APPENDIX A

NOTICE OF PREPARATION (NOP)

County of Yolo
DEPARTMENT OF COMMUNITY SERVICES

Taro Echiburú, DIRECTOR

Planning, Building & Public Works
292 West Beamer Street
Woodland, CA 95695-2598
(530) 666-8775
FAX (530) 666-8156
www.yolocounty.org

Environmental Health
292 West Beamer Street
Woodland, CA 95695-2598
(530) 666-8646
FAX (530) 669-1448
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Integrated Waste Management
44090 CR 28 H
Woodland, CA 95776
(530) 666-8852
FAX (530) 666-8853
www.yolocounty.org

Notice of Preparation and Notice of Scoping Meeting for the Draft Environmental Impact Report for the CEMEX Mining and Reclamation Plan Permit Amendment

Date:	February 26, 2021
To:	Interested Agencies, Organizations, and Individuals
Project:	CEMEX Mining and Reclamation Plan Permit Amendment (ZF#2018-0015)
Location:	30288 State Route 16, Woodland, CA 9565, in unincorporated Yolo County
Lead Agency:	Yolo County

Yolo County (County) is the Lead Agency for the preparation an Environmental Impact Report (EIR) for the **CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015)**. Pursuant to CEQA Guidelines Sections 15082 and 15083, the County is requesting your input regarding the scope and content of the environmental information that should be addressed in the EIR, including significant environmental issues, reasonable alternatives, and feasible mitigation measures. Comments from agencies must be germane to the agency's statutory responsibilities in connection with the proposed project. Responsible and trustee agencies will use this EIR when considering the issuance of permits or other approvals for the project. The project description, location, and the potential environmental effects are summarized below. As allowed under CEQA Guidelines Section 15060(d), a CEQA Initial Study was not prepared. All comments and responses must be received by the County within 30 days of receipt of this notice.

The **NOP comment period** begins on **February 26, 2021, and ends on March 29, 2021, at 4:00 p.m.** Please include the name of a contact person for your agency or organization when submitting comments. Comments must be directed to:

J.D. Trebec, Senior Planner
Yolo County Department of Community Services
292 W. Beamer Street
Woodland, CA 95695
Phone: (530) 666-8036; Email: jd.trebec@yolocounty.org

The County Planning Commission will hold an **EIR Scoping Meeting** to receive oral comments at their regularly scheduled March meeting. If timely written comments are submitted there is no need to provide verbal comments. The date, time, and information required to participate in or observe this meeting are as follows:

March 11, 2021 at 8:30 am
Yolo County Planning Commission
Join Zoom Meeting:
https://yolocounty.zoom.us/j/97388566818?pwd=OE
NhdE9LVTVXY0EwNzUxdEhqNWZtdz09
Webinar ID: 973 8856 6818

Passcode: 146225
Or
By Telephone:
US: +1 408 638
Webinar ID: 973 8856 6818
Passcode: 146225

Project Name: CEMEX Mining and Reclamation Plan Permit Amendment (ZF#2018-0015)

Project Applicant: CEMEX Construction Materials Pacific, LLC.

Project Location: 30288 State Route 16, Woodland, California 95653, in the central portion of unincorporated Yolo County, near the town of Madison APN: 025-450-001; 049-060-004, 007; 049-070-004, 049-070-005, 049-070-006, 049-070-009, 049-070-010, 049-070-011, 049-070-019, 049-070-020, 049-070-021.

Project Description: The proposed project is a request to modify an approved mining permit and reclamation plan for the existing CEMEX sand and gravel mining operation to allow more mining over a longer period of time. The operation is located primarily east of Interstate 505, along the south bank of Cache Creek, near the unincorporated community of Madison. The existing off-channel mining operation is operated subject to a 1996 permit approval, but has been operating continuously at that location since the 1970's. The project site is 1,902 acres, with mining limited to 586 acres and reclamation required for 716 acres (including the 30-acre plant site). The current approvals allow maximum annual mining of 1,445,783 tons (1,200,000 tons sold), and maximum total mining of 32,170,000 tons (26,700,000 tons sold). Mining is allowed to occur in seven phases moving generally from west to east, over a 30-year period ending in 2027, to a maximum depth of 70 feet.

The applicant is seeking approvals to increase maximum annual mining to 2,117,647 tons (1,800,000 tons sold), increase maximum total mining to 56,248,958 (48,256,687 tons sold), extend the permit period by 20 years to 2047, increase the reclamation area by 121 acres (to 837 acres) to include disturbed land along the northerly boundary of mining (adjoining the creek bank), and make other minor modifications to correct the total mining acreage and adjust phasing. These modifications, if approved, would result in changes to the approved conditions of approval and development agreement for the project.

As related specifically to reclamation end uses, the table below provides a comparison of the requested changes:

Reclaimed End Uses (in acres)	Agriculture[3]	Habitat	Lake	Slopes/Roads/Buffers	Total
Approved	476.0	61.0	153.0	26.0	716.0[1]
Proposed	438.6	168.7	210.4	19.2	836.9
Difference (% change)	<-37.4> (7.8% decrease)	107.7 (175% increase)	57.4 (37.5% increase	<-6.8> (26.2% decrease)	120.9[2] (16.9% increase)

1/Includes 30-acre plant site
2/Disturbed area along northerly boundary of approved mining, adjoining creek bank, and I-505 buffer area.
3/The applicant is also proposing to modify the type of reclaimed agriculture from 50% row crops and 50% tree crops as approved, to 80% row crops and 20% tree crops.

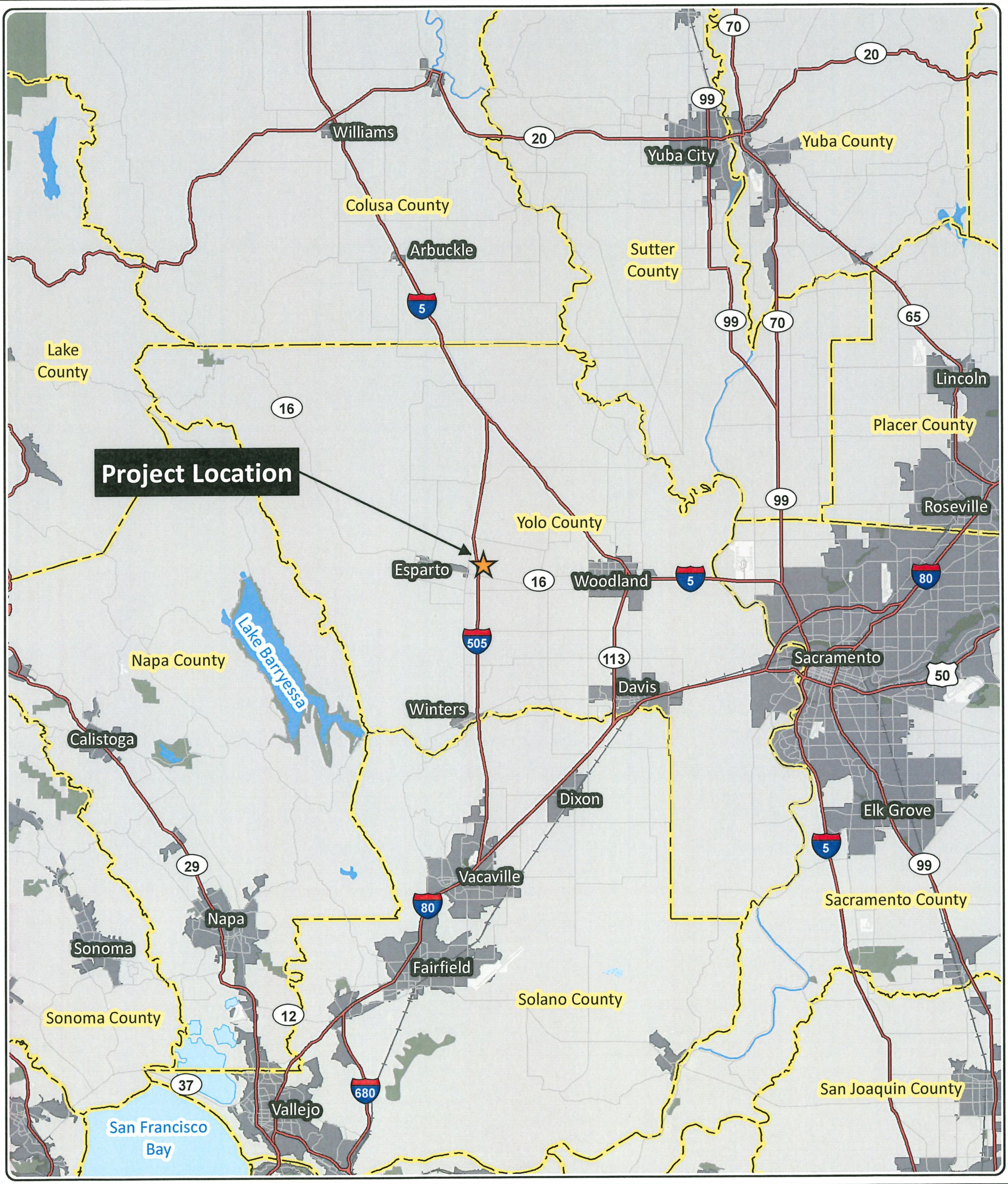
Areas of Potential Impact: The County has determined that the proposed project may result in significant environmental impacts in the CEQA impacts areas identified below and, therefore, an EIR will be prepared:

- Aesthetics and Visual Resources
- Agricultural and Forestry Resources
- Air Quality, Greenhouse Gases, and Energy
- Biological Resources
- Cultural Resources and Tribal Cultural Resources
- Geology and Soils, Mineral Resources, and Paleontological Resources
- Hazards, Hazardous Materials, and Wildfire
- Hydrology and Water Quality
- Land Use, Planning, Population, and Housing
- Noise
- Public Services, Recreation, and Utilities
- Transportation and Circulation
- Cumulative Impacts
- Other Required CEQA Analyses (including project alternatives)

Signature: JD Trebec
J.D. Trebec, Senior Planner, (530) 666-8036, jd.trebec@yolocounty.org

Additional Project Information: https://www.yolocounty.org/government/general-government-departments/community-services/planning-division/current-projects

Attachments: Regional Location and Site Plan



Legend:

