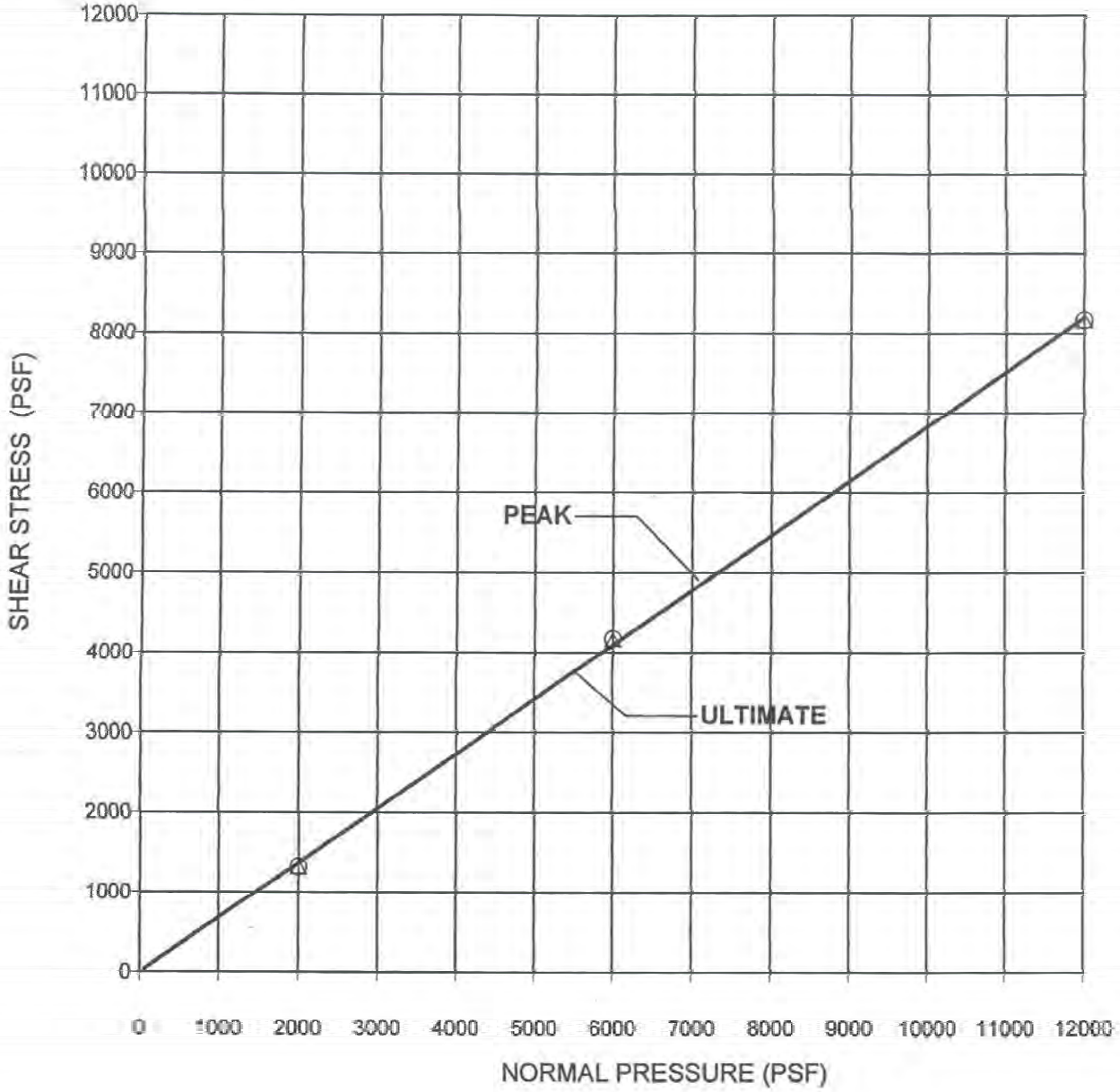
DIRECT SHEAR

(ASTM D3080)

10/06

FIGURE

11819 Goldring Road, Unit A, Arcadia, CA 91006. Tel: (626) 263-3588; Fax: (626) 263-3599



SYMBOL	BOREHOLE NUMBER	SAMPLE NUMBER	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	COHESION (PSF)	FRICTION ANGLE (DEG)
○ PEAK	SG5	SG5-8	80	RING	SM	0	34
△ ULTIMATE						0	34

Vertical Loads (PSF)	Moisture Content Before Test (%)	Moisture Content After Test (%)
2000	22.5	20.0
6000	22.5	18.0
12000	22.5	17.1

Environmental Geotechnology Laboratory

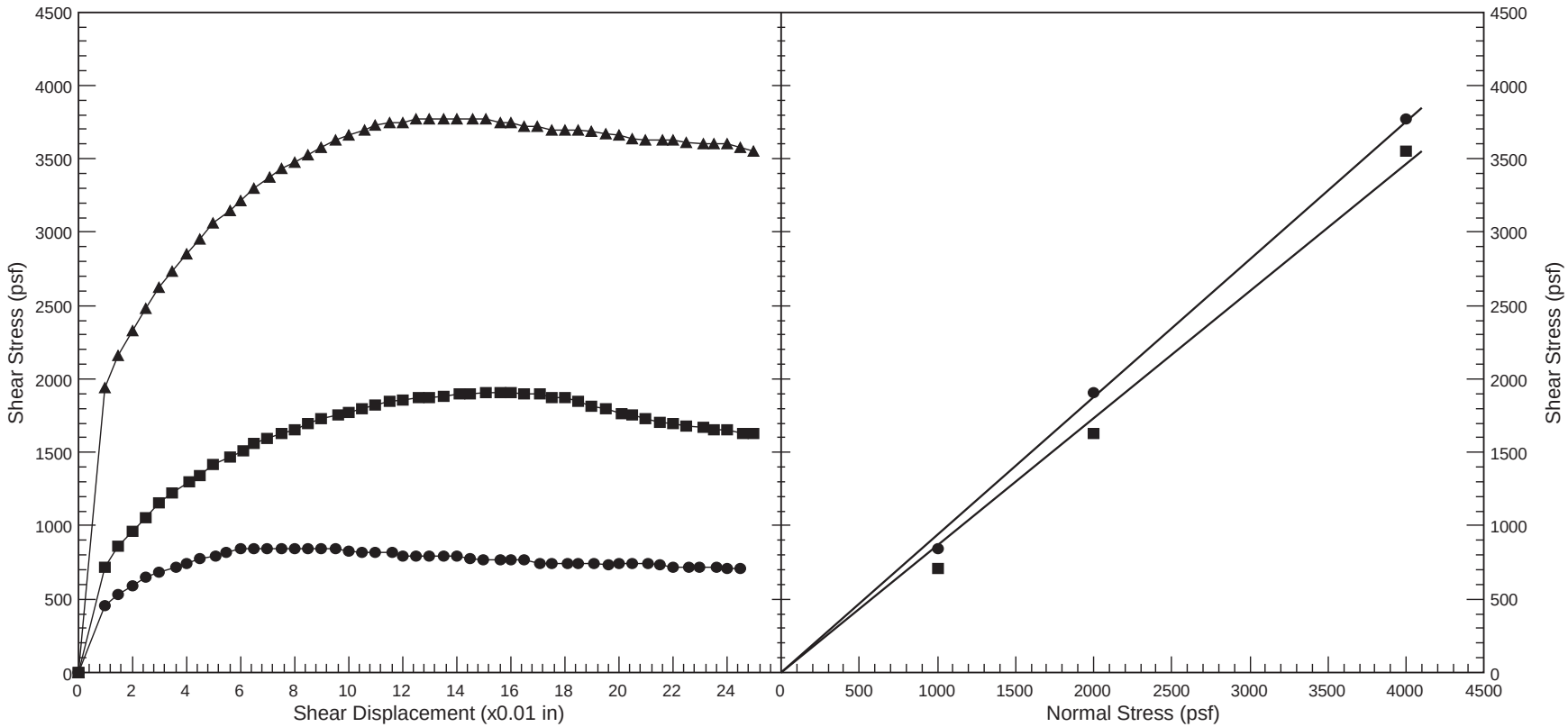
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-6
EGL Project No.: 06-287-005

DIRECT SHEAR

(ASTM D3080)

10/06

FIGURE



Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	1	110	(SM) Silty sand, fine to medium with coarse, clay, & gravel to 2", green gray / undisturbed	93.5	33.2	0	43.2	0	40.9

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-10

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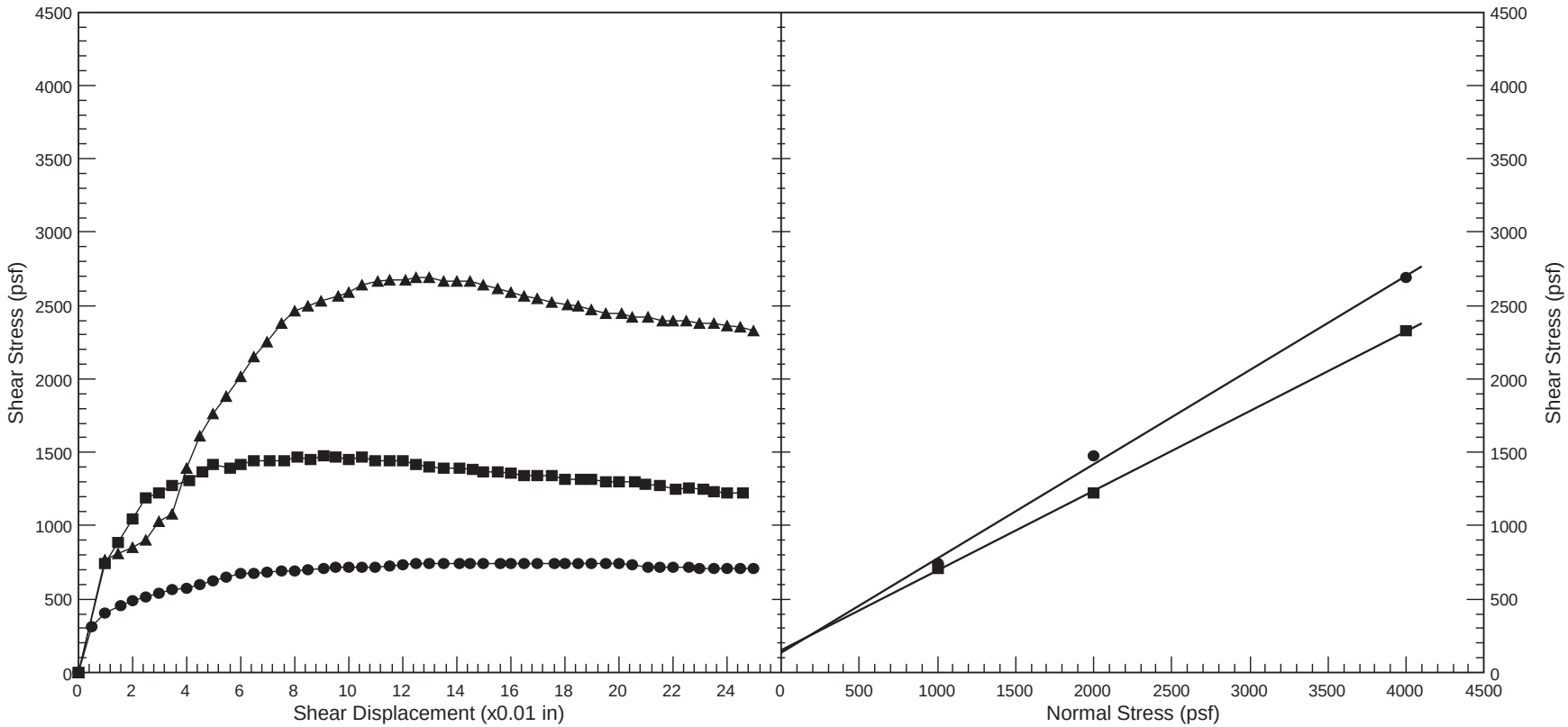

Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	1	130	(SM) Silty sand, fine to medium with coarse, clay, & gravel to 2", green gray / undisturbed	113.1	16.1	138	32.7	156	28.4

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-11

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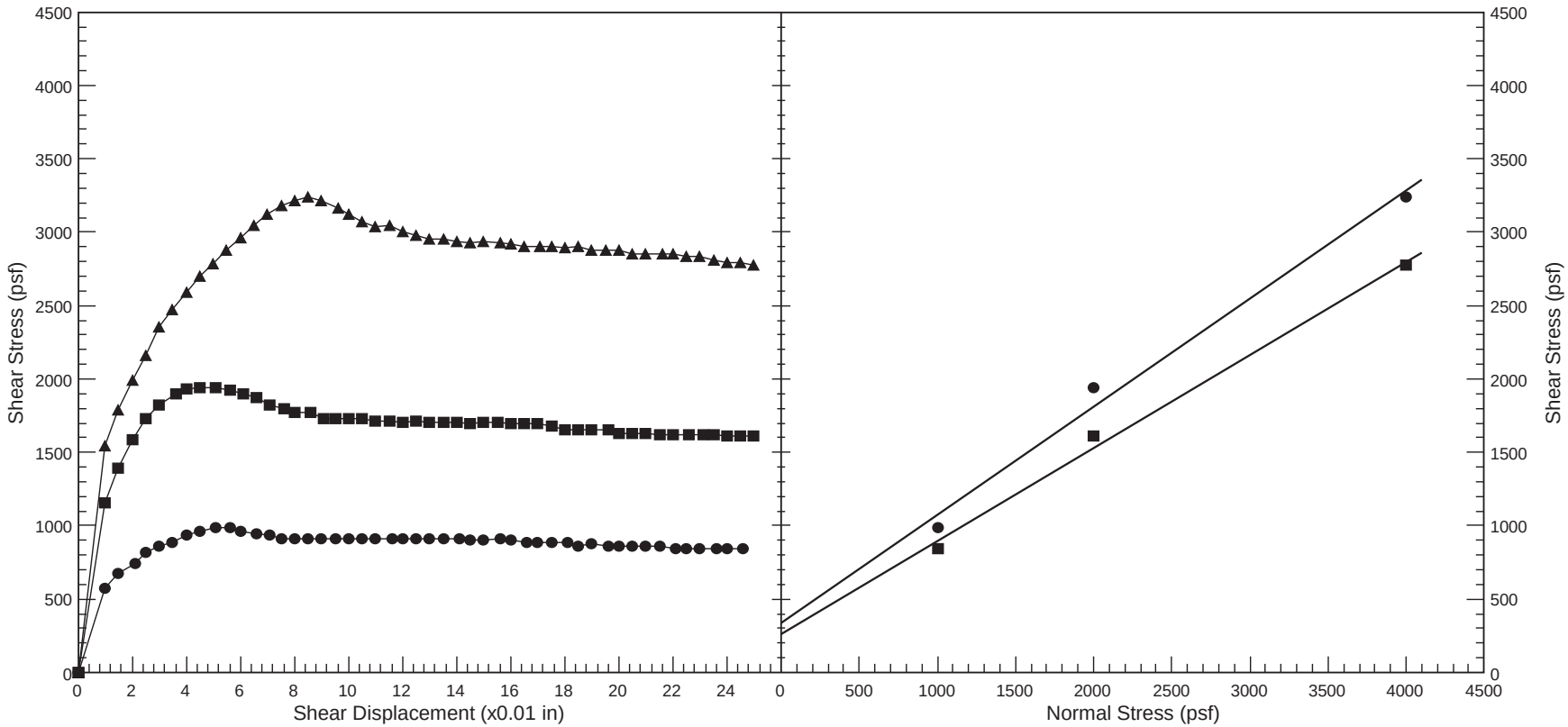

Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	3	170	(SM) Silty sand, fine to medium with coarse & gravel to 2", brown / undisturbed	80.4	39.8	336	36.4	258	32.4

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-12

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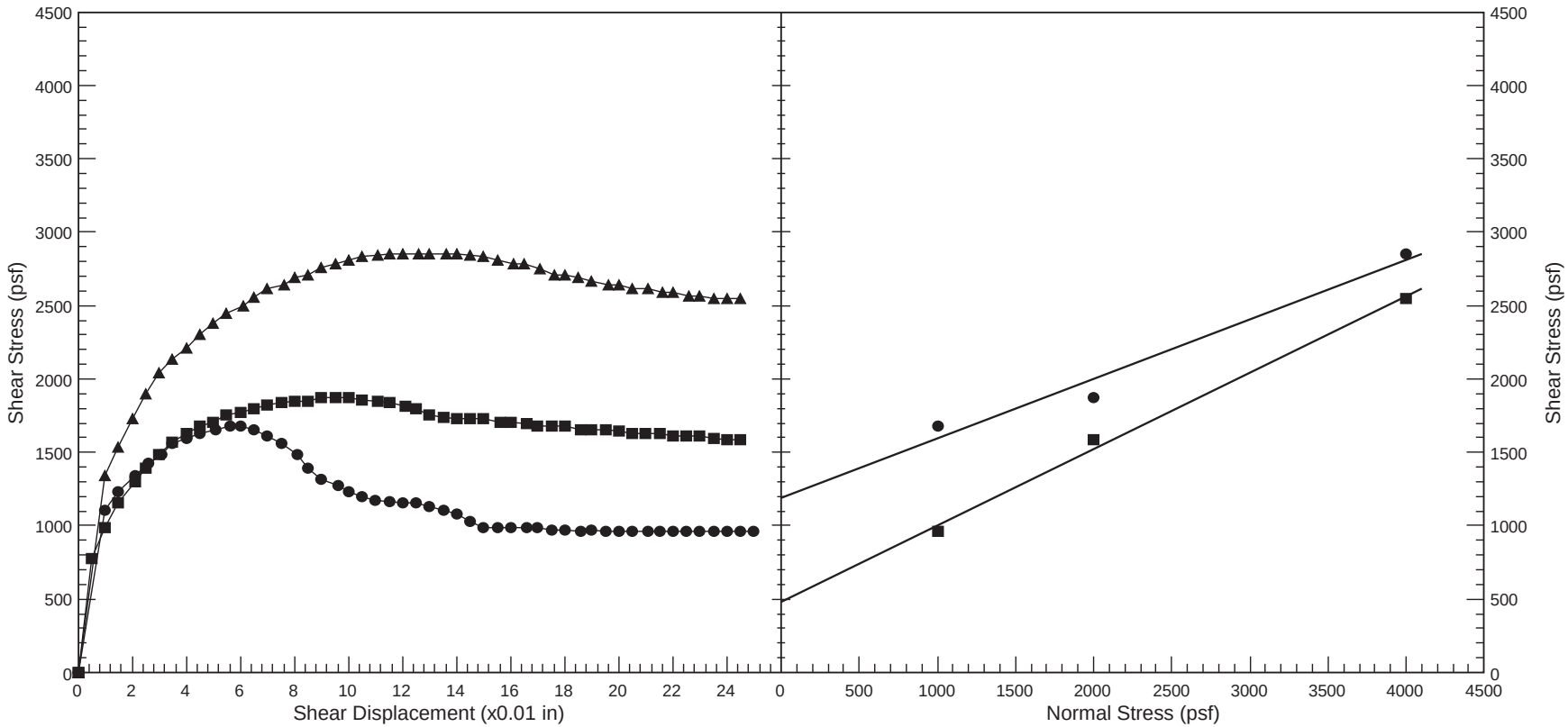

Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	4	70	(ML) Sandy silt, fine, gray / undisturbed	92.1	31.1	1188	22.1	480	27.5

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-13

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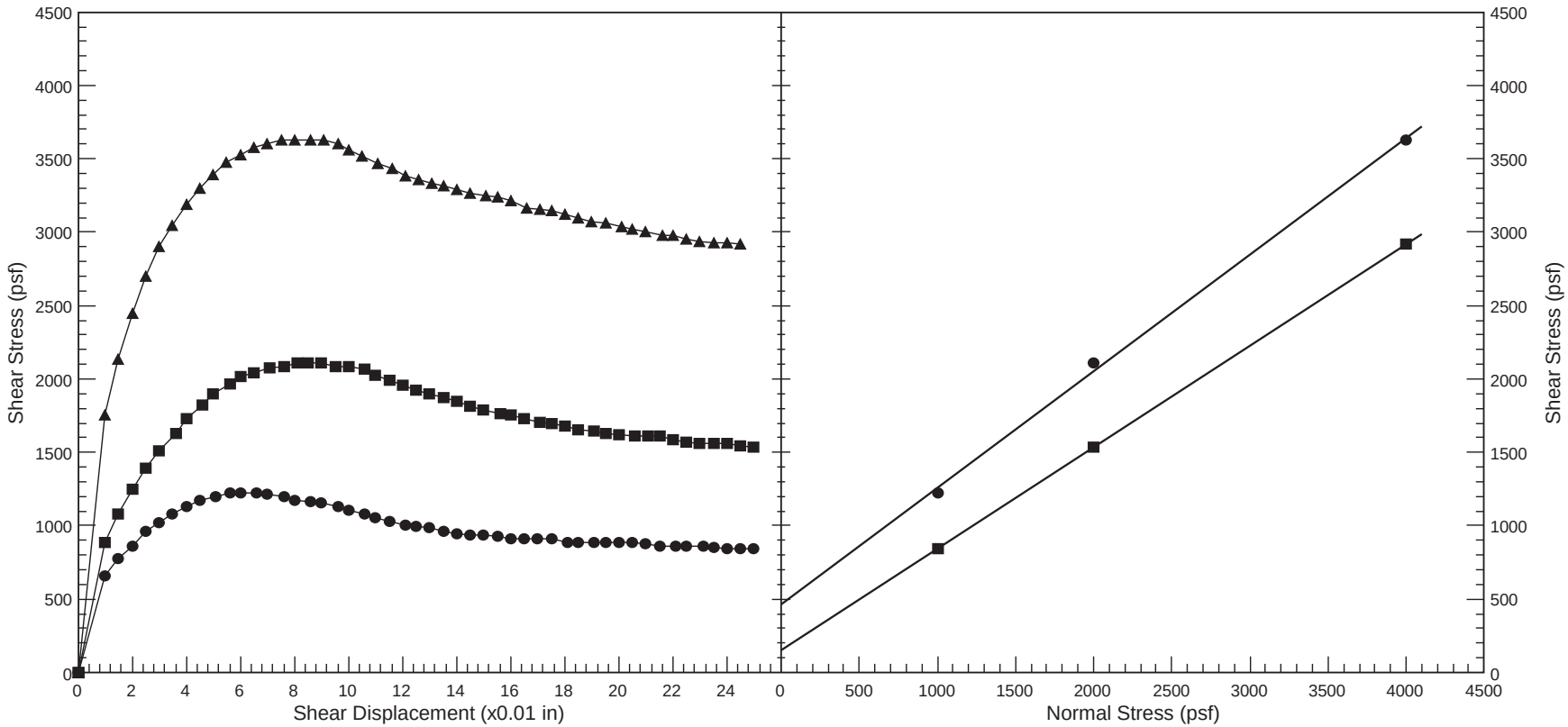

Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	5	100	(SM) Silty sand, fine to medium with coarse, dark gray / undisturbed	87.3	36.2	468	38.4	150	34.7

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-14

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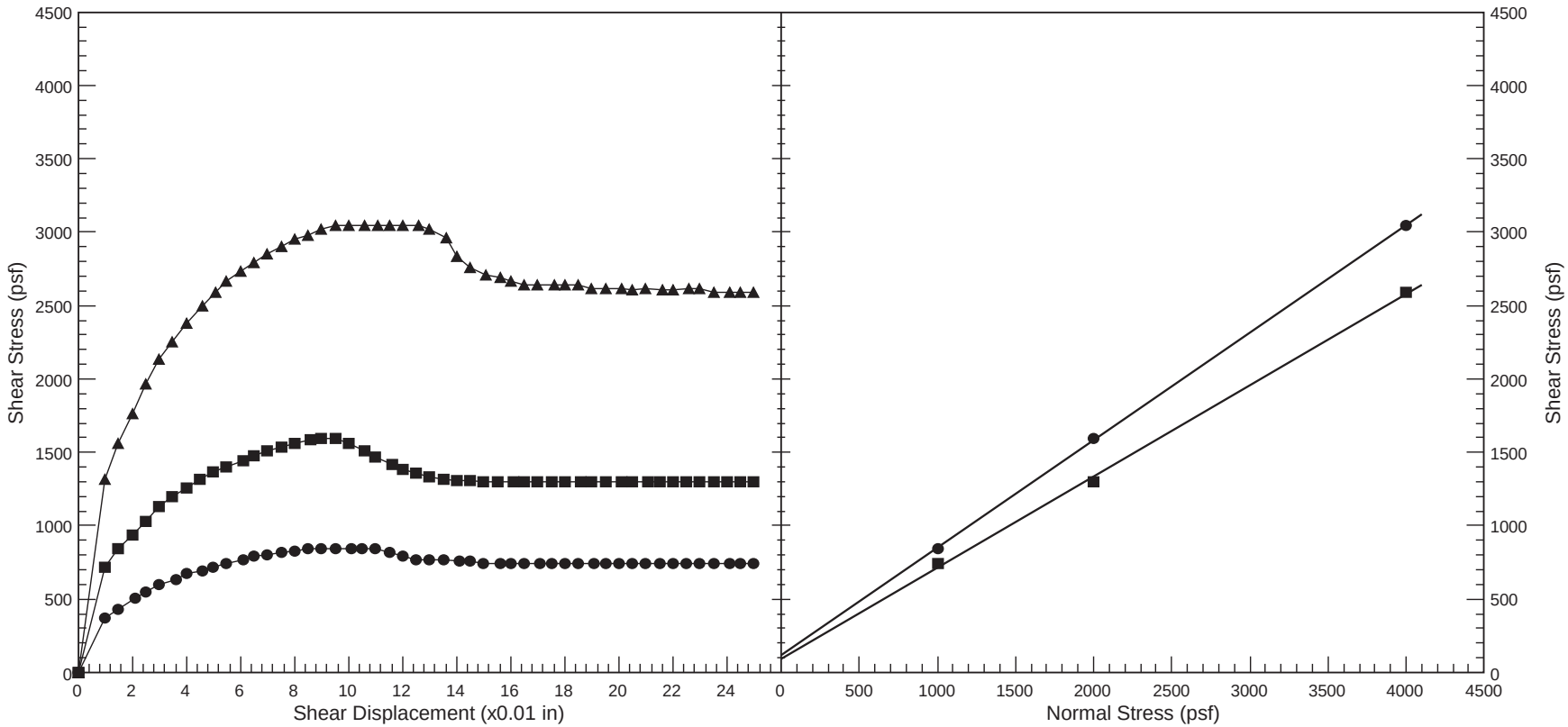

Boring #		Depth (ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
●	5	150	(SM) Silty sand, fine, dark gray / undisturbed	79.6		114	36.3	96	31.8

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Western Aggregates Quarry Reclamation		
Location	Marysville, Yuba County, California		
Job Number	11137-8	Enclosure	C-15

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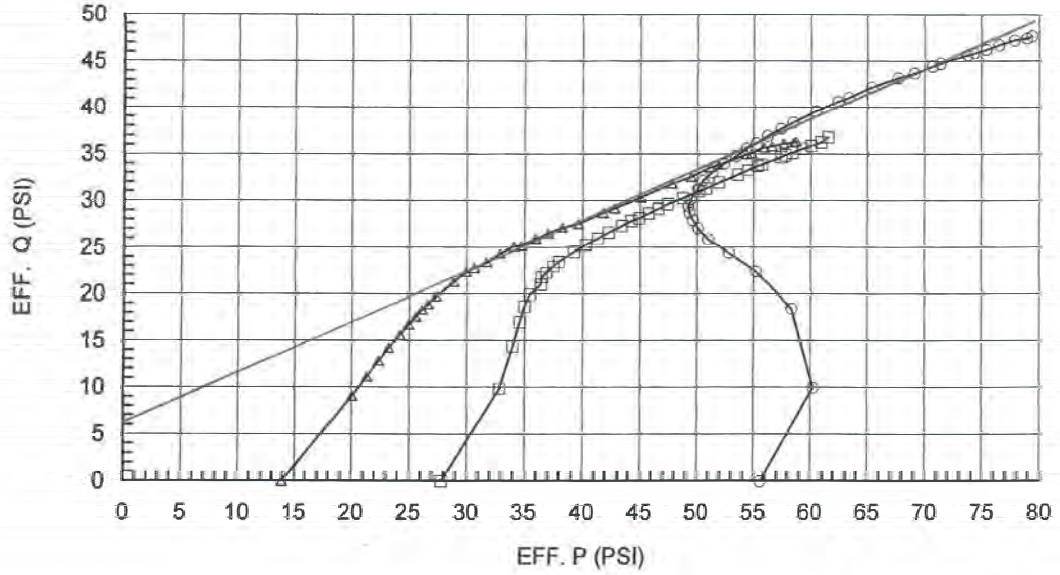
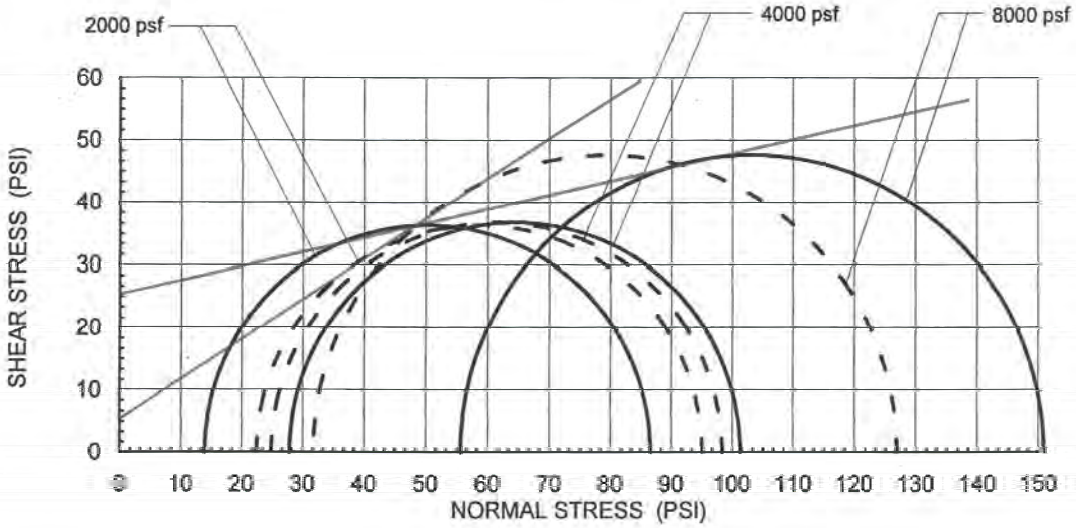




SYMBOL	SAMPLE ID	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	5B @ 2000 psf 5B @ 4000 psf 5B @ 8000 psf	N/A	Remolded	CL/SC

Note: Sample was remolded to
Dry Density = 113 pcf
Moisture = 22.5%

Environmental Geotechnology Laboratory

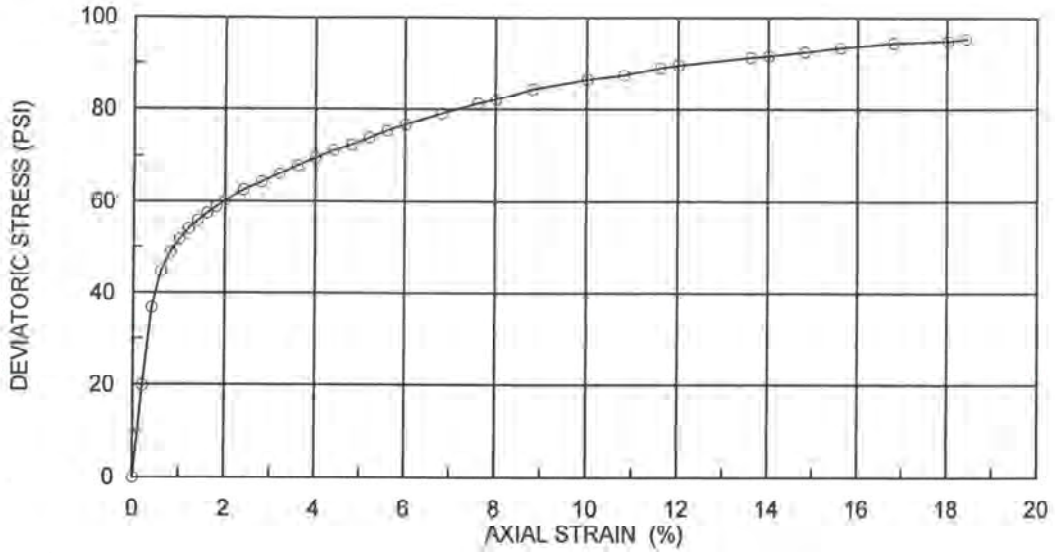
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

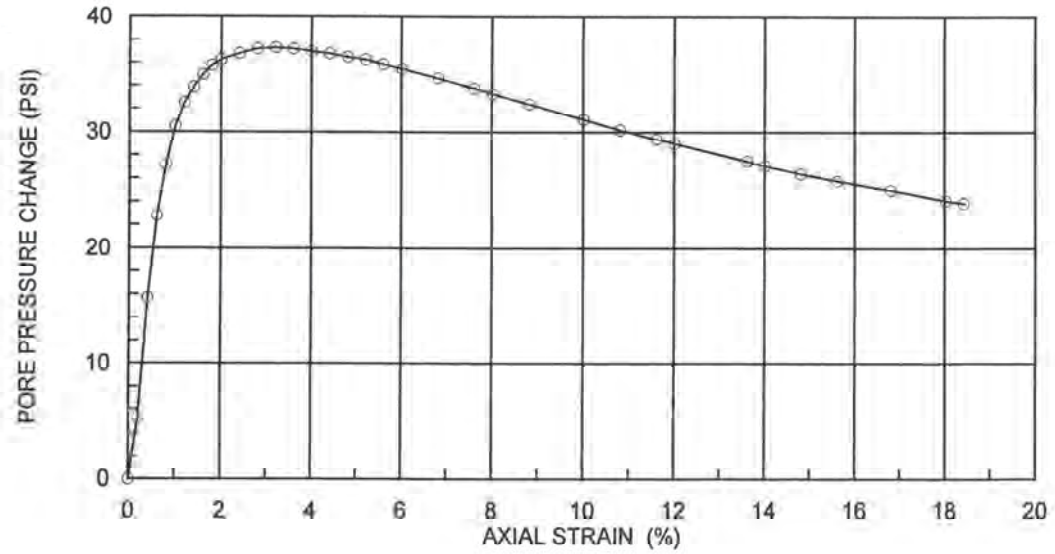
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
○	5B-8000 psf	N/A	Remold	113.0	22.5	55.6	95.33	0.01	CL/SC

Note: sample was remolded to dry density = 113 pcf, moisture = 22.5%

Environmental Geotechnology Laboratory

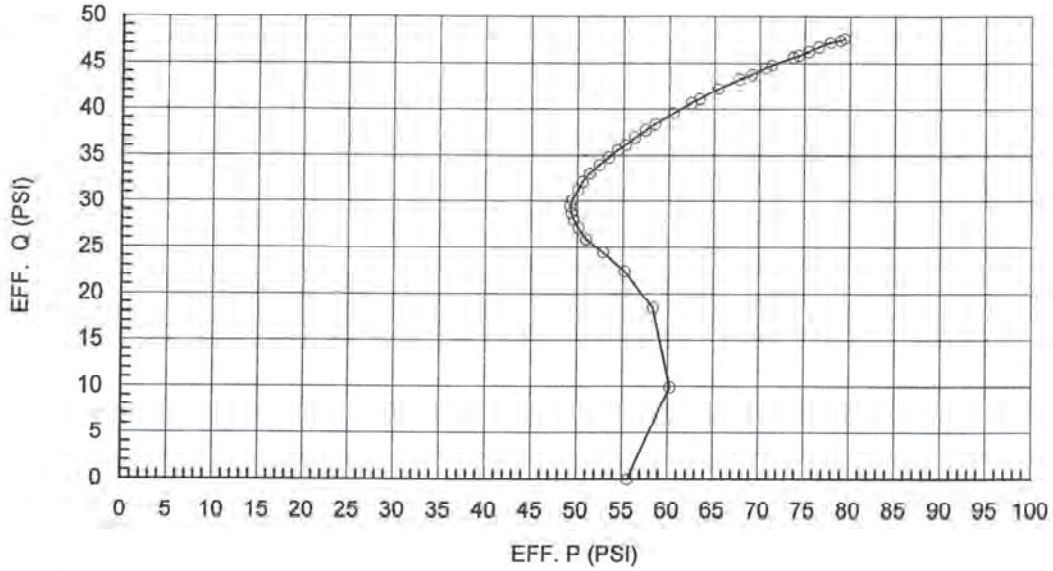
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

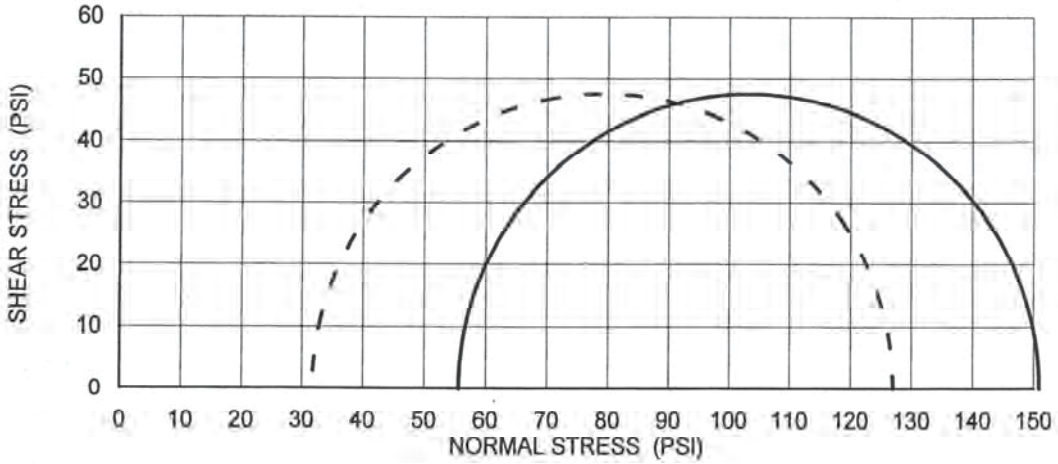
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
O	5B-8000psf	N/A	Remolded	CL/SC

Note: sample was remolded to
dry density = 113 pcf,
moisture = 22.5%

Environmental Geotechnology Laboratory

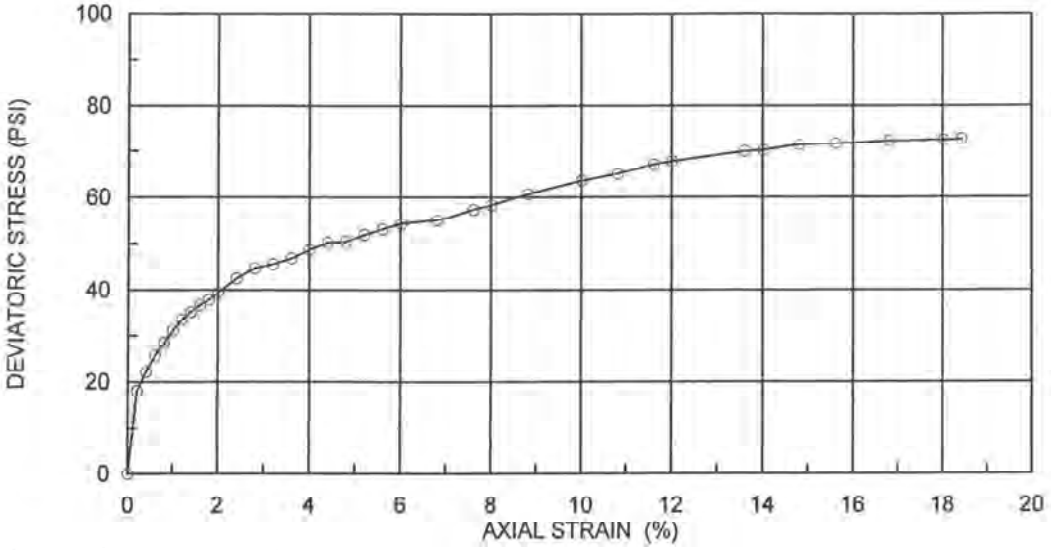
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

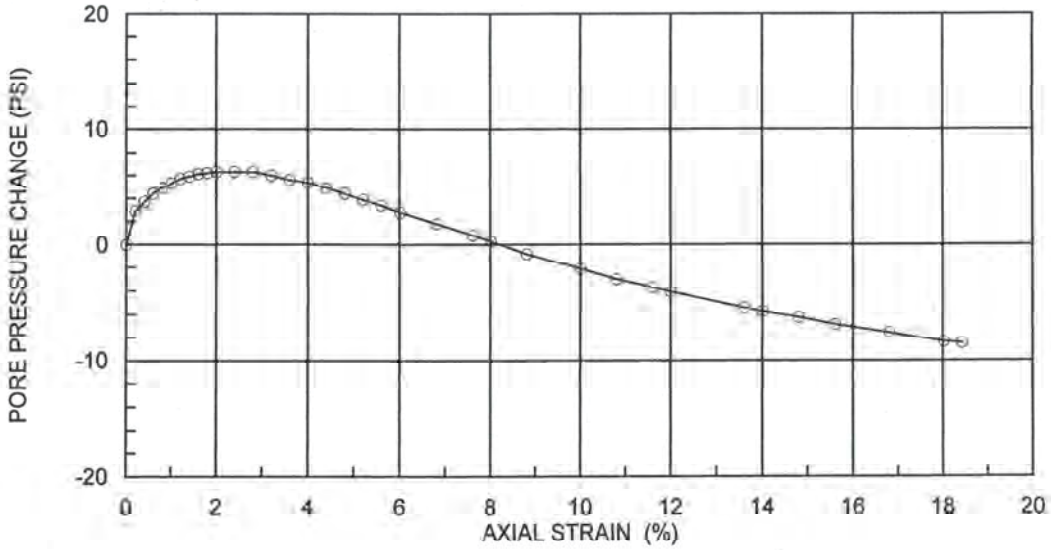
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
○	5B-2000 psf	N/A	Remold	113.0	22.5	13.9	72.66	0.01	CL/SC

Note: sample was remolded to dry density = 113 pcf, moisture = 22.5%

Environmental Geotechnology Laboratory

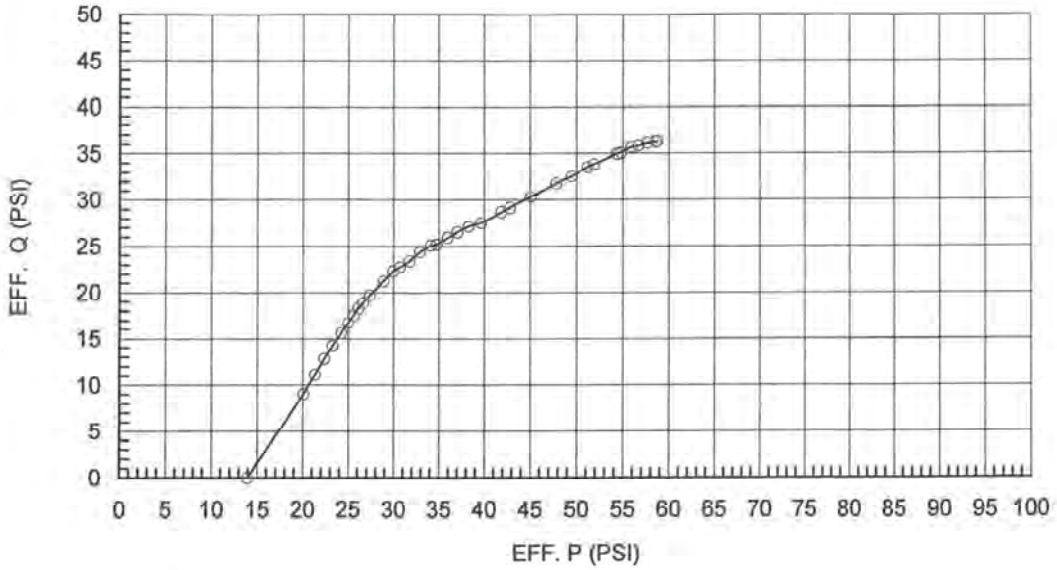
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

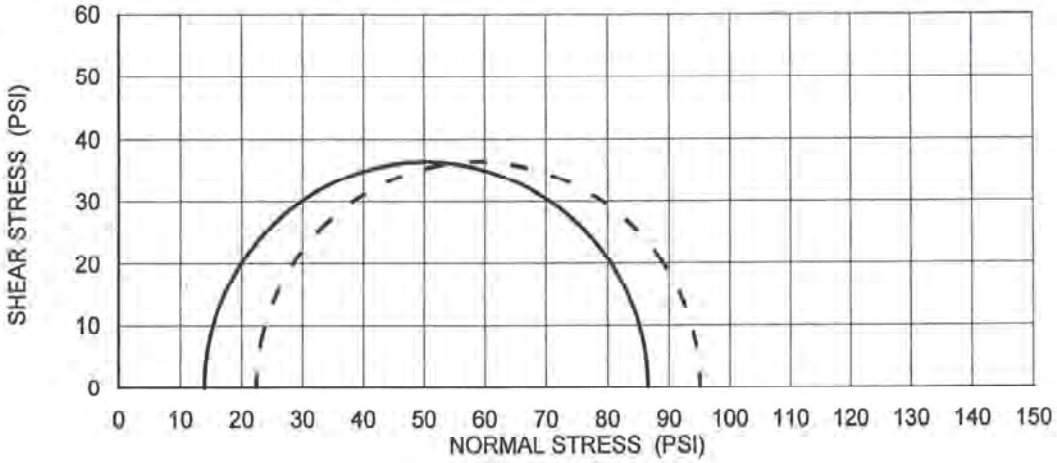
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	5B- 2000 psf	N/A	Remolded	CL/SC

Note: sample was remolded to
dry density = 113 pcf,
moisture = 22.5%

Environmental
Geotechnology
Laboratory

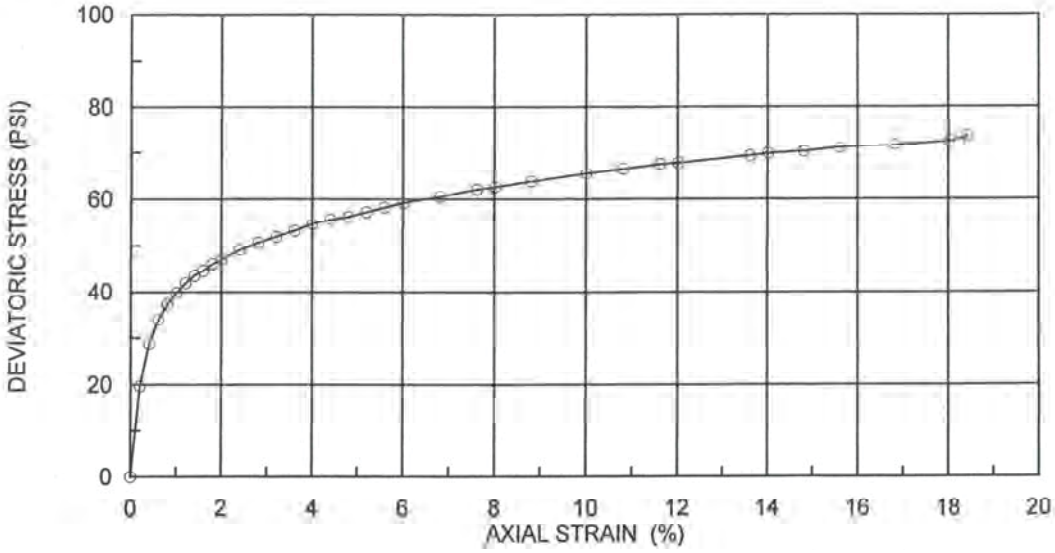
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

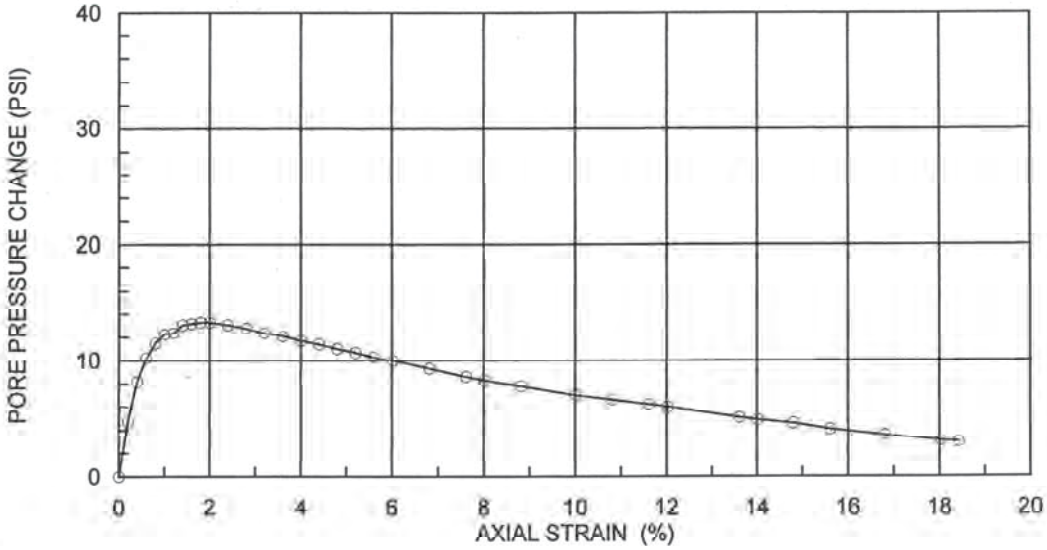
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
○	5B-4000 psf	N/A	Remold	113.0	22.5	27.8	73.55	0.01	CL/SC