★ Project Location

0 6 12 Miles

N

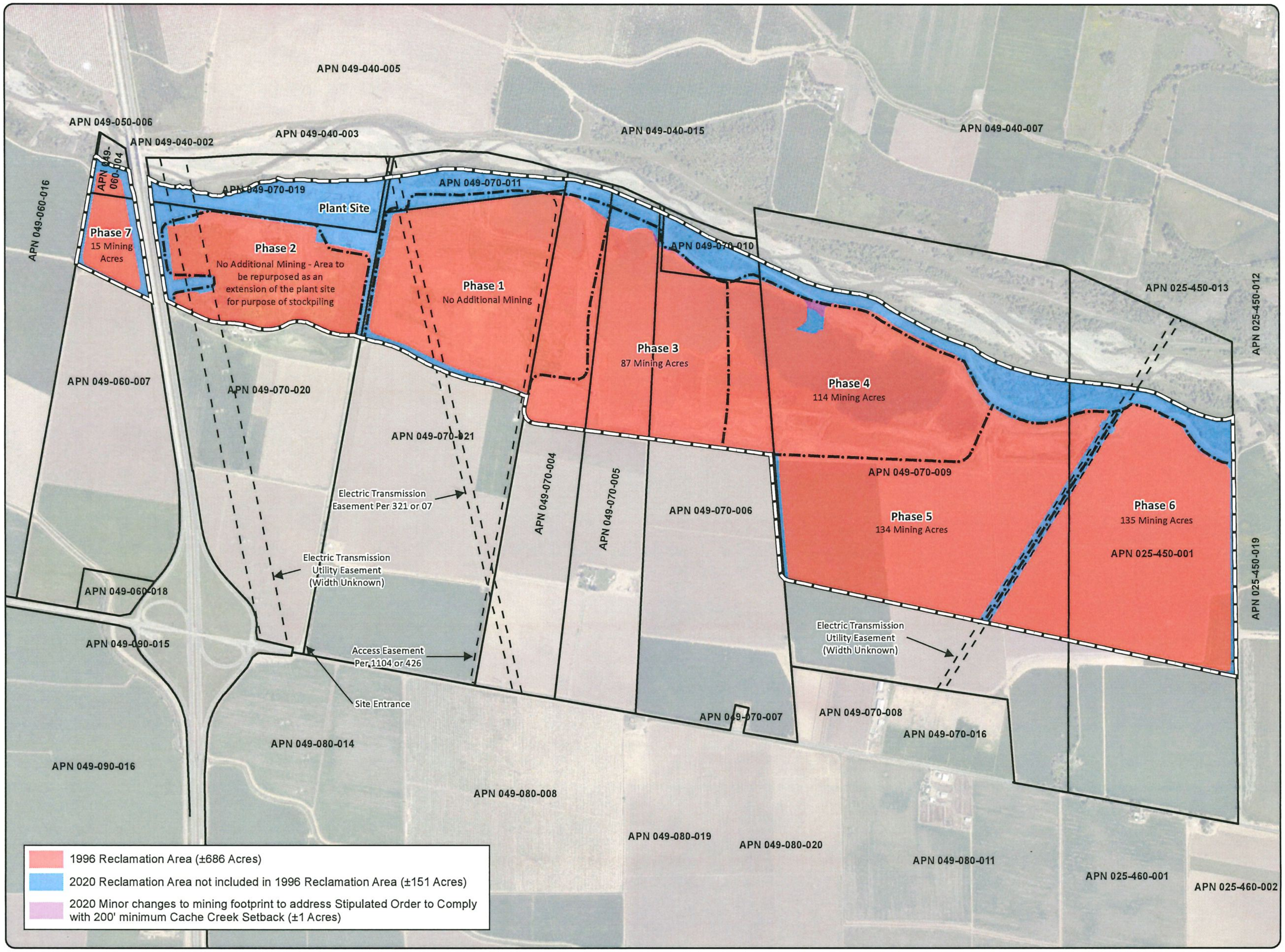
Regional Location
Cache Creek
CEMEX Construction
Materials Pacific, LLC.
Yolo County, California

Figure 1

2/22/2021

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP



CEMEX Cache Creek
Yolo County, California

Site Plan
Mining and Reclamation Area Comparison

Legend:

- 2020 Rec Plan Boundary
- 2020 Plan Phase Boundary
- Yolo County Parcel
- Easement Boundary

Note:
1) 1996 Reclamation Area based on digitization of original hand drawn Madison Plant Off-Channel Mining and Reclamation Plans.

2/23/2021

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 500 1,000 2,000 Feet

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Prepared by: Sage Thurmond, Compass Land Group
3140 Peacekeeper Way #102, McClellan Park, CA 95652

COMPASS LAND GROUP

APPENDIX B

NOP COMMENT LETTERS

From: Hernandez, Nick@DOT <Nick.Hernandez@dot.ca.gov>
Sent: Friday, February 26, 2021 1:13 PM
To: JD Trebec <JD.Trebec@yolocounty.org>

Subject: CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015) - Inquiry
Good Afternoon JD,

I'm reaching out regarding the CEMEX Mining and Reclamation Plan Permit Amendment NOP.

To better analyze the project, Caltrans respectfully requests the following information:

- Please provide the anticipated increase in truck trips (if any) from the site as we weren't able to see how the materials would be transported from the site.

Please let me know if you have any questions.

Thank you,

Nick Hernandez

Associate Transportation Planner, Transportation Planning – South

Division of Planning, Local Assistance, and Sustainability

California Department of Transportation, District 3

703 B Street | Marysville, CA 95901

Office: (530) 634-7618

Email: nick.hernandez@dot.ca.gov

www.dot.ca.gov/d3/

For real-time highway conditions: http://quickmap.dot.ca.gov/

From: PGE Plan Review <PGEPlanReview@pge.com>
Sent: Friday, February 26, 2021 1:33 PM
To: Evelyn Tamayo-Arias <Evelyn.Tamayo-Arias@yolocounty.org>
Subject: RE: Notice of Preparation and Scoping Meeting ZF2018-0015

Dear Evelyn Tamayo-Arias,

Thank you for submitting the 30288 State Route 16 plans. The PG&E Plan Review Team is currently reviewing the information provided. Should we find the possibility this project may interfere with our facilities, we will respond to you with project specific comments on or prior to the provided deadline. Attached is general

information regarding PG&E facilities for your reference. **If you do not hear from us, within 45 days, you can assume we have no comments at this time.**

This email and attachment does not constitute PG&E's consent to use any portion of its easement for any purpose not previously conveyed. If there are subsequent modifications made to your design, we ask that you resubmit the plans to the email address listed below.

If you have any questions regarding our response, please contact the PG&E Plan Review Team at (877) 259-8314 or pgeplanreview@pge.com.

Thank you,

Pacific Gas and Electric Company

Plan Review Team

(877) 259-8314

Email: pgeplanreview@pge.com

From: Evelyn Tamayo-Arias <Evelyn.Tamayo-Arias@yolocounty.org>
Sent: Friday, February 26, 2021 9:00 AM
Cc: JD Trebec <JD.Trebec@yolocounty.org>
Subject: Notice of Preparation and Scoping Meeting ZF2018-0015

Notice of Preparation and Scoping Meeting for the

DEIR for the CEMEX Mining and Reclamation Plan Permit Amendment

Date: February 26, 2021

To: Interested Agencies, Organizations, and Individuals

Project: CEMEX Mining and Reclamation Plan Permit Amendment (ZF#2018-0015)

Location: 30288 State Route 16, Woodland, CA 9565, in unincorporated Yolo County

Lead Agency: Yolo County

Yolo County (County) is the Lead Agency for the preparation an Environmental Impact Report (EIR) for the **CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015)**. Pursuant to CEQA Guidelines Sections 15082 and 15083, the County is requesting your input regarding the scope and content of the environmental information that should be addressed in the EIR, including significant environmental issues, reasonable alternatives, and feasible mitigation measures. Comments from agencies must be germane to the agency's statutory responsibilities in connection with the proposed project. Responsible and trustee agencies will use this EIR when considering the issuance of permits or other approvals for the project. The project description, location, and the potential environmental effects are summarized below. As allowed under CEQA Guidelines Section 15060(d), a CEQA Initial Study was not prepared. All comments and responses must be received by the County within 30 days of receipt of this notice.

Please see the attached notice for details.

Additional Project Information: https://www.yolocounty.org/government/general-government-departments/community-services/planning-division/current-projects

Thank you,

JD Trebec

Senior Planner

Phone: 530-666-8036

Yolo County
Department of Community Services

Planning Division

292 West Beamer Street

Woodland, CA 95695

From: Madison Fire Protection District <ycstation17@att.net>
Sent: Friday, February 26, 2021 10:29 AM
To: Evelyn Tamayo-Arias <Evelyn.Tamayo-Arias@yolocounty.org>
Cc: JD Trebec <JD.Trebec@yolocounty.org>
Subject: Re: Notice of Preparation and Scoping Meeting ZF2018-0015

Good morning JD,

I have some questions that might not belong in the report, but with the expansion of mining operation would affect the Madison Fire District.

1. Possible impact on traffic, more vehicle in and out of the plant entrance on Hwy 16

2. Will there be an increase in employees?

3. Fire road access for fires, accidents and medical emergency.

4. Can I get a copy of the emergency plan they submitted with Yolo County

5. Would the expansion need more buildings or relocation buildings

Feel free to call me and we can talk more about this. 530-867-2312

Thank you.

Paul Green
Fire Chief

Madison Fire Protection District
P.O. Box 12 | 17880 Stephens St.
Madison, CA. 95653
p 530.662.5745 | f 530.662.3441
ycstation17@att.net
www.madison-fire.com

On Friday, February 26, 2021, 09:00:43 AM PST, Evelyn Tamayo-Arias <evelyn.tamayo-arias@yolocounty.org> wrote:

Notice of Preparation and Scoping Meeting for the
DEIR for the CEMEX Mining and Reclamation Plan Permit Amendment

Date: February 26, 2021
To: Interested Agencies, Organizations, and Individuals
Project: CEMEX Mining and Reclamation Plan Permit Amendment (ZF#2018-0015)
Location: 30288 State Route 16, Woodland, CA 9565, in unincorporated Yolo County
Lead Agency: Yolo County

Yolo County (County) is the Lead Agency for the preparation an Environmental Impact Report (EIR) for the **CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015)**. Pursuant to CEQA Guidelines Sections 15082 and 15083, the County is requesting your input regarding the scope and content of the environmental information that should be addressed in the EIR, including significant environmental issues, reasonable alternatives, and feasible mitigation measures. Comments from agencies must be germane to the agency's statutory responsibilities in connection with the proposed project. Responsible and trustee agencies will use this EIR when considering the issuance of permits or other approvals for the project. The project description, location, and the potential environmental effects are summarized below. As allowed under CEQA Guidelines Section 15060(d), a CEQA Initial Study was not prepared. All comments and responses must be received by the County within 30 days of receipt of this notice.

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Additional Project Information: https://www.yolocounty.org/government/general-government-departments/community-services/planning-division/current-projects

Thank you,

JD Trebec
Senior Planner
Phone: 530-666-8036

Yolo County
Department of Community Services
Planning Division
292 West Beamer Street
Woodland, CA 95695

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

March 1, 2021

JD Trebec
Yolo County
292 West Beamer St.
Woodland, CA 95695

Re: 2021020487, CEMEX Mining and Reclamation Plan Amendment Project, Yolo County

Dear Mr. Trebec:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
   - **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
   - **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
   - **a.** If part or all of the APE has been previously surveyed for cultural resources.
   - **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
   - **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
   - **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   - **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
   - **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez

Nancy Gonzalez-Lopez
Cultural Resources Analyst

cc: State Clearinghouse

From: Hernandez, Nick@DOT <Nick.Hernandez@dot.ca.gov>
Sent: Thursday, March 4, 2021 9:19 AM
To: JD Trebec <JD.Trebec@yolocounty.org>
Subject: Follow up: CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015) - Inquiry

Hi JD,

I'm just following up on my previous email regarding the CEMEX Mining and Reclamation Plan Permit Amendment NOP. To better analyze the project, Caltrans respectfully requests the following information:

- Please provide the anticipated increase in truck trips (if any) from the site as we weren't able to see how the materials would be transported from the site.

Please let me know if you have any questions.
Thank you,

Nick Hernandez
Associate Transportation Planner, Transportation Planning – South
Division of Planning, Local Assistance, and Sustainability
California Department of Transportation, District 3
703 B Street | Marysville, CA 95901
Office: (530) 634-7618
Email: nick.hernandez@dot.ca.gov
www.dot.ca.gov/d3/
For real-time highway conditions: http://quickmap.dot.ca.gov/

Letter 6

From: JD Trebec <JD.Trebec@yolocounty.org>
Sent: Wednesday, March 10, 2021 7:48 AM
To: Meehan, Claire@DOC <Claire.Meehan@conservation.ca.gov>

Subject: RE: CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015)

Hi Claire,

Sorry about that. The project is for Mine ID# 91-57-0008. Please let me know if you have any further questions.

Thank you,

JD Trebec
Senior Planner
Phone: 530-666-8036

Yolo County
Department of Community Services
Planning Division
292 West Beamer Street
Woodland, CA 95695

From: Meehan, Claire@DOC <Claire.Meehan@conservation.ca.gov>
Sent: Tuesday, March 9, 2021 3:09 PM
To: JD Trebec <JD.Trebec@yolocounty.org>
Subject: CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015)

Hi JD,

I'm reviewing the NOP for this project for the Division of Mine Reclamation (DOC)- I don't see a mine ID associated with this project. Could you let me know the mine ID?