Note: sample was remolded to dry density = 113 pcf, moisture = 22.5%

Environmental Geotechnology Laboratory

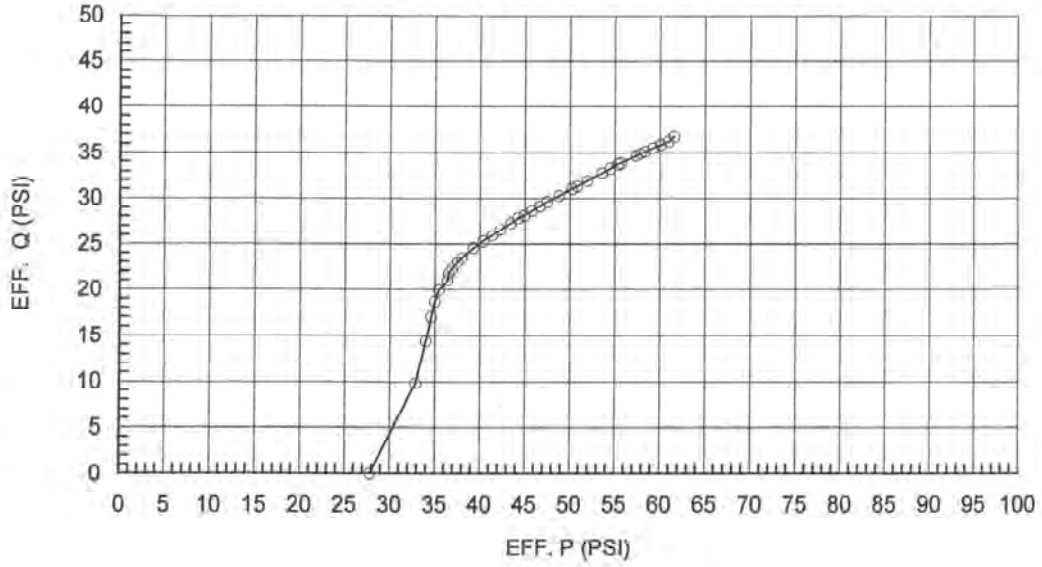
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

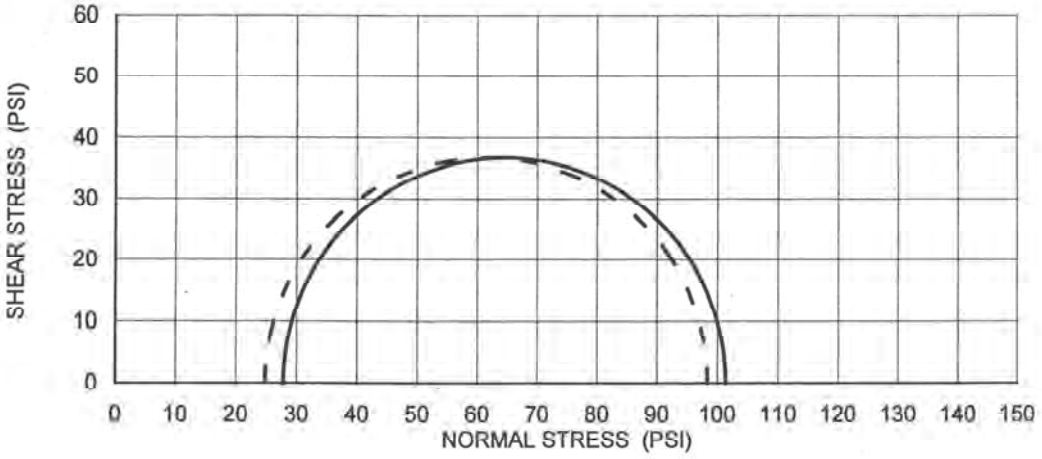
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	5B-4000psf	N/A	Remolded	CL/SC

Note: sample was remolded to dry density = 113 pcf, moisture = 22.5%

Environmental Geotechnology Laboratory

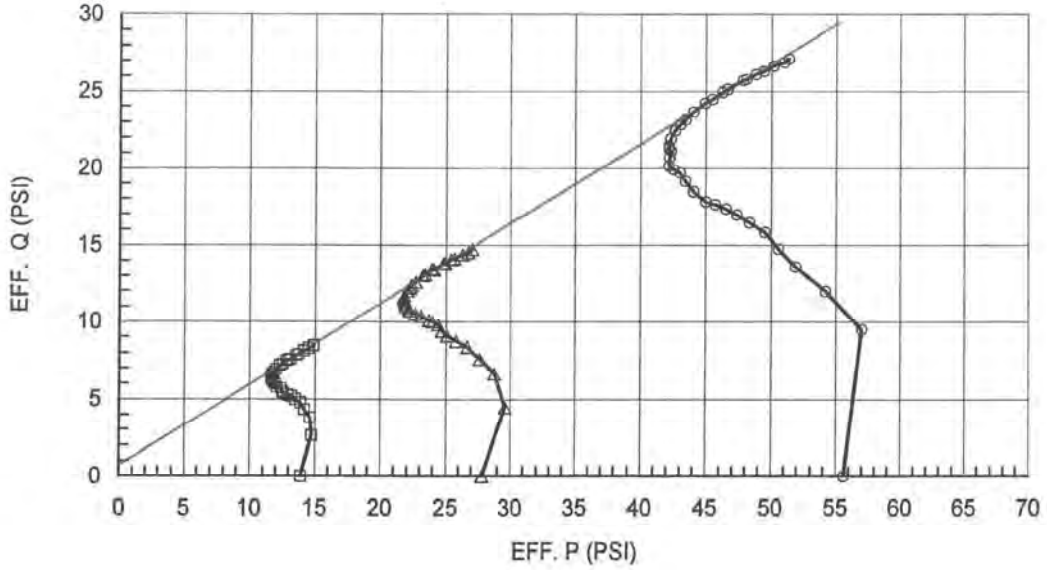
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

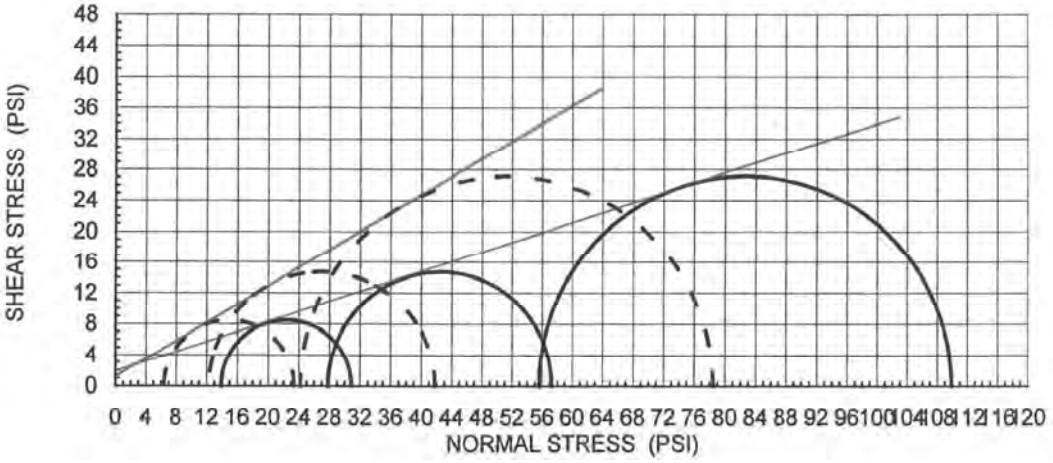
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE ID	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	1G @ 2 ksi 1G @ 4 ksi 1G @ 8 ksi	N/A	Remold Sample	CL

Environmental Geotechnology Laboratory

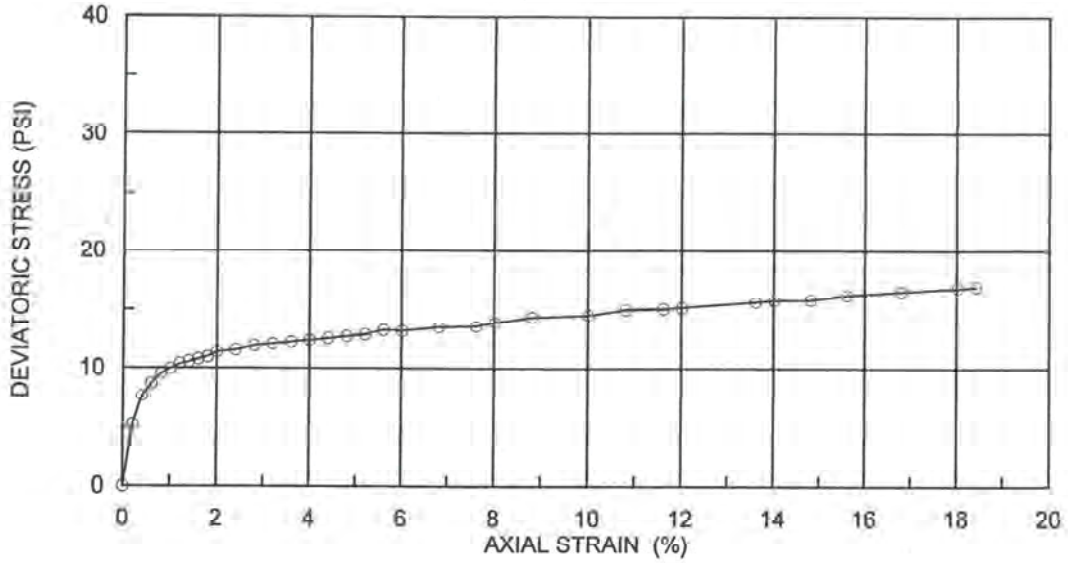
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

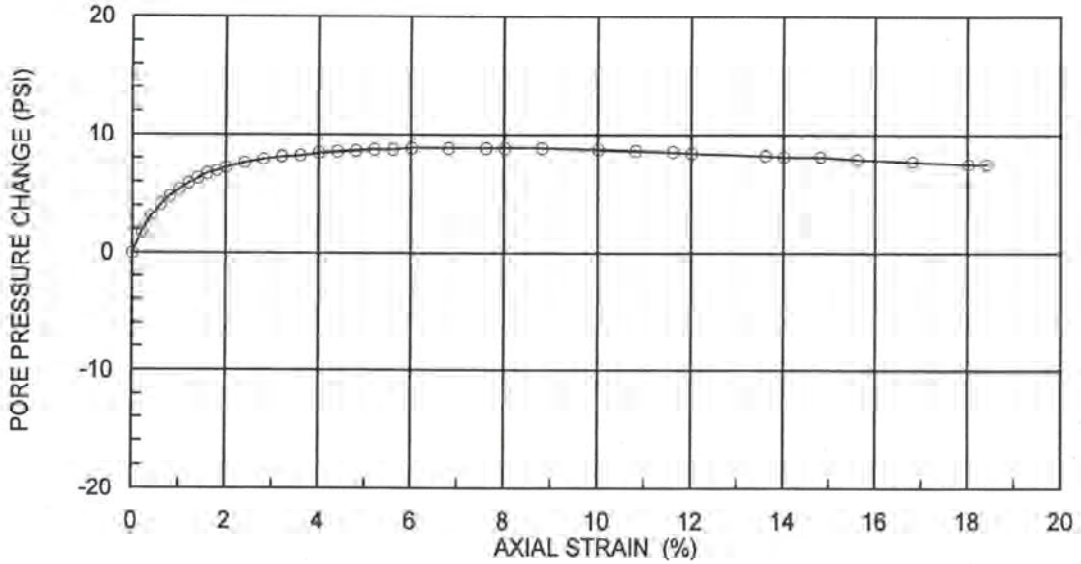
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
○	1G-2000 psf	N/A	Remold	101.0	22.9	13.9	16.96	0.01	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

Environmental Geotechnology Laboratory

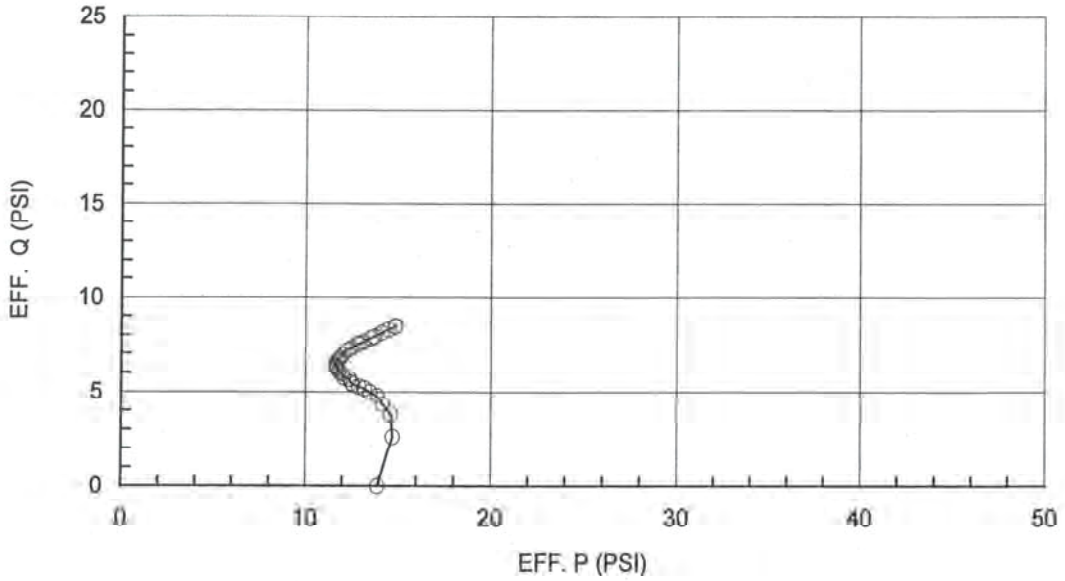
PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.:06-287-005

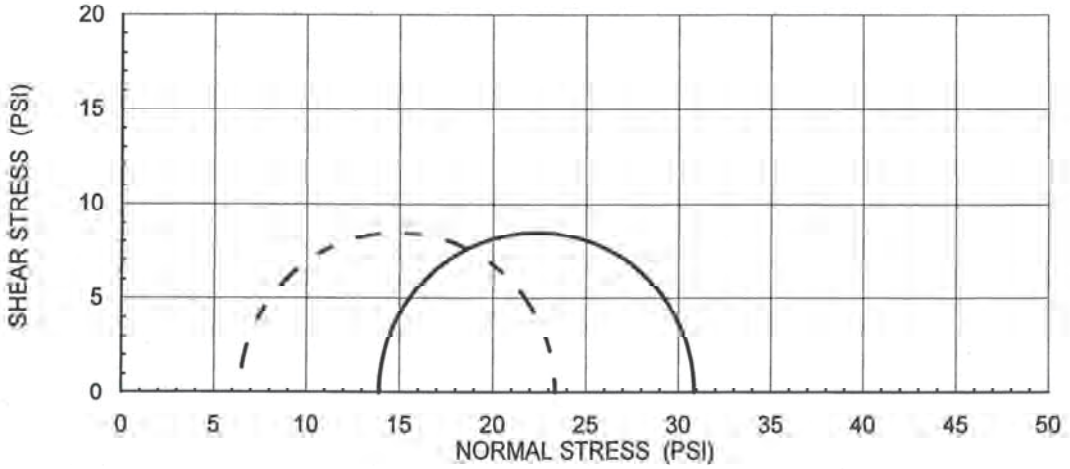
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	1G-2000 psf	N/A	Remolded	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

Environmental Geotechnology Laboratory

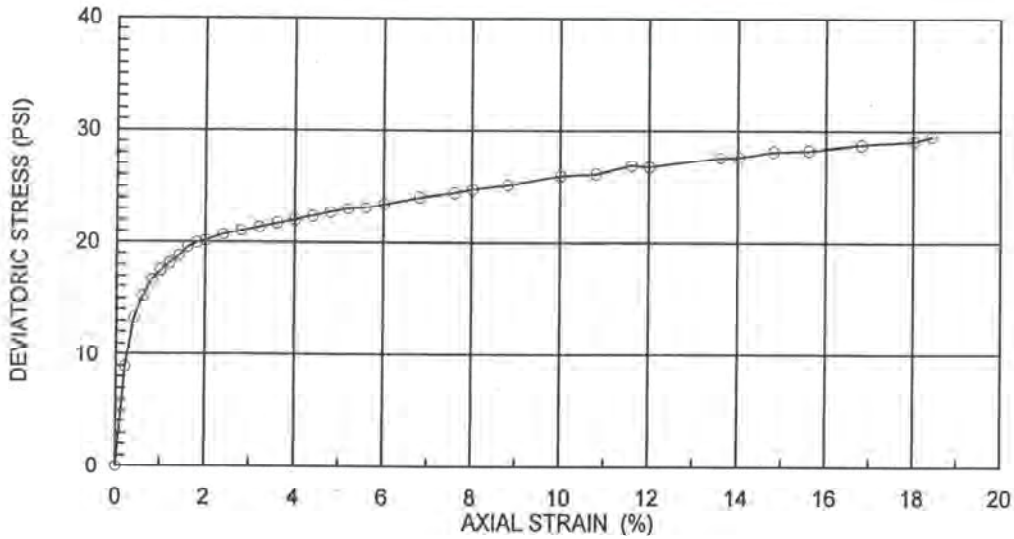
PROJECT NAME:
Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

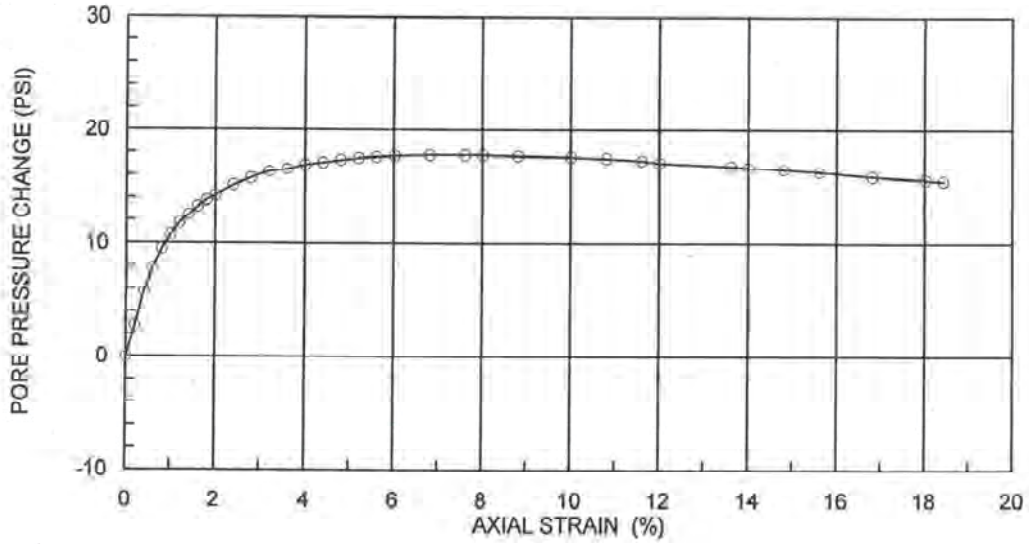
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
O	1G-4000 psf	N/A	Remold	101.0	22.9	27.8	29.46	0.01	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

Environmental Geotechnology Laboratory

PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.:06-287-005

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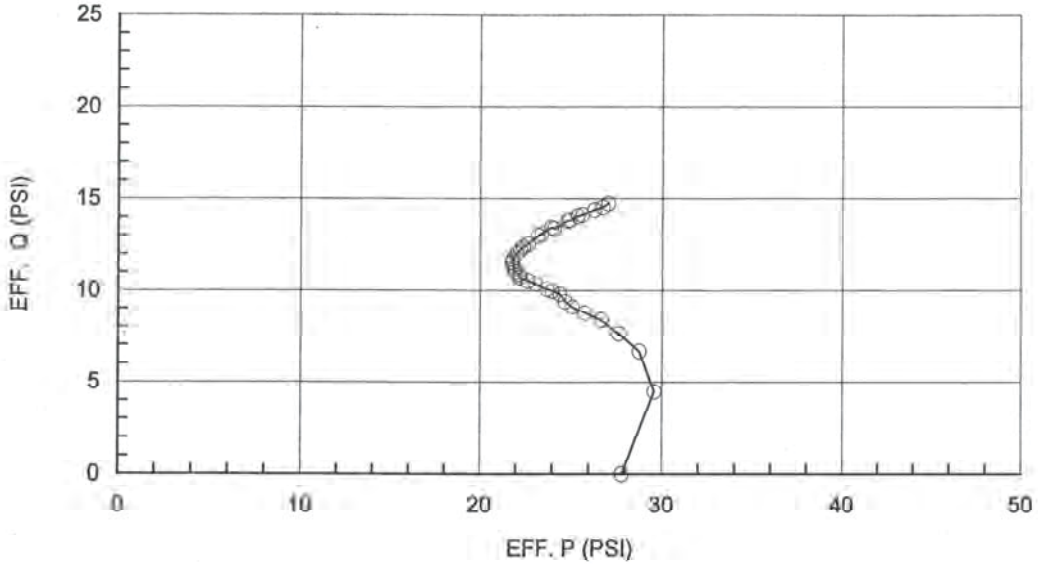
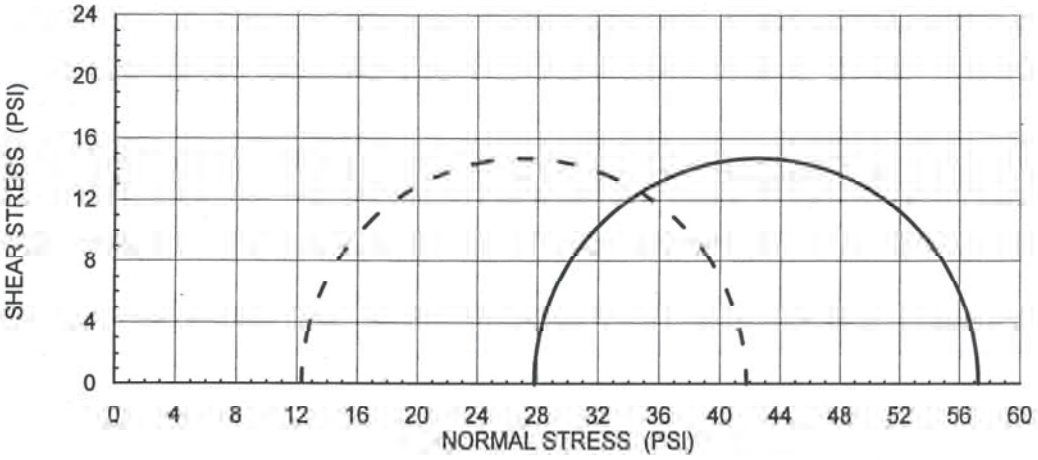
10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	1G-4000 psf	N/A	Remolded	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

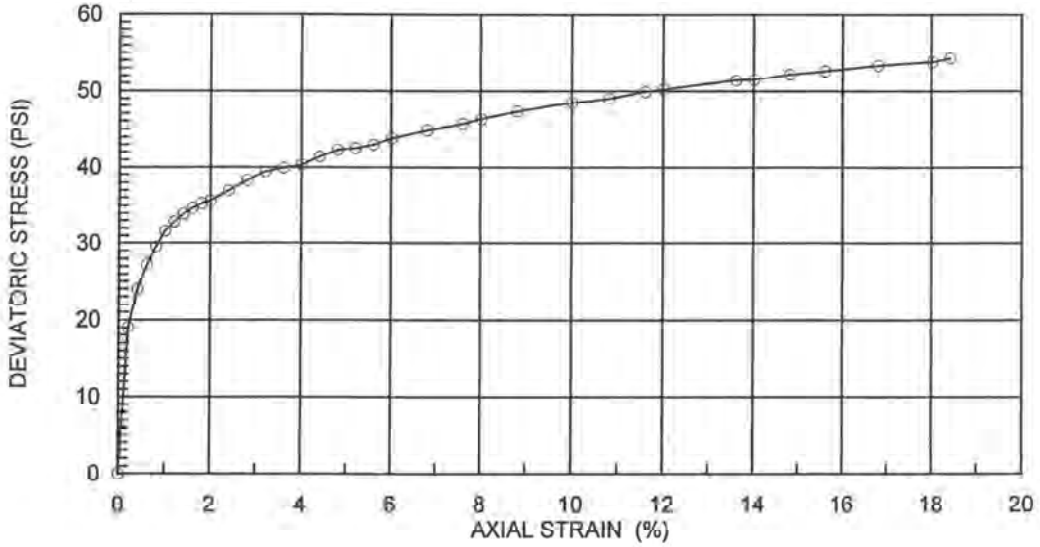
Environmental Geotechnology Laboratory

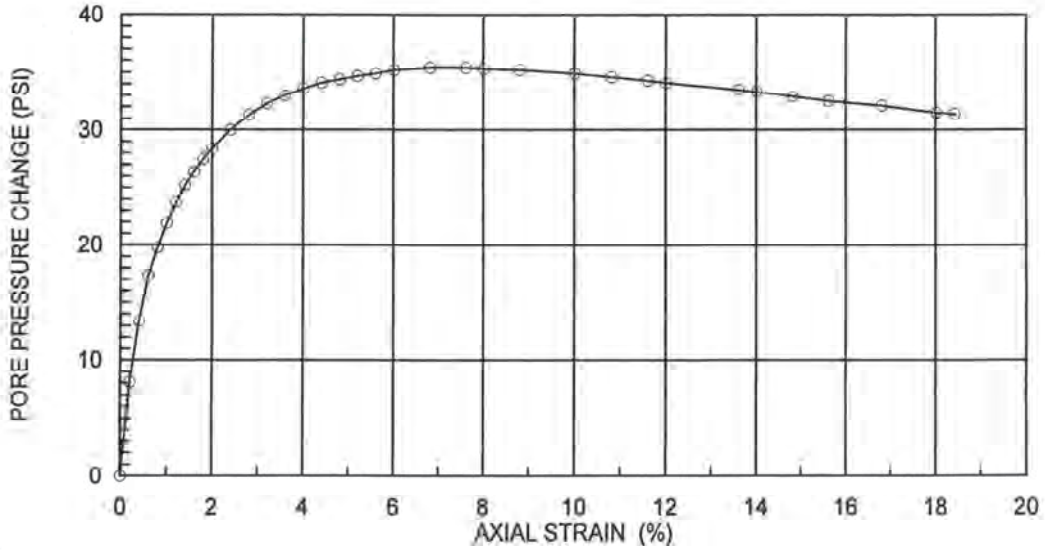
PROJECT NAME:
Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

CONSOLIDATED UNDRAINED
(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	INITIAL DRY DENSITY (PCF)	INITIAL MOISTURE CONTENT (%)	EFF. CONF. STRESS (PSI)	MAX. DEV. STRESS (PSI)	STRAIN RATE (IN/MIN)	SOIL TYPE
O	1G-8000 psf	N/A	Remold	101.0	22.9	55.6	54.27	0.01	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

Environmental Geotechnology Laboratory

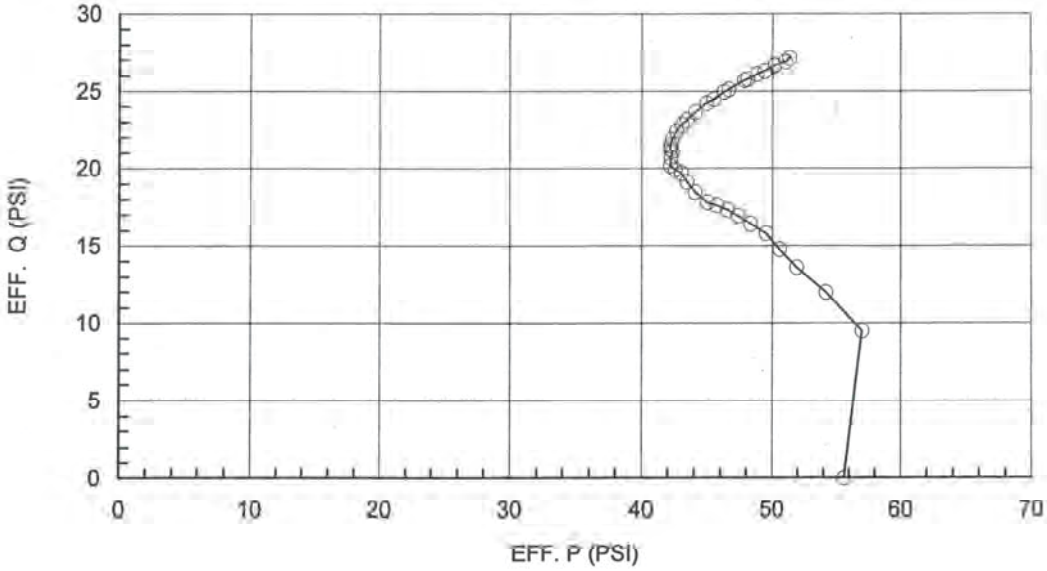
PROJECT NAME:
Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.:06-287-005

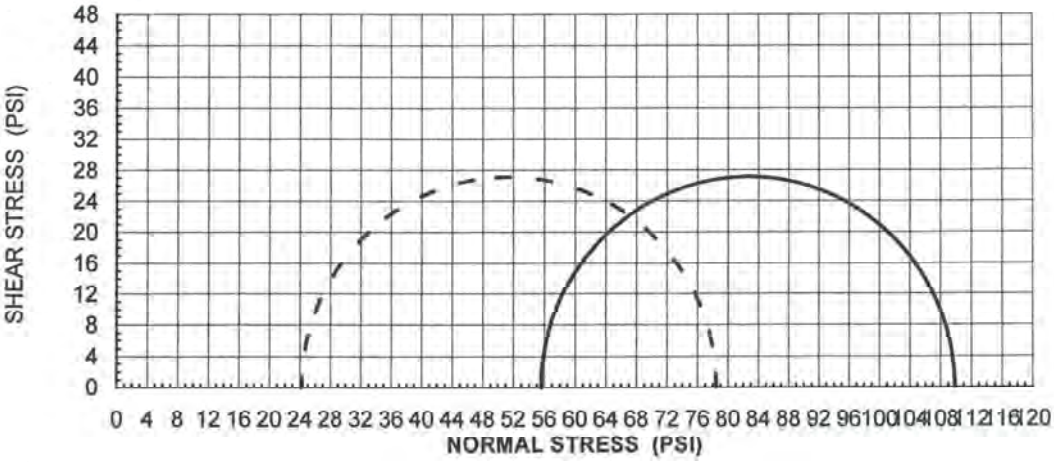
CONSOLIDATED UNDRAINED

(ASTM D4767)

10/06

FIGURE





SYMBOL	SAMPLE NO	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE
○	1G-8000 psf	N/A	Remolded	CL

Note: sample was remolded to dry density = 101 pcf, moisture = 22.9%

Environmental Geotechnology Laboratory

PROJECT NAME: Marysville
Client: CHJ Inc.
Job No.: 06260-8
EGL Project No.: 06-287-005

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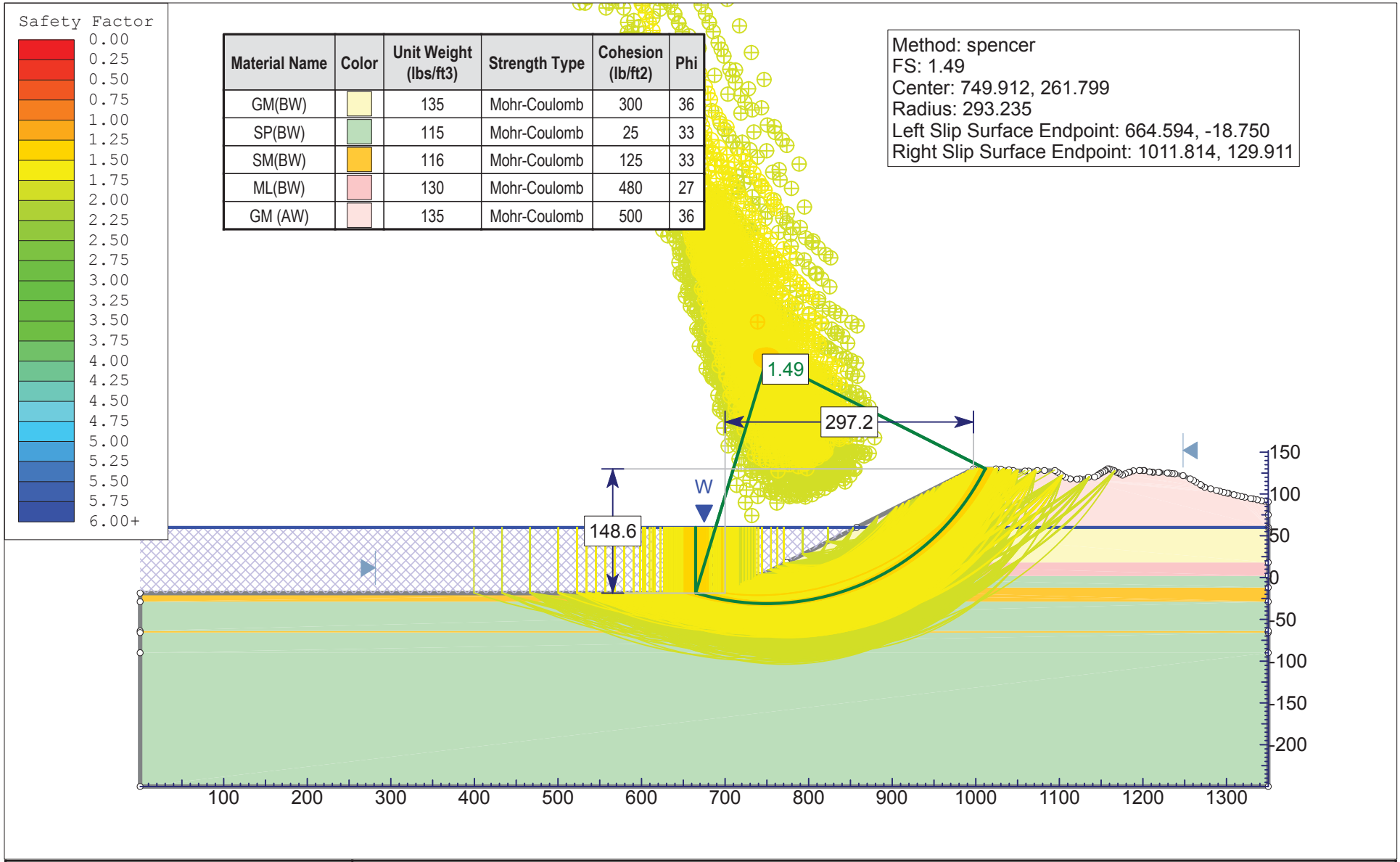
(ASTM D4767)

10/06

FIGURE

APPENDIX "D"

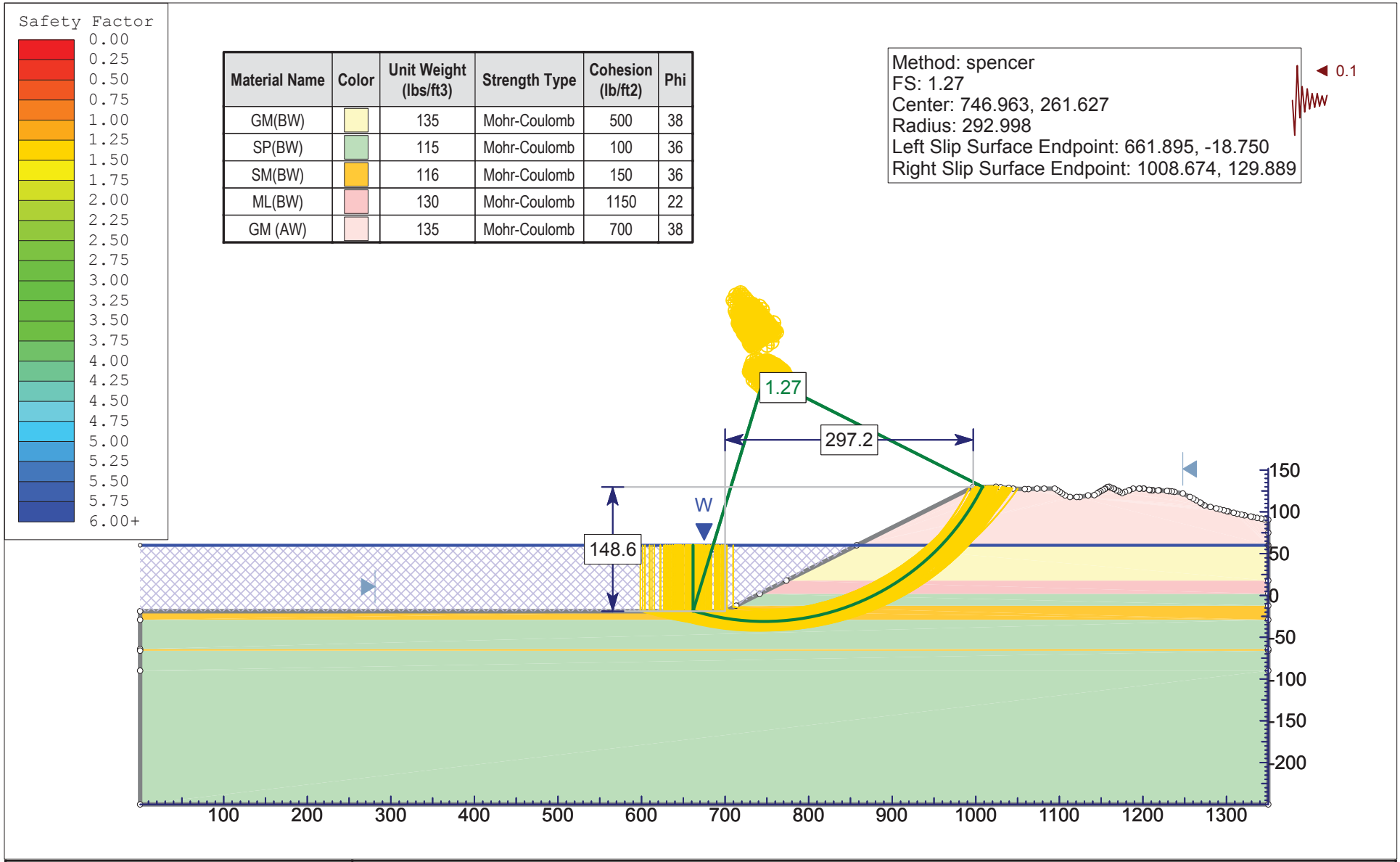
GEOTECHNICAL CALCULATIONS



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.009

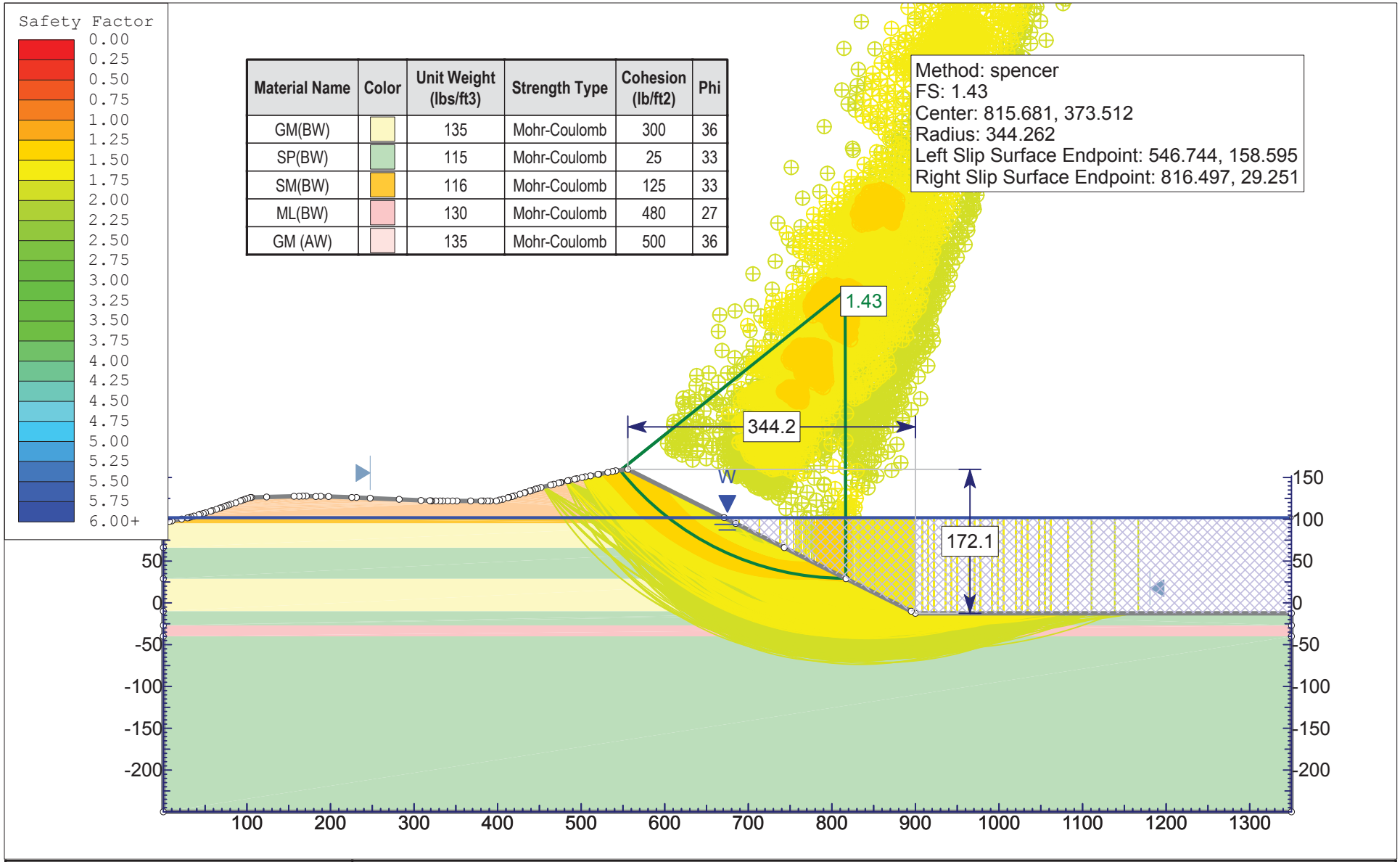
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section X-X'		
Drawn By	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8 Section X.slim	*Date* 4/1/2011	*Enclosure* D-1



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	500	38
SP(BW)		115	Mohr-Coulomb	100	36
SM(BW)		116	Mohr-Coulomb	150	36
ML(BW)		130	Mohr-Coulomb	1150	22
GM (AW)		135	Mohr-Coulomb	700	38

SLIDEINTERPRET 6.009

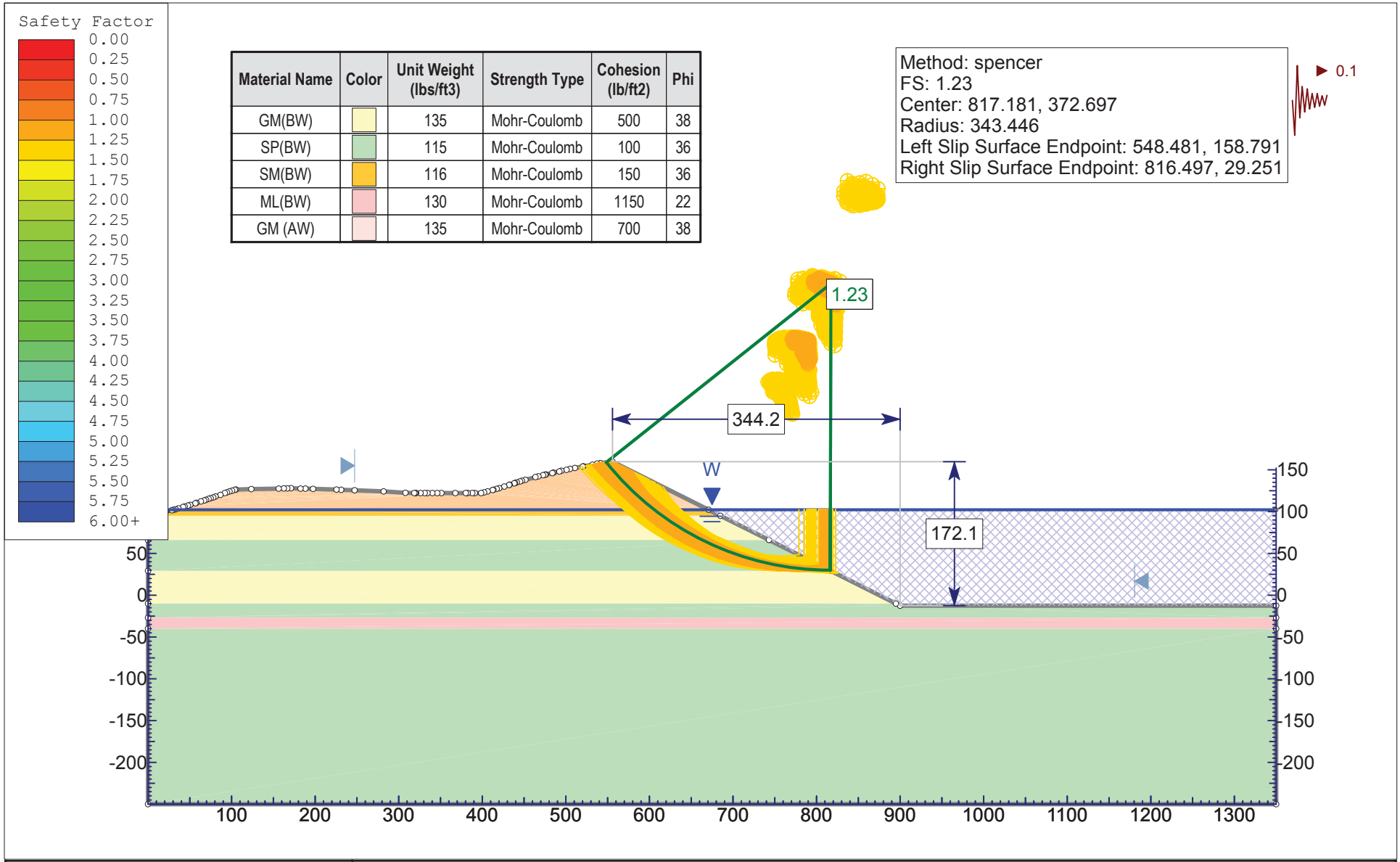
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section X-X'		
Drawn By	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8 Section X_kh=0.1.slim	*Date* 4/1/2011	*Enclosure* D-2



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.009

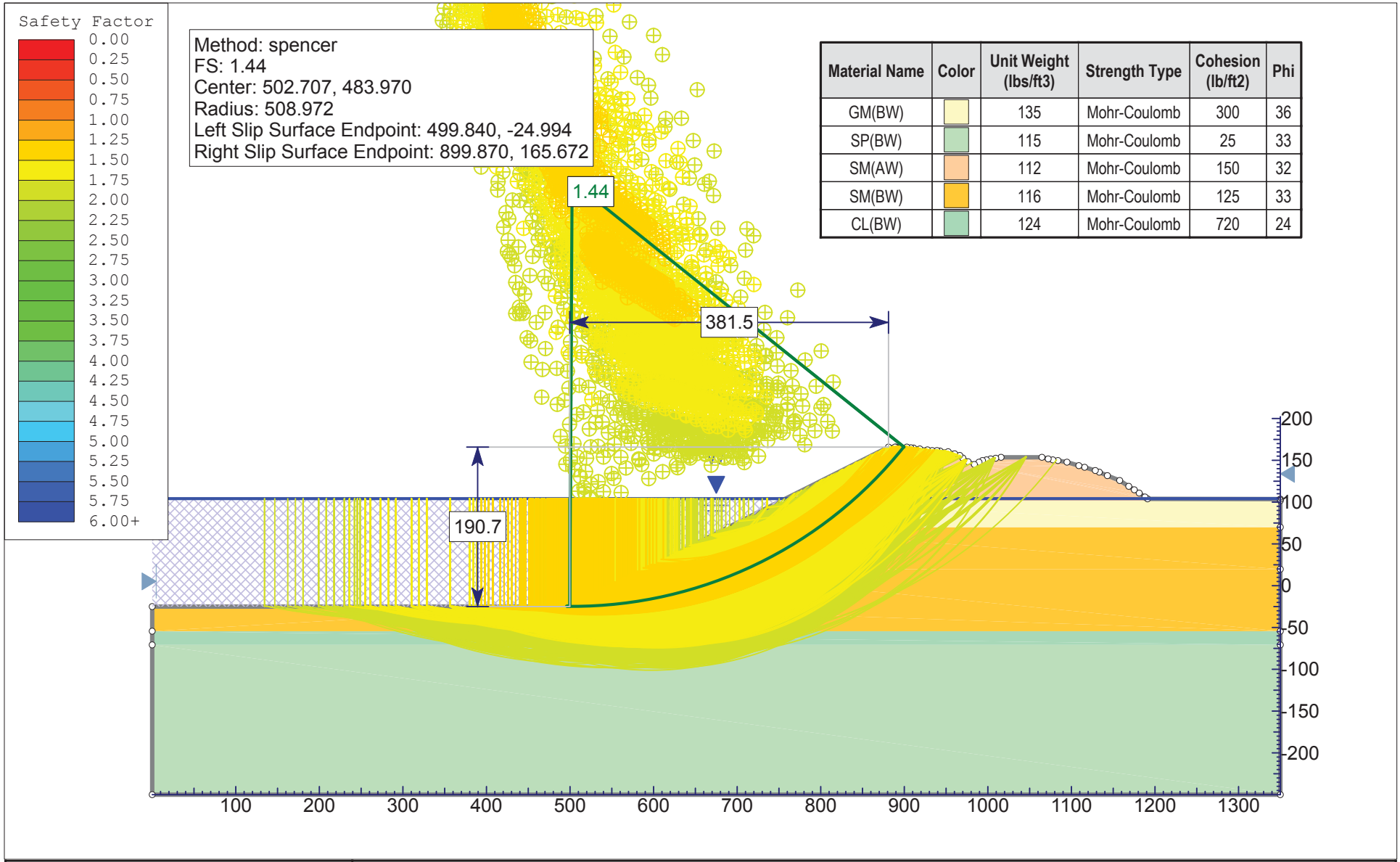
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section Y-Y'		
Drawn By	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8 Section Y.slim	*Date* 4/1/2011	*Enclosure* D-3



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	500	38
SP(BW)		115	Mohr-Coulomb	100	36
SM(BW)		116	Mohr-Coulomb	150	36
ML(BW)		130	Mohr-Coulomb	1150	22
GM (AW)		135	Mohr-Coulomb	700	38

SLIDEINTERPRET 6.009

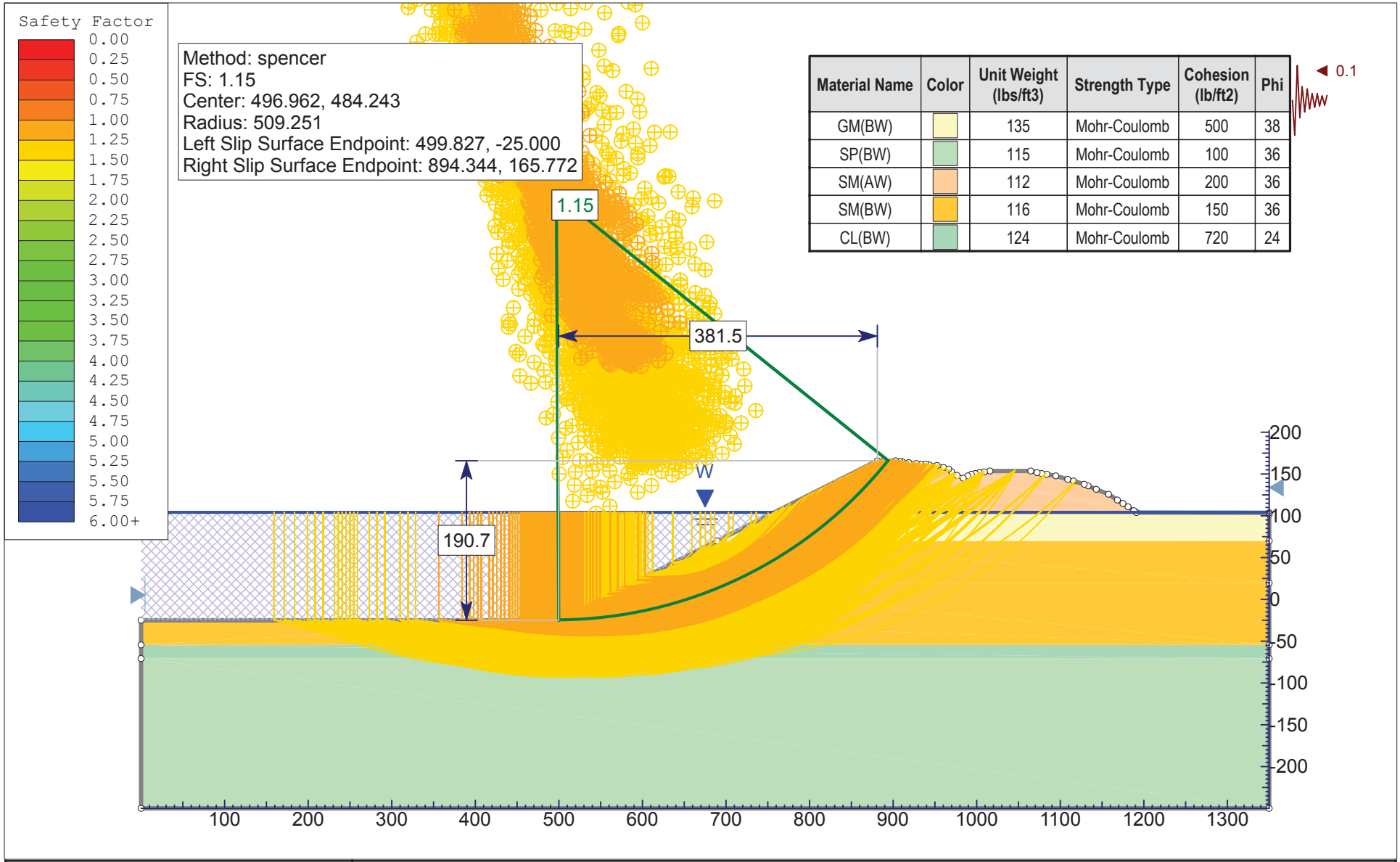
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section Y-Y'		
Drawn By	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8 Section Y_kh=0.1.slim	*Date* 4/1/2011	*Enclosure* D-4



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(AW)		112	Mohr-Coulomb	150	32
SM(BW)		116	Mohr-Coulomb	125	33
CL(BW)		124	Mohr-Coulomb	720	24

SLIDEINTERPRET 6.009

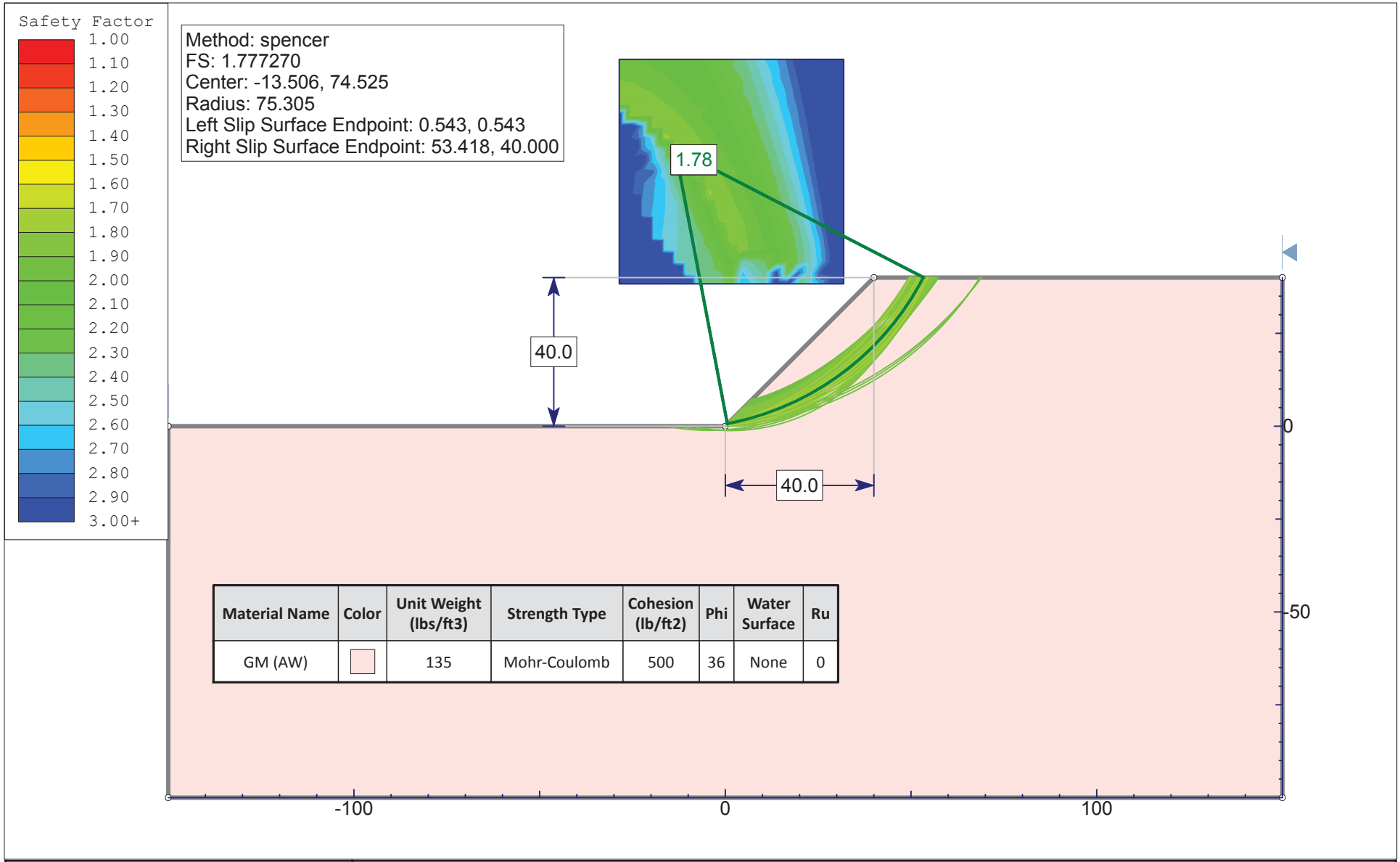
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section Z-Z'		
Drawn By C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000	
File Name 11137-8 Section Z.slim	*Date* 4/1/2011	*Enclosure* D-5	



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	500	38
SP(BW)		115	Mohr-Coulomb	100	36
SM(AW)		112	Mohr-Coulomb	200	36
SM(BW)		116	Mohr-Coulomb	150	36
CL(BW)		124	Mohr-Coulomb	720	24

SLIDEINTERPRET 6.009

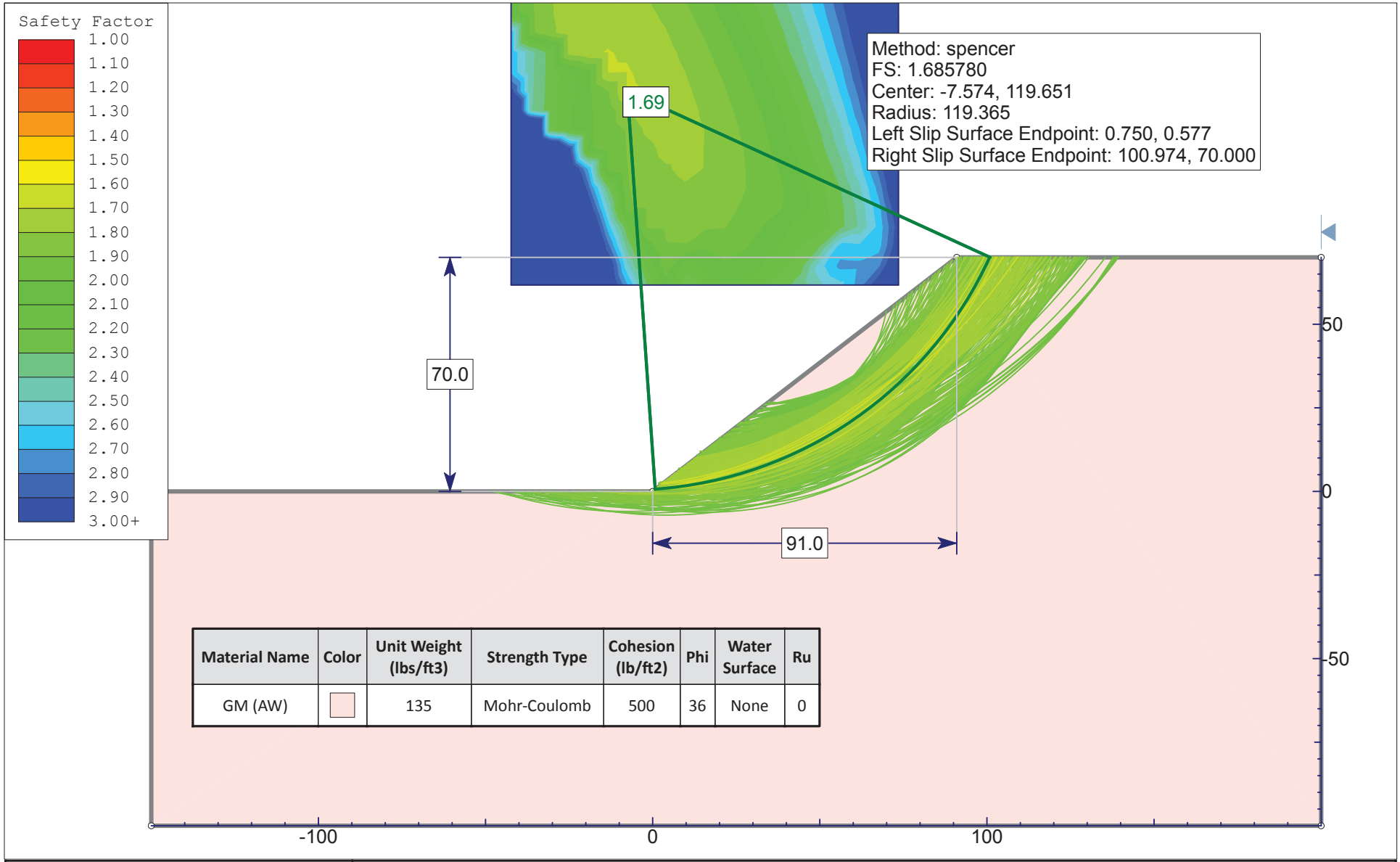
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section Z-Z'		
Drawn By	C.H.J., Incorporated	Author	Fred Yi, PhD, PE	Scale	1:2000
File Name	11137-8 Section Z_kh=0.1.slim	Date	4/1/2011	Enclosure	D-6



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Water Surface	Ru
GM (AW)		135	Mohr-Coulomb	500	36	None	0

SLIDEINTERPRET 6.009

Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Back Calculation, 40 ft		
Drawn By	C.H.J.	Author	Fred Yi	Scale	1:450
File Name	1 to 1 H=40ft back cal.sli	Date	4/1/2011	Enclosure	D-7



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Water Surface	Ru
GM (AW)		135	Mohr-Coulomb	500	36	None	0

SLIDEINTERPRET 6.009

Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Back Calculation, 70 ft		
Drawn By	C.H.J.	Author	Fred Yi	Scale	1:500
File Name	1.3 to 1 H=70ft back cal.sli	Date	4/1/2011	Enclosure	D-8

ADDENDUM
SLOPE STABILITY ANALYSIS REPORT

ADDENDUM TO
SLOPE STABILITY INVESTIGATION
(APPENDIX "D" OF AMENDED RECLAMATION PLAN
DATED APRIL 2011)
PROPOSED WESTERN AGGREGATES LLC
QUARRY RECLAMATION
MARYSVILLE AREA
YUBA COUNTY, CALIFORNIA
PREPARED FOR
WESTERN AGGREGATES LLC
JOB NO. 11137-8

C.H.J. Incorporated
1355 E. Cooley Drive, Colton, CA 92324 • Phone (909) 824-7210 • Fax (909) 824-7209
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November 30, 2011

Job No. 11137-8

Western Aggregates LLC
4711 Hammonton Road
Marysville, California 95901
Attention: Mr. Lloyd Burns

Dear Mr. Burns:

Attached herewith is the Addendum to the Slope Stability Investigation Report, prepared for the proposed reclamation of Western Aggregates LLC Quarry, located in the Marysville area, Yuba County, California. This Addendum addresses deeper proposed pit bottoms than the previously proposed bottom at -20 feet above mean sea level (AMSL).

This report was based upon a scope of services outlined in our proposal, dated October 14, 2011, and other written and verbal communications.

We appreciate this opportunity to provide geotechnical services for this project. If you have questions or comments concerning this report, please contact this firm at your convenience.

Respectfully submitted,
C.H.J., INCORPORATED

Jay J. Martin, E.G. 1529
Vice President

JJM/FY/:jm/ndt:jak

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ADDENDUM TO
SLOPE STABILITY INVESTIGATION
(APPENDIX "D" OF AMENDED RECLAMATION PLAN DATED APRIL 2011)
PROPOSED WESTERN AGGREGATES LLC
QUARRY RECLAMATION
MARYSVILLE AREA
YUBA COUNTY, CALIFORNIA
PREPARED FOR
WESTERN AGGREGATES LLC
JOB NO. 11137-8

INTRODUCTION

An Addendum to our Slope Stability Investigation , dated April 19, 2011, has been performed by this firm for the proposed reclamation of the Western Aggregates LLC Yuba County Quarry in the Marysville area, Yuba County, California. The purpose of this Addendum was to evaluate the geotechnical conditions at the subject site, analyze the stability of the proposed reclamation slopes, and provide appropriate geotechnical recommendations for design and construction of the proposed reclamation slopes down to an elevation of -120 above mean seal level (AMSL) or to the deepest stable elevation. The previous report, dated April 19, 2011, evaluated slopes for a proposed pit bottom of -20 AMSL

To orient our investigation at the site, a draft Reclamation Plan (one sheet), dated March 2011, prepared by Lilburn Corporation, was furnished for our use. The approximate location of the site is shown on the attached Index Map (Enclosure "A-1").

The results of our investigation and Slope Stability Analysis, together with our conclusions and recommendations, are presented in this report.

SCOPE OF SERVICES

The scope of services provided during this Addendum to the Slope Stability Investigation included the following:

- Review of published and unpublished literature and maps, including 209 logs of previously drilled (deep) borings placed at and near the proposed quarry

- Placement of two exploratory borings within the proposed quarry area
- Logging and sampling of exploratory borings for testing and evaluation
- Laboratory testing on selected samples
- Slope stability analysis for the proposed reclamation slopes
- Evaluation of the geotechnical data to develop site-specific recommendations for construction of reclamation slopes down to elevation -120 feet AMSL or to the deepest stable elevation

Pertinent geologic and geotechnical hazards to this project, including landsliding and flooding, were previously addressed in our April 19, 2011 report.

PROJECT CONSIDERATIONS

Our Slope Stability Investigation, dated April 19, 2011, evaluated slopes associated with a proposed reclaimed pit bottom at an elevation of -20 feet AMSL. We understand that the current reclamation plan may be revised to reflect a deeper proposed reclaimed pit bottom for all three proposed quarries, to an elevation of -120 feet AMSL or to the deepest stable elevation. Revision to -120 feet would result in quarries with a maximum slope height of approximately 240 feet. Groundwater is at approximately +80 feet MSL, which would yield a general below-water slope height of approximately 200 feet

The final reclamation plan should be reviewed by the geotechnical engineer.

SITE DESCRIPTION

The site includes the existing Western Aggregates LLC Marysville Quarry and is located at 4711 Hammonton Road, Marysville, Yuba County, California. The site is bordered on the north, east, west, and southeast by undeveloped land, and on the southwest by another operating aggregate plant.

FIELD INVESTIGATION

As part of this Addendum, the soil conditions underlying the subject site were explored by means of two exploratory borings drilled to a maximum depth of 175 feet below the existing ground surface with a truck-mounted dual-tube reverse air rig equipped for soil sampling. The rig utilized a Becker Hammer drill bit. The approximate locations of our exploratory borings (Boring Nos. 6 and 7) are indicated on the attached Geologic Map (Enclosure "A-2").

Continuous logs of the subsurface conditions, as encountered within the exploratory borings, were recorded at the time of drilling by a staff geologist from this firm. Relatively undisturbed samples were obtained by driving a split-spoon ring sampler ahead of the borings at selected levels. After the required seating of the sampler, the number of hammer blows required to advance the sampler a total of 12 inches was recorded on the boring logs. Relatively undisturbed, as well as bulk samples of typical soil types obtained, were returned to the laboratory in sealed containers for testing and evaluation.

The subsurface soils included relatively coarse materials (gravel and cobbles), as well as relatively unconsolidated lenses/layers of sand and silt. The relatively unconsolidated lithologies below the groundwater surface were subject to flowing and/or heaving during the drilling and sampling process. As a result of the coarse lithologies and flowing/heaving layers, few relatively undisturbed samples could be obtained.

Our exploratory boring logs, together with our equivalent SPT data, are presented in Appendix "B". The stratification lines presented on the boring logs represent approximate boundaries between soil types, which may include gradual transitions.

Refusal to advancement of the drill bit was obtained at a relatively shallow depth in Boring No. 6, located along the east side of the easterly pit. Hard metavolcanic bedrock was encountered at a depth of 162 feet (-54 feet AMSL) in Boring No. 6. A suitable alternative drill site was found in the central portion of the easterly pit, where Boring No. 7 was commenced.

This boring encountered refusal at a depth of 175 feet (-42 feet AMSL), also on hard metavolcanic bedrock. Both borings bottomed at unexpectedly shallow depths.

Geological field reconnaissance of the site and surrounding area and geologic mapping were also performed at the time of our field exploration.

LOGS OF BORINGS BY OTHERS

Unexpectedly shallow bedrock was encountered in Boring Nos. 6 and 7, and neither of these borings was deep enough to provide meaningful evaluation of slope stability down to the required depth (up to -120 feet AMSL). Options for proceeding to obtain the required data, including a geophysical survey to determine depth to bedrock prior to placement of additional borings, were discussed with the project team. The owner suggested using their existing boring logs in lieu of new borings. The owner provided us with 209 logs of deep borings placed for ore content evaluation purposes. At our request, the logs provided were for borings placed to a minimum depth of 200 feet below original ground surface. These borings were drilled from 1932 through 1992. Most of the logs do not include detailed soil classifications; however, a series of logs drilled in 1990 to 1992 provide sufficient gradation and classification data to utilize for slope stability analysis purposes. The materials described in the 1990-1992 logs are consistent with the results of the borings that we have drilled to date on the site and are considered to be credible as data sources for the purpose of slope stability analyses.

The logs provided are centered around the central pit and vicinity, with few logs in the east and west pits. However, suitable deep logs were found to provide the necessary data for analysis of one cross section in each proposed pit down to the required depth. The logs we utilized, including their designations in Appendix "B", consist of the following:

Boring	Date Drilled	Depth (feet)	Bottom Elev. (feet)	Cross Section	Pit	Enclosure No.
DH-3058	May 14, 1991	266	-111	R-R'	Eastern	"B-3"
DH-2163	May 3, 1990	268	-137	S-S'	Central	"B-4"
DH-2250	March 17, 1992	276	-142	T-T'	Western	"B-5"

These boring logs include a designation of the relative proportion of materials passing/retained on the 1/4-inch (No. 4) sieve. They also include a written description and a soil classification. We classified the materials in the borings according to the Unified Soil Classification using a combination of the No. 4 sieve content (gravel vs. smaller fraction), the log classification and the written description. The USCS classification for each layer is appended to the logs ("B-3" through "B-5"). The materials properties for each soil type were assigned from our previous report and used in the slope stability analyses.

LABORATORY INVESTIGATION

Included in our laboratory testing program were field moisture content tests on selected samples returned to the laboratory and field dry density tests on all relatively undisturbed samples from Boring Nos. 6 and 7. Since these borings were not deep enough to provide meaningful input for slope stability analyses, no strength testing was conducted on samples from these borings.

Dry densities and moisture contents appear on the boring logs in Appendix "B".

SLOPE STABILITY ANALYSIS

ANALYSIS METHOD:

The gross stability of slopes was analyzed under both static and seismic conditions for rotational failures using the Slide (Version 6.0) computer software program (Rocscience, 2011). This program provides nine different slope stability analysis methods including Simplified Bishop Method, Simplified Janbu Method, Spencer Method, and other methods. Spencer's method was utilized for slope stability analysis as recommended by the Implementation Committee of DMG Special Publication 117 (Blake and others, 2002).

STRENGTH PARAMETERS:

Based on the direct shear test and triaxial test results, the following strength parameters from our April 19, 2011 report were utilized in our calculations. The detailed parameters for each material type are tabulated in the following table for both static and seismic conditions.

Soil Type*	γ (pcf)	Seismic c (psf)	Seismic Φ (°)	Static c (psf)	Static Φ (°)
GM (AW)	135	700	38	500	36
GM (BW)	135	500	38	300	36
GP (BW)	135	500	38	300	36
SP (BW)	115	100	36	25	33
SM (AW)	112	200	36	150	32
SM (BW)	116	150	36	125	33
ML (BW)	130	1,150	22	480	27
CL (BW)	124	720	24	720	24

AW = Above Groundwater BW = Below Groundwater

SLOPE STABILITY ANALYSES:

Three cross sections were selected to evaluate the slope stability of the eastern (Section R-R'), the central (Section S-S') and western (Section T-T') pits. The details of the cross sections, including the stratification lines representing approximate boundaries between soil types, are included in Enclosure "A-2". The slope stability analyses were performed on the proposed reclaimed 2 horizontal to 1 vertical [2(h):1(v)] cut slopes.

A horizontal seismic coefficient of 0.10 was utilized based on the relatively low design PGA obtained for the site. This area is one of the areas of California with very low ground shaking potential. Dr. Nicholas Sitar, Professor of Civil and Environmental Engineering at U.C. Berkeley, recommends a seismic coefficient of 1/3 to 1/2 of PGA for seismic earth pressure analyses (personal communication, A.S.C.E. Seminar, Long Beach, April 23, 2008). Our K_h of 0.10 falls within this recommendation.

Static factors of safety were above 1.5 for all three sections analyzed at the -120 feet bottom elevation. Seismic factors of safety were between 1.10 and 1.00 for all sections at the -120 feet depth. As requested, we conducted searches to determine the bottom depths required to obtain a minimum seismic factor of safety of 1.10 for each section.

The detailed results of slope stability analyses are included as Enclosures "C-1" through "C-6".

Results are summarized below:

Cross Section	Cut Slope Height [below water]	Static FS	Seismic FS	Bottom Elevation
R-R'	2(h):1(v) [174']	1.70	1.12	-84 feet
S-S'	2(h):1(v) [189']	1.62	1.11	-105 feet
T-T'	2(h):1(v) [187']	1.68	1.11	-105 feet

These recommended maximum pit depths are slightly shallower than the desired -120 feet below AMSL.

CONCLUSIONS

Based upon the findings of our geologic field observations, evaluations, and review of numerous borings by others, as well as the results of our slope stability calculations, it is the opinion of this firm that the reclaimed final slopes as recommended in this report are stable, provided the recommendations contained in this Addendum Report are implemented.

Based upon our analyses, the following 2(h):1(v) reclamation slopes are suitably stable against gross failure for the anticipated long-term conditions, including the effects of seismic shaking:

Pit Designation	Maximum Slope Height Below Water Table
Pit 1 (Easterly Pit)	174 feet
Pit 2 (Central Pit)	189 feet
Pits 3, 4 and 5 (Westerly Pit)	187 feet

Reclaimed slopes, no steeper than 2(h):1(v) up to these maximum heights, are recommended to provide adequate stability against gross failure under the anticipated conditions of shallow groundwater and seismic shaking.

We understand that the new intended depth of mining has been chosen by the owner as -85 feet AMSL for all pits (Pits 1, 2, 3, 4 and 5). This intended depth of mining conforms to our recommendations.

The historic high groundwater elevation is considered to be approximately equal to the current elevation as expressed by the surface of the existing bodies of water at the site. Ponding exists across the site and is anticipated in all proposed quarries.

Relatively shallow bedrock (bedrock shallower than these recommended maximum depths) was encountered in Boring Nos. 6 and 7 of this investigation, and within some of the logs of borings placed by others. There is neither the desire nor the ability by the owner to mine the bedrock. These recommended maximum quarry depths are considered at maximum depth, with significant quarry areas expected to bottom out shallower than the recommended maxima due to shallow bedrock. The areas of shallow bedrock will result in decreased maximum reclaimed slope heights and consequent increased slope stability.

RECOMMENDATIONS

SEISMIC SHAKING HAZARDS:

Low seismic shaking of the site can be expected to occur during the lifetime of the proposed mining and reclamation. This potential has been considered in our analyses and evaluation of slope stability.

RECLAIMED (FINAL) CUT SLOPE CONSTRUCTION:

Reclaimed slopes are expected to be nearly all within and cut into dredge tailings and native alluvial materials.

The current reclamation plan (April 2011) shows proposed quarry slopes bottoming at -20 feet AMSL and inclined at 2(h):1(v). The proposed quarry slopes may be safely modified to bottom at the maximum depths recommended above provided that the recommendations included in this Addendum are followed. We understand that the new intended depth of mining has been chosen by the owner as -85 feet AMSL for all pits (Pits 1, 2, 3, 4 and 5). This intended depth of mining conforms to our recommendations.

This Addendum should be considered a part of the referenced geotechnical investigation report dated April 19, 2011. All recommendations contained in the referenced report remain applicable and should be adhered to.

Any large, unstable boulders on mine slopes above groundwater level should be removed or stabilized prior to the end of reclamation.

SLOPE PROTECTION:
Slopes should be protected with berms and/or levees as necessary to prevent slope erosion in the areas where slopes drain onto the reclaimed slopes.

EROSION AND DRAINAGE:
Runoff should not be allowed to flow over natural, cut, or fill areas in such a way as to cause erosion. Finished soil slopes should be planted with drought resistant native vegetation to protect from wind and rain. Watering to maintain slopes is not recommended.

ALTERNATE END USES OF THE SITE:
This report and the investigation performed in order to prepare this report, are intended to be suitable for mine reclamation only. Future uses of the site for anything other than reclamation of the mine as open space are beyond the scope of this investigation and report. If other uses of the site are planned or considered, then an additional investigation to address other end uses should be conducted.

LIMITATIONS

C.H.J., Incorporated has striven to perform our services within the limits prescribed by our client, and in a manner consistent with the usual thoroughness and competence of reputable geotechnical engineers and engineering geologists practicing under similar circumstances. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents, or otherwise supplied.

This report reflects the testing conducted on the site as the site existed during the investigation, which is the subject of this report. However, changes in the conditions of a property can occur with the passage of time, due to natural processes or the works of man on this or adjacent properties. Changes in applicable or appropriate standards may also occur whether as a result of legislation, application, or the broadening of knowledge.

Therefore, this report is indicative of only those conditions tested at the time of the subject investigation, and the findings of this report may be invalidated in part or in full by changes outside of the control of C.H.J., Incorporated.

The conclusions and recommendations in this report are based upon observations performed and data collected at separate locations, and interpolation between these locations, carried out for the project and the scope of services described. It is assumed and expected that the conditions between locations observed and/or sampled are similar to those encountered at the individual locations where observation and sampling was performed. However, conditions between these locations may vary significantly. Should conditions be encountered in the field, by the client, or any firm performing services for the client, or the client's assign, that appear different than those described herein, this firm should be contacted immediately in order that we might evaluate their effect.

If this report or portions thereof are provided to contractors or included in specifications, it should be understood by all parties that they are provided for information only and should be used as such.

The report and its contents resulting from this investigation are not intended or represented to be suitable for reuse on extensions or modifications of the project, or for use on any other project.

CLOSURE

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please do not hesitate to contact this office.

Respectfully submitted,
C.H.J., INCORPORATED

Fred Yi, Ph.D., R.C.E. 71059
Project Engineer

REGISTERED PROFESSIONAL ENGINEER
FENG YI
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PROFESSIONAL GEOLOGIST
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FY/JJM/:jm/ndt:jak

REFERENCES

Blake, T.F., Hollingsworth, R.A., and Stewart, J.P., 2002, Recommended procedures for implementation of DMG Special Publication 117: Guidelines for analyzing and mitigating landslide hazards in California: Workshop held by Southern California Earthquake Center, June 20-21, 2002, USC Campus.

California Building Standards Commission, 2010, California Building Code: Sacramento, California.

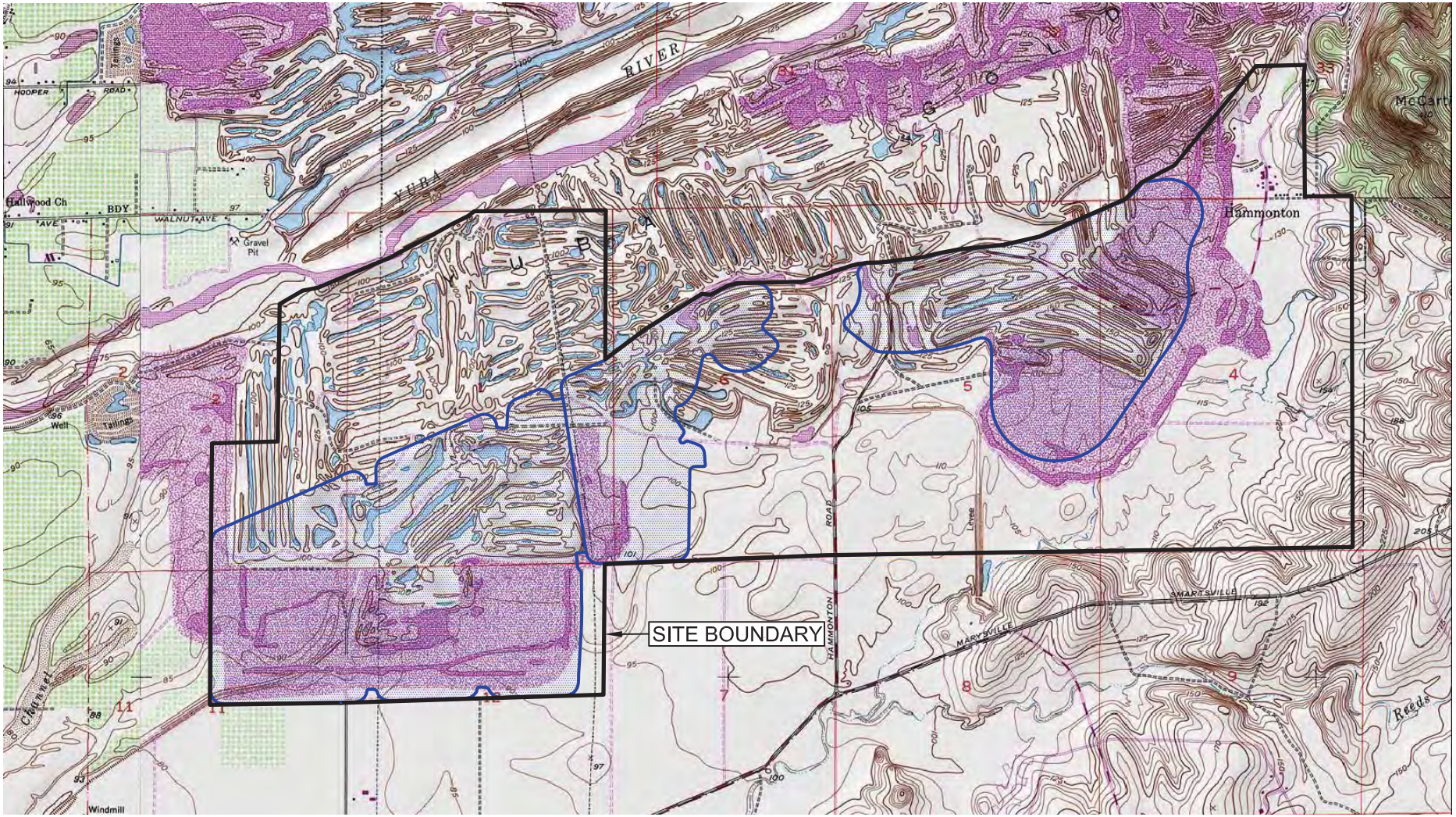
C.H.J., Incorporated, April 19, 2011, Slope Stability Investigation report, Proposed Western Aggregates LLC Quarry Reclamation, Marysville Area, Yuba County, California, Job No. 11137-8.

Jibson, R.W. and Jibson, M.W., 2003, Java programs for using Newmark's method and simplified decoupled analysis to model slope performance during earthquakes: U.S. Geological Survey Open File Report OF-03-0005.

Rocscience, 2011, SLIDE ver 6.0: 2D Limit equilibrium slope stability for soil and rock slopes (computer program).

APPENDIX "A"

GEOTECHNICAL MAPS AND CROSS SECTIONS



PROPOSED QUARRY BOUNDARIES

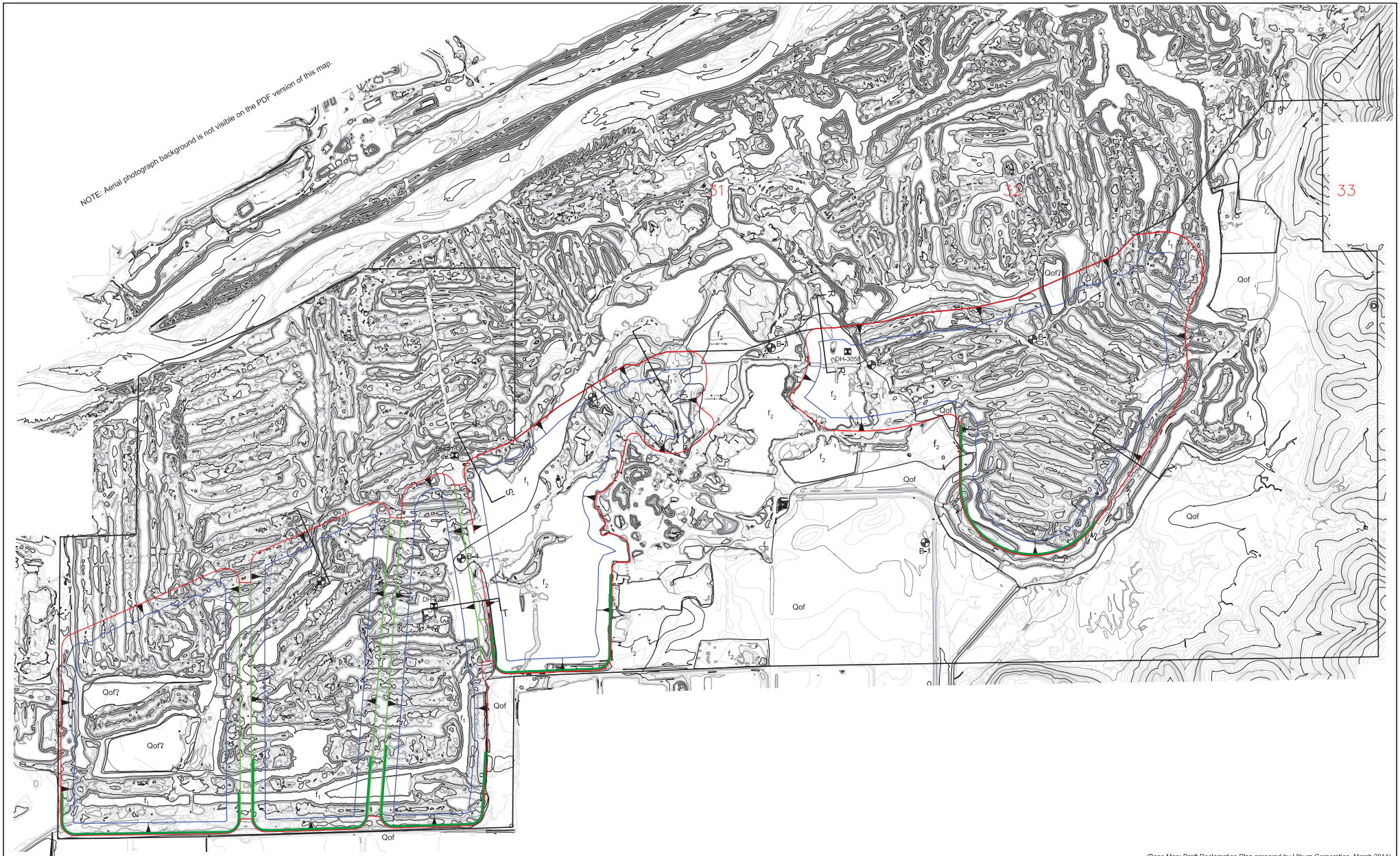
-N-

SCALE: 1"= 3,000'

INDEX MAP

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-1"
DATE: NOVEMBER 2011		JOB NUMBER 11137-8

C.H.J. Incorporated



(Base Map: Draft Reclamation Plan prepared by Lilburn Corporation, March 2011)

N

SCALE: 1"=700'

0 700 1400

GEOLOGIC UNITS:

f_2 - Recent fill

f_1 - fill associated with historic dredging activities; includes some undifferentiated dredge tailings of more recent age

Qoa - old fan deposits

Approximate boundary of proposed quarry

Approximate location of -20 amsl contour on pit bottom

Approximate geologic contact

DH-3058 Location of boring by others (1990-1992) used in this addendum

B-7 Location of Geotechnical Boring (2006, 2011)

Z Z' Geologic Cross Section (R, S, & T- this report)

GEOLOGIC MAP

FOR: WESTERN AGGREGATES LLC

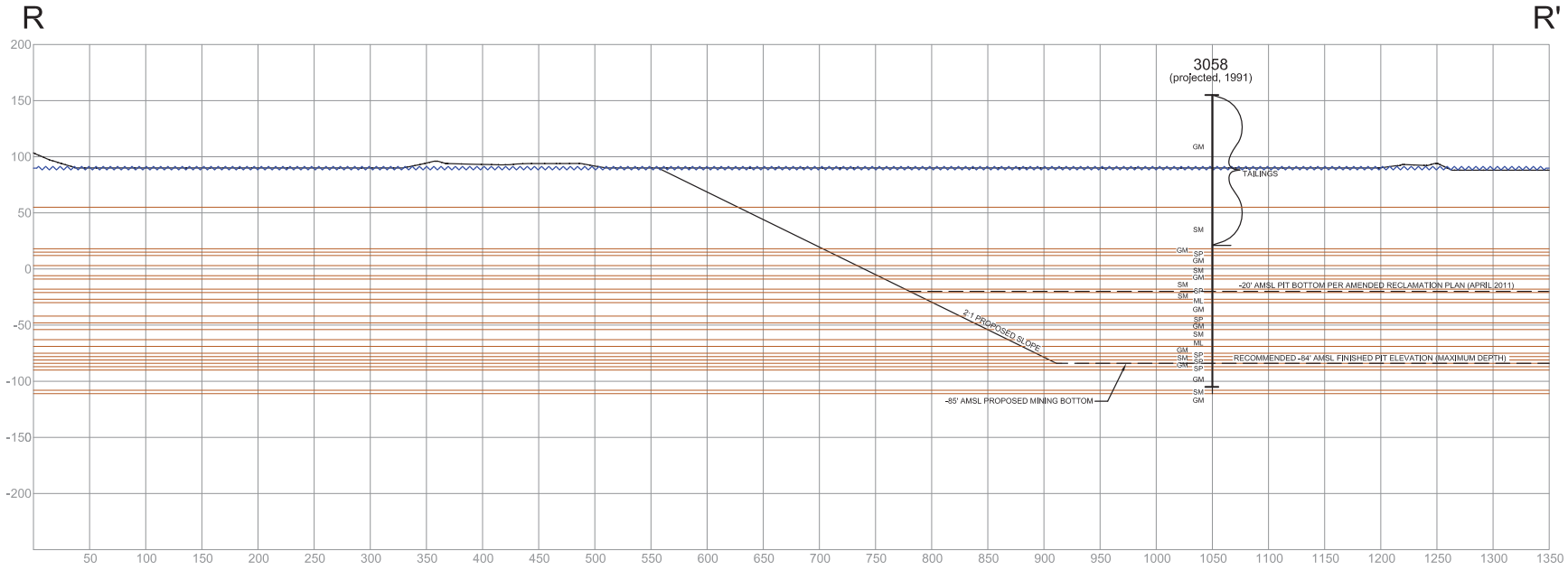
DATE: NOVEMBER 2011

SLOPE STABILITY INVESTIGATION ADDENDUM
WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS
YUBA COUNTY, CALIFORNIA

ENCLOSURE "A-2"

JOB NUMBER 11137-8

C.H.J. Incorporated



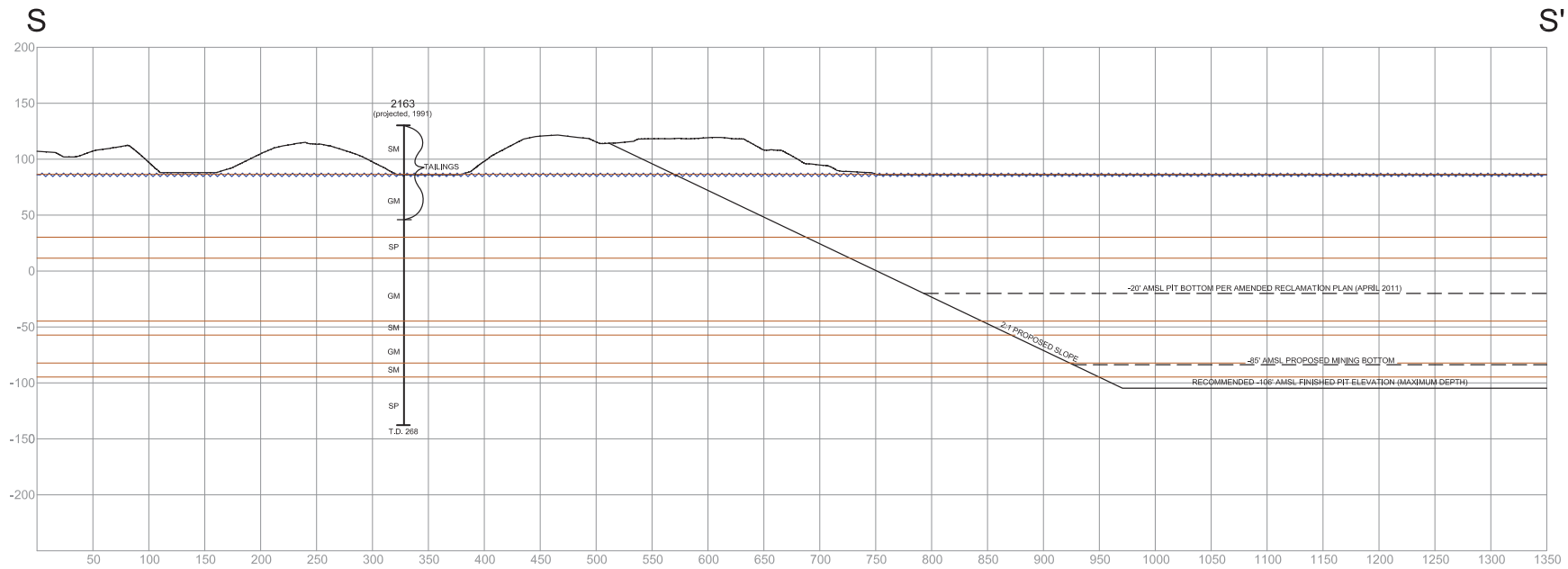
SCALE 1"= 100'

contact, separates lithologic units

GEOLOGIC CROSS SECTION R-R'

FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-3"
DATE: NOVEMBER 2011		JOB NUMBER 11137-8

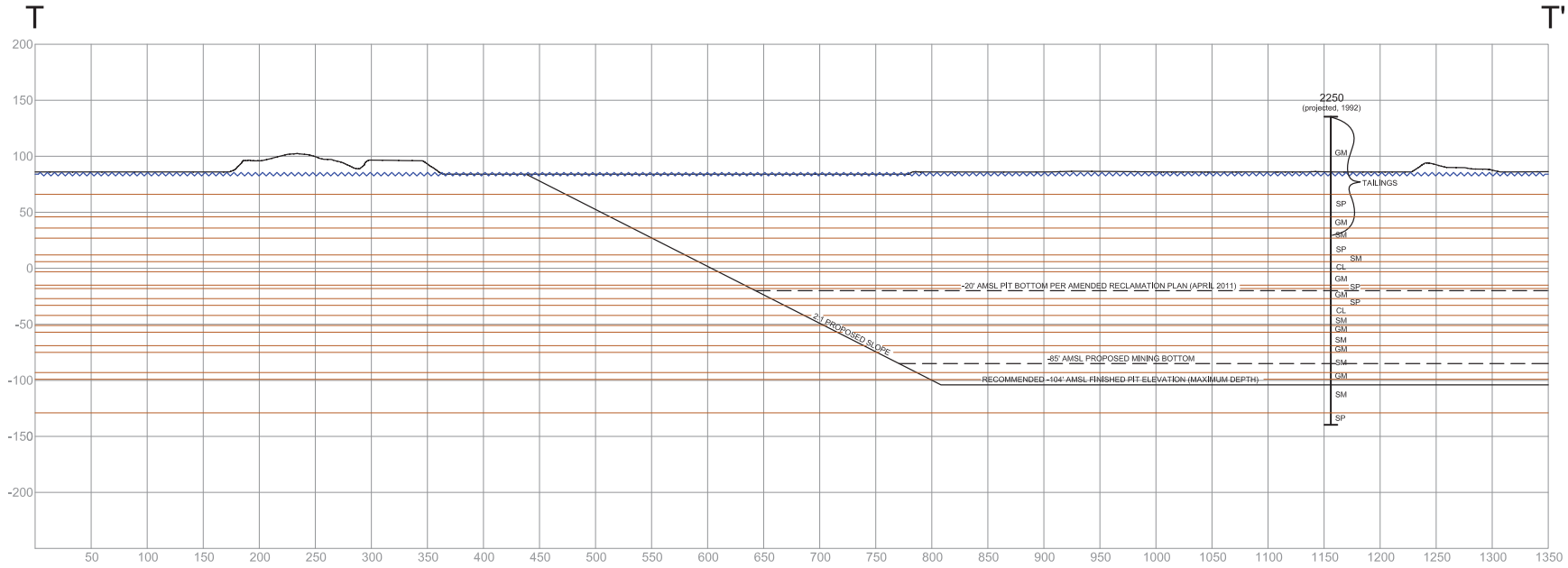
C.H.J. Incorporated



contact, separates lithologic units

SCALE 1"= 100'

GEOLOGIC CROSS SECTION S-S'		
FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-3"
DATE: NOVEMBER 2011		JOB NUMBER 11137-8
		C.H.J. Incorporated



SCALE 1"= 100'

GEOLOGIC CROSS SECTION T-T'		
FOR: WESTERN AGGREGATES LLC	SLOPE STABILITY INVESTIGATION WESTERN AGGREGATES LLC YUBA COUNTY OPERATIONS YUBA COUNTY, CALIFORNIA	ENCLOSURE "A-3"
DATE: NOVEMBER 2011		JOB NUMBER 11137-8
		C.H.J. Incorporated

APPENDIX "B"

EXPLORATORY LOGS

KEY TO LOGS (BORING NOS. 6 AND 7)

SAMPLE TYPE:

Bulk	Indicates Disturbed or Bulk Sample
Dist.	Indicates Disturbed Sample
DS	Direct Shear Test (ASTM D 3080)
MDC	Maximum Density Optimum Moisture Determination (ASTM D 1557)
N.R.	Indicates No Recovery of Sample
Ring	Indicates Relatively Undisturbed Ring Sample. Relatively Undisturbed Ring Samples are obtained with a "California Sampler" (3.25" O.D. and 2.42" I.D.) driven with a 140-pound weight falling 30 inches. The blows per foot are converted to equivalent SPT values.
SA	Sieve Analysis (ASTM C 136)

ENGINEERING PROPERTIES FROM SPT BLOWS

Relationship of Penetration Resistance to Relative Density for Cohesionless Soils*
(After Mitchell and Katti, 1981)

Number of SPT Blows (N_{60})	Descriptive Relative Density	Approximate Relative Density (%)
<4	Very Loose	0-15
4-10	Loose	15-35
10-30	Medium Dense	35-65
30-50	Dense	65-85
>50	Very Dense	85-100

*At an effective overburden pressure of 1 ton per square foot (100 kPa)

Approximate Values of Undrained Shear Strength for Cohesive Soils
(Terzaghi and Peck, 1967)

Number of SPT Blows (N_{60})	Soil Consistency	Approximate Undrained Shear Strength (psf)
<2	Very Soft	Less than 250
2-4	Soft	250-500
4-8	Medium Stiff	500-1000
8-15	Stiff	1000-2000
15-30	Very Stiff	2000-4000
>30	Hard	More than 4000

C.H.J. Incorporated

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

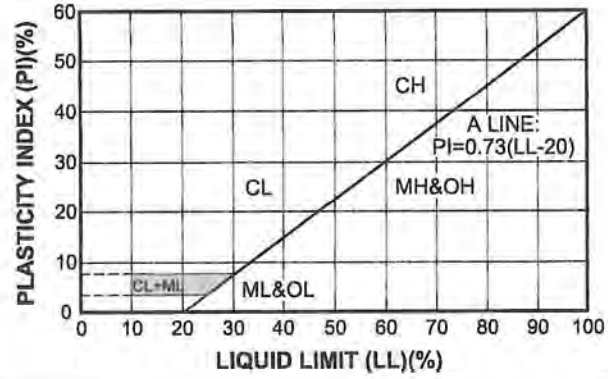
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size)			
GRAVELS More than 50% of coarse fraction larger than No.4 sieve size	Clean Gravels (Less than 5% fines)		
		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)		
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No.4 sieve size	Clean Sands (Less than 5% fines)		
		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)		
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size).
Coarse-grained soils are classified as follows:
Less than 5 percent.....GW, GP, SW, SP
More than 12 percent.....GM, GC, SM, SC
5 to 12 percent.....Borderline cases requiring dual symbols

PLASTICITY CHART



EXPLORATORY BORING NO. 6

Date Drilled: 8/10/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 108±

Logged by: VJR

Measured Depth to Water(ft): 19.5

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(CL) Clay with Sand, fine to medium, silt, gravel and cobbles to 6", brown	Tailings				4.5		
5									
10				X		20 24 21	NR	11.4	Ring
15		(GP) Sandy Gravel, fine to coarse, silt, cobbles to 4", returned as Matrix-free gravel, gray							
20			Groundwater	X		27 37 40	NR	NR	Ring
25									
30				X		46 50	NR	NR	Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1a

EXPLORATORY BORING NO. 6

Date Drilled: 8/10/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 108±

Logged by: VJR

Measured Depth to Water(ft): 19.5

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SP) Sand, fine to medium with coarse, gravel to 3", silt, dark brown							
40				X		50	19.3	106.1	Ring
45									
50				X		15 18 26	12.7	110.5	Ring
		(CL) Clay with Sand, fine, silt and gravel to 3", brown							
55									
		(SP) Sand, fine to medium with coarse, gravel and cobbles to 5", dark brown							
60				X		13 49 50/5	19.6	105.1	Ring
65		(GP) Sandy Gravel, fine to coarse, silt and cobbles to 5", dark brown							

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1b

EXPLORATORY BORING NO. 6

Date Drilled: 8/10/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 108±

Logged by: VJR

Measured Depth to Water(ft): 19.5

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(GP) Sandy Gravel, fine to coarse, silt and cobbles to 5", dark brown		X		35 50/3	NR	NR	Ring
75									
80				X		40 46 50	NR	8.5	Ring
85									
		(SP-SM) Sand, fine to medium with coarse, silt and clay, gravel to 3", brown	Native						
90				X		50	13.8	113.9	Ring
95									
100				X		26 31 36	26.5	91.6	Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1c

EXPLORATORY BORING NO. 6

Date Drilled: 8/10/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 108±

Logged by: VJR

Measured Depth to Water(ft): 19.5

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to coarse with clay, gravel to 3", light brown			▨		21.5		
110				▨		50	NR	NR	Ring
115									
120				▨		39 50/3	18.2	Dist.	Ring
125									
130				▨		13 49 50	30.1	83.3	Ring
135		(SC) Clayey Sand, fine to medium with silt and gravel to 3", brown			▨		15.7		

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1d

EXPLORATORY BORING NO. 6

Date Drilled: 8/10/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 108±

Logged by: VJR

Measured Depth to Water(ft): 19.5

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
				X		14 38 50/3	16.3	114.2	Ring
145		(SM) Silty Sand with clay, fine to medium, gravel to 3", brown							
150				X		50	Dist.	18.8	Ring
155									
		(SC) Clayey Sand, fine to medium with silt and gravel to 3", gray							
160				X		37 50	Dist.	18.4	Ring
		(GP) Gravelly Sand, fine to coarse with silt and clay, cobbles to 8"			X		14.5		
			Refusal						
		END OF BORING							
165		BORING TERMINATED AT 162.0' DUE TO REFUSAL ON METAVOLCANIC BEDROCK TAILINGS TO 88.0' MODERATE CAVING GROUNDWATER AT 19.5'							
170									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-1e

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse, clay and gravel to 3", brown	Tailings		▨		12.0		
5									
10									
15									
20				X		32 49 50	5.7	Dist.	Ring
25									
30				X		40 43 50	10.5	NR	Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2a

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse, clay and gravel to 3", brown							
40		(GP) Sandy Gravel, fine to coarse with silt, cobbles to 4", brown							
45			Groundwater						
50									
55									
60									
		(SP) Sand, fine to coarse, silt, gravel and cobbles to 4", gray brown			▨		17.0		
65									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2b

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SP) Sand, fine to coarse, silt, gravel and cobbles to 4", gray brown		X		30 50	15.6	114.2	Ring
75									
80									
85									
90									
95									
100		(GP) Sandy Gravel, fine to coarse with silt, cobbles to 6", gray brown	Native						

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2c

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
110				X		50/5	NR	NR	Ring
115									
120									
125		(SC) Clayey Sand, fine to medium with coarse, silt, gravel and cobbles to 4", brown							
130				X		50	NR	NR	Ring
135		(SC) Clayey Sand, fine to medium with coarse, silt, gravel and cobbles to 4", brown							

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2d

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
145		(SM) Silty Sand, fine to medium with clay, gravel to 3", gray							
150				☒		50	NR	NR	Ring
155									
160									
165		(GM) Gravelly Silty Sand, fine to medium with clay, gravel to 3", recovered as gravel with no matrix, gray							
170		(GM) Gravelly Silty Sand, fine to medium with clay, gravel to 3", recovered as gravel with no matrix, gray		☒		50	NR	1.6	Ring

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2e

EXPLORATORY BORING NO. 7

Date Drilled: 8/13/11

Client: WESTERN AGGREGATES, LLC

Equipment: Dual Tube Becker

Driving Weight / Drop: 140 lbs./30 in.