Thanks so much,

Claire A. Meehan
Restoration Ecologist
Division of Mine Reclamation

California Department of Conservation
801 K Street, MS 09-06, Sacramento, CA 95814
E: Claire.meehan@conservation.ca.gov

[THIS EMAIL ORIGINATED FROM OUTSIDE YOLO COUNTY. PLEASE USE CAUTION AND VALIDATE THE AUTHENTICITY OF THE EMAIL PRIOR TO CLICKING ANY LINKS OR PROVIDING ANY INFORMATION. IF YOU ARE UNSURE, PLEASE CONTACT THE HELPDESK (x5000) FOR ASSISTANCE]

YOCHA DEHE
CULTURAL RESOURCES

March 10, 2021

County of Yolo – Department of Community Services
Attn: J.D. Trebec, Senior Planner
292 W. Beamer Street
Woodland, CA 95695

RE: CEMEX Cache Creek Bank Stabilization Project YD-08312017-01

Dear Mr. Trebec:

Thank you for your project notification letter dated, February 26, 2021, regarding cultural information on or near the proposed CEMEX Cache Creek Bank Stabilization Project, Woodland, Yolo County. We appreciate your effort to contact us and wish to respond.

The Cultural Resources Department has reviewed the project and concluded it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have a cultural interest and authority in the proposed project area.

Based on the information provided, the Tribe has concerns that the project could impact known cultural resources. Yocha Dehe Wintun Nation highly recommends including cultural monitors during development and ground disturbance. In addition, we recommend cultural sensitivity training for all project personnel. Please also send us detailed project information, including any plans for ground disturbance.

To schedule cultural sensitivity training, please contact the following individual:

Laverne Bill, Cultural Resources Manager
Yocha Dehe Wintun Nation
Office: (530) 723-3891
Email: lbill@yochadehe-nsn.gov

Please refer to identification number YD–08312017-01 in any correspondence concerning this project.

Thank you for providing us the opportunity to comment.

Sincerely,

DocuSigned by:

5C39E9463F58429

Tribal Historic Preservation Officer

CEMEX Mining and Reclamation Plan Permit Amendment Project

NOP Public Scoping Meeting: Comment Summary

Date: March 11, 2021

Time: 8:30 AM to 10:30 AM

Staff Presentation: (Heidi Tschudin, Tschudin Consulting Group). Ms. Tschudin summarized a workshop on the Cache Creek Area Plan scheduled before the Planning Commission in April or May, and provided a presentation on the CEMEX project and processing of the application. NOP comments are due by 4:00 March 29, 2021.

Planning Commission Questions and Comments:

- (Pat Reynolds)
    - There should be a net gain component for reclamation of prime agricultural land.
    - Mitigation for agriculture should consider enhancing the land to make the agricultural land better than it was before mining operation.
- (Chuck Dudley)
    - Consider removal and degradation of prime farmland when reclaimed.
    - Concerns regarding effect of mining and lakes as a post-reclamation use on groundwater, adjacent wells and water quality/sanitation issues.
- (Amon Muller)
    - EIR should consider removal of prime farmland and degradation after mitigation.
    - Provide information on success of agricultural land reclamation efforts and reuse and productivity of post-mitigation agriculture land.
    - Evaluate effects on groundwater quality and adjacent wells.
- (Marcia Gibbs)
    - Provide information on productivity of agricultural land reclamation efforts.
    - Provide more information on why the increase in annual and overall mining.
    - Provide more information regarding reclamation to habitat and its overall schedule and success.
- (Trini Campbell)
    - Mitigation for loss of agriculture should consider a greater than 1:1 reclamation requirement.
    - Mitigation for loss of agriculture should consider conservation and preservation of off-site prime farmland elsewhere due to degradation of prime farmland after mining.
    - Mining could pay into an agricultural land conservation fund or purchase easements for projects outside of the mining area.

- (Elisabeth Dubin)
    - Consider off-site mitigation for loss of agricultural land.
    - Provide more information on the restoration and productivity of agricultural land after reclamation. Is there a net loss of productivity and should that trigger mitigation?
    - What metrics are used to decide if more mining is okay at any given time

Public Comments:

The public comment period was opened by Commissioner Dubin, and then closed as there were no members of the public who wished to make comments.

Prepared by Baseline Environmental Consulting

CALIFORNIA Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

29 March 2021

JD Trebec
Yolo County
292 West Beamer Street
Woodland, CA 95695

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, CEMEX MINING AND RECLAMATION PLAN PERMIT AMENDMENT (ZF2018-0015), SCH#2021020487, YOLO COUNTY

Pursuant to the State Clearinghouse's 25 February 2021 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the CEMEX Mining and Reclamation Plan Permit Amendment (ZF2018-0015), located in Yolo County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

<u>Basin Plan</u>

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website: http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]
The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit
Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit
If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act

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[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification
If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State
If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit
If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage

under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit
If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit
If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.

Stephanie Tadlock
Digitally signed by Stephanie Tadlock
Date: 2021.03.26 16:42:29 -07'00'
Water Boards

Stephanie Tadlock
Senior Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

California
Department of Conservation
Division of Mine Reclamation

Gavin Newsom, Governor
David Shabazian, Director

March 29, 2021

Mr. J. D. Trebec
Yolo County
Department of Community Services
292 West Beamer Street
Woodland, California 95695

Copy sent via email: jd.trebec@yolocounty.org

SUBJECT: CEMEX Mining and Reclamation Plan Permit Amendment; Notice of Preparation; State Clearinghouse No. 2021020487

Dear Mr. Trebec:

Thank you for including the Department of Conservation's Division of Mine Reclamation (Division) in the environmental review process for the CEMEX Mining and Reclamation Plan Permit Amendment (Proposed Project) Notice of Preparation (NOP). The NOP indicates that Yolo County (County), as lead agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the Proposed Project.

As described in the NOP, the Proposed Project will amend the mining permit and reclamation plan for the existing CEMEX sand and gravel mining operation, California Mine ID #91-57-0008, to extend mining and reclamation activities to 2047, expand reclamation by approximately 121 acres for a total of 837 acres, and adjust phasing of operations and reclamation as referenced in the table below:

Reclaimed End Uses (in acres)	Agriculture [3]	Habitat	Lake	Slopes/Roads/Buffers	Total
Approved	476.0	61.0	153.0	26.0	716.0[1]
Proposed	438.6	168.7	210.4	19.2	836.9
Difference (% **change**)	<-37.4> (7.8% decrease)	107.7 (1 75% increase)	57.4 (37.5% increase	<-6.8> (26.2% decrease)	120.9[2] (1 6.9% increase)

1/includes 30-acre plant site
2/ Disturbed area along northerly boundary of approved mining, adjoining creek bank, and 1- 505 buffer area.
3/The applicant is also proposing to modify the type of reclaimed agriculture from 50% row crops and 50% tree crops as approved, to 80% row crops and 20% tree crops.

The Division's primary focus is on active surface mining operations; however, the Division also addresses issues related to abandoned (pre-1976) legacy mines. Additionally, the Division has review responsibilities associated with lead agency implementation of SMARA. SMARA provides a comprehensive surface mining and reclamation policy to assure that:

- Adverse environmental effects of surface mining operations are prevented or minimized and mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.
- Production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.
- Residual hazards to the public health and safety are eliminated.

Division staff has reviewed the subject NOP pursuant to the CEQA and State CEQA Guidelines and offers no comments at this time.

The Division requests to be included on the distribution list for this Proposed Project. Additionally, the Division requests that any subsequent project documents (e.g., the Draft EIR, hearing notices for the Draft and Final EIRs, and any supplemental environmental documents), as well as a copy of the certified Final EIR, be sent to the Division at DMR-Submittals@conservation.ca.gov or the mailing address on the bottom of page 1 of this letter. If you have any questions, please contact us at (916) 323-9198.

Sincerely,

DocuSigned by:
Carol E Atkins
73ECCB6738194DA...

Carol E. Atkins
Manager
Environmental Services Unit

DocuSigned by:
Claire Meehan
7C67E0775504421...

Claire Meehan
Restoration Ecologist
Environmental Services Unit

ec: State Clearinghouse, state.clearinghouse@opr.ca.gov

Department of Conservation, Office of Legislative and Regulatory Affairs, OLRA@conservation.ca.gov

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, Governor

DEPARTMENT OF TRANSPORTATION
District 3
703 B Street
MARYSVILLE, CA 95901–5556
(530) 634-7616
TTY 711
www.dot.ca.gov

Making Conservation
a California Way of Life.

March 29, 2021

GTS# 03-YOL-2021-001141
County# ZF #2018-0015

J.D. Trebec
Senior Planner
Department of Community Services
Yolo County
292 West Beamer Street
Woodand, CA 95695

CEMEX Mining and Reclamation Plan Permit Amendment

Dear Mr. Trebec:

Thank you for including the California Department of Transportation (Caltrans) in the review process for the project referenced above. Caltrans' new mission, vision, and goals signal a modernization of our approach to California's transportation system. We reviewed this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals for sustainability/livability/economy, and safety/health. We provide these comments consistent with the State's smart mobility goals that support a vibrant economy, and build communities, not sprawl. Based on the information received, Caltrans provides the following comments.

Traffic Operations

- Please provide how many new trips the project will increase for vehicles/trucks in the future due to the project expansion.

  Please provide the trip distribution on the new trips for the project. For example: when will the new trips be made: morning, peak hour, or a night, and etc.

  All work proposed and performed within the State's highway right of way must be in accordance with Caltrans' standards and require a Caltrans Encroachment Permit prior to beginning construction.

Please provide our office with copies of any further actions regarding this project. We would appreciate the opportunity to review and comment on any changes related to this development. If you have any questions regarding these comments or require additional information, please contact Nick Hernandez, Intergovernmental Review Coordinator, at (530) 634-7618 or by email at: nick.hernandez@dot.ca.gov

Sincerely,

Alex Padilla

ALEX PADILLA
Branch Chief, Transportation Planning – South
Planning, Local Assistance, and Sustainability
Caltrans District 3