Surface Elevation(ft): 133±

Logged by: VJR

Measured Depth to Water(ft): 45.0

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	UNCORRECTED BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		END OF BORING	Refusal						
		BORING TERMINATED AT 175.0' DUE TO REFUSAL ON METAVOLCANIC BEDROCK TAILINGS TO 100.0' MODERATE CAVING GROUNDWATER AT 45.0'							
180									
185									
190									
195									
200									
205									

BORING LOG - NO EQUIV & BLOW PER 6 IN 11137-8.GPJ CHJ.GDT 11/7/11

C.H.J.

YUBA COUNTY OPERATIONS
MARYSVILLE AREA, CALIFORNIA

Job No. 11137-8

Enclosure B-2f

DH-3058

Date on Site 5/14/91 Time on Site 8:30
Date off Site 5/16/91 Time off Site 10:00

YUBA PROJECT WESTGOLD PLACER DRILL LOG

Drill Hole No.: 3058 Page 1 of 5
Flagging Green Dot No. Buckets 98 0
Elev. 154.59 Sed Slime
Easting 2157,683.03 Northing 554,748.12

TD Drilled 266.30 Tailings Drilled 134' Virgin Sed. Drilled 132.5' Bedrock Drilled —0—
Drill Type Becker Bit Type Four Tooth Bit OD _____ Bit ID 7" Weather _____
Reason for Termination: Crowed IN Driller Ben Coleman Foreman Jesus Robles
NOTES: Amalgamated Gold Numerical Total: 131.8

USCS Time	Drive Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
			5/14 - Start up @ 8:35											
			Tailings - Random Samples											
GM	20	20'	Brn Silt; Unsorted Subrnd - Wellrnd; Fine - coarse sand & Gravel	1	SAG	14.0		10.0	5.0		1 PT	258		1.1
			Stopped @ 9:20 (Break out Wrench broke - Tool run To Get Replacement) Start up @ 13:55											
GM	30	50	Brn. Silt; Unsorted Subrnd - Wellrnd; Fine - coarse sand & Gravel	2	SAG	24.0		18.0	6.0		1 PT	131		0.2
GM	20	70	A/A	1	SAG	13.0		9.0	4.0		1 PT	150		TR
			Shut Down @ 15:12 5/15 Start up @ 7:25											
GM	10	80	Brn. slime; Brn. Silt; Unsorted Subrnd - Wellrnd; Fine - coarse sand + Gravel	2	SAG SLI	32.5		22.0	15.0	K 1.5	1 PT	137		0.9
GM	10	90	A/A	2	SAG SLI	39.5		30.0	12.0	K 1.5	1 PT	202		2.3
SM	10	100	Brn. slime & Silt; Unsorted Subrnd - Wellrnd; Fine - coarse sand; Fine - Med. Gravel	1	SAG SLI	15.5		6.0	9.0		1 PT	293		1.2
SM	10	110	Brn. Sandy clay; Brn. Slime & Silt	2	SAM SLI	40.0		11.0	34.0	K 1.5	3 PT	209		4.2
SM	10	120	Brn. slime + Silt; Unsorted Subrnd - Wellrnd; Fine - coarse sand; Fine - Med. Gravel	2	SAG SLI	44.0		7.5	36.0	K 1.5	3 PT	119		3.6

Primary Sed Code				Modifer Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-3058

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 2 of 5

Drill Hole No.: 3058

Flagging Green DOT No. Buckets 98 Sed 0 Slime

Easting _____ Northing _____

USCS Drive Time	Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
SM	10	130	BRN. SLIME & SILT; UNSORTED Subrnd - Wellrnd; Fine-Coarse	2	SAG SLI	36.5		7.0	26.0	K 1.5	3 PT	65		2.4
			SAND; Fine-Med. Gravel.	X	X	X	X	X	X	X	X	X	X	X
SM	4	134	BRN. SILT; UNSORTED Subrnd -	1	SAG	18.0		6.0	13.0	K 1.5	2 PT	30		3.1
			Wellrnd; Fine-Coarse sand											
			& Gravel	X	X	X	X	X	X	X	X	X	X	X
			- VIRGIN GROUND -	X	X	X	X	X	X	X	X	X	X	X
GM	3	137	BRN SILT; UNSORTED, Subrnd -	1	SAG	10.0		5.0	3.5		1 PT	299		0.1
			Wellrnd; Fine Coarse SAND											
			& Gravel.	X	X	X	X	X	X	X	X	X	X	X
SP	3	140	A/A	2	SAG	27.5		12.0	18.5	K 1.5	2 PT	315		2.9
GM	3	143	A/A	3	SAG	51.5		33.0	22.5	K 1.5	2 PT	310		0.5
SM	3	146	A/A	1	SAG	11.0		4.0	7.0		2 PT	98		1.0
SM	3	149	A/A	1	SAG	6.5		4.0	2.5		1 PT	245		0.3
SM	3	152	BRN. Friable sandy clay;	1	WAD	15.0		5.5	9.0		1 PT	97		0.5
			BRN SILT; UNSORTED,											
			Subrnd - Wellrnd, Fine -	X	X	X	X	X	X	X	X	X	X	X
			Coarse SAND & Gravel											
SM	3	155	A/A	1	WAD	22.0		9.5	15.0	K 1.5	2 PT	247		0.1
SM	3	158	BRN. Friable SANDY clay;	1	SAM	11.5		1.0	8.0		2 PT	14		0.1
			BRN. SILT; UNSORTED											
			Subrnd - Wellrnd; Fine -	X	X	X	X	X	X	X	X	X	X	X
			Coarse SAND											
GM	3	161	BRN. Friable sandy clay;	1	WAD	9.0		6.0	4.0		1 PT	110		0.3
			BRN SILT; UNSORTED, Subrnd -											
			Wellrnd; Fine - Coarse sand &	X	X	X	X	X	X	X	X	X	X	X
			Gravel.											
SM	3	164	A/A	1	WAD	3.0		1.0	1.5		1 PT	120		0.6
SM	3	167	BRN. Sandy clay; BRN.	1	SAM	3.0		.5	1.0		1 PT	106		1.3
			SILT; UNSORTED Subrnd -											
			Wellrnd; Fine - Coarse sand	X	X	X	X	X	X	X	X	X	X	X
			Pipe plugged - pulled back	X	X	X	X	X	X	X	X	X	X	X
			2 ft. JAR pipe to dislodge	X	X	X	X	X	X	X	X	X	X	X
			rock - water run @ 9:35	X	X	X	X	X	X	X	X	X	X	X
			START up @ 10:00											

Primary Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel
SAM	Sand, Silt, Clay	GRA	Gravel
SAN	Sand	WAD	Sand, Gravel, Silt/Clay
		DIA	Silt/Clay, Sand, Gravel

Modifer Sed Code			
ORG	Organic Pitch	FOS	Fossils
OXI	Oxidized	CEM	Cemented
WOO	Wood	VOL	Volcanic Rock
		SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-3058

YUBA PROJECT WESTGOLD PLACER DRILL LOG

Page 3 of 5

Drill Hole No.: 3058

Flagging Green Dot No. Buckets 98 Sed 0 Slime

Easting _____ Northing _____

USCS Time	Drive Ft.	Drive Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
SM	3	170	BRN. Slime & Silt; Sandy BRN. clay; Unsorted	1	SAM SLI	19.0		6.0	6.0		1 PT	261		1.1
			Subrnd-Wellrnd; Fine-Coarse Sand	X	X	X	X	X	X	X	X	X	X	X
SP	3	173	BRN. Silt; Unsorted Subrnd-Wellrnd, Fine-Coarse Sand	1	SAG	20.5		9.0	12.0	K 1.5	2 PT	18		0.2
			& Gravel.	X	X	X	X	X	X	X	X	X	X	X
SM	3	176	BRN. Slime & Silt; BRN sandy	1	SAM SLI	17.0		3.5	7.0		1 PT	373		TR
			clay; Unsorted Subrnd-Wellrnd											
			Fine-Coarse Sand	X	X	X	X	X	X	X	X	X	X	X
SM	3	179	A/A	1	SAM SLI	16.0		1.5	13.0	K 1.5	1 PT	265		0.3
ML	3	182	BRN. cohesive clay; Unsorted	2	DIA	29.5		9.0	18.0	K 1.5	2 PT	50		1.5
			Subrnd-Wellrnd; Fine-coarse											
			Sand & Gravel	X	X	X	X	X	X	X	X	X	X	X
GM	3	185	BRN. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand &	2	WAD	33.5		23.0	11.5	K 1.5	2 PT	63		11.0
			Gravel; BRN. Sandy Friable	X	X	X	X	X	X	X	X	X	X	X
			Clay											
GM	3	188	Hammer drilling — BRN. Silt;	2	WAD	27.0		18.0	8.0		2 PT	223		22.8
			Unsorted Subrnd-Wellrnd;											
			Fine-Coarse Sand & Gravel	X	X	X	X	X	X	X	X	X	X	X
			BRN. Friable sandy clay											
GM	3	191	Rusty Unsorted Subrnd-	2	SAG OXI	36.5		25.0	15.0	K 1.5	1 PT	285		6.2
			Wellrnd; Fine-Coarse Sand											
			& Gravel; Lithified Sand	X	X	X	X	X	X	X	X	X	X	X
SM	3	194	Friable sandy chips;	3	SAG CEM	49.0		30.0	25.5	K 1.5	1 PT	124		3.1
			Unsorted Subrnd-Wellrnd											
			Fine-Coarse Sand & Gravel;	X	X	X	X	X	X	X	X	X	X	X
			Lithified Sand.											
SP	3	197	A/A	2	SAG CEM	34.0		7.0	27.0	K 1.5	3 PT	34		TR
SP	3	200	A/A.	3	SAG CEM	55.0		24.5	36.5	K 1.5	3 PT	116		2.2
GM	3	203	Lithified Sand; Unsorted	2	SAG CEM	32.0		18.5	17.0	K 1.5	2 PT 2 Brown Sand	161		0.1
			Subrnd-Wellrnd; Fine-											
			Coarse Sand & Gravel	X	X	X	X	X	X	X	X	X	X	X
GM	3	206	Lithified Sand Unsorted	3	SAN CEM	49.5		4.0	45.0	K 1.5	2 PT	27		TR
			Subrnd-Wellrnd; Fine-											
			Coarse Sand	X	X	X	X	X	X	X	X	X	X	X

Primary Sed Code

MUD	Silt, Clay	SAG	Sand, gravel
SAM	Sand, Silt, Clay	GRA	Gravel
SAN	Sand	WAD	Sand, Gravel, Silt/Clay
		DIA	Silt/Clay, Sand, Gravel

Modifer Sed Code

ORG	Organic Pitch	FOS	Fossils
OXI	Oxidized	CEM	Cemented
WOO	Wood	VOL	Volcanic Rock
		SLI	Slime

Hvy.Min. Abund.

None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-3058

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 4 of 5

Drill Hole No.: 3058

Flagging Green DOT No. Buckets 98 Sed 0 Slime

Easting _____ Northing _____

USCS Drive			Description			Volume 1 x 10³ CY				Concentration		Wt. Au (mg)		
Time	Ft.	Depth	Written Description/No. Buckets	No Buk.	Sed. Code	Total Sed.	Slm	+ 1/4	- 1/4	Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Jar No.	Cor. Wt.	Amg. Wt.
SM	3	209	BRN. SILT; BRN Friable chips of clay; Friable	2	SAM CEM	27.0		4.0	20.0	K 1.5	1 PT	286		TR
			chips of sand; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand; Lithified sand	X	X	X	X	X	X	X	X	X	X	X
SM	3	212	BRN. Cohesive Sandy clay; BRN. SILT change to Gryll	2	SAM	31.0		2.0	24.0	K 1.5	2 PT	185		TR
			cohesive clay	X	X	X	X	X	X	X	X	X	X	X
SM	3	215	Gry. Friable chips of Sand + clay; Unsorted	2	WAD CEM	29.0		7.5	21.0	K 1.5	2 PT	361		TR
			Subrnd-Wellrnd; Fine-coarse sand + Gravel; Gry. SILT,	X	X	X	X	X	X	X	X	X	X	X
ML	3	218	Gry. Friable cohesive sandy clay; Unsorted Subrnd-U	2	DIA	28.0		15.0	12.5	K 1.5	1 PT 1	350		TR
			Wellrnd; Fine-coarse sand + Gravel	X	X	X	X	X	X	X	X	X	X	X
ML	3	221	Gry. Friable sandy clay; Gry. SILT; Unsorted Subrnd-	2	WAD	34.0		13.0	22.0	K 1.5	1 PT 1	306		TR
			Wellrnd; Fine-coarse sand + Gravel; change To Drk. brn. SILT.	X	X	X	X	X	X	X	X	X	X	X
GM	3	224	Gry. + BRN. SILT; Unsorted Subrnd-Wellrnd; Fine-coarse	2	SAG CEM	29.5		9.0	22.0	K 1.5	1 PT 1	291		TR
			Sand + Gravel; Lithified Sand	X	X	X	X	X	X	X	X	X	X	X
GM	3	227	A/A	2	SAG CEM	27.5		12.0	18.0	K 1.5	1 PT 1	329		TR
SP	3	230	Gry. SILT; Unsorted Subrnd-Wellrnd; Fine-coarse sand	2	SAG	29.5		14.0	18.5	K 1.5	1 PT 1	345		NT
			+ Gravel	X	X	X	X	X	X	X	X	X	X	X
SM	3	233	Gry. Friable sandy clay; Gry. SILT; Unsorted Subrnd-	2	WAD	26.0		11.0	16.0	K 1.5	1 PT 1	353		TR
			Wellrnd; Fine-coarse sand + Gravel	X	X	X	X	X	X	X	X	X	X	X
SP	3	236	Grn. + Drk. Gry. SILT; Unsorted Subrnd-Wellrnd; Fine-coarse	2	SAG	28.5		13.0	16.0	K 1.5	1 PT 1	200		TR
			Sand + Gravel; Sulfieds.	X	X	X	X	X	X	X	X	X	X	X
GM	3	239	A/A	2	SAG	30.5		17.0	16.0	K 1.5	1 PT 1	8		NT
SP	3	242	A/A	2	SAG	40.0		20.0	21.0	K 1.5	1 PT 1	334		TR
GM	3	245	Gry. SILT Cemented Gravel; Unsorted Subrnd-Wellrnd; Fine-coarse sand + Gravel; Sulfieds	2	SAG CEM	33.0		20.0	17.5	K 1.5	1 PT 3	85		TR

Primary Sed Code				Modifer Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-3058

YUBA PROJECT WESTGOLD PLACER DRILL LOG

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Drill Hole No.: 3058

Flagging Green DOT No. Buckets 98 Sed 0 Slime

Easting _____ Northing _____

USCS Time	Drive Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
GM	3	248	Gry. Silt; Sulfieds; Cemented Gravel; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Gravel.	2	SAG CEM	34.0		19.0	18.0	K 1.5	1 PT 3	5		TR
				X	X	X	X	X	X	X	X	X	X	X
GM	3	251	A/A	2	SAG CEM	33.0		20.5	16.0	K 1.5	1 PT 1	336		TR
GM	3	254	Gry. Silt; Sulfieds; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Gravel; Hard drilling.	2	SAG	33.5		22.0	15.0	K 1.5	1 PT 1	375		NT
				X	X	X	X	X	X	X	X	X	X	X
GM	3	257	Gry. + Dk. Gry. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Gravel; Sulfieds	2	SAG	34.0		22.0	16.0	K 1.5	1 PT 3	230		TR
				X	X	X	X	X	X	X	X	X	X	X
GM	3	260	A/A	2	SAG	30.0		17.0	17.5	K 1.5	1 PT 3	252		0.2
SM	3	263	Gry. Friable sandy clay; Gry. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Gravel; Sulfieds.	3	WAD	54.0		12.0	42.5	K 1.5	1 PT 3	67		4.6
				X	X	X	X	X	X	X	X	X	X	X
SM	.70	263.70	Gry. Friable Sandy-clay; Gry. Silt; Sulfieds; Cemented Gravel; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Gravel; V. Hard drilling	1	WAD CEM	11.5		9.0	5.0		1 PT 3	A	III	26.8
				X	X	X	X	X	X	X	X	X	X	X
			Due To hard drilling The previous Sample was Shortened To (.70) in order To Examine sediment below for Gold.	X	X	X	X	X	X	X	X	X	X	X
GM	2.30	266	All Sediment is Rock Fragment of Same rock; Angular Unsorted Fractured rock; Sulfieds; Changed To Unsorted Subrnd-Wellrnd; Fine-Coarse Gravel; Sulfieds; Gry. Friable sandy clay; Gry. Silt. (No sand)	2	WAD	26.0		16.0	11.0	K 1.5	1 PT 3	221		23.2
GM	.30	266.30	Rock Fragement; Sulfieds; Tr. of Unsorted Subrnd-Wellrnd; Coarse Gravel w/o sand.	1	GRA	7.0		4.5	2.5		1 PT 1	256		1.8
				X	X	X	X	X	X	X	X	X	X	X

Terminated Hole

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

MG

DH-2163

Date on Site 5/3/90 Time on Site 7:00
Date off Site 5/3/90 Time off Site 17:30

YUBA PROJECT WESTGOLD PLACER DRILL LOG

Drill Hole No.: 2163 Page 1 of 4
Flagging RNA No. Buckets 141 2
Elev. 131.2' Sed Slime
Easting 2150858.68 Northing 552,983.99

TD Drilled 268' Tailings Drilled 85' Virgin Sed. Drilled 183' Bedrock Drilled
Drill Type Becker Bit Type Four Tooth crowed in Bit OD 7" Bit ID Weather HOT
Reason for Termination: Driller Ruben Foreman Jess

NOTES:

USCS Drive			Description			Volume 1 x 10³ CY				Concentration		Wt. Au (mg)		
Time	Ft.	Depth	Written Description/No. Buckets	No Buk.	Sed. Code	Total Sed.	Slm	+ 1/4	- 1/4	Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Jar No.	Cor. Wt.	Amg. Wt.
9:05		85												
GM	3	88	BRN. SILT; Unsorted Subrnd Well rnd; Fine - Coarse Sand + Grav.	1	SAG	18.5		1.5	7.0		1 PT	165		TR
GM	3	91	A/A	1	SAG	19.0		13.0	9.0	K 1.5	1 MT	81		14.9
GM	3	94	A/A	1	SAG	19.0		12.0	8.0		1 PT	12		0.7
GM	3	97	A/A	2	SAG	27.5		17.0	9.0	K 1.5	1 PT	15		0.5
SP	3	100	Sand; BRN clay + SILT	1	MUD	15.5		6.5	6.0		1 PT	177		2.2
SP	3	103	SAND BRN clay + SILT	2	SAM	31.0		2.0	40.0	K 1.5	2 PT	28		1.2
SP	3	106	BRN. SAT; Unsorted Subrnd Well rnd Fine-Coarse Sand	2	SAN	30.0		4.0	21.5	K 1.5	1 PT	161		0.4
SP	3	109	A/A	3	SAN	46.5		9.0	42.5	K 1.5	2 PT	143		0.2
SP	3	112	BRN. SILT; Unsorted Subrnd-Well rnd; Fine - Coarse Sand + Grav	4	SAG	65.0		17.0	53.5	K 1.5	1 FS	45		TR
SP	3	115	A/A	3	SAG	55.0		28.0	36.5	K 1.5	2 PT	152		0.3
GM	3	118	A/A	3	SAG	55.0		29.0	22.0	K 1.5	2 PT	15		5.5
GM	3	121	A/A	2	SAG	28.0		20.0	11.0	K 1.5	1 PT	154		0.1
GM	3	124	LT. BRN Sand; cohesive clay. Unsorted Subrnd - Well rnd; fine - Coarse Sand + Grav.	2	WAD	31.0		22.0	11.0	K 1.5	1 FS	60		0.9
						X		X	X			X		
GM	3	127	BRN. SILT. Unsorted Subrnd - Well rnd; fine - Coarse Sand + Grav	2	SAG	36.0		25.0	15.0	K 1.5	2 PT	151		5.7
GM	3	130	A/A	2	SAG	33.0		23.5	12.5	K 1.5	1 FS	23		4.3
GM	3	133	A/A	2	SAG	30.0		20.0	12.0	K 1.5	2 PT	28		11.2

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2163

YUBA PROJECT WESTGOLD PLACER DRILL LOG

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Drill Hole No.: 2163

Flagging Orng. No. Buckets 141 Sed 0 Slime

Easting _____ Northing _____

USCS Time	Drive Ft.	Drive Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
GM	3	136	BRN. Sandy Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	2	SAG	34.0		20.0	6.0	K 1.5	1 PT	148		2.3
GM	3	139	A/A	2	SAG	31.0		20.5	12.0	K 1.5	1 FS	92		2.2
GM	3	142	A/A	2	SAG	31.0		21.5	11.0	K 1.5	2 PT	64		1.1
GM	3	145	BRN. Silt + Clay; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	2	WAD	28.0		8.5	10.0	K 1.5	1 FS	114		1.5
GM	3	148	A/A	2	WAD	39.0		22.0	19.5	K 1.5	1	[illegible]		3.1
GM	3	151	BRN. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Grav.	2	SAG	41.0		20.0	16.0	K 1.5	1 PT	150		1.4
GM	3	154	A/A	2	SAG	34.0		23.5	12.0	K 1.5	1 PT	31		0.3
GM	3	157	A/A	2	SAG	33.0		21.0	12.0	K 1.5	1 PT	179		1.1
GM	3	160	Yel. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Grav.	2	SAG	29.0		21.0	10.5	K 1.5	1 FS	1		0.8
GM	3	163	BRN. Silt & Clay; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Grav.	2	WAD	36.0		20.5	11.0	K 1.5	1 FS	101		0.1
GM	3	166	A/A	2	WAD	30.0		18.5	7.5		1 FS	84		0.2
GM	3	169	A/A	1	WAD	24.0		19.0	9.0	K 1.5	1 PT	185		0.5
GM	3	172	BRN. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	2	SAG	33.0		24.0	11.0	K 1.5	1 FS	97		0.4
SM	3	175	Yel. Orng. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	4	SAG ORG	81.0		35.5	53.5	K 1.5	2 FS	54		0.7
SM	3	178	BRN. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Grav.	3	SAG	56.0		6.0	53.0	K 1.5	1 FS	146		0.2
SM	3	181	A/A	6	SAG	120.0		48.5	82.5	K 1.5	2 FS	38		0.7
GM	3	184	A/A	3	SAG	50.0		25.0	23.5	K 1.5	2 PT	119		7.2
GM	3	187	BRN. Clay & Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Grav.	2	WAD	27.0		11.0	10.5	K 1.5	2	150		15.8
GM	3	190	BRN. Sandy Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	3	SAG	46.0		14.5	25.5	K 1.5	2 PT	121		16.7
GM	3	193	BRN. Sandy Clay; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand + Grav.	2	WAD	36.0		25.0	11.0	K 1.5	2 PT	79		6.8

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2163

YUBA PROJECT WESTGOLD PLACER DRILL LOG

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Drill Hole No.: 2163

Flagging Orng No. Buckets 141 Sed 2 Slime

Easting _____ Northing _____

USCS Time	Drive Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
GM	3	196	BRN. sandy clay; Unsorted Subrnd Wellrnd; Fine-	2	WAD	36.0		23.0	16.0	K 1.5	2 PT	186		6.0
GM	3	199	BRN. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Grav.	2	SAG OXI	42.0		23.5	18.0	K 1.5	2 PT	48		3.6
			Rusty orng. silt also											
GM	3	202	BRN. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Grav.	2	SAG	37.0		25.0	17.0	K 1.5	2 K	10		33.8
GM	3	205	BRN. Silt + clay; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Grav.	2	WAD	33.0		22.5	14.5	K 1.5	2 FS	134		31.8
GM	3	208	Gry. Silt + clay; Unsorted Subrnd - Wellrnd; Fine-coarse Sand	2	WAD	29.0		20.0	9.5	K 1.5	2 FS	78		16.6
			+ Grav.											
GM	3	211	Gry. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Blue Grav.	2	SAG	43.0		29.5	24.0	K 1.5	2 K	26		25.4
SM	3	214	A/A	2	SAG	29.0		14.0	18.0	K 1.5	1 FS 1	164		2.6
SM	3	217	Sandy BRN. Silt + Clay	2	SAM	35.0		12.0	22.0	K 1.5	2 FS 2 BR	180		1.3
SM	3	220	Gry. Silt; Unsorted Subrnd - Wellrnd. Fine-coarse Sand +	2	WAD	35.0		8.0	25.0	K 1.5	3 PT BR	58		2.3
			Grav. BRN. cohesive clay											
SM	3	223	Gry. Silt + Sand; Unsorted Subrnd - Wellrnd; Fine-coarse	1	SAM	23.0		3.0	20.0	K 1.5	2 FS 1 BRS	127		2.2
			Sand											
SP	3	226	Gry. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Grav.	2	SAG	40.0		14.0	30.5	K 1.5	2 PT 1 S1 F	67		3.5
SP	3	229	A/A	1	SAG.	21.0		10.0	14.5	K 1.5	3 FS	47		0.7
SP	3	232	A/A	2	SAG	44.0		17.0	30.5	K 1.5	2 FS	42		0.2
SP	3	235	A/A	2	SAG	41.0		14.0	31.0	K 1.5	2 PT 1 S1 F	160		0.6
SP	3	238	Sulfer Smell; Gry. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse	3	SAG	52.0		21.5	35.0	K 1.5	2 PT 1 S1 F	120		0.3
			Sand + Blu Grav.											
SP	3	241	Gry. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand	3	SAN	66.0		16.0	48.0	K 1.5	2 PT S1 F	39		1.0
SP	3	244	Gry. Silt; Unsorted Subrnd - Wellrnd; Fine-coarse Sand + Blu	2	SAG	37.0		10.0	29.5	K 1.5	3 FS 1	131		0.5
			Grav.											

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2163

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 4 of 4

Drill Hole No.: 2163

Flagging Orng No. Buckets 141 Sed 0 Slime

Easting _____ Northing _____

USCS Drive			Description			Volume 1 x 10³ CY				Concentration		Wt. Au (mg)		
Time	Ft.	Depth	Written Description/No. Buckets	No Buk.	Sed. Code	Total Sed.	Slm	+ 1/4	- 1/4	Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Jar No.	Cor. Wt.	Amg. Wt.
SP	3	247	Unsorted Subrnd-Wellrnd; Fine Coarse Sand + Blue Grav; Gry. Silt	3	SAG	55.0		13.0	44.0	K 1.5	3 PT /	37		1.3
SP	3	250	A/A	3	SAG	61.0		11.0	43.0	K 1.5	3 PT / ISLF	89		0.5
SP	1	251	Gry. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Blue Grav.	1	SAG	11.0		5.0	6.5		2 FS / 1	190		TR
SP	1	252	A/A	1	SAG	18.0		6.5	13.0	K 1.5	2 FS / 1	157		0.2
SP	1	253	A/A	1	SAG	18.0		7.0	12.0	K 1.5	2 FS /	163		NT
SP	1	254	A/A	1	SAG	12.5		4.5	7.0		2 PT /	77		TR
SP	1	255	Gry. Silt Unsorted Subrnd Wellrnd; Fine-Coarse Sand; Fine-Med Grav	1	SAG	12.0		7.0	6.5		2 FS / 1	142		TR
SP	1	256	A/A	1	SAG	14.5		8.0	9.0	K 1.5	2 FS /	182		0.1
SP	1	257	A/A	1	SAG	15.5		5.5	10.0	K 1.5	3 PT /	122		0.1
			Down for Hammer Lift Repair 13:39 / Start up 15:55			X		X	X			X		
SP	1	258	Gry. Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Blue Grav	1	SAG	12.0		6.0	7.0		2 PT /	50		0.4
SP	1	259	A/A	1	SAG	11.0		8.0	5.0		1 PT /	98		TR
SP	1	260	A/A	1	SAG	10.0		7.0	5.0		2 PT / ISLF	170		TR
SP	1	261	A/A	1	SAG	12.5		9.0	5.0		2 PT / ISLF	109		TR
SP	1	262	A/A	1	SAG	11.5		7.0	5.5		2 FS /	91		0.1
SP	1	263	A/A	1	SAG	9.0		5.0	5.0		2 PT / ISLF	30		TR
SP	1	264	Green Grav; Unsorted Subrnd Wellrnd; Fine - Coarse Sand &	3	SAG	36.0		9.5	27.5	K 1.5	1 FS / 1	86		0.1
			Pull back @ 264' (5'6") Grav. Discard Sediment			X		X	X			X		
SP	1	265	Green: Unsorted Subrnd-Wellrnd; Fine & Coarse Sand & Grav.	2	SAG	33.0		13.0	22.0	K 1.5	2 PT / ISLF	3		0.2
SP	1	266	A/A	1	SAG	10.0		4.0	8.0		1 PT / ISLF	4		TR
SP	1	267	A/A	1	SAG	14.0		4.0	12.0	K 1.5	1 FS / 1	144		TR
SP	1	268	A/A	1	SAG	15.5		2.5	13.0	K 1.5	/ FS	95		TR

Primary Sed Code

MUD	Silt, Clay	SAG	Sand, gravel
SAM	Sand, Silt, Clay	GRA	Gravel
SAN	Sand	WAD	Sand, Gravel, Silt/Clay
		DIA	Silt/Clay, Sand, Gravel

Modifer Sed Code

ORG	Organic Pitch	FOS	Fossils
OXI	Oxidized	CEM	Cemented
WOO	Wood	VOL	Volcanic Rock
		SLI	Slime

Hvy.Min. Abund.

None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2163

Random Tailing Samples Startup 5/3/90 8:25

YUBA PROJECT WESTGOLD PLACER DRILL LOG

Page 1 of 1

Drill Hole No.: 2163

Flagging Orange No. Buckets ____ Sed ____ Slime

Easting ____ Northing ____

Drive			Description			Volume 1 x 10³ CY				Concentration		Wt. Au (mg)		
Time	Ft.	Depth	Written Description/No. Buckets	No Buk.	Sed. Code	Total Sed.	Slm	+ 1/4	- 1/4	Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Jar No.	Cor. Wt.	Amg. Wt.
9:21		68'	Orng Silt: Unsorted Subrnd-Wellrnd Fine-Coarse Sand Fine-Med. Grav.	1	SAG	25.0		14.0	17.0	K 1.5	1	112		1.0
						X		X	X			X		
9:26	10	78'	Orng. Silt: Unsorted Subrnd Wellrnd; Fine-Coarse Sand+Grav!	1	SAG	20.5		19.5	4.5		1	—		TR
9:45	7	85'		1	SAG	7.0		2.0	3.0			43		0.3
												X		
												X		
X	X	X	Frank's Tails	X	X	X	X	X	30.5	K 1.5	2	68		1.7
												X		
X	X	X	Pete's Tails	X	X	X	X	X	46.0	K 1.5	2	175		1.7
			Amalgamated Gold Numerical Total: 251.3 mg											

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

Date on Site 3/17/92 Time on Site 9:00
Date off Site _____ Time off Site _____

YUBA PROJECT WESTGOLD PLACER DRILL LOG

Drill Hole No.: 2250 Page 1 of 6
Flagging yell. DOT No. Buckets 128 0
Elev. ~~Blue~~ 133.96' Sed Slime
Easting 2150,460.49 Northing 550,411.66

TD Drilled *276' Tailings Drilled 105' Virgin Sed. Drilled 171' Bedrock Drilled _____
Drill Type Becker Bit Type Four Tooth Crowed in Bit OD 7" Bit ID _____ Weather _____
Reason for Termination: *Unable To penetrate sediment Driller Ben Coleman Foreman Jess Robles

NOTES: _____

USCS Drive Time	Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY Total Sed.	Slm	+ 1/4	- 1/4	Concentration Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg) Jar No.	Cor. Wt.	Amg. Wt.
			Random Samples Through Tailings — 3/17/92 Start up @ 9:09											
SP	69	69	BRN. SILT; Unsorted Subrnd-Wellrnd; Fine-Coarse sand; Fine-Med. Gravel.	2	SAG	40.5		8.0	34.0		2 MR	182		1.7
SP	10	79	A/A	2	SAG	29.0		5.0	22.5		2 MR	211		0.4
GM	10	89	BRN. Slimy; Unsorted Subrnd-Wellrnd; Fine-Coarse sand; Fine-Med. Gravel; BRN. Friable clay.	2	SAG SLI	30.0		24.0	8.0		2 MR	93		0.7
SM	10	99	BRN. Cohesive clay; Unsorted Subrnd-Wellrnd Fine-Coarse sand; Fine-Med. Gravel.	2	WAD SLI	40.5		4.0	36.0		2 MR	368		5.6
SM	6	105	BRN. Friable sandy chips; BRN. SILT. Tr. of Gravel Coarse gravel; BRN. Friable Clay.	2	SAM	32.5		10.0	19.5		2 MR	125		3.4
			- Virgin Ground -											
SP	3	108	BRN. Friable Sandy clay chips; BRN. SILT.	1	SAM	21.5		7.0	11.0		1 MR	155		0.1
SP	3	111	BRN. Friable sandy chips; BRN. SILT; Unsorted Subrnd-Wellrnd; Fine-Coarse sand; Fine-Med. Gravel; Water.	2	SAG	32.5		12.0	20.0		3 MR	249		0.7
SP	3	114	A/A	2	SAG	32.0		10.0	24.5		2 MR	180		0.2
SP	3	117	A/A	2	SAG	43.0		24.0	24.5		2 MR	53		0.3
GM	3	100	Water; Unsorted Subrnd-Wellrnd; Fine-Coarse sand & Gravel.	3	SAG	52.0		36.0	23.0		2 MR	90		0.5

Primary Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel
SAM	Sand, Silt, Clay	GRA	Gravel
SAN	Sand	WAD	Sand, Gravel, Silt/Clay
		DIA	Silt/Clay, Sand, Gravel

Modifer Sed Code			
ORG	Organic Pitch	FOS	Fossils
OXI	Oxidized	CEM	Cemented
WOO	Wood	VOL	Volcanic Rock
		SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 2 of 6

Drill Hole No.: 2250
Yell. DOT +
Flagging Blue No. Buckets 128 Sed 0 Slime
Easting _____ Northing _____

USCS Drive Time	Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY Total Sed.	Slm	+ 1/4	- 1/4	Concentration Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg) Jar No.	Cor. Wt.	Amg. Wt.
			Stop for water run @ 11:27 Start up 12:04											
SM	3	123	BRN. SILT; BRN. Friable sandy clay; Unsorted Subrnd - Wellrnd, Fine - Coarse sand & Gravel.	2	WAD	36.5		20.0	19.5		2 MR	379		1.4
SM	3	126	BRN. Friable clay; BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - coarse sand + Gravel; change to BRN. Friable clay.	2	WAD	25.5		8.0	12.5		2 MR	291		TR
CL	3	129	BRN. Friable clay; BRN. SILT.	2	MUD	30.0		3.5	21.0		2 MR	140		0.2
CL	3	132	BRN. Friable clay chips; BRN. SILT.	2	MUD	26.5		5.5	16.0		1 MR	130		0.2
CL	3	135	N/A	2	MUD	26.0		5.5	18.0		1 MR	135		TR
GM	3	138	BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - Coarse sand & Gravel. Rusty Friable sandy chips; BRN. Friable sandy clay.	2	WAD	27.0		16.0	13.0		2 MR	27		0.9
GM	3	141	BRN. Friable sandy clay; BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - coarse sand & Gravel	2	WAD	26.5		15.0	14.0		2 BC	288		2.6
GM	3	144	Hard drilling; BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - Coarse sand & Gravel.	2	SAG	34.5		21.0	16.5		2 MR	226		17.0
GM	3	147	N/A	2	SAG	29.0		19.5	9.5		3 BC	378		7.9
SM	3	150	BRN. Friable sandy clay; BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - Coarse sand & Gravel.	2	WAD	32.5		4.5	28.0		2 MR	306		8.2
SP	3	153	BRN. SILT; Unsorted Subrnd - Wellrnd; Fine - Coarse sand & Gravel; change to Grey silt.	2	SAG	38.5		17.5	22.5		2 MR	145		5.3
SP	3	156	Grey SILT; Water; Unsorted Subrnd - Wellrnd; Fine - Coarse sand & Gravel; Drk. Grey Friable clay	2	SAG	32.5		17.5	22.5		2 BC	240		4.9

Primary Sed Code				Modifer Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 3 of 6

Drill Hole No.: 2250
Flagging Yell. DOT + Blue
No. Buckets 128 Sed / 0 Slime
Easting _____ Northing _____

USCS Time	Drive Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
SP	3	159	Drk. Grey Friable clay; Grey Silt; Drk. Grey Friable sandy clay.	1	SAM	9.0		0.5	6.0		2 / MR	77		1.4
GM	3	162	Drk. Grey Friable sandy clay. Drk. Grey Silt; Unsorted Subrnd-Wellrnd, Fine-Coarse sand & gravel.	1	WAD	8.0		6.0	3.0		2 / BC	123		0.5
SM	3	165	Water; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Grey Silt.	4	SAG	84.0		15.5	72.0		2 / BC 1	32 3.44		2.3
SP	3	168	A/A	3	SAG	48.5		26.0	29.5		3 / OC 1	127		4.4
SM	3	171	Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand; Fine-Gravel; Water	6	SAG	140.0		51.0	102.5		2 / MR 1	80 219	119	3.8
SM	3	174	A/A	5	SAG	30.0		6.0	22.5		2 / BC 1	84		6.1
CL	3	177	Grey Friable clay; Grey Silt; Grey Silt; Wood particles.	1	MUD WOO	17.5		1.0	5.5		2 / MR 1	53		0.5
CL	3	180	Grey Friable clay chips; Grey Silt.	1	MUD	21.0		0.5	8.0		1 / MR 1	353		TR
CL	3	183	A/A	1	MUD	21.0		3.0	13.5		2 / MR 2	362		0.1
SM	3	186	Sandy Friable chips; Grey Silt; Unsorted Subrnd-Wellrnd; Fine Sand	1	SAM	19.0		1.0	17.0		2 / BC 1	157		0.4
SP	3	189	Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Cemented Gravels.	2	SAG FIN	31.0		22.0	22.5		2 / BC 1	101		3.3
GM	3	192	Water; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Cemented Sand; Sulfides.	3	SAG FIN	52.0		31.5	27.5		2 / OC 1	F		2.2
GM	3	195	Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Sulfides; Hard drilling	2	SAG	31.0		18.0	16.0		2 / BC 1	28		11.4
			STOP for water run @ 14:24 SHUT DOWN @ 15:06 3/12/92 START up @ 7:46											

Primary Sed Code
MUD Silt, Clay
SAM Sand, Silt, Clay
SAN Sand
SAG Sand, gravel
GRA Gravel
WAD Sand, Gravel, Silt/Clay
DIA Silt/Clay, Sand, Gravel

Modifer Sed Code
ORG Organic Pitch
OXI Oxidized
WOO Wood
FOS Fossils
CEM Cemented
VOL Volcanic Rock
SLI Slime

Hvy.Min. Abund.
None 0
Trace 1
Common 2
Abundant 3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

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Drill Hole No.: 2250 Yell. DOT +
Flagging Blue No. Buckets 128 Sed 0 Slime
Easting _____ Northing _____

USCS Drive			Description			Volume 1 x 10³ CY				Concentration		Wt. Au (mg)		
Time	Ft.	Depth	Written Description/No. Buckets	No Buk.	Sed. Code	Total Sed.	Slm	+ 1/4	- 1/4	Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Jar No.	Cor. Wt.	Amg. Wt.
GM	3	198	Water; Grey Silt; Hard drilling; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel.	3	SAG	61.5		41.5	26.0		2 / BC 2	105		7.2
GM	3	201	A/A	3	SAG	62.0		37.0	33.0		2 / BC 2	284		15.3
SM	3	204	Water; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel	4	SAG	68.0		27.0	49.0		3 / BC 2	227 67		13.2
SP	3	207	A/A	4	SAG	82.0		42.5	49.0		3 / BC 1	207		15.3
GM	3	210	Hard drilling; Grey Silt; Unsorted Subrnd-Wellrnd; Fine-coarse sand & gravel; Sulfids.	3	SAG	46.5		30.0	23.5		3 / BC 1	89		19.6
GM	3	213	A/A	2	SAG	35.0		27.0	14.0		2 / BC 1	114		73.7
GM	3	216	A/A	1	SAG	19.0		12.0	9.0		1 / BC 2	127		11.9
GM	3	219	A/A	1	SAG	18.0		13.0	7.5		3 / BC 2	138		0.4
GM	3	222	A/A	2	SAG	26.0		19.0	10.0		3 / BC 2	129		3.8
			rock lodged in drill bit; pull back 2ft, save sediment.											
GM	3	225	Grey Silt; Hard drilling; Unsorted Subrnd-Wellrnd; Fine-Coarse sand & Gravel.	2	SAG	27.0		18.0	11.5		1 / BC	315		3.5
SM	3	228	Grey Cohesive clay; Rich silt; Unsorted Subrnd-Wellrnd; Fine-Coarse sand & Gravel.	2	WAD	44.0		20.0	26.0		2 / BC	167		26.9
SM	3	231	Water; Unsorted Subrnd-Wellrnd; Fine-Coarse sand & Gravel.	3	SAG	58.0		23.0	41.0		2 / BC 1	154		9.2
GM	3	234	Sulfids; Hard drilling; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel.	1	SAG	12.0		7.0	6.0		0 / BC 2	97		3.7
GM	3	237	A/A	1	SAG	9.0		5.0	4.0		1 / BC 2	293		0.8

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

YUBA PROJECT
WESTGOLD
PLACER DRILL LOG

Page 5 of 6

Drill Hole No.: 2250

Flagging yell. DOT + Blue No. Buckets 128 Sed 0 Slime

Easting _____ Northing _____

USCS Drive Time	Ft.	Depth	Description: Written Description/No: Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY Total Sed.	Slm	+ 1/4	- 1/4	Concentration Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg) Jar No.	Cor. Wt.	Amg. Wt.
SM	3	240	Grey Friable sandy clay; Grey Silt; Unsorted Subrnd-Wellrnd Fine-Coarse sand & Gravel; Water.	4	WAD	76.0		20.5	60.0		3 mr / 1	280 292		5.7
SM	3	243	Grey Friable sandy chips; Grey Silt; Fine-sand	2	SAN	40.0		3.0	36.0		3 BC / 1	173		0.7
SM	3	246	Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse sand & Gravel; Grey Friable sandy clay; Sulfides.	3	WAD	48.0		16.0	33.5		3 BC / 2	134		0.9
SM	3	249	N/A	2	WAD	36.0		18.0	22.0		2 BC / 2	376		0.4
SM	3	252	N/A	2	WAD	28.0		9.5	19.0		3 BC / 2	347		1.1
SP	3	255	Lithified Sand; Grey Silt; Unsorted Subrnd-Wellrnd Fine-Coarse sand & Gravel; Sulfides.	2	SAG CEM	26.0		15.0	15.0		2 BC / 2	269		5.5
SM	3	258	Friable sandy chips; Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Sulfides.	1	SAG	20.5		4.5	16.0		2 mr / 2	336		0.5
SM	3	261	Water; Grey Silt; Friable sand chips; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Lithified Sand.	3	SAG CEM	46.5		18.0	33.0		3 BC / 2	187		2.2
SP	3	264	Drk. Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Mud drilling. Stop for water & bucket run @ 11:50 start up @ 11:29	2	SAG	26.5		13.0	15.0		3 BC / 2	369		0.4
GM	3	267	Rock lodged in drill bit pull back 18". Sand sediment; Sulfer Smell; Grey Silt; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Water.	2	SAG	47.0		29.5	24.0		3 BC / 1	229		1.2

Primary Sed Code			
MUD	Silt, Clay	SAG	Sand, gravel
SAM	Sand, Silt, Clay	GRA	Gravel
SAN	Sand	WAD	Sand, Gravel, Silt/Clay
		DIA	Silt/Clay, Sand, Gravel

Modifer Sed Code			
ORG	Organic Pitch	FOS	Fossils
OXI	Oxidized	CEM	Cemented
WOO	Wood	VOL	Volcanic Rock
		SLI	Slime

Hvy.Min. Abund.	
None	0
Trace	1
Common	2
Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

DH-2250

YUBA PROJECT WESTGOLD PLACER DRILL LOG

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Drill Hole No.: 2250

Flagging Yell. DOT & Blue No. Buckets 128 Sed 0 Slime

Easting _____ Northing _____

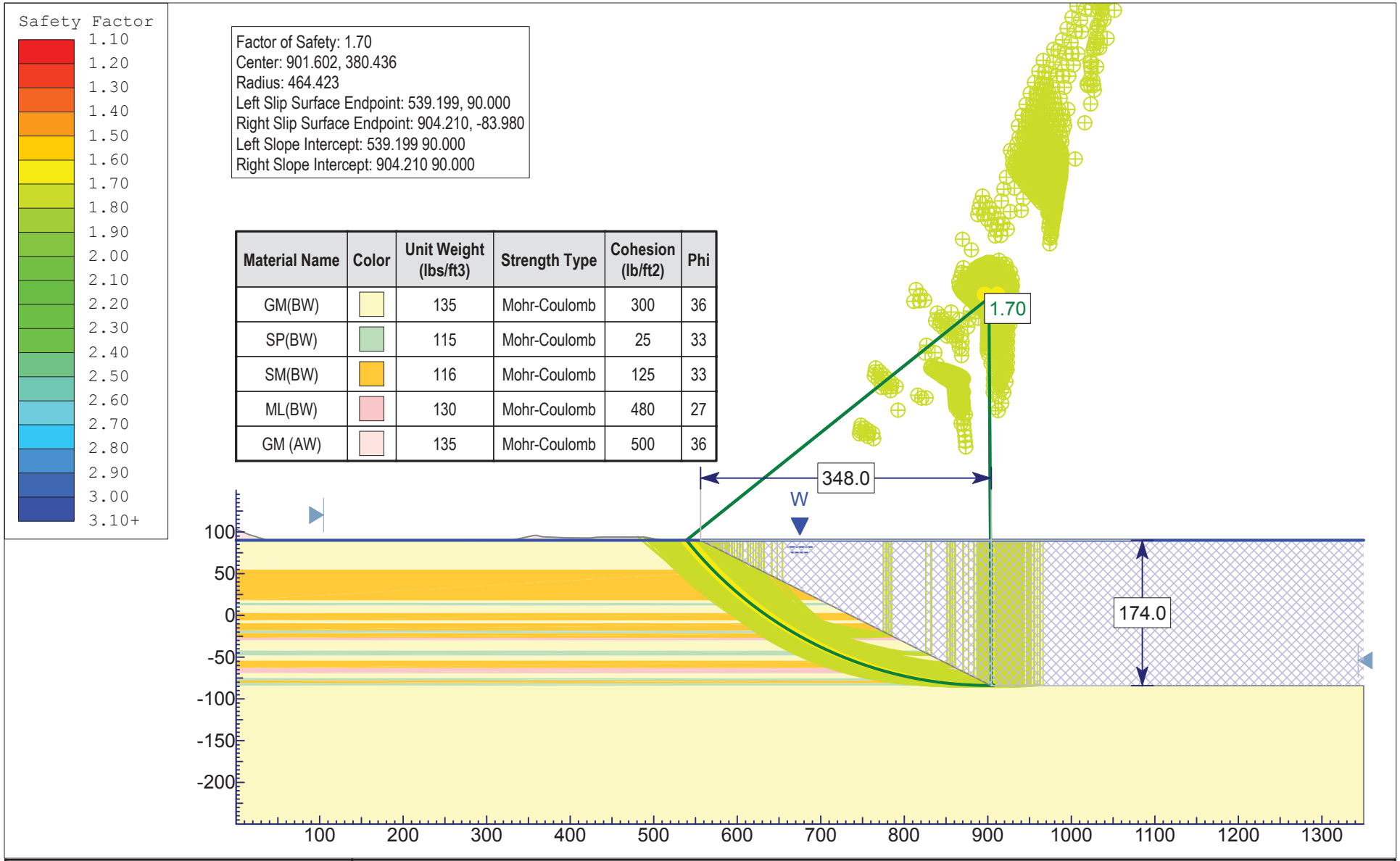
USCS Time	Drive Ft.	Depth	Description: Written Description/No. Buckets	No Buk.	Sed. Code	Volume 1 x 10³ CY: Total Sed.	Slm	+ 1/4	- 1/4	Concentration: Device Vol/Typ	Hvy.Min. Abund BS/Sulf	Wt. Au (mg): Jar No.	Cor. Wt.	Amg. Wt.
SP	3	270	Water; Lithified Sand Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel; Hard drilling.	2	SAG	40.5		17.0	25.0		3 / 1	328		0.3
SP	3	273	A/A	2	SAG	41.5		8.5	34.0		2 / 1 mt	355		0.6
SP	3	276	V. Hard drilling; Unsorted Subrnd-Wellrnd; Fine-Coarse Sand & Gravel;	2	SAG	30.0		17.5	15.5		2 / 1 RC	109		0.9
			Tails						74.0			39		2.0
			Amalgamated Gold NUMERICAL TOTAL: 325.5											

Primary Sed Code				Modifer Sed Code				Hvy.Min. Abund.	
MUD	Silt, Clay	SAG	Sand, gravel	ORG	Organic Pitch	FOS	Fossils	None	0
SAM	Sand, Silt, Clay	GRA	Gravel	OXI	Oxidized	CEM	Cemented	Trace	1
SAN	Sand	WAD	Sand, Gravel, Silt/Clay	WOO	Wood	VOL	Volcanic Rock	Common	2
		DIA	Silt/Clay, Sand, Gravel			SLI	Slime	Abundant	3

Concentration Device: K - Knelson Concentrator P - Panomatic

APPENDIX "C"

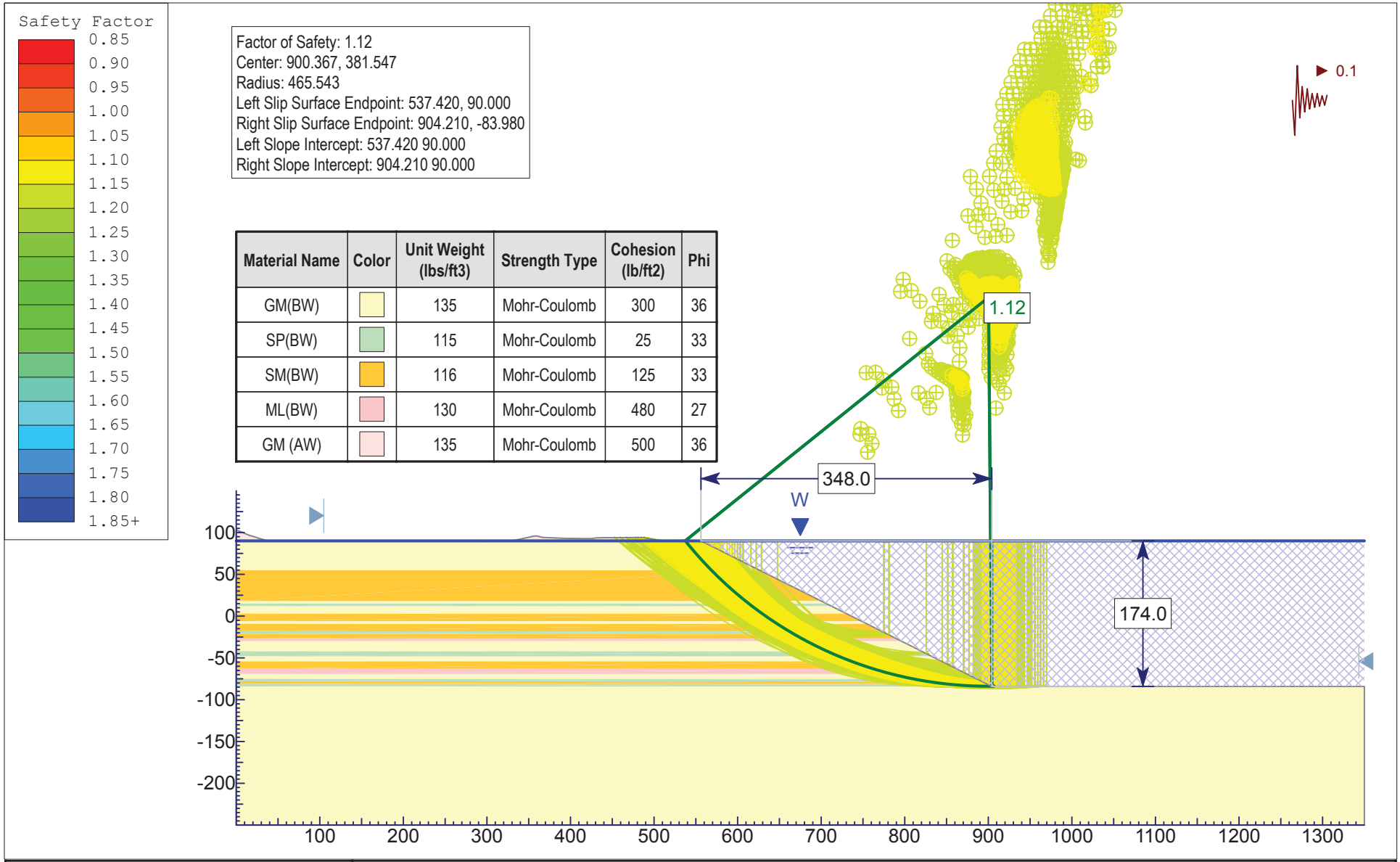
GEOTECHNICAL CALCULATIONS



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

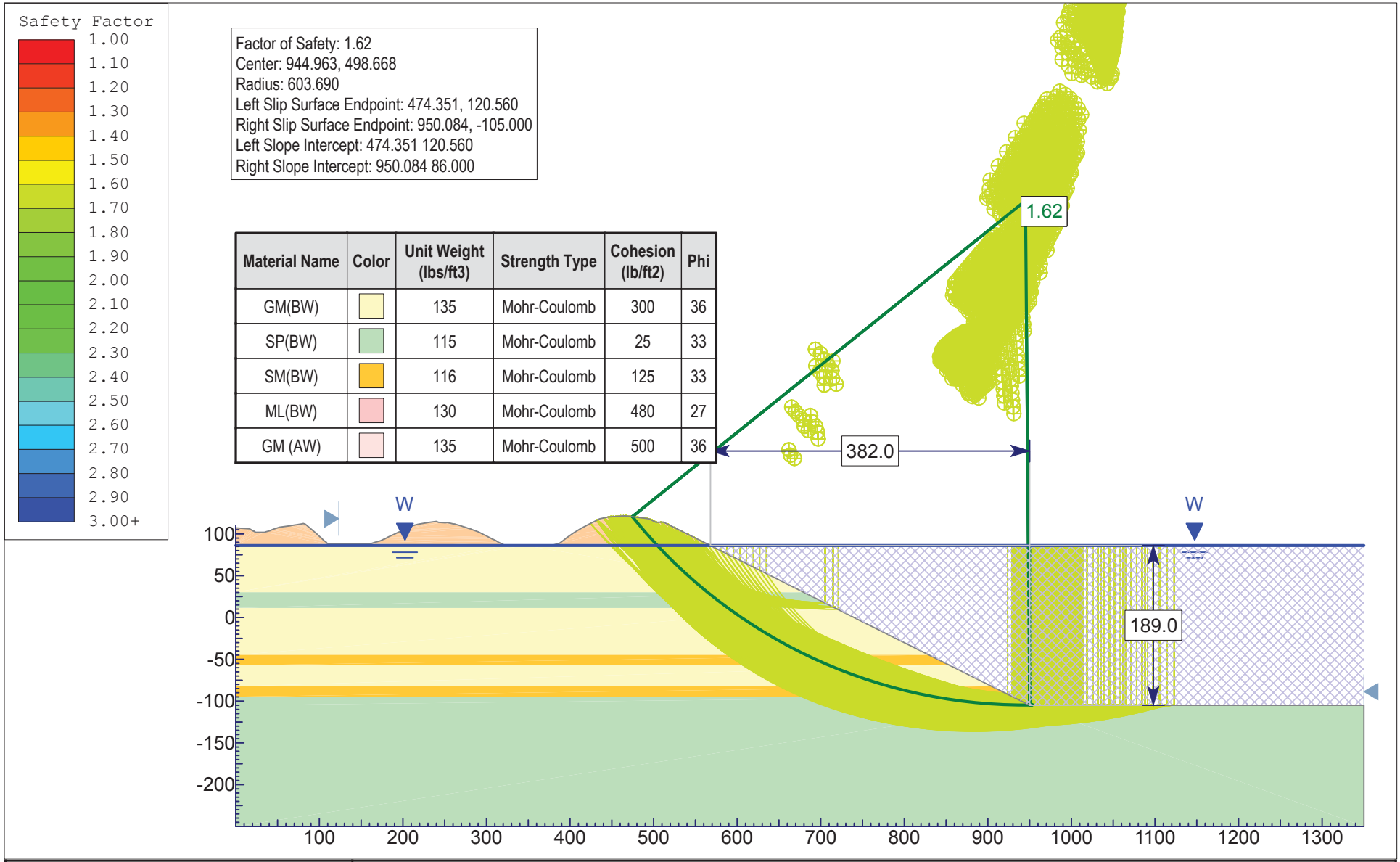
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section R-R'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section R-R_(DH-3058).slim	*Date* 11/28/2011	*Enclosure* C-1



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

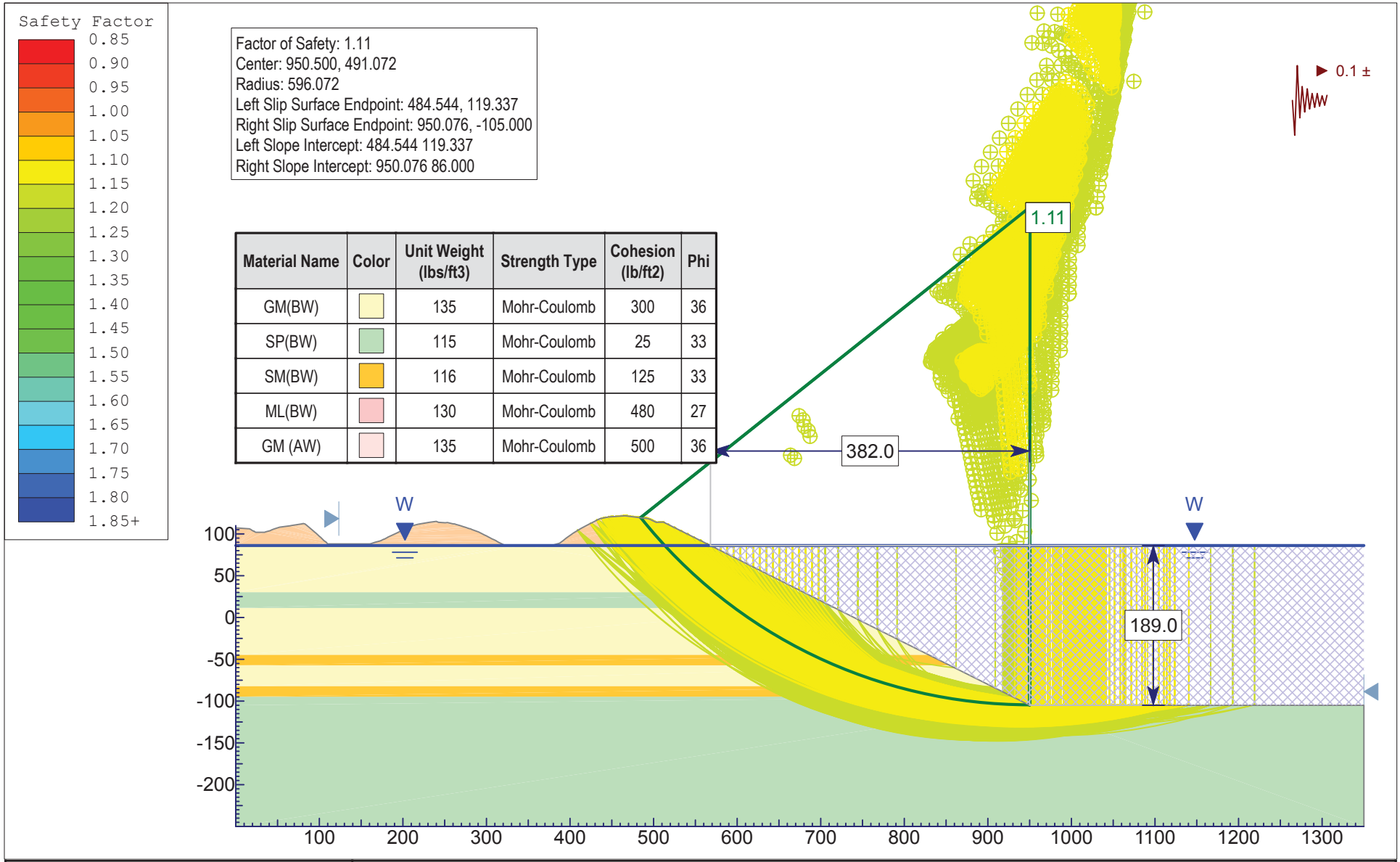
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section R-R'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section R-R_(DH-3058).slim	*Date* 11/28/2011	*Enclosure* C-2



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

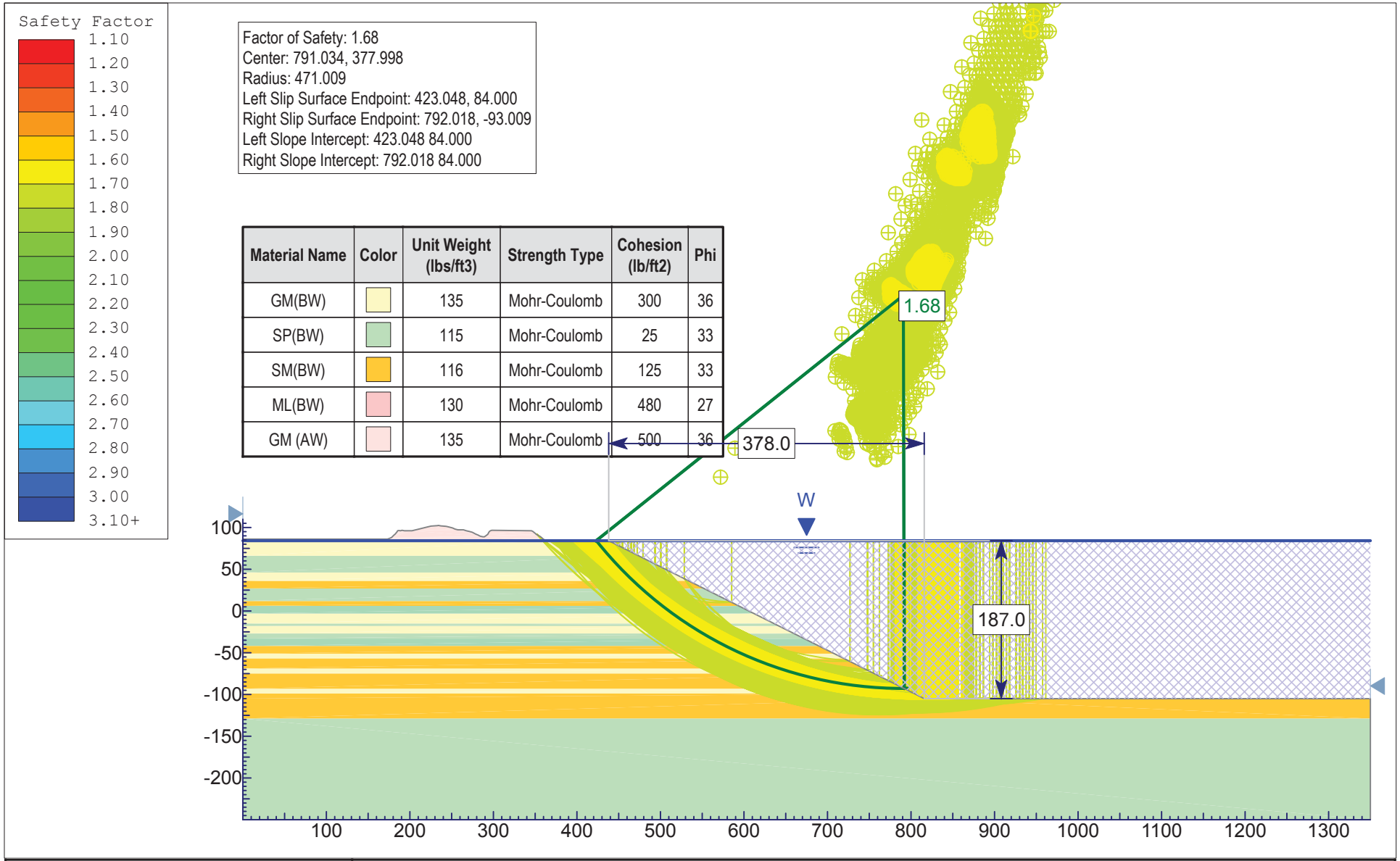
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section S-S'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section S-S_FS1.1.slim	*Date* 11/28/2011	*Enclosure* C-3



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

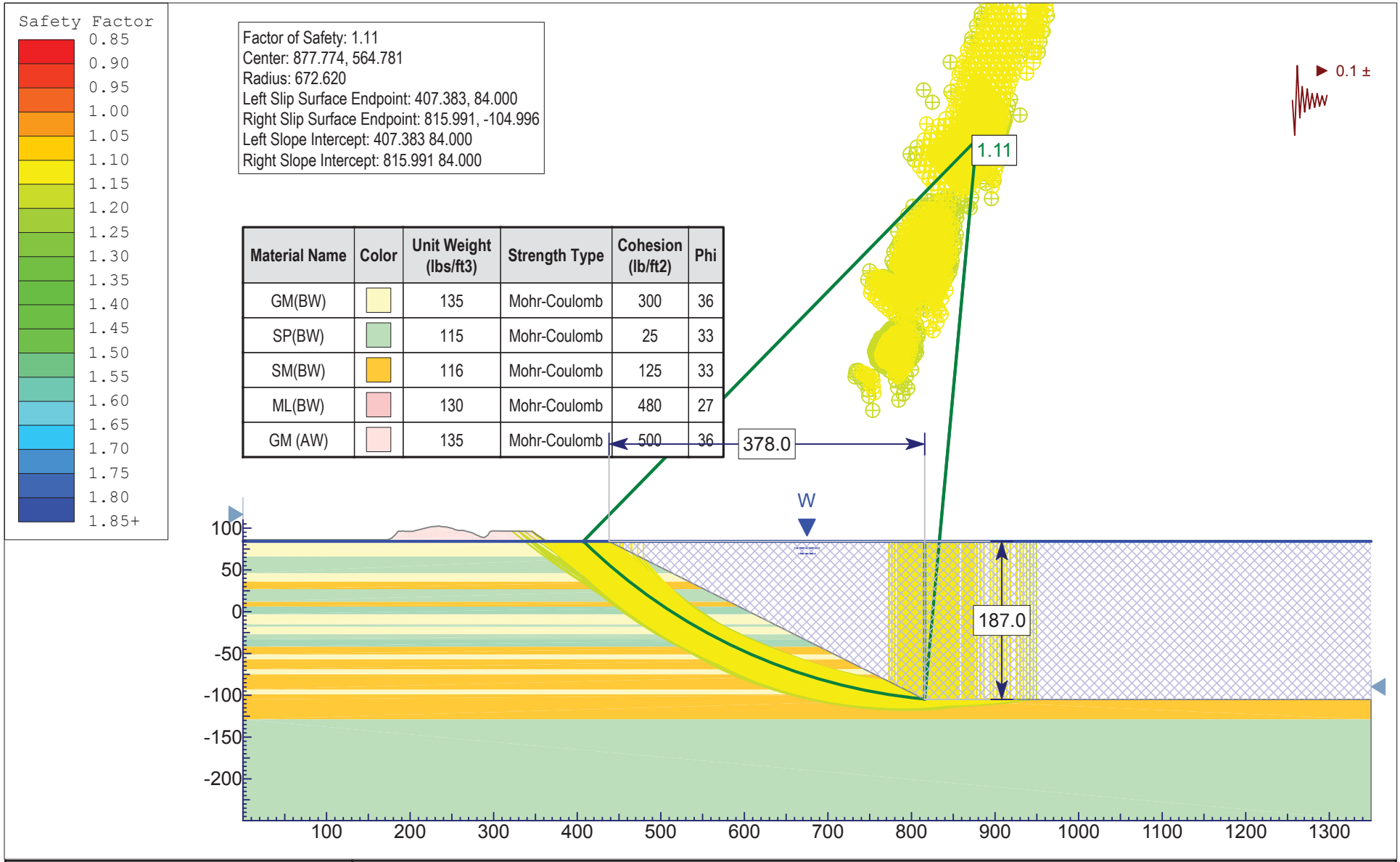
Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section S-S'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section S-S_FS1.1.slim	*Date* 11/28/2011	*Enclosure* C-4



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section T-T'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section T-T_FS1.1.slim	*Date* 11/28/2011	*Enclosure* C-5



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
GM(BW)		135	Mohr-Coulomb	300	36
SP(BW)		115	Mohr-Coulomb	25	33
SM(BW)		116	Mohr-Coulomb	125	33
ML(BW)		130	Mohr-Coulomb	480	27
GM (AW)		135	Mohr-Coulomb	500	36

SLIDEINTERPRET 6.013

Project	Proposed Reclamation of the Western Aggregates Quarry		
Analysis Description	Slope Stability Investigation - Section T-T'		
Company	C.H.J., Incorporated	*Author* Fred Yi, PhD, PE	*Scale* 1:2000
File Name	11137-8_Section T-T_FS1.1.slim	*Date* 11/28/2011	*Enclosure* C-6

ATTACHMENT 1
LEGAL DESCRIPTION

SECTION 2, T. 15 N., R. 4 E., MDM

All that real property described as a portion of Section 2, Township 15 North, Range 4 East, Mount Diablo Meridian, Yuba County, California being more particularly described as follows:

> All that portion of Lot 8 of said Section 2, lying southeasterly of the left bank of the Yuba River as said left bank is defined on the "Map Of Settlement Agreement Per U.S. District Court, Eastern District California, Case No. Civ. 2-79-788 RAR, Showing The Boundary Of The Lands In And Adjacent To The Present Yuba River, Bank To Bank", on file with the State of California, State Lands Commission: the Southeast Quarter of the Northeast Quarter of said Section 2: the Southeast Quarter of said Section 2.

Excepting therefrom that certain tract of land conveyed to W.T. Ellis by deed dated November 25, 1922 which said deed is of record in the office of the County Recorder of the said County of Yuba, in Book 78 of Deeds, at Page 333, the said excepted tract of land being particularly described as follows:

> Commencing at a point on common boundary line between Section 1 and 2, Township and Range aforesaid, distant North 01 degree 14' East 3254.2 feet from the quarter section corner common to said Section 1 and 2, and running thence along the said common boundary line of the said section, North 01 degree 14' East 147.5 feet; thence South 49 degrees 13' West 673.6 feet: thence North 60 degrees East 585.2 feet to the point of commencement.

SECTION 1, T. 15 N., R. 4 E., MDM

All that real property described as a portion of Section 1, Township 15 North, Range 4 East, Mount Diablo Meridian, Yuba County, California being more particularly described as follows:

> All that portion of said Section 1 lying southerly and easterly of the left bank of the Yuba River as said left bank is defined on the "Map Of Settlement Agreement Per U.S. District Court, Eastern District California, Case No. Civ. 2-79-788 RAR, Showing The Boundary Of The Lands In And Adjacent To The Present Yuba River, Bank To Bank", on file with the State of California, State Lands Commission.

SECTION 11, T. 15 N., R. 4 E., MDM

All that real property described as the Northeast 1/4 of Section 11, Township 15 North, Range 4 East, Mount Diablo Meridian, Yuba County, California.

SECTION 12, T. 15 N., R. 4 E., MDM

All that real property described as the North Half of Section 12, Township 15 North, Range 4 East, Mount Diablo Meridian, Yuba County, California.

SECTION 6, T. 15 N., R. 5 E., MDM

All that real property described as a portion of Section 6, Township 15 North, Range 5 East, Mount Diablo Meridian, Yuba County, California being more particularly described as follows:

> All that portion of said Section 6, lying southerly of the Linda Levee and including all lands lying beneath the Linda Levee, as said levee existed in 1912 and is shown on that certain map entitled "War Department. Corps of Engineers, U.S. Army, Yuba River Survey, 1912" on file in the office of the Yuba County Surveyor as Map Number "J-10", and also shown on that certain map entitled "Plat of Placer Mining Claims of Yuba Industries Inc. Gold Fields, located in: Sections 25 and 30, T.16N., R.6E., Sections 22, 23, 25, 26, 27, 28, 31, 32, 33, T.15N., R.5E., Sections 35 and 36, T.16N., R.4E, Yuba County, CA." dated April 1970, by Edward Von Geldern, R.E. 3366, on file in the office of the Yuba County Surveyor as Map Number 1068.

SECTION 5, T. 15 N., R. 5 E., MDM

All that real property described as a portion of Section 5, Township 15 North, Range 5 East, Mount Diablo Meridian, Yuba County, California being more particularly described as follows:

> All that portion of said Section 5, lying southerly of the Linda Levee and including all lands lying beneath the Linda Levee, as said levee existed in 1912 and is shown on that certain map entitled "War Department. Corps of Engineers, U.S. Army, Yuba River Survey, 1912" on file in the office of the Yuba County Surveyor as Map Number "J-10, and also shown on that certain map entitled "Plat of Placer Mining Claims of Yuba Industries Inc. Gold Fields, located in: Sections 25 and 30 T.16N., R.6E., Sections 22, 23, 25, 26, 27, 28, 31, 32, 33, T.15N., R.5E., Sections 35 and 36, T.16N., R.4E, Yuba County, CA." dated April 1970 by Edward Von Geldern, R.E. 3366, on file in the office of the Yuba County Surveyor as Map Number 1068 and also lying southerly of a line described as commencing at the east end of said Linda Levee in said Section 5, at the center of said levee, and running thence northeasterly, to a point twelve (12) chains east of the northeast corner of said Section 5 and thence; East, along the Third Standard Parallel to the northeast corner of Section 4 of said township and range, as said line is described in that certain deed from the United States of America to Yuba Consolidated Goldfields, dated June 25, 1910 and filed for record in Book 61, Deeds at Page 335.

SECTION 4, T. 15 N., R. 5 E., MDM

All that real property described as a portion of Section 4, Township 15 North, Range 5 East, Mount Diablo Meridian, Yuba County, California lying southerly of the following described line:

> Commencing at the east end of the Linda Levee located in the Northeast Quarter of Section 5, Township 15 North, Range 5 East, M.D.M., at the center of said levee, as said levee existed on June 25, 1910, said levee being shown on that certain map entitled "War

Department. Corps of Engineers, U.S. Army. Yuba River Survey. 1912" on file in the office of the Yuba County Surveyor as Map Number "J-10", and also shown on that certain map entitled "Plat of Placer Mining Claims of Yuba Industries Inc. Gold Fields, located in: Sections 25 and 30, T.16N., R.6E., Sections 22, 23, 25, 26, 27, 28, 31, 32, 33 T.15N., R.5E, Sections 35 and 36, T.16N., R.4E, Yuba County, CA." dated April 1970. by Edward Von Geldern, R.E. 3366, on file in the office of the Yuba County Surveyor as Map Number 1068, and running thence northeasterly, to a point twelve (12) chains east of the northeast corner of said Section 5 and thence: East, along the third standard parallel to the northeast corner of Section 4 of said Township and Range and the end of the described line, as said line is described in that deed from the United States of America to Yuba Consolidated Goldfields, dated June 25, 1910 and filed for record in Book 61, Deeds at Page 335.

SECTION 32, T. 16 N., R. 5 E., MDM

All that real property described as a portion of Parcel One of those lands as described in that certain deed from the United States of America to Yuba Consolidated Goldfields, dated June 25, 1910 and filed for record in Book 61, Deeds at Page 335, being a portion of the Southeast Quarter of Section 32, Township 16 North, Range 5 East, Mount Diablo Meridian, Yuba County, California, lying southerly of the following described line:

All that portion of said Section 32 lying southeasterly of the following described line: commencing at a point on the 3rd Standard Parallel, 5.00 chains East of the southwest corner of the southeast quarter of the southeast quarter of said Section 32: thence N 45° E, 7.07 chains; thence N 63°26' E. 11.18 chains, to a point on the east line of Section 32 lying 10.00 chains North of the southeast corner of said Section 32, and the end of the described line.

SECTION 33, T. 16 N., R. 5 E., MDM

All that real property described as a portion of Parcel One of those lands as described in that certain deed from the United States of America to Yuba Consolidated Goldfields, dated June 25, 1910 and filed for record in Book 61, Deeds at Page 335, being a portion of the Southwest Quarter of Section 33, Township 16 North, Range 5 East, Mount Diablo Meridian, Yuba County, California, lying southerly of the following described line:

Commencing at a point on the west line of Section 33, 10.00 chains North of the southwest corner of said Section; thence N 39°45'E. 2590 feet, more or less, to a point on the north line of said southwest quarter: thence easterly, along said north line, 984 feet, more or less, to the northeast corner of said southwest quarter and the end of the described line.

Excepting therefrom all that real property as described in "Exhibit "A" Part One, Hammonton Townsite" in that deed dated August 9, 1990 from Yuba Natural Resources, Inc. to YG Development Company and filed for record in Official Records as Document Number 90-9338, said real property being more particularly described as follows:

Beginning at a point from which the southwest corner of said Section 33 bears

S 89°11'59" W. 850.00 feet: thence from said point of beginning the following eleven courses:

1) N 89°11'59" E, 950.00 feet, along the south line of Section 33, thence;
2) N 08°56'00" E, 580.55 feet, thence;
3) N 41°03'17" W, 411.10 feet, thence;
4) N 83°47'48" W, 462.71 feet, thence;
5) N 01°54'33" W, 300.17 feet, thence;
6) S 75°57'50" W, 494.77 feet, thence;
7) S 26°33'54" E, 89.44 feet, thence;
8) N 67°37'12" E, 183.85 feet, thence;
9) S 11°53'19" W, 388.33 feet, thence;
10) S 05°42'38" E, 502.49 feet, thence;
11) S 00°00'52" W, 236.78 feet, to the point of beginning, and containing 22.8 acres, more or less.

TOGETHER WITH:

All that real property described as a portion of the Northeast Quarter of Section 33, Township 16 North, Range 5 East, Mount Diablo Meridian, Yuba County, California, lying southerly of the following described line:

Commencing at a point 5.00 chains North of the southwest corner of said Northeast Quarter; thence N 45° E, 21.21 chains; thence N 63° 26' E, 22.36 chains; thence N 45°E, 7.07 chains, to a point on the east line of said Section 33 located 5 chains South of the northeast corner of said section and the end of the described line, said line being the same line as described in that certain deed from E.A. Forbes to the United States of America, dated January 22, 1902 and filed for record in Book 49, Deeds at Page 433.

Excepting therefrom all that real property described as the Fifth Parcel in that certain deed from E.A. Forbes to the United States of America, dated January 22, 1902 and filed for record in Book 49, Deeds at Page 433, said Fifth Parcel being more particularly described as follows:

Commencing at the one-quarter corner on the east line of Section 33; thence West, 25 chains; thence North, 20 chains; thence N 63°26'E, 11.18 chains; thence South, 10 chains; thence East, 5 chains; thence South 5 chains; thence southeasterly to the point of commencement.

SECTION 34, T. 16 N., R. 5 E., MDM

All that real property described as a portion of the Northwest Quarter of Section 34, Township 16 North, Range 5 East, Mount Diablo Meridian, Yuba County, California, described as follows:

Commencing at an iron pipe set at the corner common to Sections 27, 28, 33 and 34 Township 16 North, Range 5 East, M.D.B & M., and running thence North 89°17' East, along the section line between said Sections 27 and 34, one thousand and three (1003.0) feet; thence South 28° 28' West, six hundred ninety-nine (699.0) feet; thence South 71° 39' West, seven hundred six and seven-tenths (706.7) feet to a point in the line between said Sections 33 and 34; thence along said last named line North 0°4' East, eight hundred

twenty-four and six-tenths (824.6) feet to the point of beginning: being a portion of the northwest quarter of the northwest quarter of said Section 34. Township 16 North. Range 5 East. M.D.B. & M.. containing 13.37 acres more or less.

SECTION 27, T. 16 N., R. 5 E., MDM

All that real property described as a portion of the Southwest Quarter of Section 27, Township 16 North. Range 5 East. Mount Diablo Meridian. Yuba County. California. described as follows:

> Commencing at the northwest corner of the southeast quarter of the southwest quarter of Section 27, Township 16 North, Range 5 East. M.D.B. & M.. and running thence South 0° 6' West along the westerly boundary line of said southeast quarter of the southwest quarter of said Section 27 four hundred fifteen and seven-tenths (415.7) feet: thence North 31° 37' East. four hundred eighty-seven and five-tenths (487.5) feet to the northerly boundary line of the said southeast quarter of the southwest quarter of said Section 27: and thence along said northerly boundary line North 89° 54' West two hundred fifty-four and nine-tenths (254.9) feet to the point of commencement; being a triangular piece of land situated in the northwest corner of the southeast quarter of the southwest quarter of said Section 27, Township 16 North, Range 5 East, M.D.B.& M. containing 1.22 acres, more or less.

TOGETHER WITH:

All that real property described as a portion of the southeast quarter of Section 27, Township 16 North, Range 5 East, Mount Diablo Meridian. Yuba County, California. said property being the same lands described in that certain deed dated October 29, 1903 from Frederick Ayer to W.P. Hammon as filed for record in Book 53. Deeds at Page 412. being more particularly described as follows:

> Beginning at a post marked "Southeast Corner", from whence the Section Corner at the southeast of Section 34. Township 16 North. Range 5 East. M.D.M., bears S 00° 08' E, 7468 feet; thence, South magnetic variation 17°55' East. S 89° 32' W. 2640 feet. along brushed line. to stake marked "Southwest Corner"; thence North. 414.4 feet to the point whence stake marked "Northwest Corner" bears South, 17.7 feet; thence N 89°32' E, 2640 feet. to the point whence the one quarter section corner between Sections 22 and 23 bears N 00°12' E. 5255 feet: thence South, 414.4 feet. to the place of beginning.

Excepting therefrom a portion of the Southeast Quarter of said Section 27, as described in that certain deed dated September 24. 1901 from Frederick Ayer and the Excelsior Water and Mining Company to the United States of America as filed for record in Book 49. Deeds at Page 539. being more particularly described as follows:

> Commencing at the center of Section 27; thence South. seven chains and fifty links (7.50 chains): thence East. ten (10) chains: thence N 75°58" E. thirty chains and ninety-three links (30.93 chains). to the quarter section corner on the east side of said Section 27: thence West. to the point of commencement.

Also excepting therefrom all that portion of the above described parcel lying in the northeast quarter of Section 27, Township 16 North, Range 5 East. M.D.M.

SECTION 26, T. 16 N., R. 5 E., MDM

All that real property described as a portion of Section 26. Township 16 North. Range 5 East. Mount Diablo Meridian, Yuba County. California, said parcel being more particularly described as follows:

Commencing at the West One-Quarter Corner of said Section 26 as shown on that certain map entitled "Record of Survey 94-26" as filed for record in Book 26 Maps. at Page 33. said corner being the True Point of Beginning for the herein described Parcel of land: thence North 00°13'30" West. along the West line of Section 26, 78.00 feet. said point being located in the centerline of a paved road and being the Southwest corner of that Parcel of land described in "Exhibit "A", Silica Plant Parcel" in that certain Quitclaim Deed from Western Water Company to Western Aggregates. Inc. as filed for record in Official Records as Serial Number 95-3554; thence North 00°13'30"West. along the West line of said Section 26, a distance of 386.83 feet more or less to the northeast corner of Lot 1 of Section 27 of said Township and Range: thence North 08°09'49"East. a distance of 337.68 feet more or less to a point on the south line of the Yuba River Historic River Bed as defined in that certain "Agreement and Stipulation for Amendment of Complaint and Order" No. CIV S-79-733 LLK. as filed by the Clerk of the U.S. District Court. for the Eastern District of California on April 22. 1980: thence continue along said Historic River Bed the following courses and distances: South 61°15'37"East 5.29 feet: South 69°46'31"East, 202.48 feet: South 71°33'54" East. 252.98 feet: South 84°17'22"East, 301.50 feet; North 85°54'52"East. 280.71 feet: North 57°22'54"East, 299.41 feet; thence North 45°15'47"East. 195.58 feet: thence North 51°06'23"East. 643.50 feet: thence North 66°42'55"East. 1080.46 feet: thence South 86°47'39"East, 803.12 feet. to a point "A" as defined in said Stipulation: thence South 65°09'02"East, continuing along said line as defined in said Stipulation. 345.72 feet; thence South 50°11'40"East. 390.51 feet; thence South 67°55'56"East. 399.25 feet; thence South 79°00'23"East, 618.36 feet, more or less. to a point on the East line of said Section 26: thence South 00°26'54"East leaving said Stipulated Boundary and along the East line of said Section, 334.22 feet. more or less, to a point on the South Boundary of that certain parcel of land described in Deed from D.W. Wright and Allie M. Wright to Yuba Consolidated Industries. Inc. dated May 12. 1960. as filed for record in Book 301, Official Records, at Page 372: thence North 84°45'West. along said South line being an existing fence per said deed, 472.0 feet: thence South 88°45'West. 405.0 feet: thence North 85°15'West. 332.0 feet; thence North 84°20'West. 360.0 feet: thence South 87°00'West, 200.0 feet; thence South 89°10'West. 82.0 feet: thence West. 172.0 feet: thence North 81°00'West. 99.0 feet; thence South 85°00'West. 70.0 feet; thence North 81°00'West, 106.0 feet; thence South 88°00'West. 84.0 feet: thence South 61°20'West, 41.0 feet; thence South 88°40'West, 290.00 feet. more or less, to the East end of course Number 19 of the Yuba River Tract, Jason Meek Survey of January 8. 1905; thence South 89°50'West, along said course. 65 feet. more or less. to the intersection of courses bearing North 65°28'30"West and North 00°48'30"East as set forth in deed to D.W. Wright, et.ux., recorded January 9. 1958, in Book 251 of Official Records, at Page 357: thence South 00°39'East along the East line of that certain Parcel of Land as described in deed from Eugene Pharis and Delores J. Pharis to Yuba Goldfields. Inc., dated November 25. 1980 and filed for record in Book 741. Official Records. at Page 637, 268.71 feet: thence South 00°53'East. 402.60 feet: thence South 01°21'East. 267.54 feet, to the

SECTION 25, T. 16 N., R. 5 E., MDM

All that real property described as a portion of the North Half of Section 25, Township 16 North, Range 5 East, Mount Diablo Meridian, Yuba County, California, lying Southerly of the herein described Line Number One and Northerly of the herein described Line Number Two, said lines being more particularly described as follows:

LINE NUMBER ONE:
The south boundary of the Historic Bed of the Yuba River as defined in that certain "Agreement and Stipulation for Amendment of Complaint and Order" No. CIV S – 79 –733 LKK, as filed by the Clerk of the U.S. District Court, for the Eastern District of California on April 22, 1980, said line also being a portion of the South Line of Parcel Two, Exhibit "A" of that Deed from Yuba Westgold, Inc. to Cal Sierra Development, Inc., dated January 26, 1994, and filed for Record in Official Records at Serial Number 94-1299.

LINE NUMBER TWO:
A line lying 15.00 feet Southerly of, adjacent to, and parallel with the centerline of that road identified as the "Main Haul Road" as described in deed from Yuba River Properties to Western Aggregates, Inc., dated June 16, 1998, and filed for record in Official Records at Serial Number 98-6773.

SECTION 30, T. 16 N., R. 6 E., MDM

All that real property described as a portion of the North Half of Section 30, Township 16 North, Range 6 East, Mount Diablo Meridian, Yuba County, California, lying Southerly of the herein described Line Number One and Northerly of the herein described Line Number Two, said lines being more particularly described as follows:

LINE NUMBER ONE:
The south boundary of the Historic Bed of the Yuba River as defined in that certain "Agreement and Stipulation for Amendment of Complaint and Order" No. CIV S – 79 –733 LKK, as filed by the Clerk of the U.S. District Court, for the Eastern District of California on April 22, 1980, said line also being a portion of the South Line of Parcel Two, Exhibit "A" of that Deed from Yuba Westgold,

Inc. to Cal Sierra Development, Inc., dated January 26. 1994. and filed for Record in Official Records at Serial Number 94-1299.

LINE NUMBER TWO:

A line lying 15.00 feet Southerly of, adjacent to, and parallel with the centerline of that road identified as the "Main Haul Road" as described in deed from Yuba River Properties to Western Aggregates, Inc., dated June 16. 1998. and filed for record in Official Records at Serial Number 98-6773.

Excepting from the above described Parcel of land that certain parcel of land lying in the Northeast Quarter of said Section 30, as described in Deed from David Peter Huckins and Jean Mitchell Huckins to the State of California, dated Feb. 1. 1994 and filed for record in Official Records at Serial Number 94-10305.

End of Description

David W Kopp, PLS 4533
License Expiration Date: 12-31-08
Date: _____

Southeast Corner of said Wright parcel; thence South 80°24'West, along the Southerly Boundary of said Parcel, 2377.41 feet; thence North 67°56'West, 264.78 feet, more or less to a point on the west line of said Section 26; thence North 00°13'30"West along said West line, 469.74 feet, to the Point of Beginning.

Excepting therefrom a portion of said Section 26, as described in deed from Eugene Pharis and Delores J. Pharis to Yuba Goldfields, Inc., dated November 25, 1980 and filed for record in Book 741, Official Records, at Page 637, being more particularly described as follows:

All that real property situate within the County of Yuba, State of California, being a portion of Lots 3 and 4 in the Northwest one-quarter and a portion of the Southwest one-quarter of Section 26, Township 16 North, Range 5 East, M.D.B.&M., more particularly described as follows:

Beginning at a point where the Southeast corner of said Section 26 bears South 49°09' East, approximately 3,628.8 feet, said Point of Beginning being on the fence line, which approximately marks the westerly boundary of the east half of the Northwest quarter of Section 26, Township 16 North, Range 5 East, M.D.B.&M.; thence from the Point of Beginning: North 1°21' West, 267.54 feet; thence North 0°53' West, 402.60 feet; thence North 0°39' West, 268.71 feet; thence South 89°38' West, 376.80 feet; thence South 89°35' West, 292.01 feet; thence South 89°44' West, 236.78 feet; thence North 89°52' West, 249.22 feet; thence North 88°39' West, 101.83 feet; thence South 0°14' East, 54.99 feet; thence South 0°46' East, 550.27 feet; thence South 89°54' West, 542.39 feet, thence South 89°34' West, 627.49 feet; thence South 65°02' West, 124.44 feet; thence South 83°13' West, 37.93 feet; thence South 0°13' West, 325.02 feet; thence South 0°08' East, 105.44 feet; thence South 2°51' East, 137.35 feet; thence South 67°56' East, 254.78 feet; thence North 80°24' East, 2377.41 feet to the Point of Beginning.