APPENDIX C

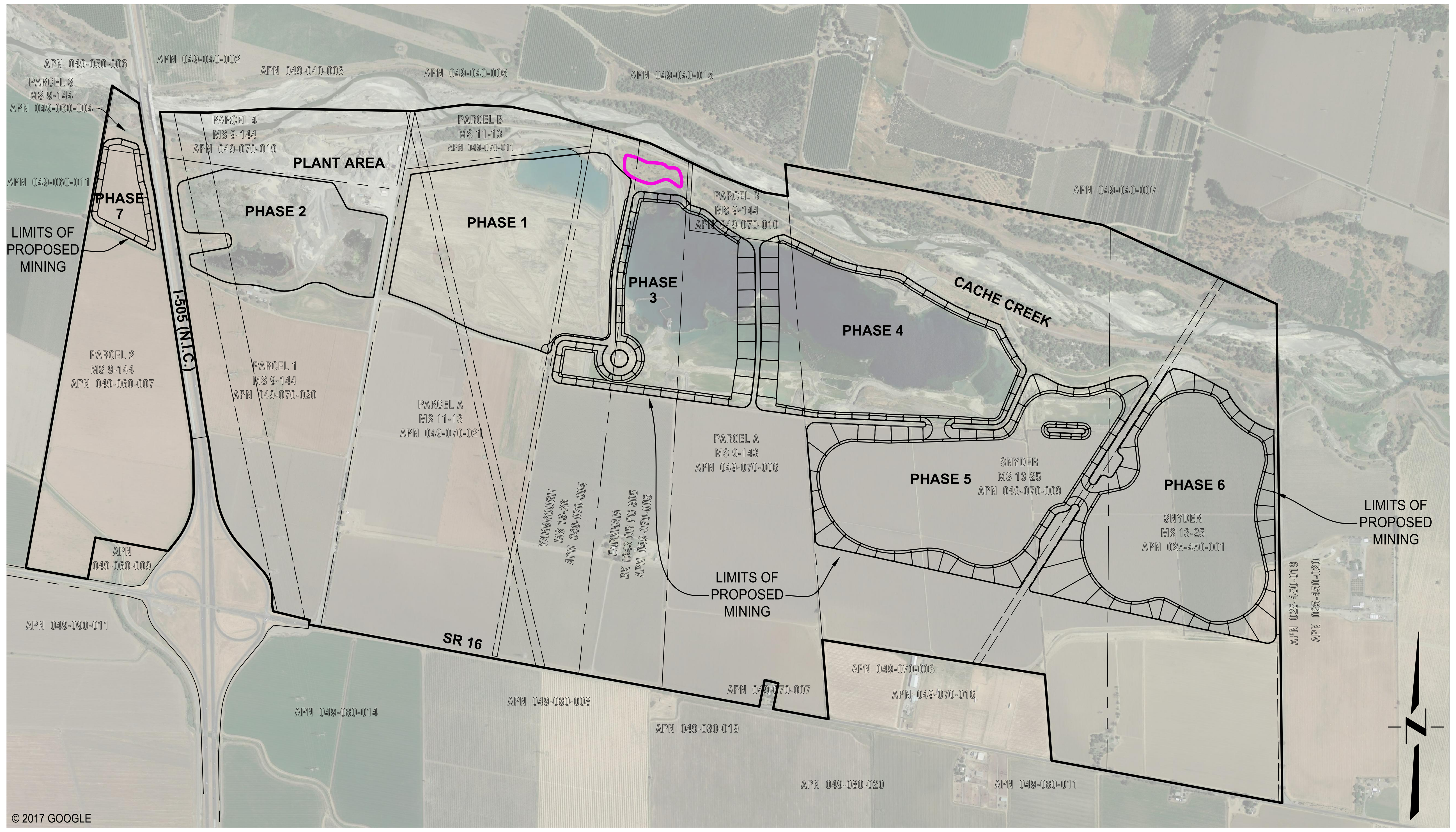
PROPOSED MINING PLAN SHEETS

OFF-CHANNEL MINING PLAN
FOR
CEMEX CACHE CREEK

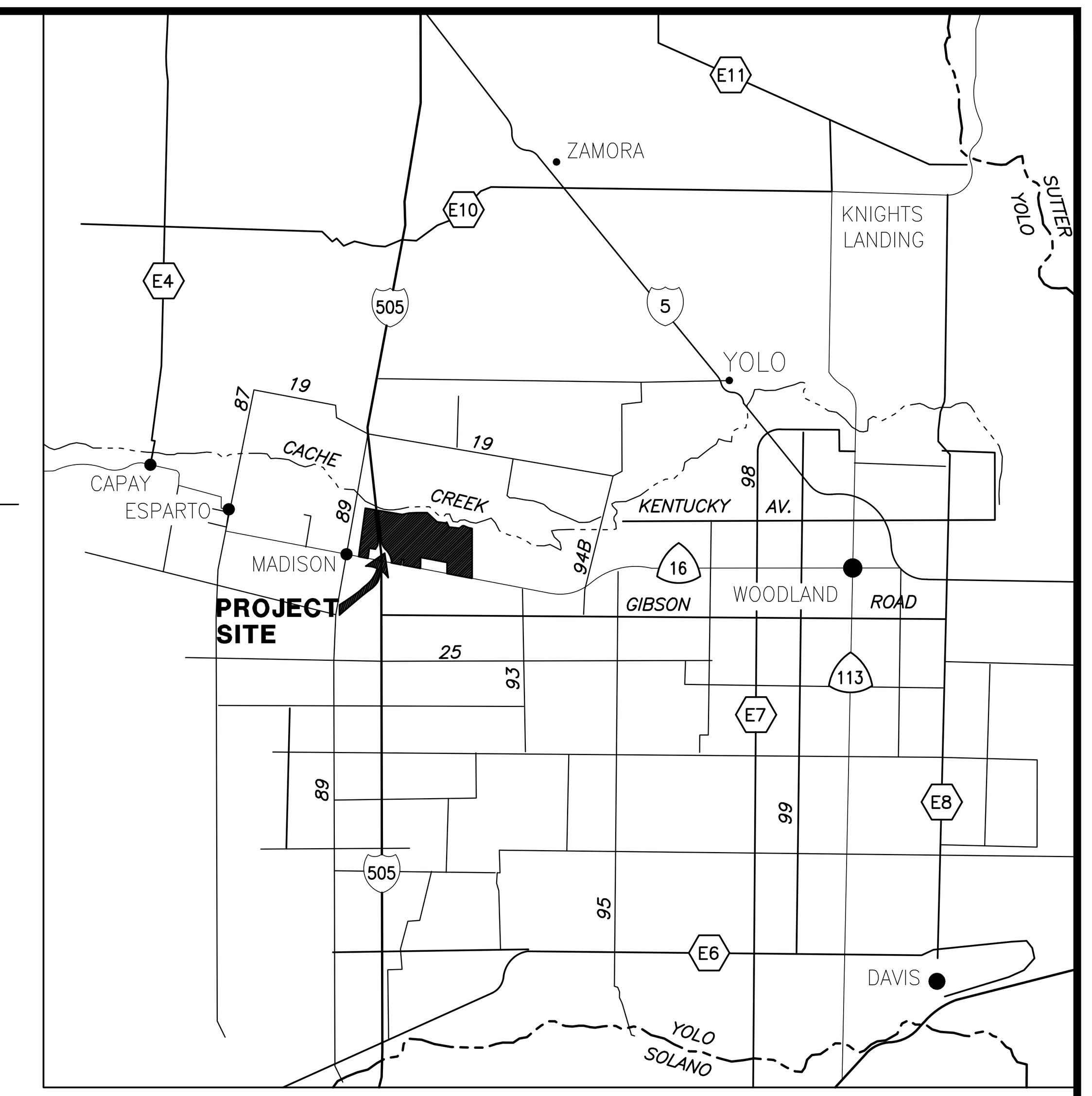
YOLO COUNTY, CALIFORNIA
JULY 2021

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
- WATER WELL
- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. (195.0)
- PROPOSED ELEV. (100.0)
- HORIZONTAL TO VERTICAL SLOPE (2:1)
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- EASEMENT
- FLOW ARROW



KEY MAP
1"=1000'



VICINITY MAP
NOT TO SCALE

SHEET INDEX

NOTE: RECLAMATION PLAN UNDER SEPARATE COVER

BENCHMARK:

EXISTING TOPOGRAPHY BASED ON AERIAL TOPOGRAPHY DATED MAY 4, 2011, PROVIDED BY TOWILL SURVEYING. PROPERTY INFORMATION BASED ON RECORD OF SURVEY BY ROBINSON ENGINEERING IN BOOK 2018 OF MAPS PAGES 2-4
HORIZONTAL DATUM: CA NAD83 ZONE 2
VERTICAL DATUM: NAVD 88

ASSESSORS PARCEL NOS:

025-450-001, 049-060-004, 049-060-007, 049-070-004, 049-070-005, 049-070-006, 049-070-009, 049-070-010, 049-070-011, 049-070-019, 049-070-020, 049-070-021

PROPERTY OWNER:

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.
2365 IRON POINT ROAD, SUITE 120
FOLSOM, CA 95630

APPLICANT:

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.
2365 IRON POINT ROAD, SUITE 120
FOLSOM, CA 95630

CIVIL ENGINEER:

CUNNINGHAM ENGINEERING
2940 SPAFFORD STREET, SUITE 200
DAVIS, CALIFORNIA 95618
(530) 758-2026

PROPOSED MINING AREA:

PLANT AREA: 25 ACRES (NO MINING)
PHASE 1: 116 ACRES (NO FURTHER MINING)
PHASE 2: 61 ACRES (NO FURTHER MINING)
PHASE 3: 67 ACRES
PHASE 4: 137 ACRES
PHASE 5: 134 ACRES
PHASE 6: 136 ACRES
PHASE 7: 15 ACRES
TOTAL: 691 ACRES
TOTAL AREA OF REMAINING MINING: 489 ACRES

LEGAL DESCRIPTION:

BEING A PORTION OF RANCHO GUESISOSI, ALSO KNOWN AS THE GORDON GRANT, WITHIN PROJECTIONS OF TOWNSHIP 10 NORTH, RANGE 1 WEST, AND TOWNSHIP 10 NORTH, RANGE 1 EAST, WITHIN THE MOUNT DIABLO MERIDIAN. MORE SPECIFICALLY, BEING RECORD OF SURVEY DATED MAY 19, 2017, RECORDED AS BOOK 2018 OF MAPS AT PAGE 2-4, OFFICIAL RECORDS OF YOLO COUNTY, CALIFORNIA.

APN	Assessor Acres[1]	ROS Acres[2]	Ownership[3]	Zoning[4]	General Plan[5]
025-450-001	291.1	280.0	United Metro Materials Inc	A-N (SG)	AG, OS
049-060-004	6.3	6.3	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-060-007	142.8	142.4	Solano Concrete Co Inc	A-N (SG)	AG
049-070-004	112.7	110.7	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-005	98.5	112.8	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-006	200.2	200.1	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-009	444.0	461.6	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-010	17.1	17.1	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-011	26.2	26.5	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-019	53.9	48.0	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-020	212.2	218.5	United Metro Materials Inc	A-N (SG)	AG
049-070-021	276.4	278.3	Solano Concrete Co Inc	A-N (SG)	AG
Total:	**1,881.4**	**1,902.3**			

Notes:

1. Source: Yolo County Assessor, retrieved November 28, 2017, with verification thru Parcel Quest.
2. Source: Record of Survey in Yolo County Book 2018 of Maps at pages 2-4.
3. United Metro Materials, Inc. and Solano Concrete Co Inc. are fully-owned subsidiaries of CEMEX.
4. A-N = Agricultural Intensive. The Sand and Gravel (SG) overlay zone applies to State designated mineral resource zones (MRZ-2) containing critical geological deposits needed for economic use in the future, as well as applying to existing mining operations. The portions of the parcels that are subject to mining already have the SG overlay.
5. Source: 2030 Countywide General Plan, with verification thru Yolo County GIS Public Viewer. AG = Agriculture. OS = Open Space. The Open Space land use designation applies to the portions of the parcels associated with Cache Creek.

DRAWING STATUS:

- ● PLAN REVIEW SET – NOT FOR CONSTRUCTION
- ○ PERMIT SET

DATE SIGNED: ____________
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG
SCALE
AS SHOWN

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

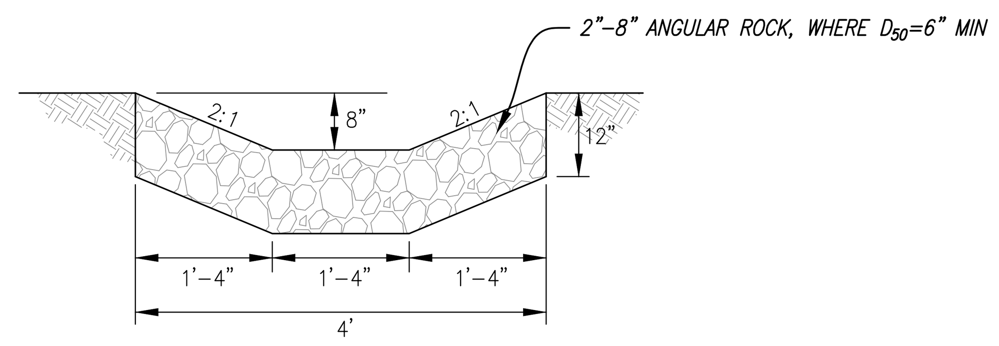
TITLE SHEET

YOLO COUNTY CALIFORNIA

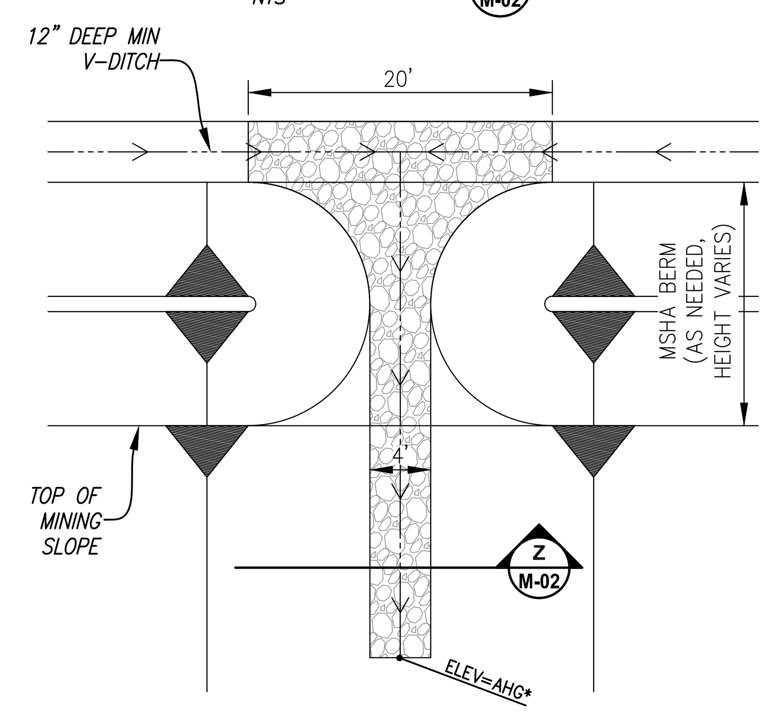
SHEET M-01 OF 15
DATE: 7/12/2021
JOB NO: 253.80

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE YOLO COUNTY OFF-CHANNEL SURFACE MINING ORDINANCE (ORD. #1190), THE PROJECT SPECIFIC CONDITIONS OF APPROVAL, THE PROJECT WASTE DISCHARGE REQUIREMENTS (WDR), THE SURFACE MINING AND RECLAMATION ACT (SMARA), OSHA, MSHA, AND OTHER APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
2. EXISTING TOPOGRAPHY BASED ON AERIAL TOPOGRAPHY DATED MAY 4, 2011, PROVIDED BY TOWILL SURVEYING SUPPLEMENTED WITH AERIAL TOPOGRAPHY DATED MAY 2015, HANDHELD GPS DATED SEPTEMBER 2017, AND AERIAL IMAGERY DATED MAY 20, 2017 BY GOOGLE EARTH. THE PROJECT SITE IS AN EXISTING, ON-GOING MINING OPERATION. THE PHYSICAL CONDITIONS DEPICTED IN THESE PLANS WILL CHANGE AS A RESULT OF ON-GOING MINING AND RECLAMATION ACTIVITIES. THE CONDITIONS DEPICTED IN THESE PLANS WILL DIFFER FROM THE CONDITIONS ON THE SITE IMMEDIATELY PRIOR TO COMMENCEMENT OF THE MINING AND RECLAMATION ACTIVITIES PROPOSED IN THIS APPLICATION.
3. TEMPORARY ACCESS WITHIN A UTILITY EASEMENT AREA TO ALLOW MINING WILL BE GOVERNED BY A JOINT USE AGREEMENT WITH THE APPROPRIATE UTILITY, IF NEEDED. USE CAUTION WHEN OPERATING ANY VEHICLES OR EQUIPMENT NEAR OVERHEAD AND UNDERGROUND ELECTRIC FACILITIES. COMPLY WITH ALL CONDITIONS LISTED IN THE CONSENT AGREEMENT.
4. THE DEPTH OF MINING AND THE LIMIT-OF-MINING LINES ARE ONLY APPROXIMATE, AND ARE SUBJECT TO CHANGE BASED ON THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, AND THE ABILITY OF THE PRODUCER TO MEET THE RECLAMATION REQUIREMENTS. THE FORESEEABLE ESTIMATE OF VARIATION IS +/- 10' IN MINING DEPTH, +/- 200' FOR THE SOUTHERN MINING BOUNDARY, AND +/- 20% OF AREA FOR EACH TYPE OF RECLAMATION. ADDITIONALLY, THE SIZE OF EACH MINE PHASE AND LOCATION OF SEPARATORS BETWEEN THEM ARE SUBJECT TO CHANGE AS MINING RESERVES ARE UNCOVERED AND SITE BALANCES ARE RECALCULATED.
5. HIGH AND LOW AVERAGE GROUNDWATER ELEVATIONS BASED ON "ESTIMATION OF AVERAGE HIGH GROUNDWATER LEVELS CEMEX MADISON PLANT, YOLO COUNTY", BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS DATED NOVEMBER 30, 2016 AND "ESTIMATION OF AVERAGE LOW GROUNDWATER LEVELS CEMEX MADISON PLANT, YOLO COUNTY", BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS DATED APRIL 26, 2017.
6. ALL SLOPES ARE LABELED AS HORIZONTAL:VERTICAL. SLOPES FIVE FEET BELOW THE SUMMER LOW GROUNDWATER LEVEL AND ABOVE SHALL NOT BE STEEPER THAN 2:1. NO FINISH SLOPE SHALL EXCEED 1:1.
7. PROVIDE PROTECTION TO WET PIT AREAS FROM STORMWATER AND/OR AGRICULTURAL RUNOFF THROUGH THE PLACEMENT OF BERMS AND/OR SWALES AS NEEDED.
8. IF HUMAN SKELETAL REMAINS ARE ENCOUNTERED DURING EXCAVATION, ALL WORK WITHIN SEVENTY-FIVE (75) FEET SHALL IMMEDIATELY STOP, AND THE COUNTY CORONER SHALL BE NOTIFIED WITHIN TWENTY-FOUR (24) HOURS. IF ANY CULTURAL RESOURCES, SUCH AS CHIPPED OR GROUND STONE, HISTORIC DEBRIS, BUILDING FOUNDATIONS, OR PALEONTOLOGICAL MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEN ALL WORK WITHIN SEVENTY-FIVE (75) FEET SHALL IMMEDIATELY STOP AND THE DIRECTOR SHALL BE NOTIFIED AT ONCE. ANY CULTURAL RESOURCES FOUND ON THE SITE SHALL BE RECORDED BY A QUALIFIED ARCHAEOLOGIST AND THE INFORMATION SHALL BE SUBMITTED TO THE COUNTY.
9. OVERBURDEN SHALL BE STOCKPILED AND STUMPS, BRUSH, OR OTHER DEBRIS RESULTING FROM EXCAVATION AND/OR PROCESSING SHALL BE PROPERLY DISPOSED OF.
10. UNNECESSARY PERSONNEL SHALL BE EXCLUDED FROM OFF-CHANNEL EXCAVATIONS. OPEN PITS SHALL BE FENCED WITH A FOUR STRAND WIRE FENCE OR THE EQUIVALENT, PRIOR TO THE COMMENCEMENT OF EXCAVATION. FENCING MAY ENCLOSE THE PROPERTY OF WHICH THE MINING SITE IS A PART, THE MINING SITE, OR BOTH. IN ADDITION, SIGNS SHALL BE INSTALLED AT THE PROJECT SITE BOUNDARIES AND ACCESS ROAD, INDICATING THAT THE EXCAVATION AREA IS A DANGER ZONE.
11. EROSION CONTROL METHODS HAVE BEEN DESIGNED TO HANDLE RUNOFF FOR THE 20 YEAR/1 HOUR INTENSITY STORM EVENT.