End of Description

Description prepared by:
MACKAY & SOMPS CIVIL ENGINEERS, INC.
1552 Eureka Road, Suite 100, Roseville, CA 95661

David W Kopp, PLS 4533
License Expiration Date: 12-31-10

Date: 6/14/2010

LICENSED LAND SURVEYOR
DAVID W. KOPP
Exp. 12-31-10
No. 4533
STATE OF CALIFORNIA

EXHIBIT "A"

RECLAMATION PLAN BOUNDARY

All that portion of Sections 1, 2, 11 and 12, Township 15 North, Range 4 East, Sections 4, 5 and 6, Township 15 North, Range 5 East, Sections 32 and 33, Township 16 North, Range 5 East, Mount Diablo Meridian, County of Yuba, State of California, more particularly described as follows:

Commencing at the corner common to said Sections 1, 12, 6 and Section 7, Township 15 North, Range 5 East, Mount Diablo Meridian: thence North 66°26'55" West a distance of 114.63 feet to the point of beginning on the exterior boundary of the Reclamation Area herein described: thence from said **TRUE POINT OF BEGINNING** in a northwesterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 48°58'28" West and a chord distance of 343.14, having a central angle of 86°40'18" and an arc length of 378.18'; thence South 84°21'24" West a distance of 200.02 feet; thence South 05°38'36" East a distance of 290.39 feet; thence South 36°49'45" East a distance of 121.14 feet; thence South 00°49'13" East a distance of 888.79 feet; thence South 03°08'17" West a distance of 1337.26 feet; thence in a southwesterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of South 45°40'32" West and a chord distance of 338.04, having a central angle of 85°04'31" and an arc length of 371.21'; thence South 88°12'48" West a distance of 1298.23 feet; thence in a northwesterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 52°27'37" West and a chord distance of 316.87, having a central angle of 78°39'10" and an arc length of 343.19'; thence North 85°49'24" West a distance of 223.24 feet; thence in a southwesterly direction with a non-tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of South 46°11'52" West and a chord distance of 334.67, having a central angle of 84°01'53" and an arc length of 366.66'; thence South 88°12'48" West a distance of 1527.71 feet; thence in a northwesterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 48°43'15" West and a chord distance of 341.42, having a central angle of 86°07'54" and an arc length of 375.82'; thence South 89°44'07" West a distance of 193.50 feet; thence in a southwesterly direction with a non-tangent curve turning to the right with a radius of 250.00 feet, having a

chord bearing of South 44°27'12" West and a chord distance of 351.84, having a central angle of 89°26'45" and an arc length of 390.28'; thence South 89°10'35" West a distance of 2626.85 feet; thence in a northwesterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 45°18'28" West and a chord distance of 356.72, having a central angle of 91°01'56" and an arc length of 397.20'; thence North 00°12'30" East a distance of 2273.14 feet; thence North 00°43'36" East a distance of 745.46 feet; thence in a northeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 33°31'09" East and a chord distance of 270.80, having a central angle of 65°35'07" and an arc length of 286.17'; thence North 66°18'42" East a distance of 2828.16 feet; thence in a southeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of South 56°58'22" East and a chord distance of 417.98, having a central angle of 113°25'52" and an arc length of 494.94'; thence North 89°44'07" East a distance of 200.02 feet; thence North 00°15'53" West a distance of 303.30 feet; thence in a northeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 33°01'25" East and a chord distance of 274.43, having a central angle of 66°34'35" and an arc length of 290.49'; thence North 66°18'42" East a distance of 2096.99 feet; thence in a southeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of South 54°53'03" East and a chord distance of 427.70, having a central angle of 117°36'30" and an arc length of 513.16'; thence South 85°47'25" East a distance of 200.02 feet; thence North 03°54'45" East a distance of 367.04 feet; thence in a northeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 35°06'44" East and a chord distance of 259.01, having a central angle of 62°23'57" and an arc length of 272.27'; thence North 66°18'42" East a distance of 444.21 feet; thence in a southeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of South 61°36'14" East and a chord distance of 394.46, having a central angle of 104°10'08" and an arc length of 454.52'; thence North 80°28'28" East a distance of 200.02 feet; thence North 09°31'32" West a distance of 176.67 feet; thence in a northeasterly direction with a tangent curve turning to the right with a radius of 250.00 feet, having a chord bearing of North 28°23'35" East and a chord distance of 307.27, having a central angle of 75°50'14" and an arc length of 330.90'; thence North 66°52'59" East a distance of 757.33 feet; thence North 70°10'48" East a distance of 324.70 feet; thence North 52°29'48" East a distance of 633.90

feet; thence North 57°41'48" East a distance of 1341.95 feet; thence South 85°38'34" East a distance of 138.28 feet; thence North 61°55'26" East a distance of 384.20 feet; thence North 74°27'26" East a distance of 199.80 feet; thence North 88°28'26" East a distance of 1319.60 feet; thence North 83°45'26" East a distance of 204.30 feet; thence North 76°58'26" East a distance of 214.90 feet; thence North 71°18'26" East a distance of 1040.90 feet; thence North 79°33'26" East a distance of 301.91 feet; thence North 88°04'26" East a distance of 293.81 feet; thence North 82°20'26" East a distance of 736.40 feet; thence North 83°38'26" East a distance of 128.90 feet; thence North 73°54'26" East a distance of 248.00 feet; thence North 78°59'48" East a distance of 479.90 feet; thence North 84°00'26" East a distance of 869.90 feet; thence North 76°48'26" East a distance of 766.70 feet; thence North 61°28'26" East a distance of 1572.60 feet; thence North 43°57'44" East a distance of 498.45 feet; thence North 83°31'23" East a distance of 423.74 feet; thence in a southeasterly direction with a tangent curve turning to the right with a radius of 676.00 feet, having a chord bearing of South 33°16'40" East and a chord distance of 1206.77, having a central angle of 126°23'54" and an arc length of 1491.30'; thence in a southerly direction with a reverse tangent curve turning to the left with a radius of 1597.00 feet, having a chord bearing of South 10°53'04" West and a chord distance of 1041.80, having a central angle of 38°04'24" and an arc length of 1061.22'; thence in a southerly direction with a reverse tangent curve turning to the right with a radius of 1626.00 feet, having a chord bearing of South 13°14'06" West and a chord distance of 1185.90, having a central angle of 42°46'27" and an arc length of 1213.89'; thence South 34°37'19" West a distance of 2272.19 feet; thence in a westerly direction with a tangent curve turning to the right with a radius of 1335.00 feet, having a chord bearing of South 83°27'41" West and a chord distance of 2010.16, having a central angle of 97°40'44" and an arc length of 2275.93'; thence in a northwesterly direction with a compound tangent curve turning to the right with a radius of 1175.00 feet, having a chord bearing of North 23°40'09" West and a chord distance of 956.96, having a central angle of 48°03'37" and an arc length of 985.60'; thence North 00°21'40" East a distance of 1039.68 feet; thence in a northwesterly direction with a tangent curve turning to the left with a radius of 200.00 feet, having a chord bearing of North 55°35'59" West and a chord distance of 331.46, having a central angle of 111°55'17" and an arc length of 390.68'; thence in a westerly direction with a reverse tangent curve turning to the right with a radius of 4020.00 feet, having a chord bearing of South 79°46'11" West and a chord distance of 1579.56, having a central angle of 22°39'37" and an arc length of

1589.90'; thence South 00°30'54" East a distance of 989.47 feet; thence South 89°29'06" West a distance of 1156.83 feet; thence South 00°30'15" West a distance of 188.05 feet; thence South 00°30'15" West a distance of 188.05 feet; thence South 07°51'12" West a distance of 94.64 feet; thence South 23°25'43" West a distance of 105.69 feet; thence South 34°30'31" West a distance of 62.77 feet; thence South 45°00'00" West a distance of 180.50 feet; thence South 00°00'00" East a distance of 2288.78 feet; thence South 87°41'24" West a distance of 3114.51 feet; thence South 87°41'22" West a distance of 1556.12 feet; to the point of beginning.

Containing 1938 acres, more or less.

Excepting therefrom:

That certain property described as "Description of Yuba Placer Gold Company Offices and Shop Facilities Area" in the "Memorandum of Agreement Regarding Mutual Operations on the Yuba Goldfields" as filed for record in Instrument No. 92 15644 Official Records Yuba County, more particularly described as follows:

All that portion of Section 5, Township 15 North, Range 5 East, Mount Diablo Base and Meridian, beginning at a point from which the corner common to Sections 4, 5, 8, and 9, T15N, R5E, M. D. B. & M. bears South 36°51'19" East, 3785.93 feet, thence the following eight (8) courses:

1. N 0°29'13" E, 332.32 feet;
2. S 89°45'21" E, 221.76 feet;
3. N 0°53'16" W, 894.45 feet;
4. S 88°15'42" W, 223.79 feet;
5. S 68°58'00" W, 816.27 feet;
6. N 89°39'51" W, 782.12 feet;
7. S 0°30'55" E, 934.36 feet;
8. N 89°51'34" East, 1548.57 feet to the point of beginning; containing approximately 40 acres, more or less

End of Description

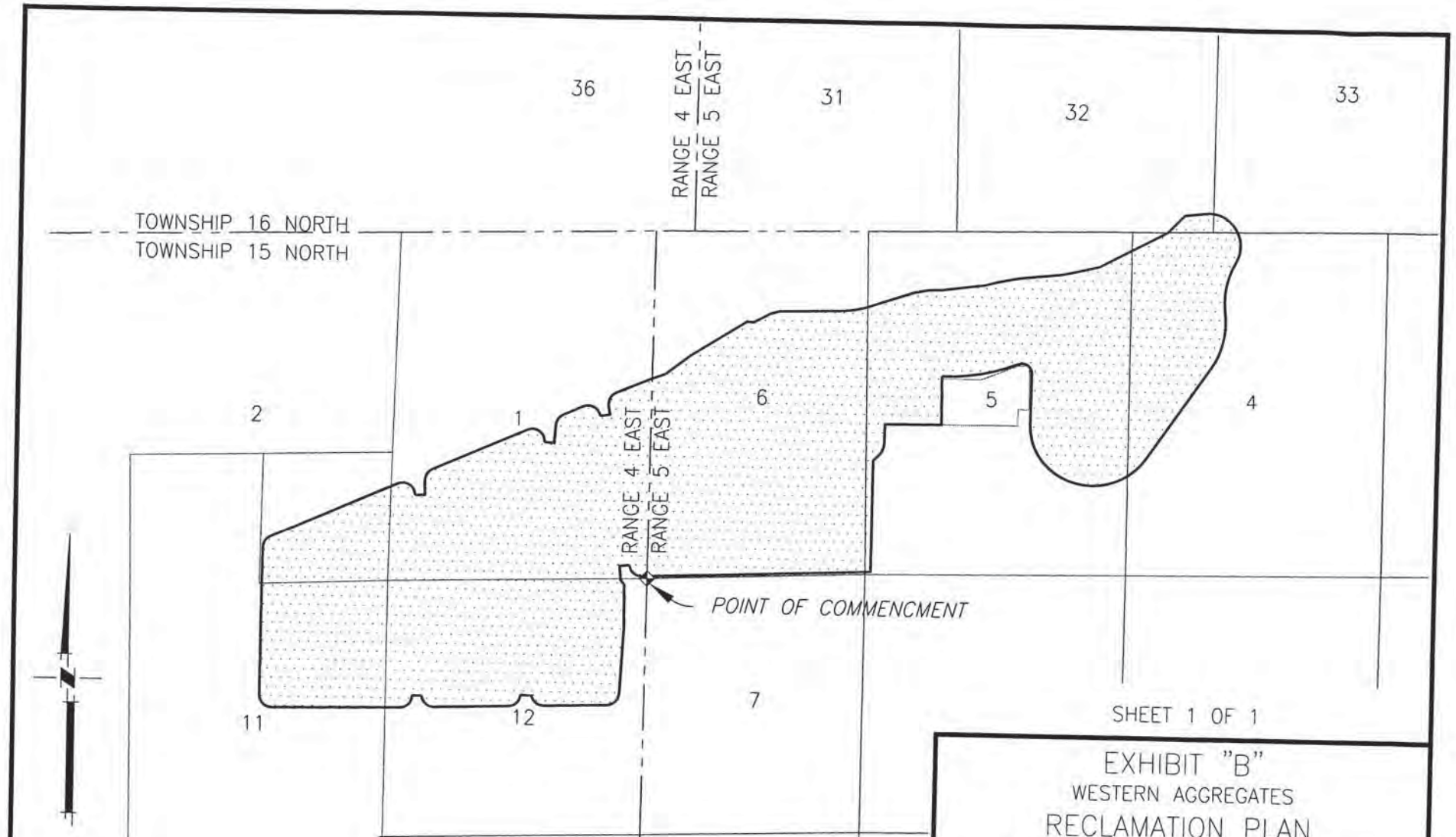
Description prepared by:
MACKAY & SOMPS CIVIL ENGINEERS, INC.

1552 Eureka Road, Suite 100, Roseville, CA 95661

David W Kopp, PLS 4533
License Expiration Date: 12-31-12

Date: 4/2/11

LICENSED LAND SURVEYOR
DAVID W. KOPP
Exp. 12-31-12
No. 4533
STATE OF CALIFORNIA



SHEET 1 OF 1

EXHIBIT "B"

WESTERN AGGREGATES

RECLAMATION PLAN

PLAT TO ACCOMPANY DESCRIPTION

YUBA GOLDFIELDS

YUBA COUNTY CALIFORNIA

MACKAY & SOMPS

ENGINEERS PLANNERS SURVEYORS

1552 Eureka Road, Suite 100, Roseville, CA 95661 (916) 773-1189

DWK	1"= 3000'	04/01/2011	18296.00
DRAWN BY	SCALE	DATE	JOB NO.

4-01-2011 07:14:31 dkopp P:\18296\REC PLAN DESC 3-25-11\LILLBURN LINE WORK-revised 3-31-11.dwg

There are no xreferences in this drawing.

ATTACHMENT 2
SMARA & CCR (TITLE 14) REQUIREMENTS FOR MINING & RECLAMATION PLAN SUBMITTALS CROSS-REFERENCE MATRIX

CROSS REFERENCE MATRIX
Between the Western Aggregates Reclamation Plan &
Surface Mining and Reclamation Act of 1975 (SMARA) & California Code of Regulations (CCR Title 14)
With Specific Emphasis on:

ARTICLE 1. GENERAL PROVISIONS. SECTION 2710 et seq.
ARTICLE 2. DEFINITIONS. SECTION 2725 et seq.
ARTICLE 3. DISTRICT COMMITTEES. SECTION 2740 – 2741
ARTICLE 4. STATE POLICY FOR THE RECLAMATION OF MINED LANDS. SECTION 2755 et seq.
ARTICLE 5. RECLAMATION PLANS AND THE CONDUCT OF SURFACE MINING OPERATIONS. SECTION 2770 et seq., as amended
CCR TITLE 14 (REGISTER 85, No. 18-5-4-83)
CHAPTER 8. MINING AND GEOLOGY
SUBCHAPTER 1. STATE MINING AND GEOLOGY BOARD
ARTICLE 1. SURFACE MINING AND RECLAMATION PRACTIVE. SECTION 3500 et seq.
ARTICLE 9. RECLAMATION STANDARDS. SECTION 3700 et seq.

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
SMARA 2770.5	100-year flood, Caltrans contact	N/A	N/A	N/A
SMARA 2772 (c) (1)	Name and Address of operator/agent.		7-8	Section 1.3
SMARA 2772 (c) (2)	Quantity & type of minerals to be mined.		5, 16	Section 1.2.2, 3.2, 3.3
SMARA 2772 (c) (3)	Initiation and termination date.		5	Section 1.1
SMARA 2772 (c) (4)	Maximum anticipated depth of mining.		21, 24, 30	Section 3.8, 4.1, 4.2
SMARA 2772 (c) (5)	Description, including map with boundaries, topographic details, geology, streams, roads, utilities.		9, 15, Sheets 1 & 2	Section 2, 3
SMARA 2772 (c) (6)	Mining plan and time schedule for reclamation (concurrent or phased reclamation).		24	Section 4.2
SMARA 2772 (c) (7)	Proposed subsequent use.		24	Section 4.1
SMARA 2772 (c) (8)	Description of reclamation measures adequate for proposed end use.		23	Section 4.0
SMARA 2772 (c) (8) (a)	Description of containment control and mine waste disposal.		21, 35	Section 3.10, 4.3
SMARAS 2772 (c) (8) (b)	Rehabilitation of stream banks/beds to minimize erosion	N/A	N/A	N/A
SMARA 2772 (c) (9)	Impact of reclamation on future mining.		24, 35	Section 4.1, 4.2

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
SMARA 2772 (c) (10)	Applicant statement accepting responsibility for reclamation per the reclamation plan.		40	Section 5.2
SMARA 2773 (a)	Water quality monitoring plan specific to property.		21	Section 3.10
SMARA 2773 (a)	Sediment and erosion control monitoring plan specific to property.		21	Section 3.9
SMARA 2773 (a)	Revegetation plan specific to property. Monitoring Plan.		36, 38	Section 4.4.2, 4.4.3
SMARA 2773.1	Performance (financial) assurances.		-	Appendix C
SMARA 2777	Amended reclamation plans required prior to substanatial deviations to approved plans.	N/A	N/A	N/A
CCR 3502 (b) (1)	Environmental setting and impact of reclamation on surrounding land uses. (identify sensitive species, wildlife habitat, sensitive natural communities, e.g., wetlands, riparian zones, etc.).		9-14	Section 2.0
CCR 3502 (b) (2)	Public health and safety (exposure).		22	Section 3.10
CCR 3502 (b) (3)	Slopes: critical gradient, consider physical properties and landscaping.		11, 30	Section 2.3, 4.2
CCR 3502 (b) (4)	Fill materials in conformance with current engineering practice.	N/A	N/A	N/A
CCR 3502 (b) (5)	Disposition of old equipment		35	Section 4.4.1
CCR 3502 (b) (6)	Temporary stream and water diversions shown.	N/A	N/A	N/A
CCR 3503 (a) (1)	Removal of vegetation and overburden preceding mining kept to a minimum.		24	Section 4.1
CCR 3503 (a) (2)	Overburden stockpiles managed to minimize water and wind erosion.		21	Section 3.9
CCR 3503 (a) (3)	Erosion control facilities (dikes, ditches, etc.) as necessary.	N/A	N/A	N/A
CCR 3503 (b) (1)	Settling ponds (sedimentation and water quality).		20, 35	Section 3.5, 4.2
CCR 3503 (b) (2)	Prevent siltation of groundwater recharge areas.		21	Section 3.10
CCR 3503 (c)	Protection of fish and wildlife habitat (all reasonable measures).	N/A	N/A	N/A

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
CCR 3503 (d)	Disposal of mine waste and overburden (stable-no natural drainage restrictions without suitable provisions for diversion).		35	Section 4.3
CCR 3503 (e)	Erosion and drainage (grading to drain to natural courses or interior basins).		21	Section 3.9
CCR 3503 (f)	Resoiling (fine material on top plus mulches).		20, 35	Section 3.5, 4.2
CCR 3503 (g)	Revegetation and plant survival (use available research).		38	Section 4.4.3
CCR 3703 (a)	Sensitive species conserved or mitigated	N/A	N/A	N/A
CCR 3703 (b)	Wildlife habitat at least as good as pre-project, if approved end use is habitat.	N/A	N/A	N/A
CCR 3703 (c)	Wetlands avoided or mitigated at 1:1 minimum	N/A	N/A	N/A
CCR 3704 (a)	For urban use, fill compacted in accordance with UBC or local grading ordinance.	N/A	N/A	N/A
CCR 3704 (b)	For resource conservation, compare to standard for that end use	N/A	N/A	N/A
CCR 3704 (c)	Mine waste stockpiled to facilitate phased reclamation and separate from growth media.		22, 35	Section 3.5, 4.3
CCR 3704 (d)	Final reclamation fill slopes not exceed 2:1, except when engineering and revegetation analysis allow.		11, 36	Section 2.3, 4.4.2
CCR 3704 (e)	Final landforms or fills conform with surrounding topography or end use.		24	Section 4.1, Sheets 1 & 2
CCR 3704 (f)	Cut slopes have minimum factor of safety for end use and conform with surrounding topography.		11, 30	Section 2.3, 4.2
CCR 3704 (g)	Piles or dumps not placed in wetlands without mitigation.	N/A	N/A	N/A
CCR 3705 (a)	Vegetative cover, suitable to end use, self-sustaining. Baseline studies documenting cover, density and species richness.		36	Section 4.4.2
CCR 3705 (b)	Test plots if success has not been proven previously	N/A	N/A	N/A
CCR 3705 (c)	Decompaction of site.	N/A	N/A	N/A

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
CCR 3705 (d)	Roads stripped of roadbase materials, resoiled and revegetated, unless exempted.	N/A	N/A	N/A
CCR 3705 (e)	Soil altered or other than native topsoil, required soil analysis. Amend if necessary.	N/A	N/A	N/A
CCR 3705 (f)	Temporary access not bladed. Barriers installed.	N/A	N/A	N/A
CCR 3705 (g)	Use native plant species, unless exotic species meet end use.		33, 37	Section 4.4.2
CCR 3705 (h)	Plant during correct season.		37	Section 4.4.2
CCR 3705 (i)	Erosion control and irrigation, when necessary.		21	Section 3.9
CCR 3705 (j)	If irrigated, demonstrate self-sustaining without for two-year minimum.	N/A	N/A	N/A
CCR 3705 (k)	Weeds managed.		38	Section 4.4.3
CCR 3705 (l)	Plant protection measures, fencing, caging.		38	Section 4.4.3
CCR 3705 (m)	Success quantified by cover, density and species-richness. Standards proposed in plan. Sample method set forth in plan and sample size provide 80 percent confidence level, as minimum.		38	Section 4.4.3
CCR 3706 (a)	Mining and reclamation to protect downstream beneficial uses.		21	Section 3.9
CCR 3706 (b)	Water quality, recharge, and groundwater storage shall not be diminished, except as allowed by plan.		21	Section 3.10
CCR 3706 (c)	Erosion and sedimentation controlled during all phases as per RWQCB/SWRCB.		22	Section 3.10
CCR 3706 (d)	Surface runoff and drainage controlled and methods designed for not less than 20 year/1 hour intensity storm event.		21	Section 3.9
CCR 3706 (e)	Altered drainages shall not cause increased erosion or sedimentation.		21, 22	Section 3.9, 3.10
CCR 3706 (f)	Stream diversions constructed in accordance with DFG 1603, EPA 404, Sec. 10 Rivers and Harbors.	N/A	N/A	N/A
CCR 3706 (g)	All temporary diversions eventually removed.	N/A	N/A	N/A

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
CCR 3707 (a)	Return prime ag to prime ag, unless exempted.	N/A	N/A	N/A
CCR 3707 (b)	Segregate and replace topsoil by horizon.	N/A	N/A	N/A
CCR 3707 (c)	Productivity rates equal pre-project or similar site for two consecutive years. Rates set forth in plan.	N/A	N/A	N/A
CCR 3707 (d)	Fertilizers and amendments not contaminate water.		21	Section 3.9
CCR 3708	Other ag capable of sustaining crops of area.	N/A	N/A	N/A
CCR 3709 (a)	Equipment stored in designated area and waste disposed of according to ordinance.		35	Section 4.3, 4.4.1
CCR 3709 (b)	Structures and equipment dismantled and removed.		35	Section 4.4.1
CCR 3710 (a)	Surface and groundwater protected.		21	Section 3.9, 3.10
CCR 3710 (a)	Surface and groundwater projected in accordance with Porter Cologne and Clean Water Acts (RWQCB/SWRCB).		22	Section 3.10
CCR 3710 (b)	In-stream in accordance with CFG 1600, EPA 404, and Sec. 10 Rivers and Harbors.	N/A	N/A	N/A
CCR 3710 (c)	In-stream channel elevations and bank erosion evaluated annually using extraction quantities, cross-sections, and aerial photos.	N/A	N/A	N/A
CCR 3710 (d)	In-stream mining activities shall not cause fish to become entrapped in pools or in off-channel pits. California Fish and Game Code section 1600.	N/A	N/A	N/A
CCR 3711(a)	All salvageable topsoil removed. Topsoil and vegetation removal not process mining by more than one year.	N/A	N/A	N/A
CCR 3711 (b)	Topsoil resources mapped prior to stripping, location of stockpiles on map. Topsoil and growth media in separate stockpiles.	N/A	N/A	N/A
CCR 3711 (c)	Soil salvage and phases set forth in plan, minimize disturbance, designed to achieve revegetation success.	N/A	N/A	N/A
CCR 3711 (d)	Topsoiling phased ASAP. Stockpiles not be disturbed until needed. Stockpiles clearly identified and planted with vegetation or otherwise protected.	N/A	N/A	N/A

SMARA/CCR SECTION	DESCRIPTION	N/A	PAGE	SECTION
MINING OPERATION AND CLOSURE				
CCR 3711 (e)	Topsoil redistributed in stable site and consistent thickness.		20, 24	Section 3.5, 4.2
CCR 3712	Waste and tallings, and waste disposal governed by SWRCB (Article 7, Chapter 15, Title 23, CCR).		22	Section 3.10
CCR 3713 (a)	Drill holes, water wells, monitoring wells abandoned in accordance with laws.	N/A	N/A	N/A
CCR 3713 (b)	All portals, shafts, tunnels, or openings, gated or protected from public entry, but preserve access for wildlife.	N/A	N/A	N/A

Appendix B Air Quality and Climate Change Assessment for the Western Aggregates LLC Amended Reclamation Plan Technical Memorandum

Technical Memorandum

Project:	Western Aggregates LLC Yuba County Operations Amended Reclamation Plan
Subject:	Air Quality and Climate Change Assessment
Date:	March 22, 2013

Introduction

Western Aggregates LLC ("Western") operates an active aggregate mining operation in Yuba County. At the conclusion of mining, operations within the Vested Rights Area will be reclaimed in accordance with State Mining and Geology Board (SMGB) Reclamation Regulations (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1 §§ 3500-3800).

This Technical Memorandum (TM) describes the existing air quality and climate change environment in the project area, and the regulatory programs or adopted plans that shape the existing environment. The TM also analyzes the effects of implementing the Amended Reclamation Plan (proposed project) on air quality and climate change. Topics addressed in this TM include:

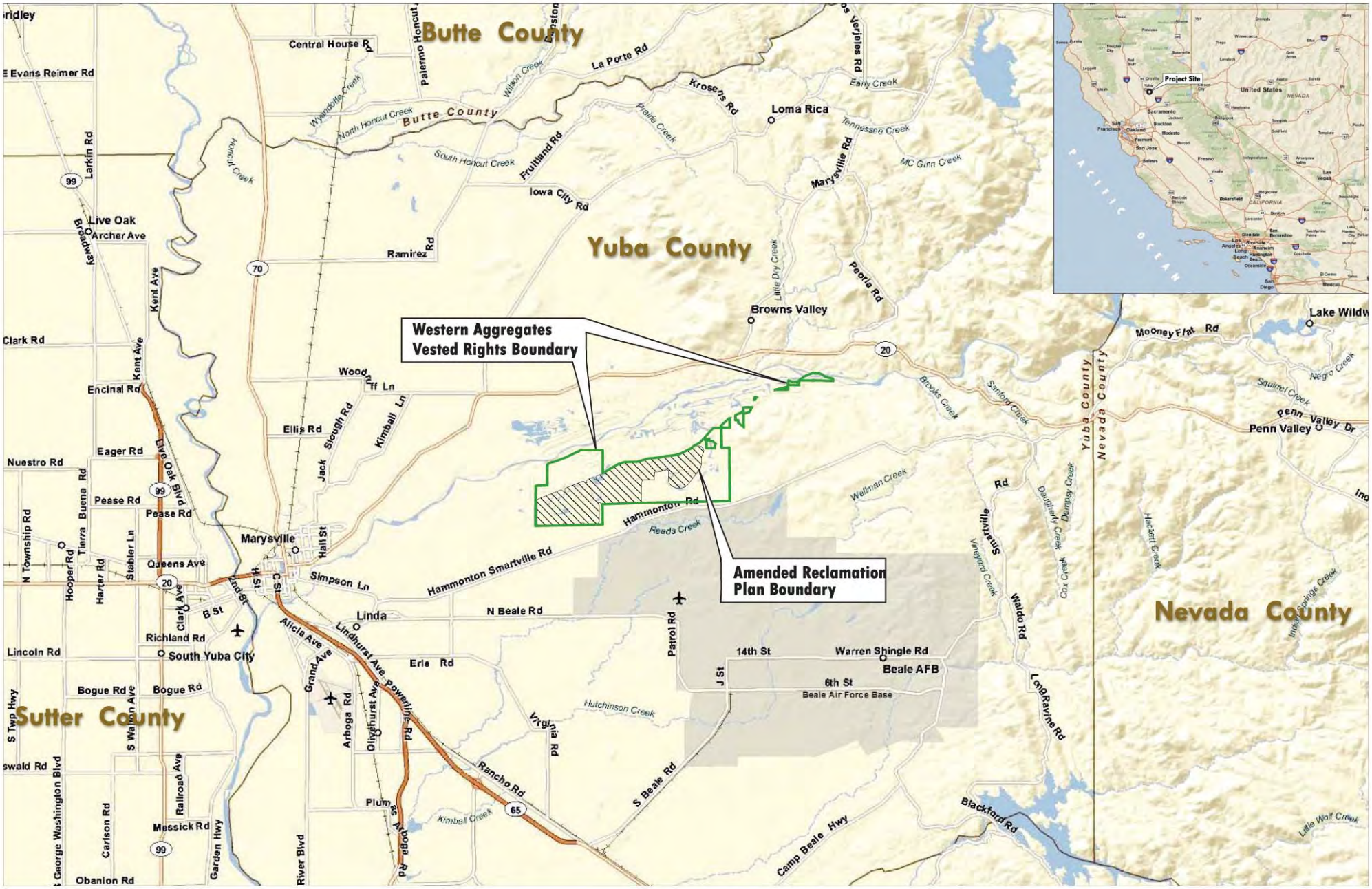
- Generation of criteria air pollutants from the implementation of the Amended Reclamation Plan;
- Potential impacts on sensitive receptors;
- Potential creation of objectionable odors;
- Cumulative air quality impacts; and
- Generation of greenhouse gas emissions from the implementation of the Amended Reclamation Plan.

Project Location

The Amended Reclamation Plan area is approximately 1,960 acres located in an unincorporated portion of Yuba County, California, south of the Yuba River, north of Hammonton-Smartville Road, and approximately equidistant (20 miles) between Marysville and Smartsville (Figure 1 [Area Map]). The site is situated at the western edge of the Sierra Nevada foothills, approximately 1 mile south of the south bank of the Yuba River, and north of Beale Air Force Base. Access to the project site is via an access road (generally referred to as Hammonton Road), which intersects with Hammonton-Smartville Road approximately 1 mile south of the mine processing plant. The project site is located within the area commonly referred to as the Yuba Goldfields.

Site Description

The majority of the project site is characterized by active mining operations, a processing facility, numerous dredge tailing ridges interspersed with waterways and areas of native riparian and wetland vegetation, and small to large siltation and freshwater ponds created by past and ongoing mining activities.



Area Map

Western Aggregates LLC
Yuba County, California

Figure 1

LEGEND

Vested Rights Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

N

0 3
Miles

Source: Lilburn Corp., 03/2011 (TAG)

LILBURN CORPORATION

Western's processing plant is located in the southern portion of the project site where the company maintains processing equipment, a scalehouse, a shop building, an above-ground fuel island, and administrative offices. A large Designated Disposal Area (DDA) which serves as the sediment settling pond is situated in the northeast portion of the processing area. Product stockpiles are located adjacent to the processing area. The majority of the site currently contains or historically contained large tailings piles created by extensive gold dredging operations. However, approximately 30 acres adjacent to processing area and a larger area in the southeast corner of the reclamation plan area (west and south of Hammonton Road) were unaffected by prior dredging operations and currently support open annual grassland that are primarily used for livestock grazing.

Project Description

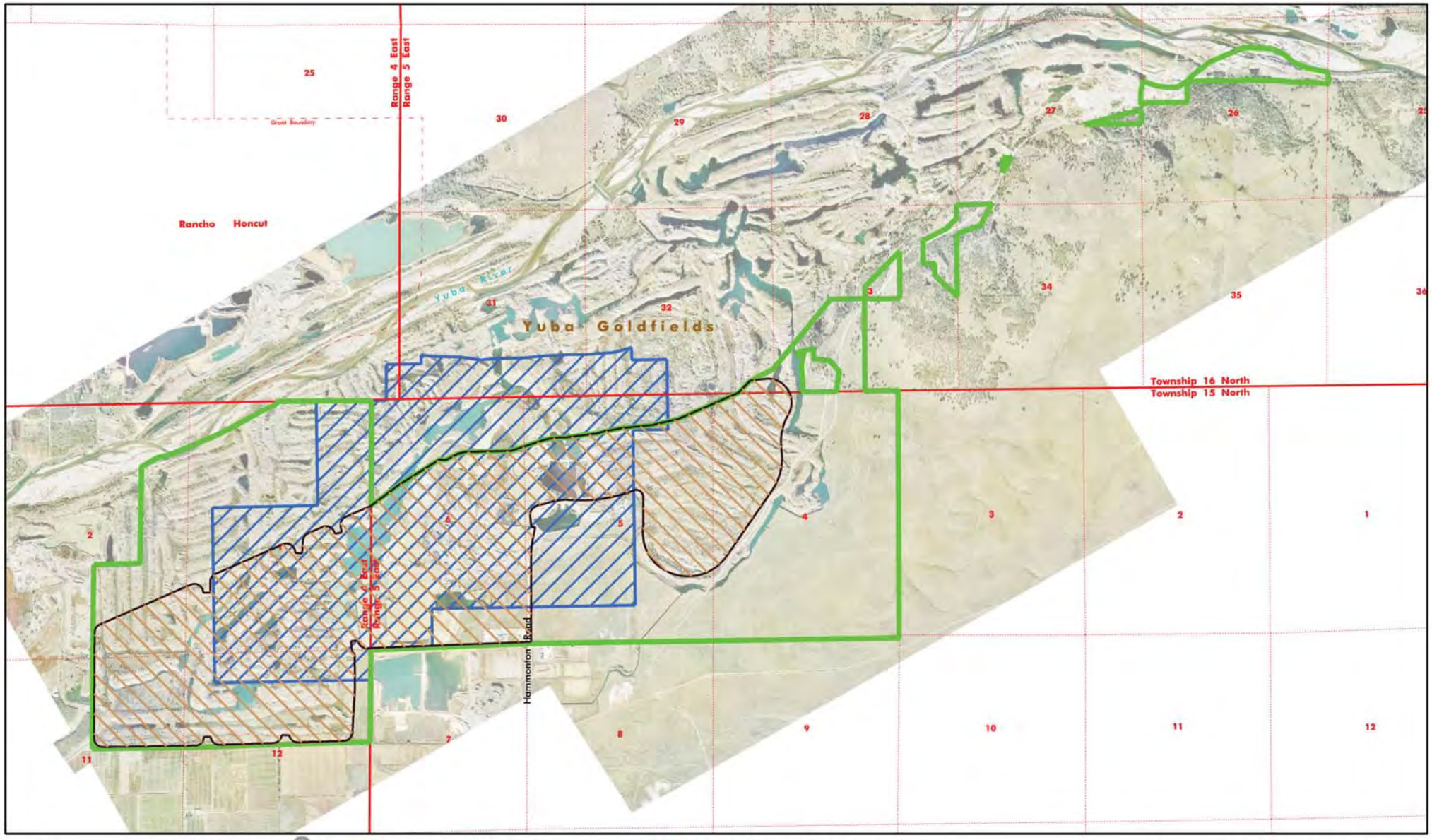
Under Western's Amended Reclamation Plan, site reclamation would be carried out in three phases to coincide with three remaining phases of ongoing vested aggregate mining and processing operations. Implementation of the reclamation plan would ultimately create a series of lakes, varying in size, and open space areas supporting a variety of wildlife habitat types including aquatic lake, marsh, woodland and upland habitats.

Activities specific to site reclamation are the focus of this impact evaluation. While this impact analysis does not address the impact of the ongoing and vested mining activities, implementation of the reclamation plan is tied to these activities. Existing on-site conditions created by mining operations and future conditions that are anticipated to be created by vested mining operations over the life of the project will serve as environmental baseline conditions from which the reclamation plan impacts will be measured. Mining operations are described in detail in the Amended Reclamation Plan for Western Aggregates LLC Yuba County Operations (Lilburn 2012).

Approximately 1,960 acres of the 3,900-acre Vested Rights Area will be affected by Western's surface mining operations, which are projected to terminate in approximately 45 years (Figure 2 [Proposed Reclamation Plan Area]*)*. The actual time frame for termination, however, depends on economic factors (e.g., demand and competition), reserves, ultimate mining depths and quality of mined materials.

The Amended Reclamation Plan would use fines available from mining operations, including residual dredge fines, fines from the settling pond(s), and overburden, to implement site re-vegetation as specified in the Amended Reclamation Plan. Commercially available broadcast seeding would be applied to these areas for erosion control purposes and to enhance natural re-vegetation. No off-site import of fines is proposed. In areas where topsoil would be disturbed, the soil would be salvaged and stockpiled for use in re-vegetation to the extent necessary. Only areas above the water level would be affected by reclamation plan activities. Historically, it has been observed that aquatic vegetation naturally populates in the on-site lakes and, therefore, no reseeding of the areas are necessary.

Upon final completion of mining activities and the closing of the mine, the aggregate processing plant would be razed and all equipment would be dismantled and removed. As detailed in the Amended Reclamation Plan, the plant site and roads and utilities serving the site would be prepared, re-vegetated and reclaimed.



LILBURN CORPORATION

1250 0 1250 2500

Scale: 1 inch = 2500 feet

Map Prepared By: Lilburn Corporation 03/2011 (TAG)
Aerial: Stewart, 12-22-10
Boundary: Mackay & Somps: 2010

LEGEND

Western Aggregates Confirmed 2010 Vested Rights Boundary

Reclamation Plan #80-01 Gold Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

Proposed Reclamation Plan Area

Western Aggregates LLC
Yuba County, California

Figure 2

Environmental Setting

Air Quality Background

A region's air quality is influenced by the region's climate, topography, and pollutant sources. The characteristics of the region encompassing the proposed project are such that the area can, at times, have the potential for high concentrations of regional and localized air pollutants.

The proposed project is located in the Feather River Air Quality Management District's (FRAQMD, or District) jurisdiction. The FRAQMD is located in the Sacramento Valley Air Basin (SVAB), which includes the counties of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and portions of Placer and Solano counties. The Cascade Range borders the SVAB to the north, the Sierra Nevada to the east, and the Coast Ranges to the west. The SVAB is bounded to the south by the San Joaquin Valley Air Basin. The FRAQMD has jurisdiction over Yuba and Sutter counties.

Depending on meteorological conditions, the barrier to air flow created by the mountain ranges surrounding the valley can trap air pollutants. Autumn and early winter experience the highest frequency of air stagnation when large high-pressure cells remain over the valley. During this time, pollutants become concentrated in the area due to the lack of surface wind and reduced vertical flow caused by relatively low surface heating, which reduces the influx of outside air. Concentrations are highest when these conditions are combined with temperature inversions that trap cool air, fog, and pollutants near the ground.

The Mediterranean climate of the SVAB is characterized by hot, dry summers and mild, rainy winters. Yearly temperatures average from 30 to 90 degrees Fahrenheit. Late October to early May is the rainy season for the FRAQMD portion of the SVAB, with yearly precipitation varying significantly. Average rainfall is 17.2 inches.

Criteria Air Pollutants

Criteria air pollutants are a group of pollutants for which federal or state regulatory agencies have adopted ambient air quality standards. Criteria air pollutants of greatest concern are: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead. Most of the criteria pollutants are directly emitted. Ozone, however, is a secondary pollutant formed in the atmosphere by chemical reactions between oxides of nitrogen (NO_X) and reactive organic gases (ROG). A brief description of the criteria air pollutants is provided below.

Ozone, commonly referred to as smog, is greatest on warm, windless, sunny days. Reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X) occur over time in the presence of sunlight. Ground-level ozone formation can occur in a matter of hours under ideal conditions. The principal sources of the ozone precursors are the combustion of fuels and the evaporation of solvents, paints, and fuels.

Ozone can greatly impair visibility and create an unsightly haze. But ozone is also a public health concern because adverse health effects due to photochemical oxidants range from mild irritation of the eyes, nose and throat to possible impairment of lung function. Other effects include aggravation of respiratory and cardiac diseases, and pulmonary dysfunction. Ozone, the primary constituent of photochemical smog, is a

severe irritant to all mucous membranes and primarily affects the respiratory system. A 10-year study funded by the California Air Resources Board (ARB) revealed that exposure to high air pollution levels can slow down the lung function growth rate of children by up to 10 percent (ARB 2004).

Carbon Monoxide is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. Through control measures adopted by state, local, and federal agencies, all areas of the SVAB have attained the state and federal CO standards. However, the potential still exists for incidents of high localized concentrations of CO to occur.

Coarse Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$) consists of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter respectively. Some sources of suspended particulate matter, like pollen and windblown dust, occur naturally. However, in populated areas, most fine suspended particulate matter is caused by road dust, diesel soot, fuel combustion, abrasion of tires and brakes, and construction activities. Fine particles can remain suspended in the air and travel long distances.

The health effects depend on the nature of the particulate matter. For example, health effects can be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances absorbed onto fine particulates or with fine dust particles of silica or asbestos. Generally, health effects associated with particulate matter can result from both short-term and long-term exposure to elevated levels. These effects can include increased mortality, reduced lung function, aggravation of asthma and bronchitis symptoms, and respiratory disease.

Nitrogen Dioxide (NO_2) is generated by the burning of fuel and can produce lung damage in exposed individuals. NO_2 can also react in the atmosphere to form acid rain. NO_2 is one component of NO_X, which is an ozone precursor.

Sulfur Dioxide (SO_2) can be produced by coal or oil burning power plants or industries, refineries, and diesel engines. SO_2 can increase lung disease and breathing problems in asthmatics, and can react in the atmosphere to form acid rain.

Lead concentrations in the air are generated by industrial processes, primarily metals processing. The highest air concentrations of lead are usually found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. In the past, motor vehicles were the major contributor of lead emissions to the air. As a result of EPA's regulatory efforts to reduce lead in gasoline, air emissions of lead from the transportation sector, and particularly the automotive sector, have greatly declined over the past few decades.

Regional Air Quality

Emissions from the urbanized portion of the SVAB have the greatest effect on air quality. While pollutant concentrations have generally declined over the years, additional emission reductions will be needed to

attain the state and national ambient air quality standards in the SVAB. As shown in Table 1, the SVAB is currently in nonattainment for the state ozone standards, state PM_{10} standard, and National $PM_{2.5}$ standard. The air basin is in attainment for state $PM_{2.5}$, NO_2, and SO_2 standards. The SVAB is unclassified or unclassified attainment for the State CO standard, and national 8-hr ozone, NO_2, and SO_2 standards.

Table 1 FRAQMD Area Designations for State and National Ambient Air Quality Standards

Pollutants	*State Designations*	*National Designations*
Ozone 1-hr	Nonattainment—Transitional[a]	—
Ozone 8-hr	Nonattainment—Transitional[a]	Unclassified/Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Attainment[b]	Nonattainment
Carbon Monoxide (CO)	Unclassified	—
Nitrogen Dioxide (NO_2)	Attainment	Unclassified/Attainment
Sulfur Dioxide (SO_2)	Attainment	Unclassified/Attainment

SOURCE: ARB, Area Designation Maps/ State and National (2012), http://www.arb.ca.gov/desig/adm/adm.htm (accessed 3/20/2013).

a. The district has been re-designated from Nonattainment to Nonattainment Transitional for the state designation for ozone. The change was confirmed by ARB on March 25, 2010.

b. The district has been re-designated to attainment for annual $PM_{2.5}$ for state ambient air quality standards. The change was adopted by ARB on March 25, 2010.

Existing Local Air Quality

The ARB collects ambient air quality data through a network of air monitoring stations throughout the state. These data are summarized annually and are published in ARB's California Air Quality Data Summaries. The monitoring station closest to the project site is the Yuba City–Almond Street station located approximately 7 miles southwest of Western's property boundary in Yuba City, California. All criteria pollutant concentrations except CO are monitored at this station. The reported CO concentrations are an air-basin-wide average because concentrations for individual stations within Yuba County are not available. Table 2 identifies the national and state ambient air quality standards for criteria air pollutants and the ambient criteria air pollutant concentrations between 2009 and 2011.

Exiting Regional Toxic Air Contaminants

In addition to the criteria air pollutants, another group of airborne substances, called toxic air contaminants (TACs), are known to be highly hazardous to health, even in small quantities. TACs are airborne substances capable of causing short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects (i.e., injury or illness).

There are almost 200 compounds that have been designated as TACs in California. The ten TACs posing the greatest known health risk in California, based primarily on ambient air quality data, are: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter. Mobile sources are the primary contributors to ambient levels of many of the TACs posing the greatest known health risk.

Table 2 Summary of Ambient Air Quality in the Project Vicinity	2009	2010	2011
NATIONAL			
Ozone[a]			
Maximum 1-hour average concentration	0.089	0.089	0.074
Number of days exceeding Federal 1-hr standard (0.089 ppm)	0	0	0
Maximum 8-hour average concentration	0.076	0.075	0.067
Number of days exceeding Federal 8-hour standard (0.075 ppm)	1	0	0
Carbon Monoxide			
Maximum 8-hr average concentration	2.84	1.89	2.83
Number of days exceeding Federal 8-hr Standard (9 ppm)	0	0	0
Nitrogen Oxides (NO_x)[c]			
Maximum 1-hr average concentration	0.057	0.059	0.073
Number of days exceeding Federal 1-hr Standard (0.10 ppm)	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum 24-hour average concentration	50.7	43.1	54.6
Number of days exceeding national standard (150 $\mu g/m^3$)	0	0	0
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour average concentration	41.8	72.2	57.0
Number of days exceeding national standard (35 $\mu g/m^3$)	2	1	8
STATE			
Ozone[a]			
Maximum 1-hour average concentration	0.089	0.089	0.074
Number of days exceeding state 1-hour standard (0.09 ppm)	0	0	0
Maximum 8-hour average concentration (national)	0.077	0.076	0.067
Number of days exceeding state 8-hour standard (0.07 ppm)	1	1	0
Carbon Monoxide			
Maximum 8-hr average concentration	2.84	1.89	2.83
Number of days exceeding state 8-hr Standard (9 ppm)	0	0	0
Nitrogen Oxides (NO_x)[c]			
Maximum 1-hr average concentration	0.057	0.059	0.073
Number of days exceeding state 1-hr Standard (0.18 ppm)	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum 24-hour average concentration	50.1	43.3	57.8
Number of days exceeding state standard (50 $\mu g/m^3$)	0	0	2
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour average concentration	45.3	92.3	57

SOURCE: California ARB, Data Statistics, Top 4 Summaries, www.arb.ca.gov/adam/topfour (accessed March 21, 2013).

Naturally occurring asbestos (NOA) and asbestos containing material may be encountered in parts of the SVAB. NOA is most likely to be found in the foothills and mountainous portions of the Feather River District. The most common type of asbestos is chrysotile, and this or other types of asbestos can be released and become airborne when rocks are broken or crushed. Sources of asbestos include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits or rock quarrying activities where ultramafic rock is present. The project site is not located in an area of historically mined asbestos or areas of known ultramafic rock (USGS 2011); therefore, NOA is not discussed further in this analysis.

Sensitive Receptors

Western's property is located in unincorporated Yuba County, approximately 6 miles northeast of the City of Marysville. The site is bounded by the Yuba River, agriculture, grazing land, rural residential uses, and other active mine sites. There are no developed communities on the project site. There are rural residential uses to the west and south of proposed Reclamation Phase 2 and Phase 3 plan areas. These residences are more than 1,000 feet from the site's boundaries and are buffered by orchards that occur along the western and southern boundaries of the site.

Climate Change and Greenhouse Gases

Parts of the Earth's atmosphere act as an insulating blanket of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The "blanket" is a collection of atmospheric gases called "greenhouse gases" (GHGs) based on the idea that the gases 'trap' heat similar to the glass walls of a greenhouse. These gases, mainly water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and chlorofluorocarbons (CFCs), act as global insulators, reflecting visible light and infrared radiation back to the Earth. Methodologies approved by the Intergovernmental Panel on Climate Change (IPCC), EPA, and the ARB focus on carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and hydrofluorocarbons as GHGs of greatest concern. A brief description of each of these gases is provided below.

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of CO_2 emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. CO_2 is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. When in balance, the total CO_2 emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal, and gas, and deforestation, have increased CO_2 concentrations in the atmosphere. In 2005, global atmospheric concentrations of CO_2 were 35 percent higher than they were before the Industrial Revolution (EPA 2011).

Methane (CH_4) is emitted from a variety of both human-related and natural sources. Human-related activities include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4

emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH_4 emissions are due to human-related activities.

Methane emission levels from a particular source can vary significantly from one country or region to another, depending on many factors such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological processes that cause CH_4 emissions in both human-related and natural sources. Also, the implementation of technologies to capture and utilize CH_4 from sources such as landfills, coal mines, and manure management systems affects the emission levels from these sources (EPA 2011b).

Nitrous oxide (N_2O), more commonly known as "laughing gas," is produced naturally by microbial processes in soil and water. In addition to agricultural sources, some industrial processes, such as fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions, also contribute to its atmospheric load. It is used in rocket engines, racecars, and as an aerosol spray propellant. Global concentration of nitrous oxide in 1998 was 314 parts per billion (ppb) (EPA 2010).

Chlorofluorocarbons (CFCs) have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere were rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and has successfully reduced or stopped the increase in the levels of the major CFCs. However, due to the long atmospheric lifetimes, CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFCs) are another set of synthesized compounds. HFCs are also considered GHGs, though they are less stable in the atmosphere and therefore have a shorter lifetime and less of an impact than CFCs. CFCs, Tetrafluoromethane (CF_4), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs) have been banned and are no longer commercially available. Therefore, they are not considered further in this analysis.

Potential Effects of Human Activity on Greenhouse Gas Emissions

The burning of fossil fuels, such as coal and oil, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations). In 1994, atmospheric CO_2 concentrations were found to have increased by nearly 30 percent above pre-industrial (c.1860) concentrations.

The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO_2.[1] Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalents (CO_2e), and are sometimes expressed in millions of metric tons (MMT) of CO_2e.

[1] The potential of a gas or aerosol to trap heat in the atmosphere.

Worldwide emissions of GHGs in 2004 were nearly 30 billion tons of CO_2e per year (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes) (EPA 2011c).

In 2004, the United States emitted 7 billion tons of CO_2e. Of the four major sectors nationwide—residential, commercial, industrial and transportation—transportation accounts for the highest fraction of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion (EPA 2006). In 2008, the United States emitted 6.9 billion tons of CO_2e, with transportation accounting for the highest fraction of GHG emissions of approximately 32 percent (EPA 2010b).

In 2004, California emitted approximately 483 million tons of CO_2e, or about 6 percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has one of the fourth lowest per capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the state's GHG emissions rate of growth by more than half of what it would have been otherwise. Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states. In 2008, California's GHG emissions were approximately 478 million metric tons CO_2e, generally attributed to the reduced travel and therefore transportation emissions.

The California Energy Commission found that transportation is the source of approximately 41 percent of the state's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities (CEC 2007).