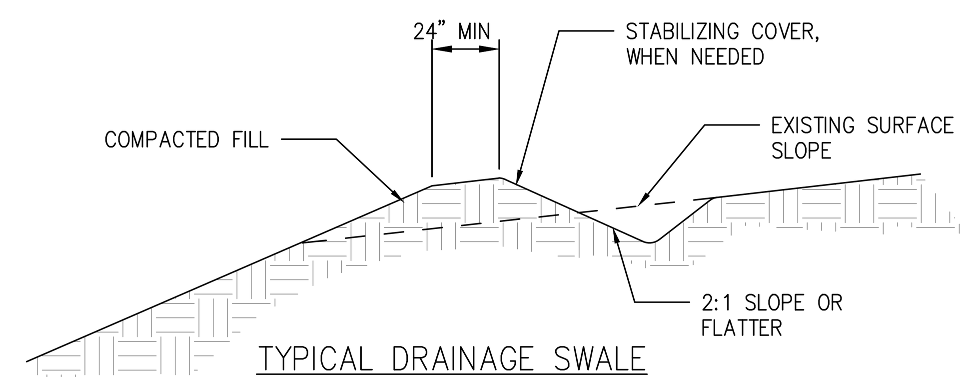


SECTION Z
NTS
Z
M-02



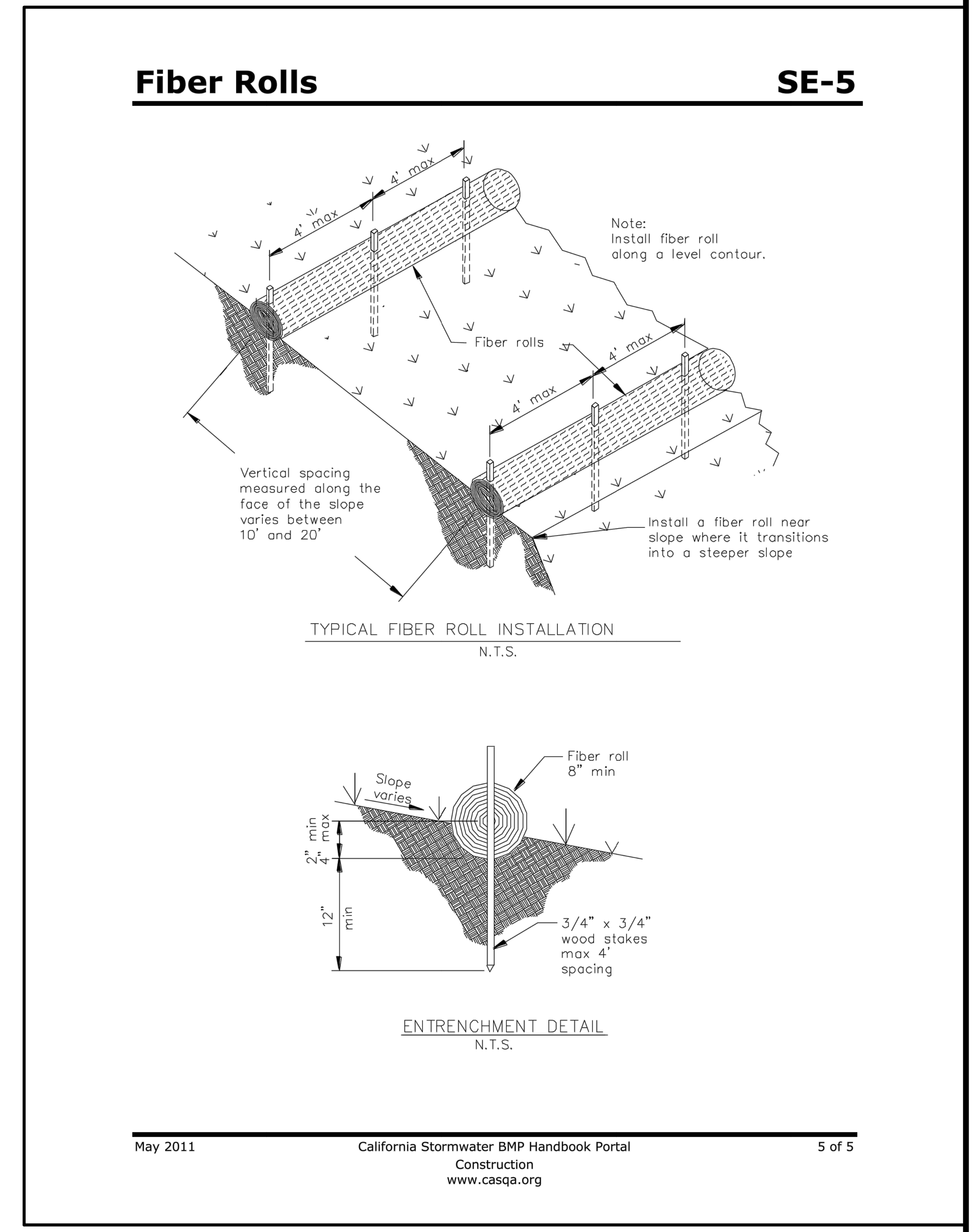
TYP. RIP-RAP RUNDOWN DETAIL
NTS

*OR ELEVATION AS NOTED ON PLANS



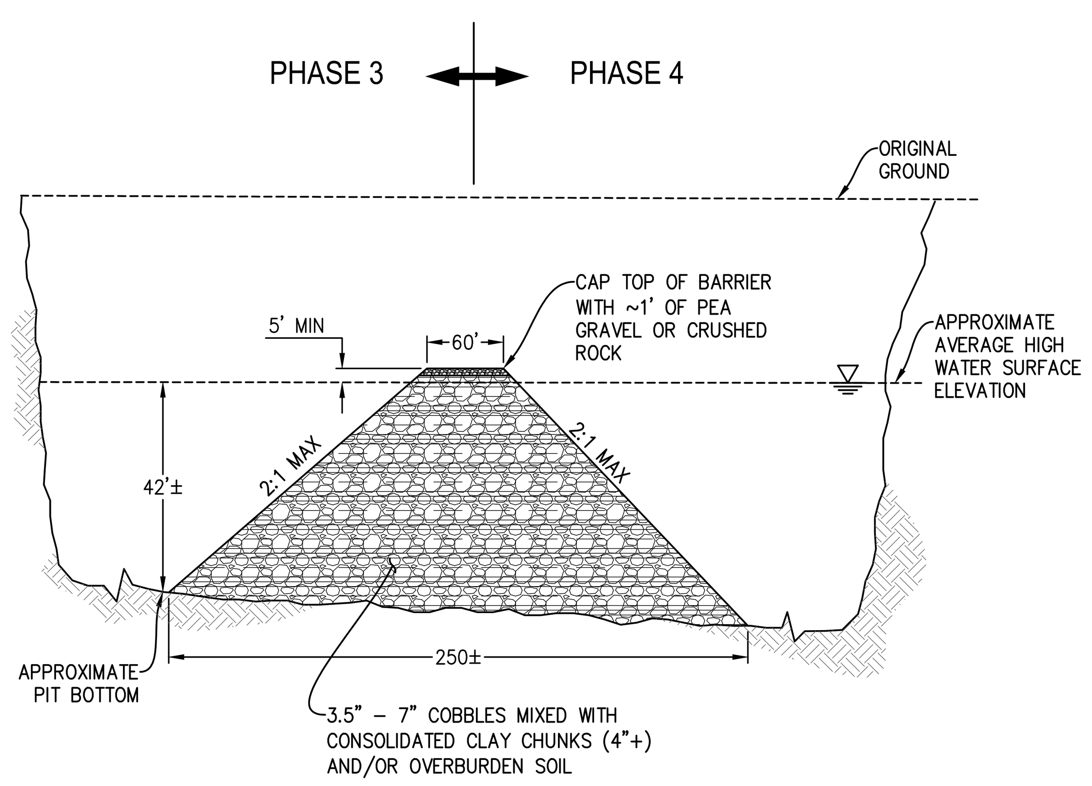
TYPICAL DRAINAGE SWALE
NTS

NOTES:
1. STABILIZE INLET, OUTLETS, AND SLOPES
2. PROPERLY COMPACT THE SUBGRADE



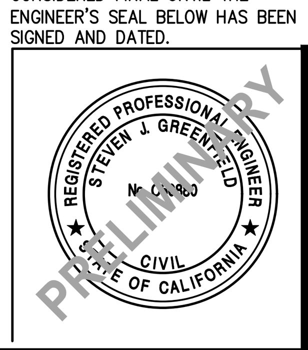
ABBREVIATIONS:

AHG	AVERAGE HIGH GROUNDWATER
ALG	AVERAGE LOW GROUNDWATER
APN	ASSESSOR'S PARCEL NUMBER
CFT	CHANNEL FORM TEMPLATE
D	DELTA
E	EAST
L	LENGTH
MA	MATCH
MS	MAPS AND SURVEYS
MSHA	MINE SAFETY AND HEALTH ADMINISTRATION
N	NORTH
N.I.C.	NOT IN CONTRACT
OHE	OVERHEAD ELECTRIC
PL	PROPERTY LINE
R	RADIUS
S	SOUTH
TYP	TYPICAL
W	WEST
ZF	ZONE FILE



TYPICAL ALLUVIAL SEPERATOR DETAIL
NTS

DATE SIGNED: ____________
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.



DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	NONE

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

NOTES AND DETAILS

YOLO COUNTY
CALIFORNIA

SHEET M-02 OF 15
DATE: 7/12/2021
JOB NO: 253.80

S:\AutoCAD\200\253 Solano Concrete Projects CAD\Project dwgs\80 Mining and Rec Plans\SHEETS\253-80-MIN-M02-NOTES.dwg – NOTES AND DETAILS 7/13/2021 – 1:21PM Plotted by: Liz

APN	Assessor Acres[1]	ROS Acres[2]	Ownership[3]	Zoning[4]	General Plan[5]
025-450-001	291.1	280.0	United Metro Materials Inc	A-N (SG)	AG, OS
049-060-004	6.3	6.3	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-060-007	142.8	142.4	Solano Concrete Co Inc	A-N (SG)	AG
049-070-004	112.7	110.7	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-005	98.5	112.8	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-006	200.2	200.1	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-009	444.0	461.6	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-010	17.1	17.1	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-011	26.2	26.5	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-019	53.9	48.0	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-020	212.2	218.5	United Metro Materials Inc	A-N (SG)	AG
049-070-021	276.4	278.3	Solano Concrete Co Inc	A-N (SG)	AG
Total:	**1,881.4**	**1,902.3**			

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5. Source: 2030 Countywide General Plan, with verification thru Yolo County GIS Public Viewer. AG = Agriculture. OS = Open Space. The Open Space land use designation applies to the portions of the parcels associated with Cache Creek.

NOTES:

1. WELL LOCATIONS ARE APPROXIMATE AND BASED UPON INFORMATION PRESENTED IN "ESTIMATION OF AVERAGE HIGH GROUNDWATER LEVELS" BY LUHDORFF & SCALMANI DATED NOVEMBER 30, 2016.
2. PRIOR TO SURFACE MINING ACTIVITIES, LOCATE, MARK, AND PROTECT WELLS. IF MONITORING WELLS ARE LOCATED WITHIN AN AREA OF PROPOSED MINING, RELOCATE TO NEARBY AREA OUTSIDE OF MINE PIT LIMITS THAT CAN BE PROTECTED.

LEGAL DESCRIPTION:

BEING A PORTION OF RANCHO GUESISOSI, ALSO KNOWN AS THE GORDON GRANT, WITHIN PROJECTIONS OF TOWNSHIP 10 NORTH, RANGE 1 WEST, AND TOWNSHIP 10 NORTH, RANGE 1 EAST, WITHIN THE MOUNT DIABLO MERIDIAN. MORE SPECIFICALLY, BEING RECORD OF SURVEY DATED MAY 19, 2017, RECORDED AS BOOK 2018 OF MAPS AT PAGE 2-4, OFFICIAL RECORDS OF YOLO COUNTY, CALIFORNIA.

DATE SIGNED: ____________

THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD CIVIL STATE OF CALIFORNIA

DESIGNED BY KD	NO.	DATE	REVISIONS	BY	APPD.
DRAWN BY KD					
CHECKED BY SG					
SCALE 1" = 500'					

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CEMEX CACHE CREEK MINING PLAN
PROPERTY INFORMATION

YOLO COUNTY — CALIFORNIA

SHEET M-03 OF 15

DATE: 7/12/2021

JOB NO: 253.80

PROPOSED MINING AREA:

PLANT AREA: 25 ACRES (NO MINING)
PHASE 1: 116 ACRES (NO FURTHER MINING)
PHASE 2: 61 ACRES (NO FURTHER MINING)
PHASE 3: 87 ACRES
PHASE 4: 114 ACRES
PHASE 5: 134 ACRES
PHASE 6: 135 ACRES
PHASE 7: 15 ACRES
TOTAL: 687 ACRES
TOTAL AREA OF REMAINING MINING: 485 ACRES

DATE SIGNED: ____
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PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG
SCALE 1" = 500'

NO.	DATE	REVISIONS	BY	APPD.

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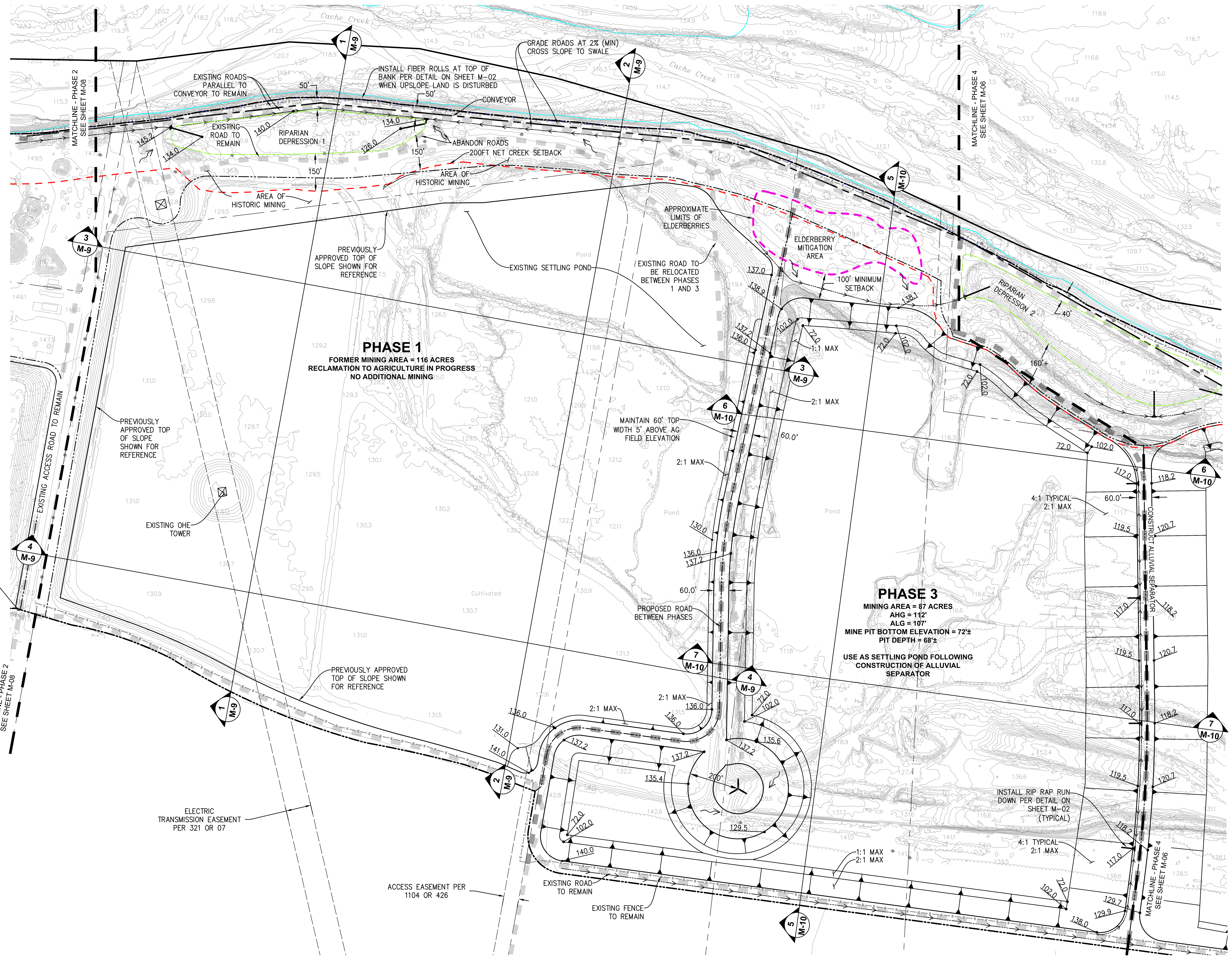
CEMEX CACHE CREEK MINING PLAN
OVERALL PROPOSED MINING PLAN

YOLO COUNTY CALIFORNIA

SHEET M-04 OF 15
DATE: 7/12/2021
JOB NO: 253.80

LEGEND:

ELECTRIC TRANSMISSION TOWER
EXISTING GROUND CONTOUR — 100
CROSS SECTION NUMBER AND SHEET LOCATION — 1 M-10
200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
TOP OF BANK
CHANNEL FORM TEMPLATE
RIPARIAN DEPRESSION
APPROXIMATE EXISTING CONVEYOR ROUTE
EXISTING DIRT ROAD
PROPOSED DIRT ROAD
V DITCH SWALE
PHASE BOUNDARY
RECLAMATION BOUNDARY
WATER WELL
EXISTING/PROPOSED — x — x — x — x
WIND TURBINE
EXISTING ELEV. — 195.0
PROPOSED ELEV. — 100.0
HORIZONTAL TO VERTICAL SLOPE — 2:1
WATER SURFACE
PROJECT BOUNDARY
PARCEL LINE
EASEMENT
FLOW ARROW



200 100 0 200 400
SCALE 1" = 200'

NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
2. ACTUAL DISTURBANCE WITHIN THE APPROXIMATE AREA TO BE MINED WILL BE DETERMINED ON AN OPERATIONAL BASIS. SOME AREAS MAY BE LEFT IN THEIR EXISTING CONDITION OR PARTIALLY MINED. WHERE OPERATOR ELECTS NOT TO MINE TO ELEVATION SHOWN, THE RECLAMATION ELEVATIONS SHOWN ON SUBSEQUENT PLAN SHEETS MAY NOT BE ACHIEVED.
3. MINING TO BE SETBACK 25' MINIMUM OR AS INDICATED FROM FOOTINGS OF EXISTING UTILITY TOWERS. MINING TO BE SETBACK 50' MINIMUM OR AS INDICATED FROM PROPERTY LINES.
4. TEMPORARY ACCESS WITHIN UTILITY EASEMENT AREAS TO ALLOW MINING WILL BE GOVERNED BY A JOINT USE AGREEMENT WITH THE APPROPRIATE UTILITY.
5. SLOPES FIVE FEET BELOW THE SUMMER LOW GROUNDWATER LEVEL AND ABOVE SHALL NOT BE STEEPER THAN 2:1. NO SLOPE SHALL EXCEED 1:1.

DATE SIGNED:
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY — REGISTERED PROFESSIONAL ENGINEER — STEVEN J. GREENFIELD — CIVIL — STATE OF CALIFORNIA

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

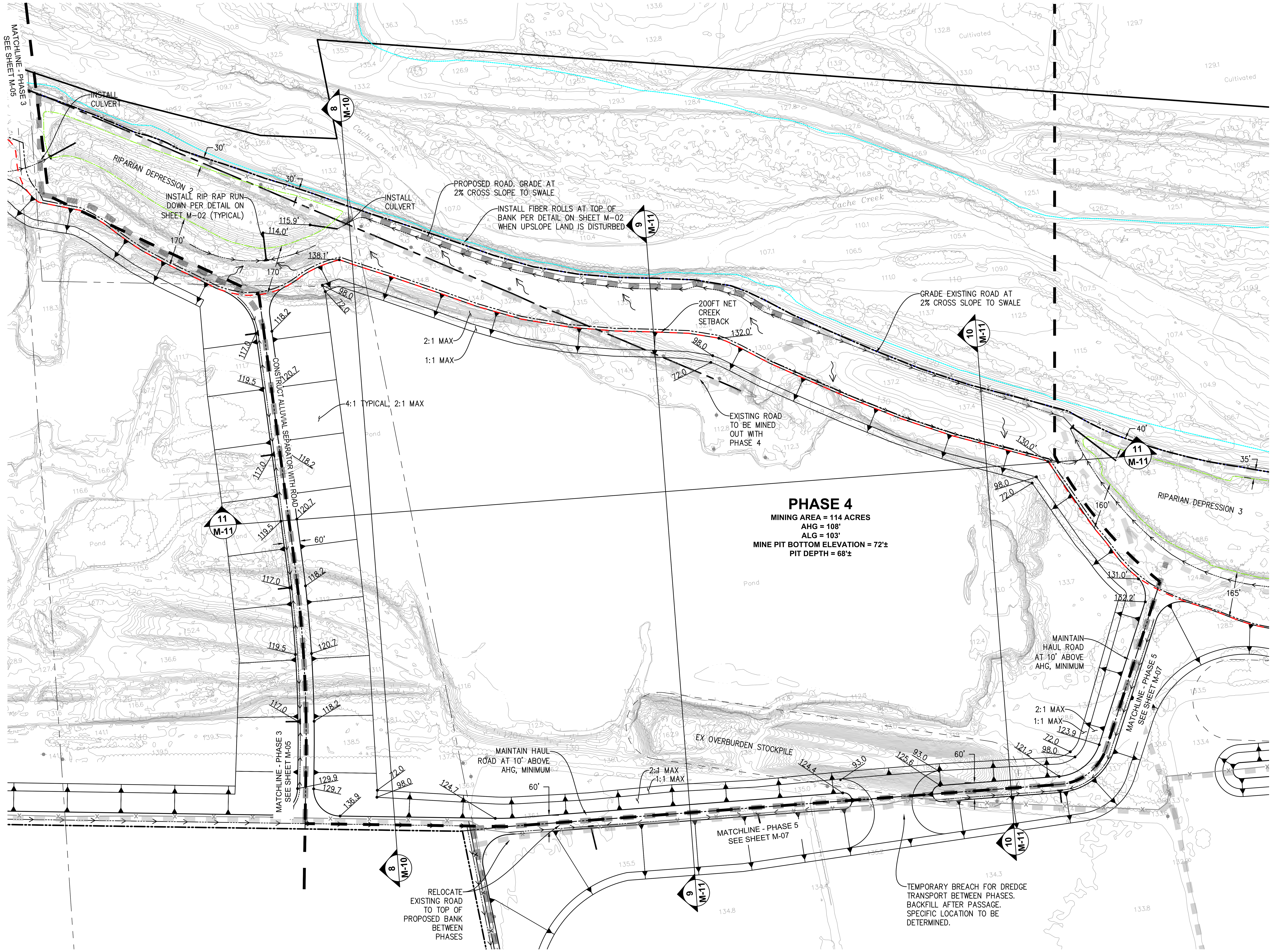
PHASES 1 AND 3

YOLO COUNTY — CALIFORNIA

SHEET M-05 OF 15
DATE: 7/12/2021
JOB NO: 253.80

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
- WATER WELL
- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
- HORIZONTAL TO VERTICAL SLOPE 2:1
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- EASEMENT
- FLOW ARROW



NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
2. ACTUAL DISTURBANCE WITHIN THE APPROXIMATE AREA TO BE MINED WILL BE DETERMINED ON AN OPERATIONAL BASIS. SOME AREAS MAY BE LEFT IN THEIR EXISTING CONDITION OR PARTIALLY MINED. WHERE OPERATOR ELECTS NOT TO MINE TO ELEVATION SHOWN, THE RECLAMATION ELEVATIONS SHOWN ON SUBSEQUENT PLAN SHEETS MAY NOT BE ACHIEVED.
3. MINING TO BE SETBACK 25' MINIMUM OR AS INDICATED FROM FOOTINGS OF EXISTING UTILITY TOWERS. MINING TO BE SETBACK 50' MINIMUM OR AS INDICATED FROM PROPERTY LINES.
4. TEMPORARY ACCESS WITHIN UTILITY EASEMENT AREAS TO ALLOW MINING WILL BE GOVERNED BY A JOINT USE AGREEMENT WITH THE APPROPRIATE UTILITY.
5. SLOPES FIVE FEET BELOW THE SUMMER LOW GROUNDWATER LEVEL AND ABOVE SHALL NOT BE STEEPER THAN 2:1. NO SLOPE SHALL EXCEED 1:1.

200 100 0 200 400
SCALE 1" = 200'

DATE SIGNED: ______
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY — REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD — CIVIL — STATE OF CALIFORNIA

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

PHASE 4

YOLO COUNTY CALIFORNIA

SHEET M-06 OF 15
DATE: 7/12/2021
JOB NO: 253.80

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
- WATER WELL
- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
- HORIZONTAL TO VERTICAL SLOPE 2:1
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- EASEMENT
- FLOW ARROW

NOTES:

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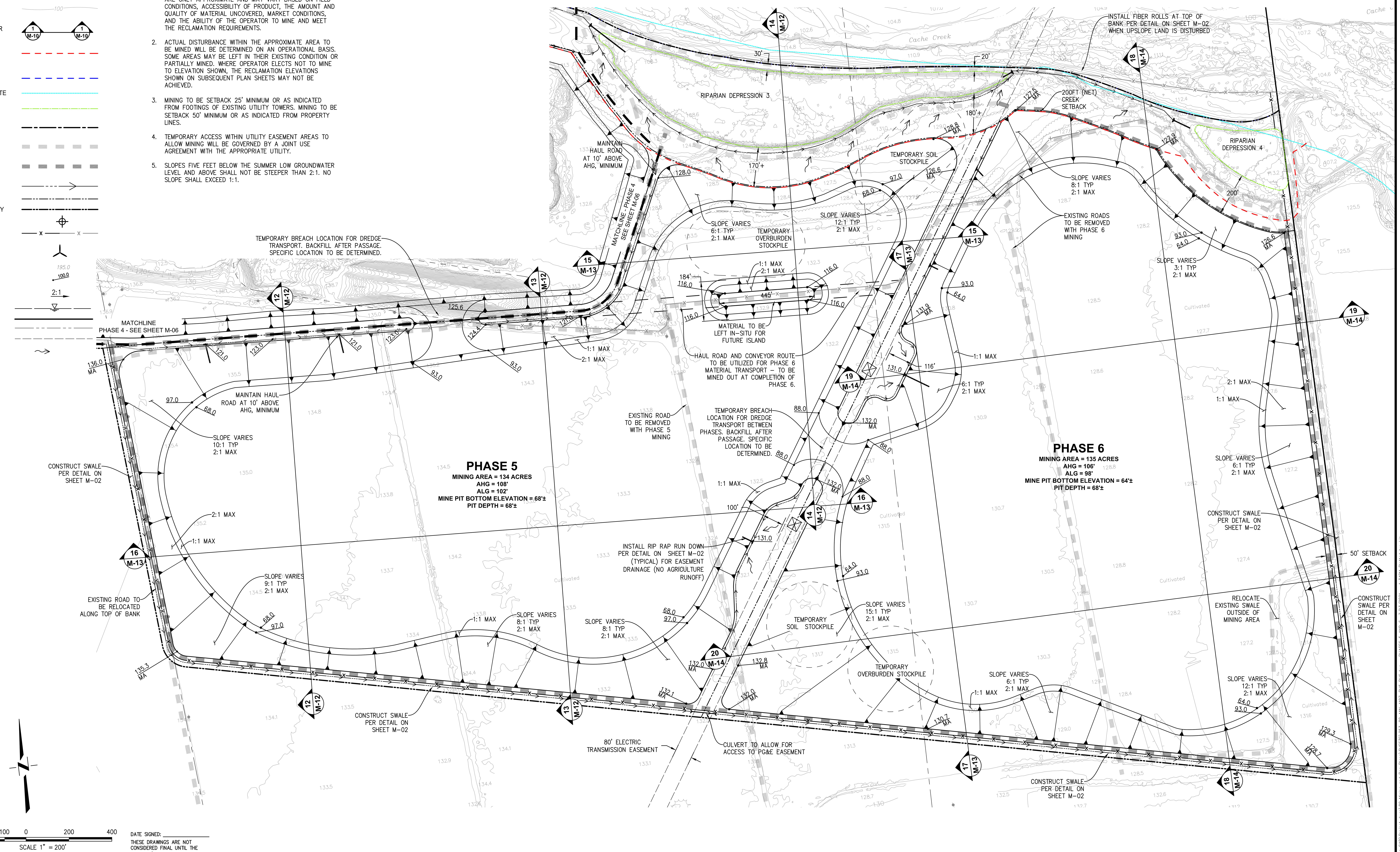

DATE SIGNED: ______

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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD CIVIL STATE OF CALIFORNIA — PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

CEMEX

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CEMEX CACHE CREEK MINING PLAN