Regulatory Setting

Air quality in the project area is regulated by the federal EPA, ARB, and the FRAQMD. These agencies develop rules and regulations to meet the goals or state/regional directives imposed on them through legislation. Although federal EPA regulations may not be superseded, both state and local regulations may be more stringent than the federal standards. In general, air quality evaluations are based on air quality standards developed by the federal and state governments. Emissions limitations are then imposed upon individual sources of air pollutants by the various air agencies. Mobile sources of air pollutants are largely controlled through federal and state agencies, while most stationary sources are regulated by the local air pollution control or air quality management districts.

Global climate change is addressed through the efforts of various federal, state, regional, and local government agencies as well as national and international scientific and governmental conventions and programs. These agencies work jointly, as well as individually, to understand and regulate the effects of greenhouse gas emissions and resulting climate change through legislation, regulations, planning, policy-making, education, and a variety of programs. The significant agencies, conventions, and programs focused on global climate change are discussed below.

Federal

The EPA is the federal agency responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives.

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that describes a strategy for the means to attain the federal standards for which the state is in nonattainment. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs.

Clean Air Act

The Federal Clean Air Act (FCAA), as amended, establishes air quality standards for several pollutants. These standards are divided into primary standards and secondary standards. Primary standards are designed to protect public health, and secondary standards are intended to protect public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The FCAA requires that regional plans be prepared for non-attainment areas illustrating how the federal air quality standards could be met.

Regulation of TACs is achieved through federal and state controls on individual sources. The 1990 FCAA Amendments offer a comprehensive plan for achieving significant reduction in both mobile and stationary source emissions of certain designated Hazardous Air Pollutants, with a goal of achieving the EPA's one in one million cancer risk from TACs.

State

The California Air Resources Board (ARB), a part of the California Environmental Protection Agency (Cal EPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the ARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The ARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 requires nonattainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. The ARB has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts. The SIP identifies measures that will be implemented to reduce ozone and fine particulate matter ($PM_{2.5}$) emissions to meet federal standards.

Toxic Air Contaminants

Regulation of TACs is achieved through federal and state controls on individual sources. The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) and California Health and Safety Code Sections 44300 et seq., provides for the regulation of over 200 air toxics and is the primary air contaminant legislation in the state. ARB has published the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. This plan identifies diesel particulate matter as the predominant TAC in California and identifies methods for reducing diesel emissions from mobile, stationary, and area-wide sources. ARB has also prepared an informational document, Air Quality and Land Use Handbook A Community Health Perspective (2005), with recommended guidelines for siting sensitive land uses near sources of mobile TAC emissions such as diesel particulate matter.

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHGs as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 required ARB to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to 1990 statewide levels by 2020. ARB published a staff report that determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO_2e. ARB published its final report for Proposed Early Actions to Mitigate Climate Change in California in October 2007. This report described recommendations for discrete early action measures to reduce GHG emissions. ARB estimates that by 2020, the reductions from those three measures would be approximately 13 to 26 million metric tons (MMT) of carbon dioxide equivalents (CO_2e) (ARB 2007).

In December 2008, ARB adopted the Climate Change Scoping Plan, which outlined the state's strategy to achieve the 2020 GHG limit. The 2008 ARB Scoping Plan projected 2020 emissions to be 596 $MMTCO_2e$ if no emission reductions occur, as compared to the 2020 target (1990 emissions level) of 427 $MMTCO_2e$. In order to reach the 2020 target goal, emissions must be reduced by 169 $MMTCO_2e$ (approximately 29 percent reduction).

ARB revised the Scoping Plan in 2011. The 2011 Scoping Plan incorporates changes that have occurred since the original 2008 Plan was adopted. While the structure and framework remain the same, the 2011 Plan provides an updated business-as-usual benchmark, and revised reduction requirements that take into account the current economic status of California.

Executive Order S-3-05

Executive Order S-3-05, signed in 2005, states that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce snowpack in the Sierra Nevada Mountains, further exacerbate California's air quality problems, and potentially cause a rise in sea level. To combat those concerns, the Executive Order established total GHG emissions targets. Executive Order S-3-05 establishes following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

Regional

Feather River Air Quality Management District

The FRAQMD is the primary agency responsible for planning to meet federal and state ambient air quality standards in Yuba and Sutter Counties. The District is subject to the following air quality plans with respect to the project area.

- **Northern Sacramento Valley Planning Area (NSVPA) Attainment Plan for California Ozone AAQS**. Nonattainment areas for the California Ozone AAQS are required to submit a plan every 3 years demonstrating progress made toward achieving the standard. The District partnered with other Northern Sacramento Valley nonattainment air districts in completing the plan. The NSVPA Attainment Plan includes all of Yuba County.
- **SB 656 (Sher) PM_{10} Reduction Measures**. As a nonattainment area for California PM_{10} AAQS, the District has adopted a schedule of adoption of control measures and programs to reduce emissions of PM_{10}. The schedule was adopted by the District's Board of Directors in 2006.
- **$PM_{2.5}$ NAAQS State Implementation Plan.** The National $PM_{2.5}$ AAQS was lowered in 2006 from 60 $\mu g/m^3$ to 35 $\mu g/m^3$. Most of Yuba County and all of Sutter County have been designated as nonattainment for the 2006 NAAQS. The District is in the process of developing an attainment plan for reducing $PM_{2.5}$ emissions.

As part of their commitment to reducing regional pollutants, the FRAQMD requires that the following Standard Mitigation Measures be applied to all construction projects (FRAQMD 2010):

- Implement FRAMQD's Fugitive Dust Control Plan.
- Construction equipment exhaust emissions shall not exceed FRAQMD Regulation II, Rule 3.0, Visible Emissions Limitations (40 percent opacity or Ringelmann 2.0).
- The operator shall be responsible to ensure that all construction equipment is properly tuned and maintained prior to and for the duration of on-site operation.
- Limiting idling time to 5 minutes—saves fuel and reduces emissions. (State idling rule: commercial diesel vehicles -13 CCR Chapter 10 Section 2485 effective 02/01/2005; off road diesel vehicles—13 CCR Chapter 9 Article 4.8 Section 2449 effective 05/01/2008).
- Utilize existing power sources (e.g. power poles) or clean fuel generators rather than temporary power generation.
- Develop a traffic plan to minimize traffic flow interference from construction activities. The plan may include advance public notice of routing, use of public transportation, and satellite parking areas with a shuttle service. Schedule operations affecting traffic for off-peak hours. Minimize obstruction of through-traffic lanes. Provide a flag person to guide traffic properly ad ensure safety at construction sites.
- Portable engines and portable engine-driven equipment units used at the same project work site, with the exception of on-road and off-road motor vehicles, may require ARB Portable Equipment Registration with the State or local district permit.

Impacts and Mitigation Measures

Methods of Analysis

The methodology for the analysis of reclamation activities is described below for air quality and climate change. The proposed project is the reclamation of mined areas and development of open space wetland and associated habitat. Reclamation would occur periodically in phases over the remainder of the operation mining activities. Once the area is reclaimed, there would be no active operation activities and long-term operational impacts would not occur. Therefore, methodology for or the analysis of operational activities is not contained in this analysis. Specific assumptions and calculations associated with the reclamation activities are included in Attachment A, and model output is included in Attachment B.

Air Quality

Daily reclamation emissions were estimated using the CalEEMod emissions model. The following describes the project elements assumed for estimating emissions, based on information provided by project applicant. Reclamation is anticipated to occur three times over the remaining life of Western's mining activities within the 1,960-acre area. Reclamation is anticipated to occur once every 15 years. Approximately 304 acres of mined, process, and road areas above water levels would be reclaimed. At the completion of mining activities, the demolition/removal of the processing equipment and on-site structures would occur, and that land would also be reclaimed. The processing area encompasses approximately 90 acres. Reclamation and involve the demolition of approximately 850 square feet of buildings (scale house and laboratory facilities) and the demolition of approximately 891 cubic yards of building and structure pads and foundations.

The reclamation activities would be initiated following the termination of mining activities subsequent to each mining phase. However, the level of intensity for mining activities and, therefore, the completion of each phase are determined by market demand. While the exact timing and schedule for reclamation and demolition is unknown, the following assumptions were used for modeling to result in a conservative estimate of emissions. The initial reclamation period is assumed to start in January 2025. Each reclamation phase is estimated to take 47 days based on information provided in the Amended Reclamation Plan. Reclamation of the first and second phases is anticipated to be identical. Reclamation of the third phase would include the same activities as the first two phases, but it would also include the demolition and reclamation of the processing areas. The total time for all activities for the third phase is estimated at eight months. While it is anticipated that the third phase of reclamation would not occur until 2058, CalEEMod does not have the capability to estimate emissions using dates further than 2040. Based on the limitations of the CalEEMod model, the emissions for the final phase of reclamation were modeled using a conservative reclamation year of 2039. The equipment list for each phase of the reclamation plan is included in Attachment A.

Climate Change

GHG emissions from reclamation were calculated using the CalEEMod model, using the assumptions outlined above. Reclamation is a temporary source of emissions necessary to facilitate the proposed project. Although these emissions are temporary, they must be accounted for because the impact from the

emissions of GHGs is considered cumulative. Current methodology for the evaluation of GHG emissions from construction-type activities states that construction emissions should be totaled for the project and amortized over the average life of the project. After the completion of reclamation activities, it is anticipated that the reclaimed area would remain wetland open space indefinitely. However, standard methodology for estimating CO_2e emissions assumes a 30-year lifetime for a project. Therefore, to determine the average annual emissions from the reclamation activities, the total CO_2e emissions from these activities are amortized over an assumed 30-year project lifetime. The amortized emissions are then combined with the operational emissions to provide a cumulative estimate of annual GHG emissions for the project. Because there are no operational emissions associated with this project, annual emissions with respect to GHGs are the amortized reclamation emissions.

Standards of Significance

The following thresholds of significance are based on CEQA Guidelines Appendix G. For purposes of this analysis, impacts are considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute to an existing or projected air quality violation;
- Result in cumulatively considerable net increases of any criteria pollutant for which the project region is in non-attainment under applicable federal or state ambient air quality standards (including releasing emission that exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The FRAQMD provides their *Indirect Source Review Guidelines* to assist lead agencies in evaluating impacts to air quality from their proposed projects and recommends methods for use by lead agencies when making a determination of significance (FRAQMD 2010). The FRAQMD has established its own numerical thresholds of significance for reclamation related criteria pollutant emissions as follows:

Table 3 FRAQMD Construction Thresholds of Significance

Phase	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Lb/day	25	25	N/A	80	N/A
Tons/year	4.5	4.5	N/A	N/A	N/A

SOURCE: FRAQMD (2010).

To date there are no federal, state or FRAQMD thresholds against which GHG impacts of a proposed project can be evaluated to assist lead agencies in determining whether the proposed project's contribution is significant. In accordance with CEQA Guidelines (Section 15064 (h)(3)), "A lead agency may determine

that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency …"

To assess the cumulative impacts of GHG emissions generated by the proposed project, a context for comparison must be established. However, because climate change is considered to be a global impact, comparing the emissions of an individual project to global or even regional or countywide emissions would understate the potential impact. AB 32 provides a common metric by which to compare project GHG emissions, by fixing GHG emission reductions to a specific benchmark year (1990). In order to achieve the state reduction goals, GHG emissions would need to be reduced despite the continued economic and population growth. Therefore, future land use development projects that do not achieve their fair share of reductions in GHG emissions would be considered to conflict with the spirit of state law or implementing policy decisions.

Under CEQA it is up to the Lead Agency to determine which thresholds of significance and methodology to use in evaluating a project. Typically, the Lead Agency adopts the thresholds of the air district which has jurisdiction over a project. However, because the FRAQMD does not have a quantitative or qualitative threshold by which to determine the significance of GHG emissions, this analysis uses the most restrictive quantitative threshold available.

Several air districts have proposed or adopted screening level thresholds that can be used to analyze climate change impacts for projects. The screening threshold represents the level of GHG emissions under which a project would be considered to have a less than significant impact on the environment without the need for further mitigation. These include:

- South Coast Air Quality Management District (SCAQMD) has proposed a screening threshold of 1,400 MT CO_2e for commercial/industrial projects (SCAQMD 2010).
- San Louis Obispo Air Pollution Control District (SLO APCD) adopted a screening threshold of 1,150 MT CO_2e for commercial/industrial projects population metric as part of their CEQA Air Quality Handbook in April of 2012 (SLO APCD 2012).
- Bay Area Air Quality Management District (BAAQMD) adopted an annual 1,100 MT CO_2e threshold as part of their 2011 CEQA Guidelines (BAAQMD 2011).

In January 2012, the Superior Court for the Court of Alameda County issued a minute order granting a petition for writ of mandate and determined that BAAQMD failed to comply with CEQA in adopting its revised Guidelines, and decided that the 2011 BAAQMD CEQA Guidelines are invalid on procedural grounds. The BAAQMD issued revised CEQA Guidelines in 2012 which maintains the methodology applied in the 2011 Guidelines but does not recommend specific thresholds of significance for lead agencies to use in evaluating air quality impacts. The 2012 Guidelines provide numerous sources of potential significance thresholds including the BAAQMD's 2009 CEQA Thresholds Options and Justifications Report (BAAQMD 2009). This document outlines substantial evidence that supports a

variety of significance thresholds applicable to climate change, including the 1,100 MT CO_2e screening threshold.

While the 2011 BAAQMD Guidelines have been challenged, the thresholds represented are still valid through the 2009 CEQA Thresholds Options and Justifications Report which provides the scientific justification for the identified thresholds. Further, as the BAAQMD thresholds are the most restrictive, the use of these thresholds provides for a more conservative significance finding. Therefore, this analysis incorporates the thresholds identified in the BAAQMD 2009 CEQA Thresholds Options and Justifications Report to determine the level of significance for climate change impacts resulting from reclamation activities.

Project Impacts and Mitigation Measures

Air Quality Impact 1	**Conflict with or obstruct implementation of the applicable air quality plan.**
Applicable Policies and Regulations	Northern Sacramento Valley Planning Area Attainment Plan for California Ozone AAQS SB 656 PM_{10} Reduction Measures $PM_{2.5}$ NAAQS State Implementation Plan
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

Air quality plans are prepared to accommodate growth, to reduce the high levels of pollutants within areas under the jurisdiction of the FRAQMD, to return clean air to the region, and to minimize the impact of reduced air quality on the economy. Projects that are considered to be consistent with the air quality plans would not interfere with attainment of the identified air quality thresholds.

The FRAQMD thresholds of significance for criteria pollutants are designed to bring the region into compliance with the applicable air quality plans and foster an overall reduction in regional air pollution. As identified under Air Quality Impact 2, the proposed project emissions would not exceed any of the regulatory thresholds for criteria pollutants, and, therefore, the project would be in conformance with the air quality management plans. Therefore, the impact from the proposed project would be ***less than significant***.

<u>Mitigation Measures</u>

None required.

Air Quality Impact 2	**Violate any air quality standard or contribute to an existing or projected air quality violation.**
Applicable Policies and Regulations	FRAQMD Thresholds of Significance FRAQMD Indirect Source Review Guidelines
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

The proposed project would require grading and contouring of the mined areas, and demolition of the processing plant and other structures, as described in the Project Description. While the exact date and duration of the reclamation activities is unknown, the most conservative estimate was used for this analysis. Table 4 shows the total calculated emissions by phase. For the analysis, because the equipment and duration of Phase 2 is identical to that of Phase 1, only Phase 1 was specifically modeled. As construction equipment ages and is replaced by newer equipment, it is anticipated that criteria air pollutant emissions would be reduced as equipment efficiency increases. Therefore, the modeled years were chosen to provide a worst-case emissions assumption based on anticipated schedule and limitations of the modeling software. As shown in Table 4, emissions would not be above regulatory thresholds for any time period.

Table 4 Reclamation Emissions (lb/day)

Phase[a]	*Duration*	*ROG*	*NO_X*	*PM_{10}*	*$PM_{2.5}$*
Daily Emissions (lb/day)					
Phase 1 Reclamation	47 days	3.88	18.41	9.27	3.99
Phase 2 Reclamation	47 days	3.88	18.41	9.27	3.99
Phase 3 Demolition and Reclamation	8 months	5.25	17.04	35.52	3.91
FRAQMD Threshold		**25.00**	**25.00**	**80.00**	**N/A**
Significant?		No	No	No	–
Daily Emissions (tons/phase)					
Phase 1 Reclamation	47 days	0.09	0.43	0.22	0.1
Phase 2 Reclamation	47 days	0.09	0.43	0.22	0.1
Phase 3 Demolition and Reclamation	8 months	0.29	1.05	2.01	0.14
FRAQMD Threshold (tons/year)		**4.5**	**4.5**	**N/A**	**N/A**

SOURCE: Atkins, CalEEMod Model (2013).

Emissions are before applying FRAQMD Standard Mitigation Measures.

a. While it is assumed that the initial reclamation phase would be 2028, the rate of mining is market-dependent and, therefore, a conservative reclamation year of 2025 was used for Phase 1. Because the activities for the second phase would be identical to Phase 1, and it is uncertain if any or all of the equipment would be modernized between the two phases, emissions conservatively assume no equipment change between Phase 1 and Phase 2. Phase 3 is estimated to be approximately 45 years into the future, or 2058. However, based on limitations of the CalEEMod model, Phase 3 was estimated based on a 2039 activity year. This assumes a more modern equipment fleet than in 2025; however, it is more conservative than a 2058 fleet would be.

While no mitigation is required based on the modeling of reclamation activities, the FRAQMD requires all projects implement its Standard Mitigation Measures as identified under the Regulatory Setting, above.

Implementation of the Standard Mitigation Measures would further reduce reclamation activity emissions to below the emissions identified in Table 4. Because the reclamation activities would not exceed regulatory thresholds during any phase of reclamation, the proposed project is considered to have a ***less-than-significant*** impact.

Mitigation Measures

None required.

Air Quality Impact 3	**Result in cumulatively considerable net increases of any criteria pollutant for which the project region is in non-attainment under applicable federal or state ambient air quality standards.**
Applicable Policies and Regulations	FRAQMD Thresholds of Significance FRAQMD Indirect Source Review Guidelines
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

Construction of related projects could generate daily emissions that would result in potentially significant impacts on an individual project basis. If construction phases of the various projects overlap, the project could result in significant cumulative impacts to air quality. As discussed under Air Quality Impact 2 above, reclamation-related emissions associated with the proposed project would not exceed any regulatory thresholds. Based on the applied methodology, and because regulatory thresholds are implemented to reduce cumulative regional impacts, a project that is below the project-level significance thresholds of the local air quality management district would not be anticipated to represent a cumulatively considerable impact. Therefore, because the proposed project would not exceed any regulatory thresholds, the project's contribution would not be cumulatively considerable. Cumulative impacts would, therefore, be ***less than significant***.

Mitigation Measures

None required.

Air Quality Impact 4	**Expose sensitive receptors to substantial pollutant concentrations.**
Applicable Policies and Regulations	FRAQMD Thresholds of Significance FRAQMD Indirect Source Review Guidelines
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

A carbon dioxide "hot spot," or area of high CO concentration, can occur at traffic congested roadway intersections as a result of accumulating vehicle emissions. The proposed project would not increase traffic on local roadways and therefore would not increase the potential for localized CO hot spots. The proposed project would therefore result in a ***less-than-significant*** impact with respect to localized CO concentrations.

Toxic air contaminants of potential concern within the project area include diesel particulate matter, a form of particulate matter emitted mostly from diesel-powered equipment during reclamation activities. Reclamation activities for Phase 1 and Phase 2 are anticipated to last approximately 47 days, while Phase 3 is anticipated to last approximately eight months. Therefore, because the proposed project would not include long-term construction-type activities, any temporary increase in TACs related to reclamation and the use of construction equipment would be negligible. In addition, the closest sensitive receptor is located well over 1,000 feet from the project border and even further from the areas where reclamation would occur. Therefore, concentrations of emissions from on-site activities that would reach nearby sensitive receptors would be reduced through dispersion through distance. Impacts from toxic air contaminants with respect to sensitive receptors would, therefore, be ***less than significant.***

Mitigation Measures

None required.

Air Quality Impact 5	**Create objectionable odors affecting a substantial number of people.**
Applicable Policies and Regulations	FRAQMD Indirect Source Review Guidelines
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

The project site is located approximately 1 mile south of the Yuba River in a rural area of the Central Valley in Yuba County. Because odor-causing activities, primarily the operation of diesel-powered equipment during reclamation, would be of short duration and intermittent, users of the Yuba River in the vicinity of the project site may experience occasional odors from diesel equipment exhaust during reclamation activities. This effect would be intermittent, contingent on prevailing wind conditions, occur only during reclamation activities, and would not affect a substantial number of people. Additionally, the users of the Yuba River would be transitory in nature, further reducing potential odor effects. Because the generation of odors would be periodic and of short durations, and because no sensitive receptors are located within 1,000 feet of the project site, the impact is considered ***less than significant***.

Mitigation Measures

None required.

Greenhouse Gas 1	**Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment**
Applicable Policies and Regulations	AB 32 Scoping Plan
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

The proposed project would not generate significant amounts of GHG emissions that would result in an influence on global climate change on its own. However, the proposed project would incrementally contribute to the global impact through its GHG emissions combined with the cumulative increase of all other anthropogenic sources of GHGs. As indicated in CEQA Guidelines Section 15064(i)(1), "cumulatively considerable" is defined to mean "that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

In order to determine whether the proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of GHG emissions generated. The proposed project would, through the use of heavy equipment during reclamation, emit GHGs.

Reclamation would be a temporary source of GHG emissions. Based on the CalEEMod model, during reclamation activities, emissions from all three phases of the proposed project would equal 1,007 MT CO_2e. Current methodology for the evaluation of GHG emissions from construction-type activities states that construction emissions should be totaled for the project and amortized over the average life of the project. After the completion of reclamation activities, it is anticipated that the reclaimed area would remain wetland open space indefinitely. However, standard methodology for estimating CO_2e emissions assumes a 30-year lifetime for a project. Therefore, to determine the average annual emissions from the reclamation activities, the total CO_2e emissions from these activities are amortized over an assumed 30-year project lifetime. Reclamation activities would result in an amortized 30-year contribution of 34 MT CO_2e per year as shown in Table 5. Because both the unamortized as well as amortized emissions are below the significance threshold identified in this TM, the project activities would be considered ***less than significant*** with respect to emission of GHGs.

Table 5 GHG Emission (MT CO_2e/yr)

Phase[a]	CO_2	CH_4	N_2O	CO_2e
Phase 1 Reclamation	162.95	0.01	0.00	163
Phase 2 Reclamation	162.95	0.01	0.00	163
Phase 3 Demolition & Reclamation	680.01	0.02	0.00	681
Total				***1,007***
Amortized				**34**
Threshold				1,100
Significant?				No

SOURCE: Atkins, CalEEMod modeling (2013).

a. While it is assumed that the initial reclamation phase would be 2028, the rate of mining is market- dependent and, therefore, a conservative reclamation year of 2025 was used for Phase 1. Because the activities for the second phase would be identical to Phase 1, and it is uncertain if any or all of the equipment would be modernized between the two phases, emissions conservatively assume no equipment change between Phase 1 and Phase 2. Phase 3 is estimated to be approximately 45 years into the future, or 2058. However, based on limitations of the CalEEMod model, Phase 3 was estimated based on a 2039 activity year. This assumes a more modern equipment fleet than in 2025; however, it is more conservative than a 2058 fleet would be.

Mitigation Measures

None required.

Greenhouse Gas 2	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases
Applicable Policies and Regulations	AB 32 Scoping Plan
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

The FRAQMD does not have established significance criteria for assessing impacts from GHG emissions other than compliance with current state and federal regulations or specifically AB 32. One way to determine compliance with AB 32 is to demonstrate project compliance with an adopted climate action plan or emissions reduction strategy for the region in which the project is located. While there are no adopted climate action plans that govern the proposed project, the project has demonstrated that emissions would be minimal and well below the 1,100 MT CO_2 screening level identified for ensuring regional compliance with AB 32 goals. Therefore, this impact is considered to be compliant with AB 23 and, therefore, would be ***less than significant.***

Mitigation Measures

None required.

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ATTACHMENT A

Project Assumptions

Western Aggregates
Project Assumptions

CalEEMod Inputs

Project Name:	Western Aggregates	
File Name:	WesternAg	
Project Location:	County	
Climate Zone:	3	
Landuse Setting:	Rural	
Operational Year:	2040	*Note operational emissions are not quantified as this is a construction project. Operational Year was set such that construction would be completed before the operational year as is suggested by the model.
Utility:		

Land Use Information

Type: Industrial User Defined

Reclamation of mining operation areas above water levels:

303.5 acres total -Reclaimed mined areas above waterline plus processing area.

*There are 3 phases over which this total acreage will be Reclaimed.

0.00 1,000 square feet (no building/operations associated with project)

Demolition of buildings and foundations

90 acres

0.85 1,000 ksf building demolished

20.273 1,000 ksf building foundations demolished

743 cubic yards

Construction Schedule

	Start	End	Days/week	Total days	description
Phase 1 Reclamition	1/1/2025	3/6/2025	5	47	
Phase 3a Reclamation	1/1/2039	3/8/2039	5	47	
Phase 3b Demolition - pads	1/1/2039	8/31/2039	5	173	
Phase 3c Demolition - buildings	1/1/2039	8/31/2039	5	173	

Construction Equipment

	#	Hours/day	HP	LF	CalEEMod Equipment Title
Phase 1 Reclamition					
Excavator	1	8	157	0.57	Excavator
Dump Truck	2	7.9	196	0.59	Other Material Handling Equipment
D9R buldozer	1	5.9	358	0.59	Rubber Tired Dozer
Water Truck	1	8	381	0.57	Off-highway Trucks
Phase 3a Reclamation					
Excavator	1	8	157	0.57	Excavator
Dump Truck	2	7.9	196	0.59	Other Material Handling Equipment
D9R buldozer	1	5.9	358	0.59	Rubber Tired Dozer
Water Truck	1	8	381	0.57	Off-highway Trucks
Phase 3b Demolition - pads					
rock hammer	1	8	82	0.75	Bor/Drill Rig (augrer mounted hamer
excavator	1	8	157	0.57	Excavator
loader	1	8	87	0.54	Rubber Tired Loader
haul truck	1	8	196	0.59	Other Material Handling Equipment
dozer	1	8	358	0.59	Rubber Tired Dozer
grader	1	8	162	0.61	Graders
Phase 3c Demolition - buildings					

*No equipment as this phase is used only to estimate emissions from the demolition of onsite buildings. No additional equipment onsite during this time period then addressed under Phase 3b Demolition -pads.

Dust from material Movement

Export:	0 cubic yards	assumes all earthen fines material is balanced onsite.
Import	0 cubic yards	assumes all earthen fines material is balanced onsite.
Disturbed area:	102 acres	
	0 trucks	

Demolition

Phase 3b	891	tons of debris (SeeDemolition Assumptions Sheet)
Phase 3c	850	square feet of building

Western Aggregates
Demolition Assumptions

Buildings to be delolished

	L (ft)	W (ft)	square feet
Scale House	20	20	400
Lab	15	30	450
			850

Foundations/pads to be demolished

	L (ft)	W (ft)	D (ft)	square feet	cubic feet
Scale house	20	20	0.33	400	133
lab	15	30	0.33	450	150
	60	12	0.50	720	360
	20	12	0.50	240	120
	40	12	0.50	480	240
Weigh Scales	70	8	2.00	560	1,120
	70	8	2.00	560	1,120
	60	16	2.00	960	1,920
	70	10	2.00	700	1,400
Feeder/Hopper	15	30	0.67	450	300
Wet Screening Plant	30	30	1.50	900	1,350
	20	30	1.50	600	900
	22	15	1.00	330	330
Dry Screening Plant	30	30	1.50	900	1,350
	50	20	1.50	1000	1,500
	20	25	1.00	500	500
	20	20	1.00	400	400
	20	40	1.00	800	800
	4	4	1.00	16	16
Conveyor support	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
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	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
	8	2	1.00	16	16
Repair Shop Facilities	40	60	0.67	2400	1,600
	18	16	0.50	288	144
	15	15	0.50	225	113

Foundations/pads to be demolished (Coun't)

	L (ft)	W (ft)	D (ft)	square feet	cubic feet
Refueling Facility	40	36	0.67	1440	960
	15	40	0.67	600	400
	15	40	0.67	600	400
Tail Pulley Concrete Slabe	15	10	0.50	150	75
	15	10	0.50	150	75
	15	10	0.50	150	75
	15	10	0.50	150	75
	15	10	0.50	150	75
	15	10	0.50	150	75
Dredger GFI Foundations	21	2	0.17	42	7
	21	2	0.17	42	7
Dredger Pillow/Bloc/Conveyro Supports	10	20	1.33	200	267
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
	4	8	1.00	32	32
Top-off Hopper Foundations	10	40	0.67	400	267
Log Washer & Foundations	24	20	0.50	480	240
	15	15	0.50	225	113
	15	15	0.50	225	113
	12	10	0.50	120	60
Old Hot Plant Tanks and Foundations	8	8	0.50	64	32
	10	20	0.17	200	33
	4	6	0.50	24	12
Total				20,273	sq ft
				20,058	cubic feet
				743	cubic yards
				891	tons

Conversion Factors

0.03704	cubic feet per cubic yard
2400	lbs/cubic yard[1]
2000	lbs/ton
1.2	tons/cubic yard

[1] Cal Recycle. 2004. *Construction/Demolition and Inert Debris Tools and Resources.* http://www.calrecycle.ca.gov/SWFacilities/CDI/Tools/Calculations.htm accessed 3/20/2013.

ATTACHMENT B

CalEEMod Output

Winter Emissions: pg B-1 to B-6
Summer Emissions: pg B-7 to B-12
Annual Emissions: pg B-13 to B-18

Western Aggregate Reclamation

Yuba County, Winter

Note: There are no operational emissions associated with this project therefore all pages pertaining to operational emissions have been removed.

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Industrial	303.5	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**		**Utility Company**	Statewide Average
Climate Zone	3		3.4		
		Precipitation Freq (Days)			
			72		

1.3 User Entered Comments

Project Characteristics - Only construction emissions are quantified herein.

Land Use - Acerage identified in the Reclemation Plan (213.5 acres) plus the processing area (90 acres)

Construction Phase - Worst case scenario assumes 47 days per reclamation phase and 8 month demolition schedule as identified in the Reclemation plan. Phase 3 reclamation and demolition assumed to overlap.
Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan.

Grading - based on 1/3 of total acerage to be disturbed.

Demolition - demolition of pad weight is based on cubic yards of foundations and pads (8,914) times the average ton per cubic yard (1.2 tons per cubic yard).

Off-road Equipment - Based on Reclamation Plan

Off-road Equipment - No equipment as the equipment is the same as Phase 3b. Just used to import demolition of building separate from demolition area for pads.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	3.88	18.41	20.68	0.07	8.59	0.68	9.27	3.31	0.68	3.99	0.00	7,638.95	0.00	0.35	0.00	7,646.21
2039	5.25	17.03	42.90	0.13	34.94	0.58	35.52	3.32	0.58	3.91	0.00	13,350.22	0.00	0.46	0.00	13,359.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction - No mitigation was implemented therefore all additional mention of mitigation has been removed.

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	3.88	18.41	20.68	0.07	8.33	0.68	9.01	3.31	0.68	3.99	0.00	7,638.95	0.00	0.35	0.00	7,646.21
2039	5.25	17.03	42.90	0.13	9.74	0.58	10.32	3.32	0.58	3.91	0.00	13,350.22	0.00	0.46	0.00	13,359.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Phase 1 - Reclamation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.32	0.00	8.32	3.31	0.00	3.31						0.00
Off-Road	3.81	18.36	20.18	0.07		0.67	0.67		0.67	0.67		7,502.00		0.34		7,509.15
Total	**3.81**	**18.36**	**20.18**	**0.07**	**8.32**	**0.67**	**8.99**	**3.31**	**0.67**	**3.98**		**7,502.00**		**0.34**		**7,509.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.05	0.50	0.00	0.26	0.01	0.27	0.00	0.01	0.01		136.95		0.01		137.06
Total	**0.06**	**0.05**	**0.50**	**0.00**	**0.26**	**0.01**	**0.27**	**0.00**	**0.01**	**0.01**		**136.95**		**0.01**		**137.06**

3.3 Phase 3b - Demolition - Pads - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.37	0.00	1.37	0.00	0.00	0.00						0.00
Off-Road	2.53	9.18	25.00	0.06		0.29	0.29		0.29	0.29		6,245.16		0.22		6,249.87
Total	**2.53**	**9.18**	**25.00**	**0.06**	**1.37**	**0.29**	**1.66**	**0.00**	**0.29**	**0.29**		**6,245.16**		**0.22**		**6,249.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.10	1.04	0.70	0.00	24.63	0.02	24.66	0.01	0.02	0.03		511.67		0.01		511.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.35	0.00	0.30	0.01	0.31	0.00	0.01	0.01		148.47		0.00		148.56
Total	**0.14**	**1.07**	**1.05**	**0.00**	**24.93**	**0.03**	**24.97**	**0.01**	**0.03**	**0.04**		**660.14**		**0.01**		**660.34**

3.4 Phase 3c - Demolition - buildings - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00						0.00
Total					**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**						**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00		1.93		0.00		1.93
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**		**1.93**		**0.00**		**1.93**

3.5 Phase 3a - Reclamation - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.32	0.00	8.32	3.31	0.00	3.31						0.00
Off-Road	2.54	6.75	16.61	0.06		0.26	0.26		0.26	0.26		6,344.00		0.22		6,348.69
Total	**2.54**	**6.75**	**16.61**	**0.06**	**8.32**	**0.26**	**8.58**	**3.31**	**0.26**	**3.57**		**6,344.00**		**0.22**		**6,348.69**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.02	0.24	0.00	0.20	0.01	0.21	0.00	0.01	0.01		98.98		0.00		99.04
Total	**0.03**	**0.02**	**0.24**	**0.00**	**0.20**	**0.01**	**0.21**	**0.00**	**0.01**	**0.01**		**98.98**		**0.00**		**99.04**

Western Aggregate Reclamation

Yuba County, Summer

Note: There are no operational emissions associated with this project therefore all pages pertaining to operational emissions have been removed.

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Industrial	303.5	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**		**Utility Company**	Statewide Average
Climate Zone	3		3.4		
		Precipitation Freq (Days)			
			72		

1.3 User Entered Comments

Project Characteristics - Only construction emissions are quantified herein.

Land Use - Acerage identified in the Reclemation Plan (213.5 acres) plus the processing area (90 acres)

Construction Phase - Worst case scenario assumes 47 days per reclamation phase and 8 month demolition schedule as identified in the Reclemation plan. Phase reclamation and demolition assumed to overlap.

Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan.

Grading - based on 1/3 of total acerage to be disturbed.

Demolition - demolition of pad weight is based on cubic yards of foundations and pads (8,914) times the average ton per cubic yard (1.2 tons per cubic yard).

Off-road Equipment - Based on Reclamation Plan

Off-road Equipment - No equipment as the equipment is the same as Phase 3b. Just used to import demolition of building separate from demolition area for pads.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	3.87	18.40	20.77	0.07	8.59	0.68	9.27	3.31	0.68	3.99	0.00	7,661.21	0.00	0.35	0.00	7,668.48
2039	5.24	17.04	42.89	0.13	34.94	0.58	35.52	3.32	0.58	3.90	0.00	13,394.21	0.00	0.46	0.00	13,403.87
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction - No mitigation was implemented therefore all additional mention of mitigation has been removed.

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	3.87	18.40	20.77	0.07	8.33	0.68	9.01	3.31	0.68	3.99	0.00	7,661.21	0.00	0.35	0.00	7,668.48
2039	5.24	17.04	42.89	0.13	9.74	0.58	10.32	3.32	0.58	3.90	0.00	13,394.21	0.00	0.46	0.00	13,403.87
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Phase 1 - Reclamation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.32	0.00	8.32	3.31	0.00	3.31						0.00
Off-Road	3.81	18.36	20.18	0.07		0.67	0.67		0.67	0.67		7,502.00		0.34		7,509.15
Total	**3.81**	**18.36**	**20.18**	**0.07**	**8.32**	**0.67**	**8.99**	**3.31**	**0.67**	**3.98**		**7,502.00**		**0.34**		**7,509.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.05	0.60	0.00	0.26	0.01	0.27	0.00	0.01	0.01		159.21		0.01		159.33
Total	**0.06**	**0.05**	**0.60**	**0.00**	**0.26**	**0.01**	**0.27**	**0.00**	**0.01**	**0.01**		**159.21**		**0.01**		**159.33**

3.3 Phase 3b - Demolition - Pads - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.37	0.00	1.37	0.00	0.00	0.00						0.00
Off-Road	2.53	9.18	25.00	0.06		0.29	0.29		0.29	0.29		6,245.16		0.22		6,249.87
Total	**2.53**	**9.18**	**25.00**	**0.06**	**1.37**	**0.29**	**1.66**	**0.00**	**0.29**	**0.29**		**6,245.16**		**0.22**		**6,249.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.10	1.06	0.56	0.00	24.63	0.02	24.66	0.01	0.02	0.03		514.89		0.00		514.99
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.03	0.44	0.00	0.30	0.01	0.31	0.00	0.01	0.01		172.93		0.00		173.03
Total	**0.14**	**1.09**	**1.00**	**0.00**	**24.93**	**0.03**	**24.97**	**0.01**	**0.03**	**0.04**		**687.82**		**0.00**		**688.02**

3.4 Phase 3c - Demolition - buildings - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00						0.00
Total					**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**						**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00		1.95		0.00		1.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.09**	**0.00**	**0.09**	**0.00**	**0.00**	**0.00**		**1.95**		**0.00**		**1.95**

3.5 Phase 3a - Reclamation - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.32	0.00	8.32	3.31	0.00	3.31						0.00
Off-Road	2.54	6.75	16.61	0.06		0.26	0.26		0.26	0.26		6,344.00		0.22		6,348.69
Total	**2.54**	**6.75**	**16.61**	**0.06**	**8.32**	**0.26**	**8.58**	**3.31**	**0.26**	**3.57**		**6,344.00**		**0.22**		**6,348.69**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.02	0.29	0.00	0.20	0.01	0.21	0.00	0.01	0.01		115.29		0.00		115.35
Total	**0.03**	**0.02**	**0.29**	**0.00**	**0.20**	**0.01**	**0.21**	**0.00**	**0.01**	**0.01**		**115.29**		**0.00**		**115.35**

Western Aggregate Reclamation

Yuba County, Annual

Note: There are no operational emissions associated with this project therefore all pages pertaining to operational emissions have been removed.

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
User Defined Industrial	303.5	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**		**Utility Company**	Statewide Average
Climate Zone	3		3.4		
		Precipitation Freq (Days)			
			72		

1.3 User Entered Comments

Project Characteristics - Only construction emissions are quantified herein.

Land Use - Acerage identified in the Reclemation Plan (213.5 acres) plus the processing area (90 acres)

Construction Phase - Worst case scenario assumes 47 days per reclamation phase and 8 month demolition schedule as identified in the Reclemation plan. Phase reclamation and demolition assumed to overlap.
Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan

Off-road Equipment - Based on Amended Reclamation Plan.

Grading - based on 1/3 of total acerage to be disturbed.

Demolition - demolition of pad weight is based on cubic yards of foundations and pads (8,914) times the average ton per cubic yard (1.2 tons per cubic yard).

Off-road Equipment - Based on Reclamation Plan

Off-road Equipment - No equipment as the equipment is the same as Phase 3b. Just used to import demolition of building separate from demolition area for pads.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.09	0.43	0.49	0.00	0.20	0.02	0.22	0.08	0.02	0.10	0.00	162.95	162.95	0.01	0.00	163.11
2039	0.29	1.05	2.65	0.01	1.97	0.03	2.01	0.10	0.03	0.14	0.00	680.01	680.01	0.02	0.00	680.50
Total	**0.38**	**1.48**	**3.14**	**0.01**	**2.17**	**0.05**	**2.23**	**0.18**	**0.05**	**0.24**	**0.00**	**842.96**	**842.96**	**0.03**	**0.00**	**843.61**

Mitigated Construction - No mitigation was implemented therefore all additional mention of mitigation has been removed.

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.09	0.43	0.49	0.00	0.20	0.02	0.21	0.08	0.02	0.10	0.00	162.95	162.95	0.01	0.00	163.11
2039	0.29	1.05	2.65	0.01	0.32	0.03	0.35	0.10	0.03	0.14	0.00	680.01	680.01	0.02	0.00	680.50
Total	**0.38**	**1.48**	**3.14**	**0.01**	**0.52**	**0.05**	**0.56**	**0.18**	**0.05**	**0.24**	**0.00**	**842.96**	**842.96**	**0.03**	**0.00**	**843.61**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Phase 1 - Reclamation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.20	0.00	0.20	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.09	0.43	0.47	0.00		0.02	0.02		0.02	0.02	0.00	159.89	159.89	0.01	0.00	160.04
Total	**0.09**	**0.43**	**0.47**	**0.00**	**0.20**	**0.02**	**0.22**	**0.08**	**0.02**	**0.10**	**0.00**	**159.89**	**159.89**	**0.01**	**0.00**	**160.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.06	3.06	0.00	0.00	3.06
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.06**	**3.06**	**0.00**	**0.00**	**3.06**

3.3 Phase 3b - Demolition - Pads - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.12	0.00	0.12	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.22	0.79	2.16	0.01		0.02	0.02		0.02	0.02	0.00	489.93	489.93	0.02	0.00	490.30
Total	**0.22**	**0.79**	**2.16**	**0.01**	**0.12**	**0.02**	**0.14**	**0.02**	**0.02**	**0.04**	**0.00**	**489.93**	**489.93**	**0.02**	**0.00**	**490.30**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.01	0.09	0.06	0.00	1.63	0.00	1.63	0.00	0.00	0.00	0.00	40.28	40.28	0.00	0.00	40.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	12.22	12.22	0.00	0.00	12.23
Total	**0.01**	**0.09**	**0.09**	**0.00**	**1.65**	**0.00**	**1.65**	**0.00**	**0.00**	**0.00**	**0.00**	**52.50**	**52.50**	**0.00**	**0.00**	**52.52**

3.4 Phase 3c - Demolition - buildings - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total					**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.15	0.15	0.00	0.00	0.15
Vendor					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.15**	**0.15**	**0.00**	**0.00**	**0.15**

3.5 Phase 3a - Reclamation - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.20	0.00	0.20	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.16	0.39	0.00		0.01	0.01		0.01	0.01	0.00	135.21	135.21	0.00	0.00	135.31
Total	**0.06**	**0.16**	**0.39**	**0.00**	**0.20**	**0.01**	**0.21**	**0.08**	**0.01**	**0.09**	**0.00**	**135.21**	**135.21**	**0.00**	**0.00**	**135.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.21	2.21	0.00	0.00	2.22
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.21**	**2.21**	**0.00**	**0.00**	**2.22**

Appendix C Cultural Resources Impact Evaluation for the Western Aggregates LLC Amended Reclamation Plan

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March 14, 2013

Mr. Stephen Testa, Executive Officer
State Mining & Geology Board
801 K Street, Suite 2015
Sacramento, California 95814-3528

Subject: California Historical Resources Information System (CHRIS) Records Search Results, Native American Heritage Commission (NAHC) Sacred Lands Database Search Results and Sensitivity Designations for the Western Aggregates Reclamation Plan, Yuba County, California

Mr. Testa:

Atkins has completed a CHRIS records search for the proposed Western Aggregates Reclamation Plan. The project area is located in Yuba County, California approximately four miles northeast of the City of Marysville, California. The Western Aggregates Reclamation Plan project area is within Sections 1, 2, 11, and 12 of Township 15 North, Range 4 East; Sections 4, 5, and 6 of Township 15 North, Range 5 East; and Sections 3 and 32 of Township 16 North, Range 5 East as found on the United States Geological Survey (USGS) Browns Valley, CA 7.5-minute topographic quadrangle.

Project Description

The Western Aggregates Reclamation Plan will occur in three phases, with each phase of reclamation immediately following the completion of three proposed mining phases. At the conclusion of the third and final phase of mining, all unreclaimed mined areas will be graded, resoiled and revegetated in accordance with the proposed project. Western Aggregates plans to remove aggregates to a depth of approximately -20 feet below mean sea level over an approximately 1,960-acre project site. This will occur during a phased 45-year surface mining operation and will create a series of five discrete lakes bordered by vegetated woodlands and dikes or berms. Lake depth will vary with location due to aggregate quality and demand, but would range between approximately 85 to 100 feet. The final phase of reclamation will also include the removal of processing and mining equipment from the project site; the redistribution of stockpiled ~~fi~~nes" from settling ponds to pond and lake shores, and other disturbed flat areas on the mine site; the ripping and grading of those areas; and site revegetation.

NCIC Record Search Results

The record search was requested on December 5, 2012 by Atkins Archaeologist Lora Holland from the North Central Information Center (NCIC) located at California State University, Sacramento. The response was received on December 10, 2012. The search included a review of previously documented resources and surveys for the project site and all lands within a 0.50-mile radius. The search included a review of the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), Office of Historic Preservation Historic

Properties Directory (OH-HPD), California Historical Landmarks (CHL), California Points of Historical Interest (CHPI), and historic maps.

The results of the records search indicated that three cultural resources have been recorded within the project area, and that one additional resource is known within the 0.50-mile search radius. The sites located within the project area consist of one prehistoric and two historic age archaeological resources. These sites were first documented in 1975 on California State University, Sacramento Archaeological Site Survey forms, and there are no reports or updated forms associated with these resources. The prehistoric site is a village complex with 18 house pits and a possible sweat house. The two historic age archaeological resources consist of a dump site and a burned house site. The historic age dump site is composed of bottles, cans, and other metal objects, and the historic age house site includes a burned house with a cement slab and dump area. One additional historic age resource was documented within 0.50 mile of the project area. The site consists of a historic age camp or temporary occupation site located approximately 2,500-feet south of the eastern project area. This resource is comprised of brick fragments, ceramic pipe fragments, metal debris, and three features. Associated features consist of two rock structures and large building or pad. These resources and their location relative to the project area are outlined in Table 1 below.

One cultural resource report was on file at the NCIC addressing the project area, and six additional reports were completed within the 0.50-mile search radius. In 2005, Genesis Society conducted a pedestrian survey of 40 acres with the northeast portion of the project area. The survey failed to identify any resources within the survey area.

Table 1: Known Cultural Resources within the 0.50-Mile Records Search Radius

Site Number/ OH-HPD Property Number	Resource Description	Within ~0.5-mile to 0.25-mile Radius	Within ~0.25-mile Radius	Within Project Area?
P-58-000331/CA-YUB-313	Prehistoric – A village complex with 18 house pits and a possible sweat house.	—	—	Yes
P-58-000580/CA-YUB-562H	Historic age – The Burned House site with a dump site and concrete slab. Artifacts associated with the site include square nails and bottle. The site exhibits evidence of disturbance as a result of looting.	—	—	Yes
P-41-000581/CA-YUB-563H	Historic age – Dump site composed of bottles, cans and other metal objects.	—	—	Yes
P-41-0001750/CA-YUB-1502H	Historic age – Campsite or temporary facility of unknown origin or date. This resource consists of brick fragments, ceramic pipe fragments, metal debris, and three features. Associated features consist of two rock structures and large building or pad. This resource has been assigned an NRHP Status code of 07, indicating that it has not been evaluated for the NRHP or the CRHR, or needs revaluation.	●	—	No

During the records request, archival maps were reviewed for the presence of historic age structures and development within the project area and the general vicinity. The results of this review are presented below in Table 2, and assist in determining the probability for encountering

historic age resources during project implementation. Archival maps can also provide insight about historic era land use patterns.

Table 2: Archival Topographic Map Review

Map Name and Date	Review
1860 General Land Office Map	This map depicts roads, sloughs, and a small house in the project area.
1908 USGS Browns Valley Quadrangle	This map depicts structures and roads within the project area.
1911 USGS Browns Valley Quadrangle 1: 31,680	This map depicts roads within the project area.
1947 USGS Browns Valley Quadrangle 1: 24,000	This map depicts unimproved dirt and medium duty roads within the project area. Structures depicted on the 1908 USGS Browns Valley map are no longer present.
1949 USGS Browns Valley Quadrangle 1: 24,000	This map depicts unimproved dirt and medium duty roads within the project area. Structures depicted on the 1908 USGS Browns Valley map are no longer present.

Native American Heritage Commission Record Search

Atkins requested a search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) on December 5, 2012 to determine if any Native American cultural resources are present within or near the vicinity of the proposed project site. The response from the NAHC was received on December 21, 2012, and indicated that no SLF listed resources were known within the project area. The response letter also provided a listing of Native American contacts that might have knowledge about the project area and the presence or absence of any properties of religious and cultural significance not listed in the SLF. For this reason, letters to each of the listed tribal contacts were sent on December 27, 2012. The purpose of the letters is for information scoping purposes only, and does not constitute formal consultation.

These information request letters described the proposed project, contained a project map, the results of the NAHC SLF search, and a request for any cultural resource data pertinent to the project area. The NAHC also requested that follow-up contact be made to the Native Americans if no response was given after a two-week period. As of the date of this report, one written response has been received at the Atkins office. Gene Whitehouse, Chairman of the United Auburn Indian Community of the Auburn Rancheria responded on February 11, 2013. Mr. Whitehouse stated that cultural resources are present within the project area and requested a site visit and meeting regarding the project. Mr. Whitehouse also requested copies of any archaeological reports and environmental documents completed for the project and a tribal monitor be present for field surveys. In the event that other written correspondence or telephone responses are received after the date of this report, pertinent information will be forwarded to the State Mining and Geology Board. All correspondence has been incorporated into Attachment A and the results of the Native American correspondence are summarized in Table 3, below.

Table 3: Native American Correspondence

Native American Organization/ Individual	Tribal Affiliation	Date Contact Letter Sent	Response
Ren Reynolds	Butte Tribal Council	December 27, 2012	None
David Keyser	United Auburn Indian Community of the Auburn Rancheria.	December 27, 2012	None
Eileen Moon	T si-Akim Maidu	December 27, 2012	None
Cathy Bishop	Strawberry Valley Rancheria	December 27, 2012	None
Art Angle	Enterprise Rancheria of Maidu Indians	December 27, 2012	None
Glenda Nelson	Enterprise Rancheria of Maidu Indians	December 27, 2012	None
Grayson Coney	T si-Akim Maidu	December 27, 2012	None
Marcos Guerrero	United Auburn Indian Community of the Auburn Rancheria.	December 27, 2012	Written correspondence requesting, a site visit, meeting, tribal monitoring and a copy of all environmental documents for the purposed project.
Judith Marks	Colfax-Todds Valley Consolidated Tribe	December 27, 2012	None
Danny Rey	United Auburn Indian Community of the Auburn Rancheria.	December 27, 2012	None

Summary and Recommendations

The results of the CHRIS records search indicated that three cultural resources have been recorded within the project area; one prehistoric village site, a historic age dumpsite and a burned historic age house site. None of these resources have been evaluated to determine if they qualify for inclusion in the NRHP or CRHR. One survey with negative findings was conducted within the project area boundaries; however, the survey addressed only 40 acres or approximately 2 percent of 1,960-acre project site.

The project area lies along the Yuba River once occupied by the Nisenan or Southern Maidu group of Native Americans and within the historically occupied Yuba Gold Fields. An archival topographic map review revealed that several roads, sloughs and a house structure have been mapped within the project area as early as 1860. Thus, based the presence of known sites, a review of historic maps, and an evaluation of the environmental and ethnographic setting, there is a high possibility that unrecorded cultural resources exist within the project area boundaries.

Historical and Archaeological Resources

The proposed project would entail surface and sub-surface ground disturbance following the completion of mining-related ground disturbing activities. Thus, while it is possible or even likely that known and previously recorded sites may be destroyed by mining activities within the project area, the extent of their future disturbance or destruction is unknown at this time in relation to the implementation of the reclamation plan. For this reason, the project has the potential to impact potential historical and archaeological resources in areas not previously and

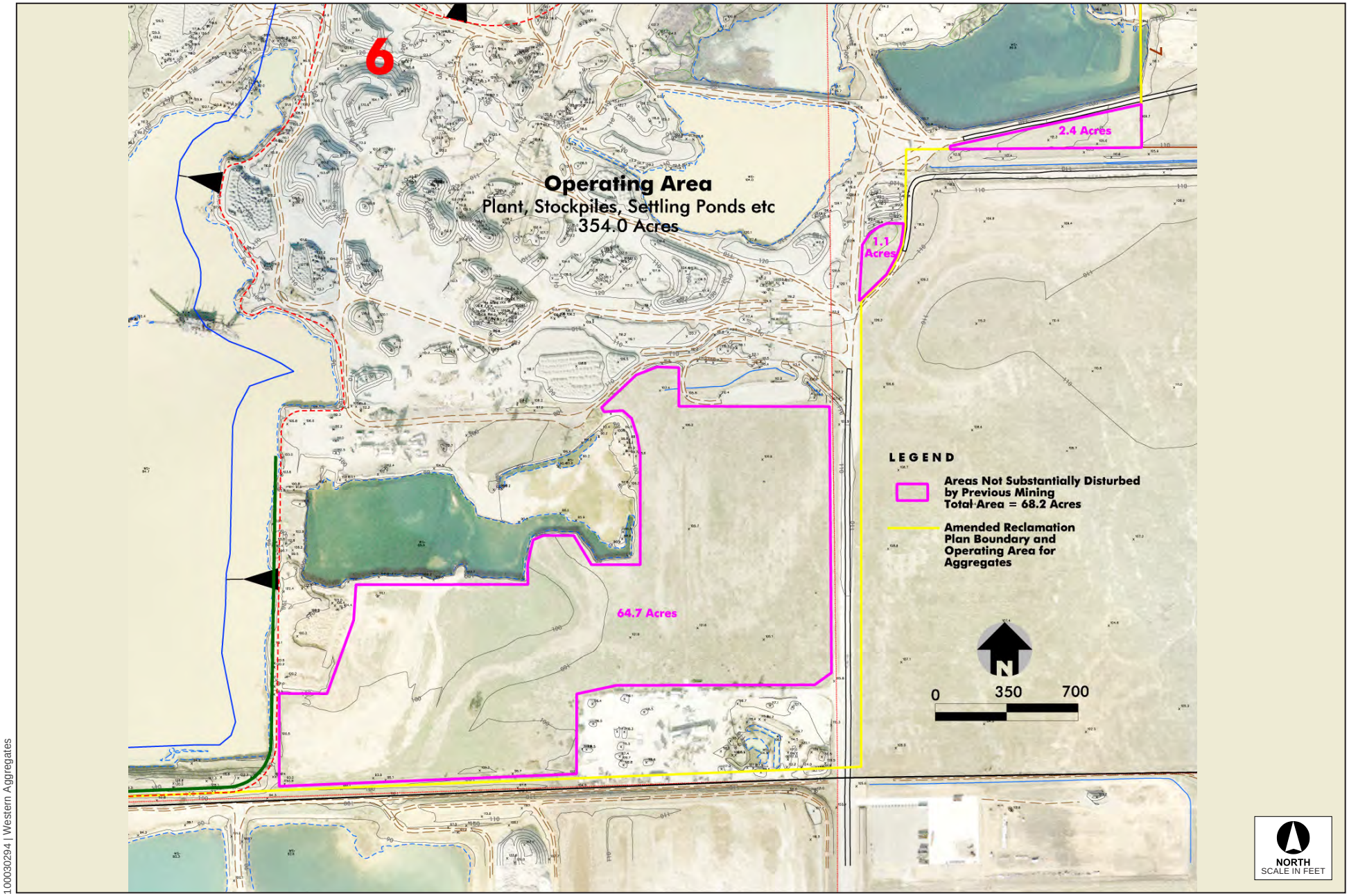
substantially disturbed by mining activities. Those areas, totaling approximately 68.2 acres, are shown in Figure 1. Ground disturbance associated with demolition, equipment removal, ripping and grading, could damage or destroy previously documented and/or unidentified archaeological resources remaining after the completion of mining activities. To ensure that potential impacts to historical and archaeological resources are reduced to a less-than-significant level, Atkins recommends an evaluation of the previously documented resources, if present after the mining activities, and the implementation of a mitigation-monitoring plan as outlined below.

Prior to the initiation of project-related ground-disturbing activities, the project proponent shall hire a qualified archaeologist who meets the Secretary of the Interior's standards for Archaeology to locate and evaluate the previously recorded resources. The archaeologist shall determine, through existing records or by evaluation, if the previously recorded sites qualify as historical or archaeological resources under CEQA. If it is determined that the sites qualify as historical or archaeological resources under CEQA, the archaeologist shall determine if the sites would be damaged or destroyed by implementation of the proposed project. If it is determined that the sites would be damaged or destroyed by project implementation, the archaeologist shall recommend measures, including avoidance or data recovery, that would eliminate adverse impacts to the resources or reduce impacts to the resources to a less-than-significant level. The measures shall be consistent with the Secretary of the Interior's standards for the evaluation and treatment of archaeological resources. The project proponent shall adhere to all measures recommend by the archaeologist for the treatment of the resources.

Prior to the initiation of project-related ground-disturbing activities, the project proponent shall retain a qualified archaeologist with knowledge of prehistoric and historic-period archaeology to prepare an Archaeological Monitoring and Data Recovery Plan (AMDRP). The AMDRP shall require that a qualified archaeologist be present for all ground-disturbing activities (i.e., excavation, grading, equipment removal, and demolition) that occur on the project site. The AMDRP shall define how archaeological monitoring will be conducted, the protocol to be followed in the event that significant resources are discovered during monitoring, and where and how data recovery will be conducted for any important archaeological resources discovered. The AMDRP shall specify that all construction personnel will be alerted to the possibility of buried cultural resources prior to the initiation of ground-disturbing activities. The AMDRP shall specify that if any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains are encountered during any development activities, work shall be suspended within 100 feet of the find and the State Mining and Geology Board shall be immediately notified. Once the State Mining and Geology Board is notified, work may proceed on other portions of the project site while mitigation of impacts on archaeological resources is implemented.

Human Remains

There are no known formal cemeteries present within the project area, and the results of the CHRIS records search did not indicate if human remains were present at any of the previously recorded cultural resource sites. There is the possibility that ground-disturbing activities during construction may uncover previously unknown and buried human remains.



100030294 | Western Aggregates

Figure 1

Areas Not Substantially Disturbed by Previous Mining

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Inadvertent Discovery of Human Remains

If human remains are discovered during any phase of construction, including disarticulated or cremated remains, all ground-disturbing activities should cease within 100 feet of the remains. California State Health and Safety Code § 7050.5 dictates that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code (PRC) § 5097.98. If the remains are determined by the County Coroner to be Native American, the NAHC shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. It is further recommended that a professional archaeologist with Native American burial experience conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD), if any, identified by the NAHC. As necessary and appropriate, a professional archaeologist may provide technical assistance to the MLD, including but not limited to, the excavation and removal of the human remains.

Please feel free to contact us at 1.415.362.1500 if you have any questions, or if Atkins can provide additional assistance regarding cultural resource management issues.

Sincerely,

Lora Holland, M.A., RPA

Archaeologist/Scientist I

Attachment A: NAHC Sacred Lands Database Search and Correspondence
Attachment B: Project Area Topographic Map
Project Area Aerial Map

Attachment A
NAHC Sacred Lands
Database Search Request

Western Aggregates , YuSLF file search request

Holland, Lora

Sent: Wednesday, December 05, 2012 5:53 PM

To: nahc@pacbell.net

Project:_Western Aggregates Reclamation Plan _____

County_____Yuba _____

USGS Quadrangle

Name___Browns Valley_____

Township Range Section(s)T: 15 N R: 4 E S: 1,2,11,12 R 5 E S 4,5,6 T :16 N R: 5 E S: 3,32

Company/Firm/Agency:
__Atkins _____

Contact Person: __Lora Holland _____

Street Address: __475 Sansome Street _____

City: ___San Francisco _____Zip:_94111_____

Phone: ____1-415-3621500_____

Fax: __1-415-362-1954_____

Email: ___lora.holland@atkinsglobal.com_____

Project Description:

Western Aggregates Reclamation Plan

Lora Holland, RPA
Archaeologist/Scientist I

Atkins

475 Sansome St. Suite 2000 San Francisco CA 94111 | Tel: +1 (415) 362 1500 | Fax: +1 (415) 362 1954 |

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STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390

December 21, 2012

Lora Holland
Atkins
475 Sansome St. # 2000
San Francisco, CA

Sent by Fax: 415-362-1954
Number of Pages: 2

Re: western Aggregates Reclamation Plan, Yuba County

Dear Ms. Holland:

A search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American traditional cultural places or cultural landscapes in any APE. While in this case, a search of the NAHC *Sacred Lands File* did not indicate the presence of any sites within the APE you provided, a Native American tribe or individual may be the only source for the presence of traditional cultural places. For that reason, enclosed is a list of Native American individuals/organizations who may have knowledge of traditional cultural places in your project area. This list should provide a starting place in locating any areas of potential adverse impact.

The NAHC makes no recommendation or preference of any single individual, or group over another. All of those on the list should be contacted, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: rw_nahc@pacbell.net

Sincerely,

Rob Wood
Associate Government Program Analyst

Native American Contact List
Yuba County
December 21, 2012

Butte Tribal Council
Ren Reynolds
1693 Mt. Ida Road Maidu
Oroville , CA 95966

(530) 589-1571

Enterprise Rancheria of Maidu Indians
Glenda Nelson, Chairperson
2133 Monta Vista Ave Maidu
Oroville , CA 95966
info@enterpriserancheria.com
(530) 532-9214
(530) 532-1768 FAX

United Auburn Indian Community of the Auburn Rancheria
David Keyser, Chairperson
10720 Indian Hill Road Maidu
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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Western Aggregates Reclamation Plan, Browns Valley USGS Quadrangle, Yuba County

Atkins North America Inc.
475 Sansome Street, Suite 2000
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December 27, 2012

Marcos Guerrero, Tribal Preservation Committee
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

Subject: Western Aggregates Reclamation Plan, Yuba County, California.

Dear Mr. Guerrero:

Atkins is preparing the environmental documentation for the Western Aggregates Reclamation Plan. The project area is located in Yuba County, California approximately four miles northeast of the City of Marysville, California. The Western Aggregates Reclamation Plan project area is within Sections 1, 2, 11, and 12 of Township 15 North, Range 4 East; Sections 4, 5 , and 6 of Township 15 North, Range 5 East; and Sections 3 and 32 of Township 16 North, Range 5 East as found on the United States Geological Survey (USGS) Browns Valley, CA 7.5-minute topographic quadrangle.

The mining and proposed site reclamation will occur in three phases. Each phase of reclamation will immediately follow the completion of each of the three proposed mining phases. At the conclusion of the third and final phase of mining, all unreclaimed mined areas will be graded, resoiled and revegetated in accordance with the proposed project. Western Aggregates plans to remove aggregates to a depth of approximately -20 feet below msl (100 feet below the average lake surface level) over an approximately 1,960-acre area, during a phased 45-year surface mining operation, creating a series of five discrete lakes bordered by vegetated woodlands and dikes or berms. Lake depth will vary with location due to aggregate quality and demand, but would range between approximately 85 to 100 feet. The final phase of reclamation will also include the removal of processing and mining equipment from the project site; the redistribution of stockpiled “fines” from settling ponds to pond and lake shores, and other disturbed flat areas on the mine site; the ripping and grading of those areas; and site revegetation.

Environmental regulations, including Section 106 of the National Historic Preservation Act of 1966, National Environmental Policy Act, and the California Environmental Quality Act, consider the effects a project may have on cultural resources, including Historic Properties. The definition of Historic Properties can include properties of traditional religious and cultural significance to Native American groups and individuals. To assist in determining whether any traditional cultural properties are found in the project area, including any Historic Properties, Atkins has conducted research on the project area including a records search at the North Central Information Center of the California Historical Resources Information System and a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC).

December 27, 2012

The NAHC has listed you as a contact, and has indicated that you may have information about the potential for the project area to contain resources not found in the SLF. If you are aware of any such properties, please contact Lora Holland at (415) 671-7180 or by mail or email to the address below. Atkins is aware that the physical locations of properties of traditional cultural value are often considered confidential and sacred, and Atkins respects this concept. No specific location data would need to be supplied in order to consider properties and landscapes important to you. Any information supplied would only be employed to the extent allowed. We invite your views and comments about the proposed project as they relate to cultural resources. Enclosed are two maps of the study area.

Sincerely,

Lora Holland
Archaeologist
475 Sansome Street
San Francisco, CA 94111
lora.holland@atkinsglobal.com

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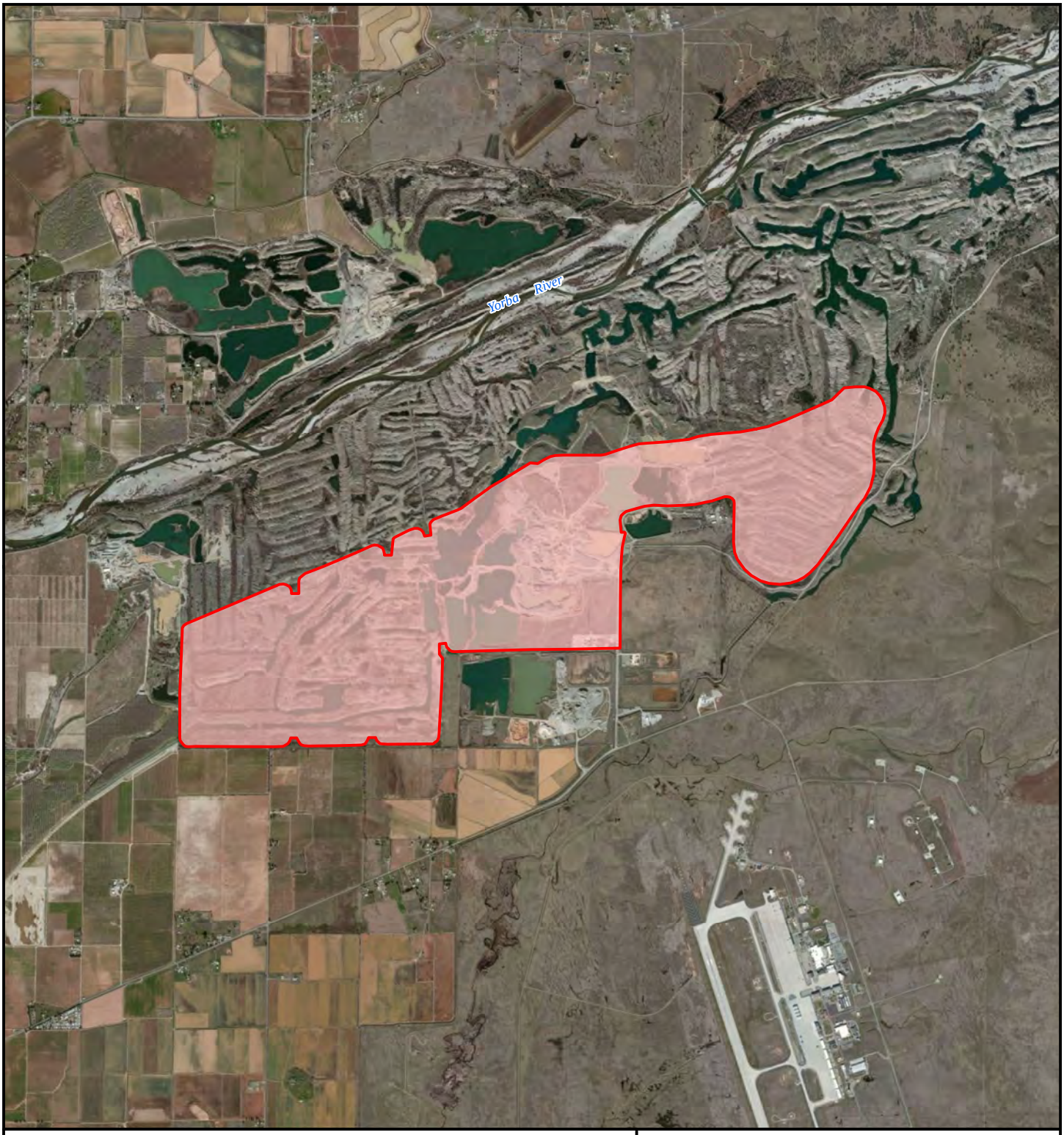
Attachment B
Project Area Topographic Map
Project Area Aerial Map



Project Area

0 2,000 4,000 8,000 12,000 Feet

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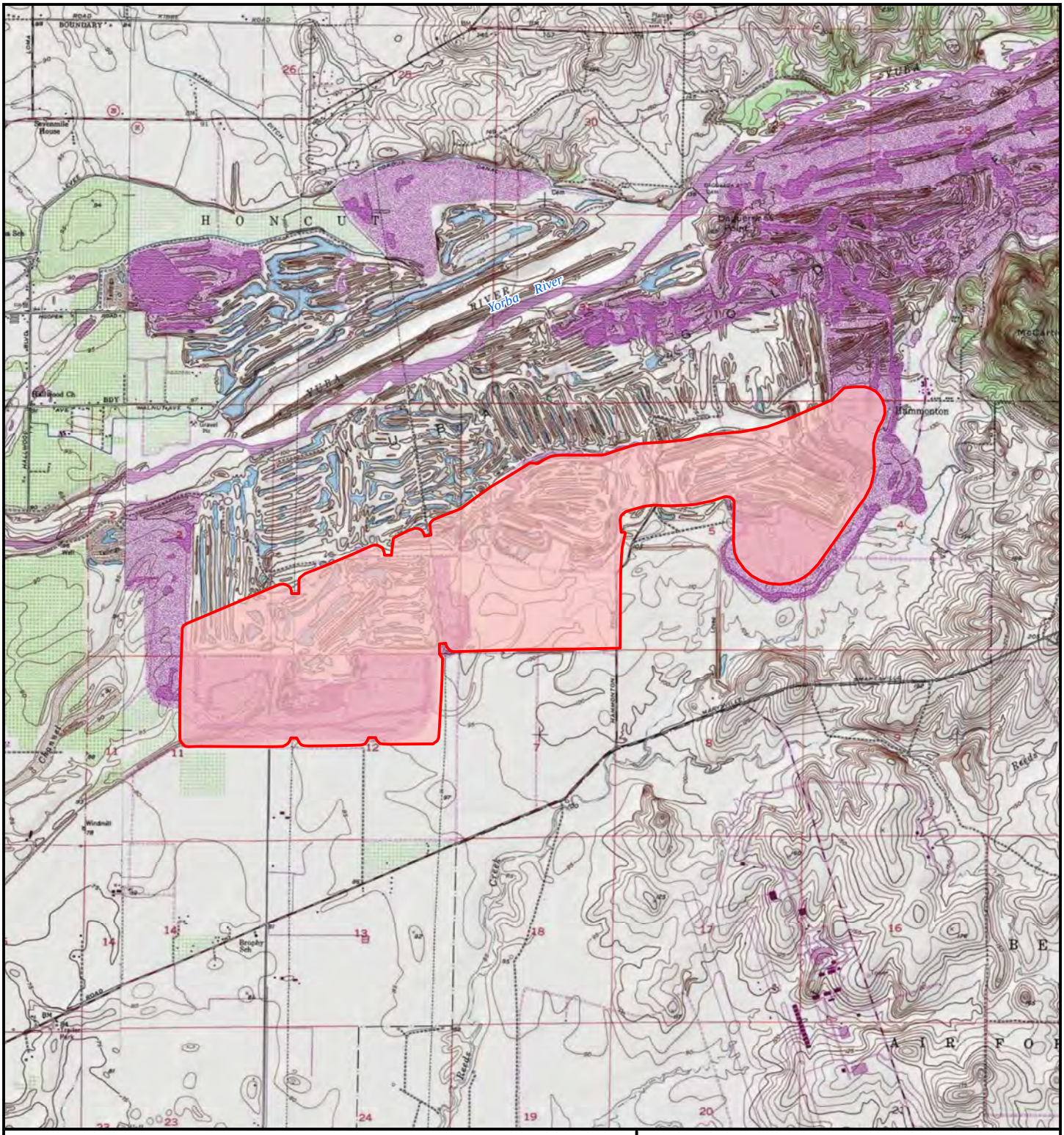
Western Aggregates
Browns Valley Quadrangle
Yuba County, CA

Prepared by: JS	Scale: 1" = 4000'
Job No: 100030294	Date: 05 December 2012
Source: 2012 NAIP Imagery	



ATKINS

Western Aggregates
Browns Valley Quadrangle
Yuba County, CA

Prepared by: JS	Scale: 1" = 4000'
Job No: 100030294	Date: 05 December 2012
Source: Brown Valley 7.5' USGS Topogrpahic Map	

Appendix D Noise Impact Assessment for the Western Aggregates LLC Amended Reclamation Plan Technical Memorandum

Technical Memorandum

Project:	Western Aggregates LLC Yuba County Operations Amended Reclamation Plan
Subject:	Noise Impact Assessment
Date:	Dec 13, 2012

Introduction

Western Aggregates LLC ("Western") operates an active aggregate mining operation in Yuba County. At the conclusion of mining, operations within the Vested Rights Area will be reclaimed in accordance with State Mining and Geology Board (SMGB) Reclamation Regulations (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1 §§ 3500-3800).

This Technical Memorandum (TM) describes the existing noise environment in the project area, and the regulatory programs or adopted plans that shape the noise environment. The TM also analyzes the effects of implementing the Amended Reclamation Plan (proposed project) on the existing and future noise environment. Topics addressed in this TM include:

- Fundamentals of sound and environmental noise;
- Mobile or stationary sources of noise created by the project, and their effect on existing receptors; and
- Future project-related noise impacts.

Fundamentals of Sound and Environmental Noise

Sound can be described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the intensity of the vibrations that make up a sound. The pitch of the sound is correlated to the frequency of the sound's vibration. Because humans are not equally sensitive to a given sound level at all frequencies, a special scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) does this by placing more importance on frequencies that are more noticeable to the human ear.

Noise is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" noise that is made up of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 1 lists representative noise levels for the environment.

Several rating scales have been developed to analyze the adverse effect of noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the volume of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise source and that of a steady noise source are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- L_{dn}, the Day Night Average Level, is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 PM to 7:00 AM to account for noise sensitivity in the nighttime.
- L_{max}, the maximum instantaneous noise level experienced during a given period of time.

Noise caused by natural sources and human activities is usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the L_{eq} is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of settings with low daytime background noise levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise settings are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most people living or working in urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) accept the higher noise levels commonly associated with these land uses.

When evaluating changes in community noise levels, or L_{dn}, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather or the shielding of a receptor from a noise source, can also help intensify or reduce the noise level at any given location. For roadway noise, a commonly used rule of thumb is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Table 1 Representative Environmental Noise Levels		
Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

SOURCE: California Department of Transportation (1998).

Fundamentals of Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured in the U.S. as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for most people.

Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

The general human response to different levels of groundborne vibration velocity levels is described in Table 2.

Table 2 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	*Human Reaction*
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

SOURCE: Federal Railroad Administration (1998).

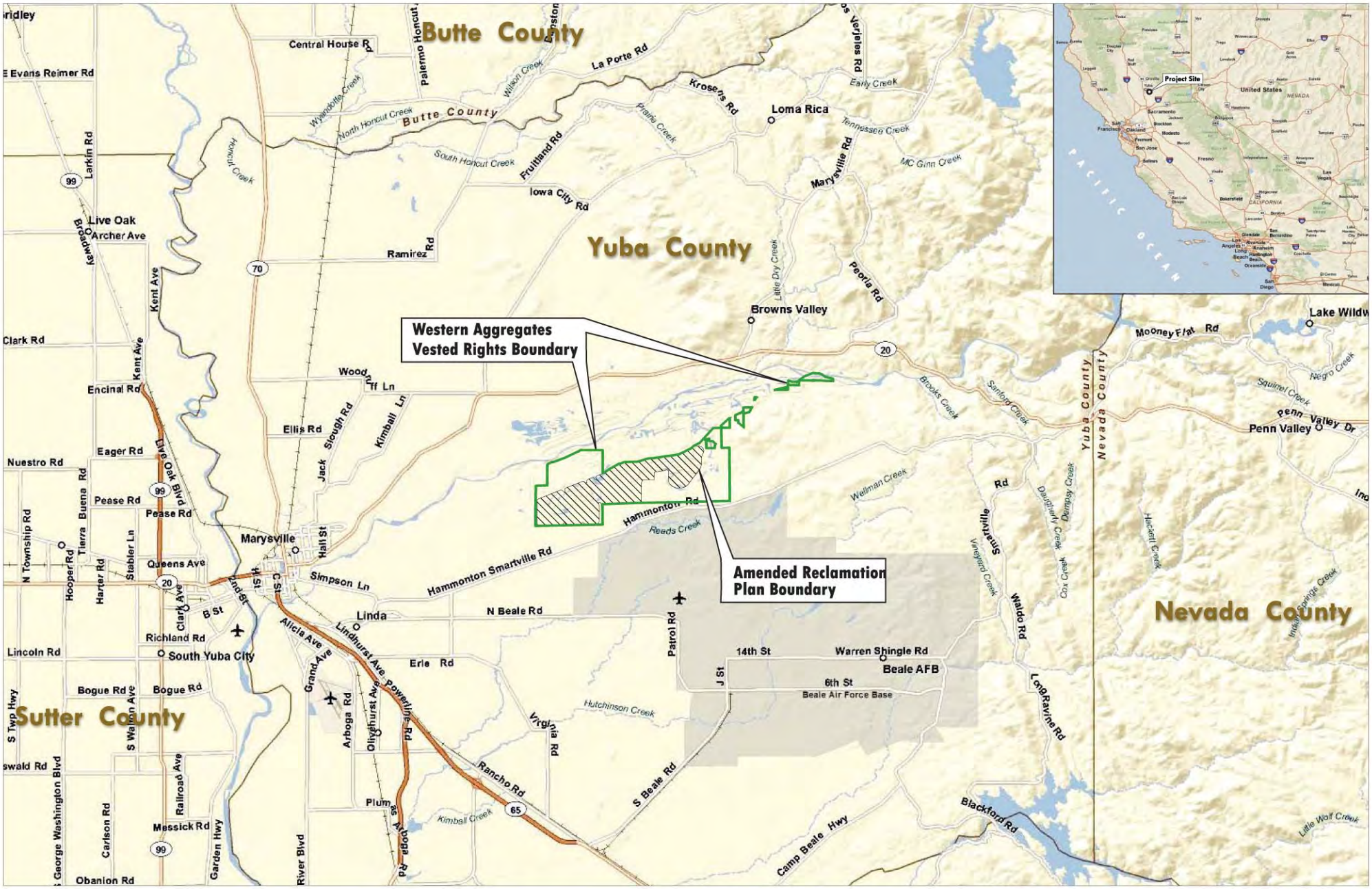
Environmental Setting

Existing Receptors

The Amended Reclamation Plan area is approximately 1,960 acres located in an unincorporated portion of Yuba County, California, south of the Yuba River, north of Hammonton-Smartville Road, and approximately equidistant (20 miles) between Marysville and Smartsville (Figure 1 [Area Map]). The site is situated at the western edge of the Sierra Nevada foothills, approximately 1 mile south of the south bank of the Yuba River, and north of Beale Air Force Base. Agriculture, grazing land, rural residential uses, and other active mine sites are in the project vicinity. There are no developed communities on the project site. However, there are rural residential uses to the west and south of Amended Reclamation Phase 2 and Phase 3 plan areas. These residences are more than 0.5 mile from the site's boundaries, but are buffered by orchards and, to an extent, tailings piles that occur along the western and southern boundaries of the site.

Noise generated by current mining activities is primarily limited to the project site boundaries. The site's only entrance and exit is located on Hammonton-Smartville Road, to the north of Beale Air Force Base. Processing operations are centrally located on the project site.

Heavy-duty trucks driving to and from the project site, however, use State Route 70 (Highway 70) frequently because it is the main highway near Western Aggregate property. Highway 70 runs through Linda, so trucks pass by receptors as they drive through town. The Yuba County General Plan Final Environmental Impact Report (FEIR) provides noise contours for Highway 70 and Hammonton



Area Map

Western Aggregates LLC
Yuba County, California

Figure 1

LEGEND

Vested Rights Boundary

Amended Reclamation Plan Boundary and Operating Area for Aggregates

N

0 3
Miles

Source: Lilburn Corp., 03/2011 (TAG)

LILBURN CORPORATION

Smartville Road as they existed in 2007, shown in of the FEIR.[1] Aircraft operations attributable to Travis Air Force Base also contribute to the noise environment. Figure 2 (Beale AFB Noise Contours) shows the location of the proposed reclamation activities, locations of receptors relevant to reclamation activities, and Travis Air Force Base CNEL noise contours.

Regulatory Setting

Federal

There are no federal regulations that apply to this project.

State

There are no state regulations that apply to this project. State regulations that do exist are primarily standards for new residential land uses. There is no residential development proposed as part of this project.

Local

Both the Yuba County General Plan and the Yuba County Municipal Code provide policies and regulations concerning noise. These are discussed below.

Yuba County General Plan

The County General Plan noise element provides standards to protect Yuba County citizens from hazardous or annoying noise. Desirable sound levels for various land uses, as shown in the noise element, are listed in Table 3. The noise element also lists the recommended ambient allowable noise levels. These can be found in Table 4.

Table 3 Maximum Allowable Noise Exposure from Non-Transportation Noise Sources at Noise-Sensitive Land Uses

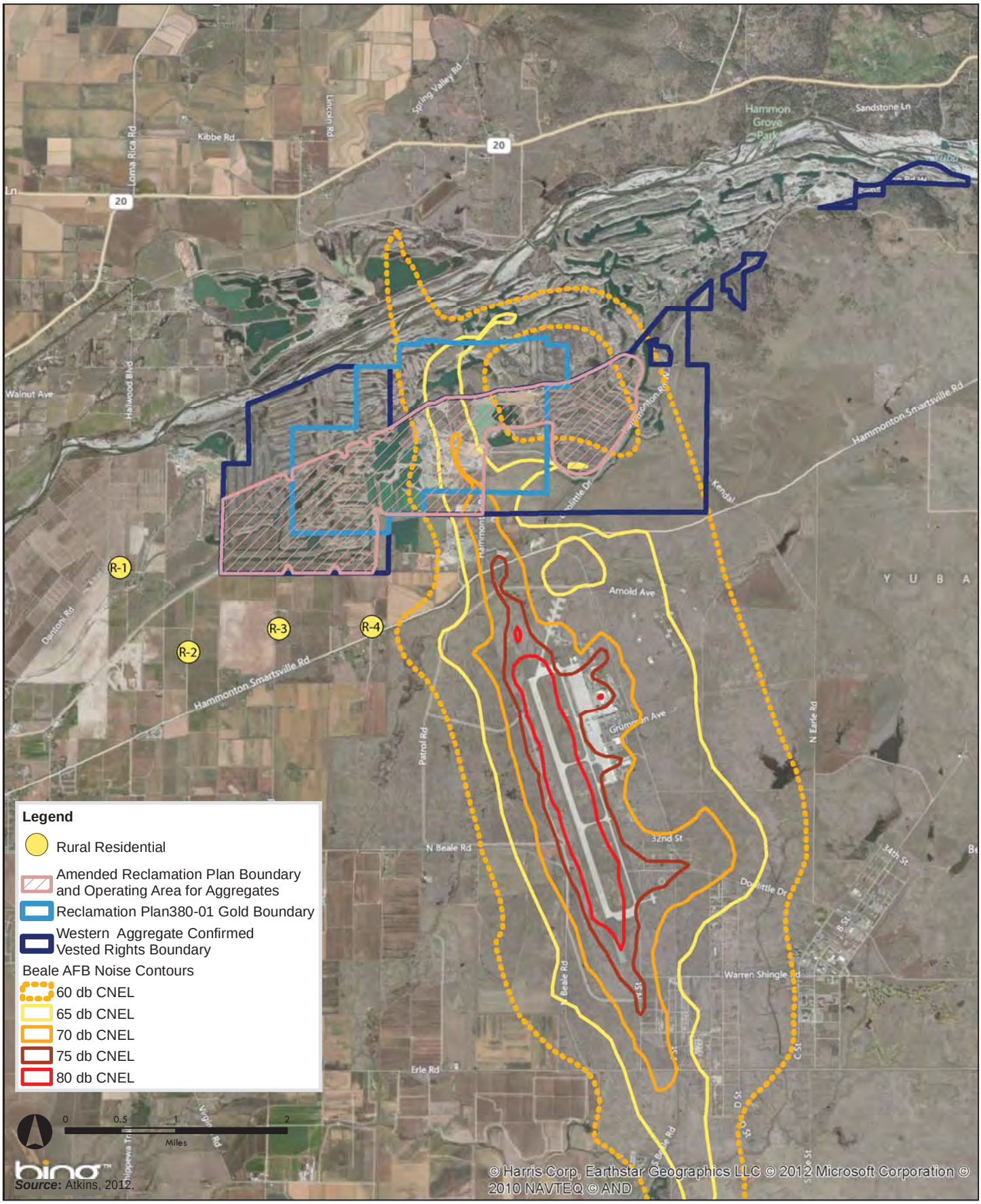
Noise Level Descriptor	*Daytime (7:00 AM–10:00 PM)*	*Nighttime (10:00 PM–7:00 AM)*
Hourly L_{eq}	60 dBA	45 dBA
L_{max}	75 dBA	65 dBA

SOURCE: Yuba County Community Development & Services Agency, *Yuba County 2030 General Plan* (adopted June 7, 2011), Table Public Health & Safety-2.

dBA = A-weighted decibel; L_{eq} = energy-equivalent noise level; L_{max} = maximum noise level

Each of the noise levels specified shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of speech, music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). Noise-sensitive land uses include schools, hospitals, rest homes, long-term care facilities, mental care facilities, residences, and other similar land uses.

[1] Yuba County, *Yuba County 2030 General Plan Environmental Impact Report* (adopted May 2011), Section 4.11 (Noise and Vibration).



Source: Atkins, 2012.

100030294 | Western Aggregates

Figure 2

Beale AFB Noise Contours

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Table 4 Performance Standards for Non-Transportation Noise Sources		
Cumulative Duration of a Noise Event[a] (Minutes)	*Maximum Exterior Noise Level Standards[2]*	
	Daytime dBA L_{max}[b,d]	*Nighttime dBA L_{max}[c,d]*
30–60	50	45
15–30	55	50
5–15	60	55
1–5	65	60
0–1	70	65

SOURCE: Yuba County Community Development & Services Agency, *Yuba County 2030 General Plan* (adopted June 7, 2011), Table Public Health & Safety-3.

dBA = A-weighted decibel; L_{max} = maximum noise level

a. Cumulative duration refers to time within any 1-hour period.

b. Daytime = hours between 7:00 AM and 10:00 PM.

c. Nighttime = hours between 10:00 PM and 7:00 AM.

d. Each of the noise level standards specified may be reduced by 5 dBA for tonal noise (i.e., a signal which has a particular and unusual pitch) or for noises consisting primarily of speech of for recurring impulsive noises (i.e., sounds of short duration, usually less than one second, with an abrupt onset and rapid decay such as the discharge of firearms).

Yuba County Municipal Code

The Yuba County Municipal Code lists maximum allowable noise levels for land uses with certain ambient noise levels during different hours of the day. If ambient sound levels do not exceed the ambient levels shown, the respective maximum noise level may not be exceeded. These levels are shown in Table 5. The Code also provides regulations for construction noise. The Code prohibits any person from operating construction equipment within 500 feet of a residential zone between the hours of 10:00 PM and 7:00 AM of the following day. This could apply to the project because excavation/grading equipment would be used as part of the reclamation activities.

Table 5 Maximum Noise Levels Permitted			
Zone Permitted	*Time*	*Ambient Levels (dBA)*	*Maximum Noise Level (dBA)*
Single Family Residential	10:00 PM–7:00 AM	45	55
	7:00 PM–10:00 PM	50	60
	7:00 AM–7:00 PM	55	65
Multi-family Residential	10:00 PM–7:00 AM	50	60
	7:00 AM–10:00 PM	55	65
Commercial – BP	10:00 PM–7:00 AM	55	65
Commercial	7:00 AM–10:00 PM	60	70
M1	Anytime	65	75
M2	Anytime	70	80

SOURCE: *Yuba County Municipal Code* Section 8.20.140.

Beale Air Force Base Land Use Compatibility

The Beale Air Force Base Air Installation Compatible Use Zone (Beale AFB AICUZ) established noise standards for land uses within the airport's area of influence. These standards are based on adopted airport CNEL noise contours and where the proposed land use is located relative to these noise contours. The designated land use at the proposed reclamation activity areas are considered compatible when located within the 75 to 80 dBA CNEL aircraft noise contour.[2]

Impacts and Mitigation Measures

Methods of Analysis

The analysis in this section focuses on the nature and magnitude of the change in the noise environment associated with implementation of the proposed project. The project could generate noise in primarily one way. The primary source of noise associated with the project would be the noise generated on the project site from activity associated with the reclamation. Construction equipment and processes would contribute to noise from this source. Besides noise generated on the project site, any project-related increase in vehicle traffic that travel along local roads near existing receptors would be temporary and intermittent for deliveries of reclamation materials not already existing on site. Noise levels associated with reclamation activities and have been estimated using methods discussed below. The levels are then compared to applicable noise standards and thresholds of significance.

On-Site Construction Noise and Vibration

Data included in the Western Aggregates LLC Amended Reclamation Plan (May 2012) were used to determine potential locations of sensitive receptors and potential noise- and vibration-generating land uses on the project site. Noise-sensitive land uses and major noise sources near the project site were also identified based on existing documentation (e.g., equipment noise levels and attenuation rates).

To assess the impacts of potential Amended Reclamation Plan activity noise on sensitive receptors, the sensitive receptors and their relative exposure to the impacts were identified. Noise that would be generated by the proposed project was predicted by using the Federal Transit Noise and Vibration Impact Assessment methodology.[3] The emission noise levels referenced and the usage factors were based on the Federal Highway Administration Roadway Construction Noise Model.[4] The noise levels of the specific construction equipment that would be used during long-term (operation-related) reclamation activities and the resulting noise levels where sensitive receptors are located were calculated. Model output are included in Attachment A.

---

[2] Beale AFB CA, Air Installation Compatible Use Zone (2005).

[3] Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment* (Washington, DC; May 2006). Prepared by Harris Miller Miller & Hanson Inc., Burlington, MA, pp. 12-1 thru 12-15.

[4] Federal Highway Administration (FHWA), Roadway Construction Noise Model Version 1.0 (FHWA RCNM V. 1.0) (Washington DC; January 2006).

To assess the land use compatibility of the proposed project with on-site noise levels, predicted reclamation activity noise levels were used to determine if implementation of the proposed reclamation activities would exceed the applicable noise criteria. The standards of significance applied in this analysis address the exterior noise standards established by Yuba County. Unless otherwise stated, standards for interior noise levels would not be exceeded if exterior noise-level standards are achieved.

Groundborne vibration impacts were qualitatively assessed based on existing documentation (e.g., vibration levels produced by specific construction equipment operations) and the distance of sensitive receptors from the given source.

Standards of Significance

The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. For purposes of this IS, impacts are considered significant if the proposed project would:

- Increase ambient noise levels above those recommended in Table 3 for the land uses listed;
- Exceed performance standards listed above in Table 4 for the specified duration of time;
- Create maximum noise levels above those listed in Table 5 in the zones and during the times listed in the table; or
- Generate or expose people to excessive groundborne vibration levels.

Note that while the CEQA Guidelines do not define levels at which groundborne vibration is considered "excessive", the Federal Railway Administration has published vibration impact thresholds for sensitive buildings and residences of 80 VdB.

Project Impacts and Mitigation Measures

Noise Impact 1	**The project would generate noise from on-site activities.**
Applicable Policies and Regulations	Yuba County General Plan – Noise Element Yuba County Municipal Code, Section 8.20.140
Significance with Policies and Regulations	Less than Significant
Mitigation Measures	None required

Reclamation of each phase would occur after mining of the phase was completed. This reclamation activity would be less intensive than the mining that preceded it and would involve much less heavy-duty equipment. Since the mining phase would include the grading of the land to form the appropriate topography for the reclamation, the project itself would be limited to the delivery and planting of trees and vegetation, although some light grading may possibly occur. Consequently, the equipment expected to be used for reclamation would include heavy trucks (2), backhoe, dozer and one grader for earthmoving activity. This activity would generate much less noise than that experienced under baseline mining conditions, which includes rock excavating, grading, and the transport and dumping of aggregate. Aside

from reclamation activity being inherently quieter than mining operations, noise levels would also be lessened by virtue of the fact that there would be many fewer pieces of equipment used overall.

Table 6 shows noise levels for equipment that would be used during reclamation. According to the table, this equipment could generate maximum noise levels of 85 dBA at 50 feet. The Amended Reclamation Plan indicates reclamation would occur in three phases over the remaining life of Western's mining activities at the site. Each phase would occur every 15 years for the estimated 45-year life-span of mining activities. The exact timing of reclamation activities would depend on the level of intensity of future mining, which, in turn, would depend on several factors, but primarily market conditions. The analysis assumes the reclamation activities would be initiated following the termination of mining activities subsequent to each mining phase.

Table 6 Reclamation Equipment Noise Emission Levels

Equipment Type	*Typical Noise Level (dBA) at 50 feet*
Backhoe	80
Crusher	85
Dozer	85
Grader	85
Haul Truck	84

SOURCE: Atkins (2012) (model output included in Attachment A).
dB = A-weighted decibels (dBA)
All equipment fitted with properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are the actual measured noise levels for each piece of heavy construction equipment.

The noise analysis takes into account two reclamation activity noise scenarios: reclamation activities of surfaces above water, and demolition of existing operation facilities and equipment. The nearest noise receptors are rural residential uses to the south and west of the project site, more than half a mile from proposed reclamation activities. At this distance, on-site reclamation activity would be barely noticeable at these receptor locations. Table 7 shows the predicted noise levels at the nearest receptor locations to the project site, the resulting noise level due to reclamation activities at the closest reclamation phase boundary line and the center of the reclamation phase area. However, as stated previously, any noise from reclamation would be less than experienced under baseline mining conditions. Consequently, these receptors would actually experience improvements in ambient noise levels.

Lastly, any noise impact from reclamation activity would be temporary. As shown in Table 7, the proposed reclamation activities would not exceed the exterior noise standards established by Yuba County and listed in Tables 3, 4, and 5. Noise Impact 1, therefore, would be ***less than significant***.

Table 7 Reclamation Equipment Noise Emission Levels at the Nearest Noise-Sensitive Receptor[1]

Receptor ID	Reclamation Phase	Distance to Nearest Reclamation Area Boundary Line (feet)	Surfaces Above Water Line at Phase Boundary Line Noise Level (dBA Leq)	Distance to Center of Reclamation Phase (feet)	Surfaces Above Water Line at Center of Phase Noise Level (dBA Leq)	Distance to Demolition Area (feet)	Demolition Noise Level (dBA L_{eq})
1	3	4,900	36	6,800	32	5,500	33
2	3	4,175	37	6,400	33	5,000	34
	3	5,880	34	8,100	30		
3	3	2,800	42	4,600	36	3,800	37
	3	2,800	42	4,500	37		
4	2	5,335	35	8,500	30	3,000	40
	3	2,700	42	6,800	32		
	3	5,300	35	4,200	37		

SOURCE: Atkins (2012) (model output included in Attachment A).

Mitigation Measures

None required.

Noise Impact 2	**The project would not generate groundborne vibrations.**
Applicable Policies and Regulations	None
Significance with Policies and Regulations	No Impact
Mitigation Measures	None required

As discussed in Noise Impact 1, less heavy-duty equipment would be used during reclamation than during baseline mining activity. This less intense activity would produce lower levels of groundborne vibration. Table 8 shows vibration levels from construction equipment as published by the Federal Railroad Administration. Equipment used during reclamation would consist of trucks for transporting material, dozer, backhoe and a grader for earthmoving. The lighter nature of the reclamation-related equipment means that vibration levels would be less than those listed for heavy-duty equipment in Table 8. Consequently, groundborne vibration levels at the edge of the project site and at the nearest residences would be less than the Federal Railway Administration's vibration impact thresholds for sensitive buildings and residences of 80 VdB. There would be ***no impact*** from project-related groundborne vibration.

Table 8 Vibration Source Levels for Construction Equipment					
Construction Equipment	*Approximate VdB*				
	25 feet	*50 feet*	*60 feet*	*75 feet*	*100 feet*
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Small Bulldozer	58	52	50	48	46

SOURCE: Federal Railroad Administration, *High Speed Ground Transportation Noise and Vibration Impact Assessment* (December 1998), Table 10-4 (Vibration Source Levels for Construction Equipment).

Mitigation Measures

None required.

Appendix A. Noise Calculations

Receptor ID	Reclamation Phase	Distance to Nearest Reclamation Area Boundary Line (feet)	Surfaces Above Water Line at Phase Boundary Line Noise Level (dBA Leq)	Distance to Center of Reclamation Phase (feet)	Surfaces Above Water Line at Center of Phase Noise Level (dBA Leq)	Distance to Demolition Area (feet)	Demolition Noise Level (dBA Leq)
1	3	4,900	36	6,800	#VALUE!	5500	33
2	3	4,175	37	6,400	#VALUE!	5000	34
	3	5,880	34	8,100	#VALUE!		
3	3	2,800	42	4,600	#VALUE!	3800	37
	3	2,800	42	4,500	#VALUE!		
4	2	5,335	35	8,500	#VALUE!	3000	40
	3	2,700	42	6,800	#VALUE!		
	3	5,300	35	4,200	#VALUE!		

Project-Generated Construction Source Noise Prediction Model

Western Aggregates Reclamation Plan - Surfaces Above Water Line Nearest Boundary Line

Receptor ID	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	523	60.0
	100	78.0
1	4900	35.7
2	4175	37.4
2	5880	33.7
3	2800	41.8
3	2800	41.8
4	5335	34.8
4	2700	42.2
4	5300	34.9

Assumptions:	Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dump Truck	84	0.4
Dozer	85	0.4
Grader	85	0.4

Ground Type	Soft
Ground Factor	0.50

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Dump Truck	80.0
Dozer	81.0
Grader	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
85.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe rar	20	90	90	212	84.0	77.0	100	84.0	77.0

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:
FHWA Roadway Construction Noise Model, January 2006.
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Project-Generated Construction Source Noise Prediction Model

Western Aggregates Reclamation Plan - Demolition Center

Receptor ID	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	475	60.0
	100	76.9
1	5500	33.4
2	5000	34.4
3	3800	37.4
4	3000	40.0

Assumptions:	Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dump Truck	84	0.4
Dozer	85	0.4
Crusher	85	0.16

Ground Type	Soft
Ground Factor	0.50

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Dump Truck	80.0
Dozer	81.0
Crusher	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
84.4

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Crusher	85	85	85		85	85	100	78.9794	78.273589
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe rar	20	90	90	212	84.0	77.0	100	84.0	77.0

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:
FHWA Roadway Construction Noise Model, January 2006.
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Project-Generated Construction Source Noise Prediction Model

Western Aggregates Reclamation Plan - Surfaces of Above Water Line Center

Receptor ID	Distance to Nearest Receiver in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold*	#VALUE!	60.0
	100	#VALUE!
1	6800	#VALUE!
2	6400	#VALUE!
2	8100	#VALUE!
3	4600	#VALUE!
3	4500	#VALUE!
4	8500	#VALUE!
4	6800	#VALUE!
4	4200	#VALUE!

Assumptions:	Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Dump Truck	76	0.84
Dozer	82	0.85
Grader	na	0.85

Ground Type	Soft
Ground Factor	0.50

Predicted Noise Level [2]	L_{eq} dBA at 50 feet[2]
Dump Truck	75.2
Dozer	81.3
Grader	#VALUE!

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
#VALUE!

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006.

[2] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:
FHWA Roadway Construction Noise Model, January 2006.
U.S. Department of Transportation
CA/T Construction Spec. 721.560