PHASES 5 AND 6

YOLO COUNTY — CALIFORNIA

SHEET M-07 OF 15

DATE: 7/12/2021

JOB NO: 253.80

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
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- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
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- WATER SURFACE
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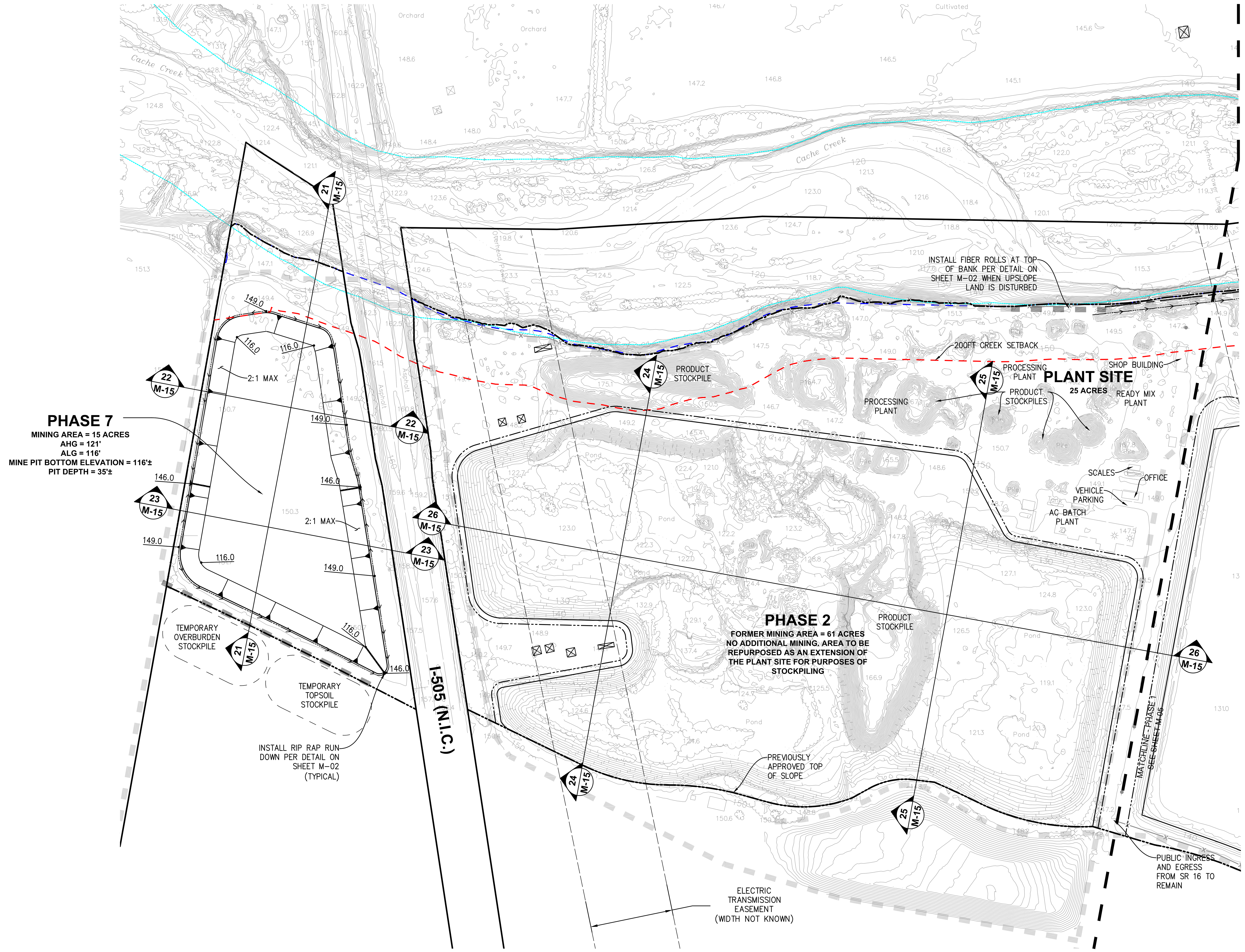
- FLOW ARROW



NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
2. ACTUAL DISTURBANCE WITHIN THE APPROXIMATE AREA TO BE MINED WILL BE DETERMINED ON AN OPERATIONAL BASIS. SOME AREAS MAY BE LEFT IN THEIR EXISTING CONDITION OR PARTIALLY MINED. WHERE OPERATOR ELECTS NOT TO MINE TO ELEVATION SHOWN, THE RECLAMATION ELEVATIONS SHOWN ON SUBSEQUENT PLAN SHEETS MAY NOT BE ACHIEVED.
3. MINING TO BE SETBACK 25' MINIMUM OR AS INDICATED FROM FOOTINGS OF EXISTING UTILITY TOWERS. MINING TO BE SETBACK 50' MINIMUM OR AS INDICATED FROM PROPERTY LINES.
4. TEMPORARY ACCESS WITHIN UTILITY EASEMENT AREAS TO ALLOW MINING WILL BE GOVERNED BY A JOINT USE AGREEMENT WITH THE APPROPRIATE UTILITY.
5. SLOPES FIVE FEET BELOW THE SUMMER LOW GROUNDWATER LEVEL AND ABOVE SHALL NOT BE STEEPER THAN 2:1. NO SLOPE SHALL EXCEED 1:1.
6. PHASE 7 TO BE DRY MINED ONLY WITHOUT THE USE OF A DREDGE BELOW THE SEASONAL WATER SURFACE ELEVATION.
7. STOCKPILES SHALL NOT EXCEED A HEIGHT OF 40 FEET.

DATE SIGNED: ________
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY — REGISTERED PROFESSIONAL ENGINEER, STEVEN J. GREENFIELD, No. C-54580, CIVIL, STATE OF CALIFORNIA

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

CEMEX

CUNNINGHAM ENGINEERING — CECWEST.COM
Project Planning ■ Civil Engineering ■ Landscape Architecture
■ Sacramento Office: 2120 20th Street, Suite Three, Sacramento, CA 95818, (916) 455-2026
■ Davis Office: 2940 Spafford Street, Suite 200, Davis, CA 95618, (530) 758-2026

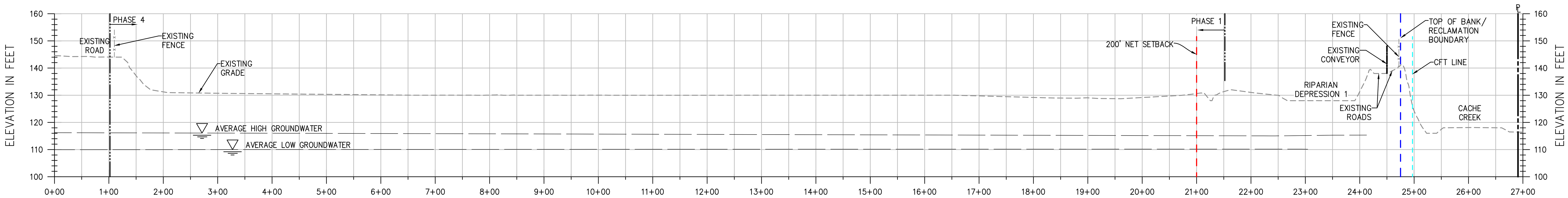
CEMEX CACHE CREEK MINING PLAN

PHASES 2 AND 7

YOLO COUNTY — CALIFORNIA

SHEET M-08 OF 15
DATE: 7/12/2021
JOB NO: 253.80

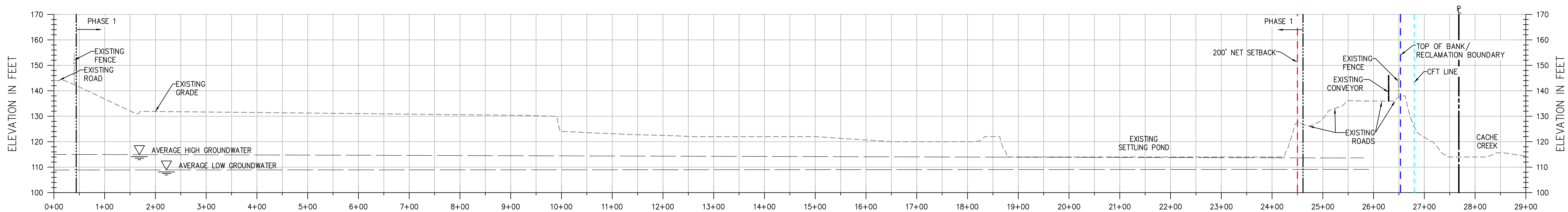
S:\AutoCAD\200\253 Solano Concrete Projects CAD\Project dwgs\80 Mining and Rec Plans\SHEETS\253-80-MIN-M08-PH2 PH7.dwg -- PHASES 2 AND 7 7/13/2021 -- 1:35PM Plotted by: Liz



SECTION 1 (PHASE 1)

H: 1"=100'
V: 1"=20'

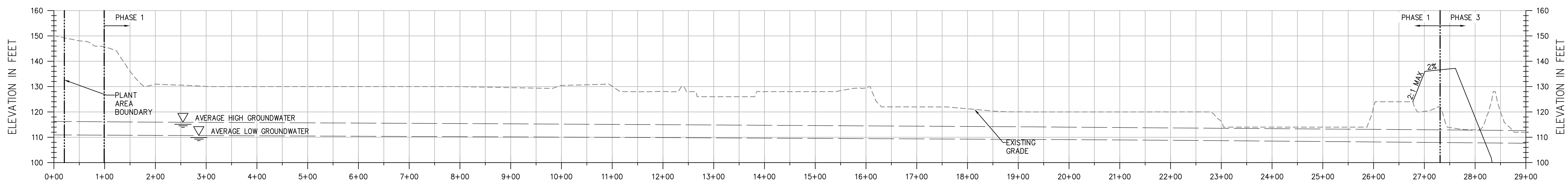
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 2 (PHASE 1)

H: 1"=100'
V: 1"=20'

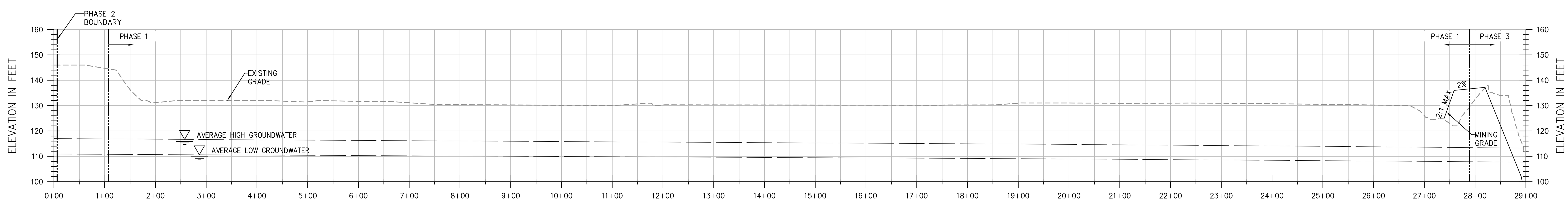
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 3 (PHASE 1)

H: 1"=100'
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 4 (PHASE 1)

H: 1"=100'
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1

DATE SIGNED: ____

THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

REGISTERED PROFESSIONAL ENGINEER · STEVEN J. GREENFIELD · CIVIL · STATE OF CALIFORNIA · PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

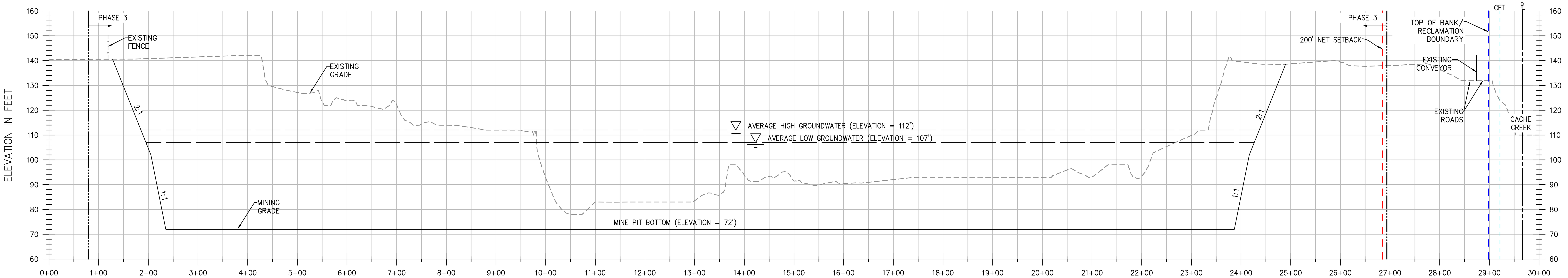
SECTIONS 1-4

YOLO COUNTY CALIFORNIA

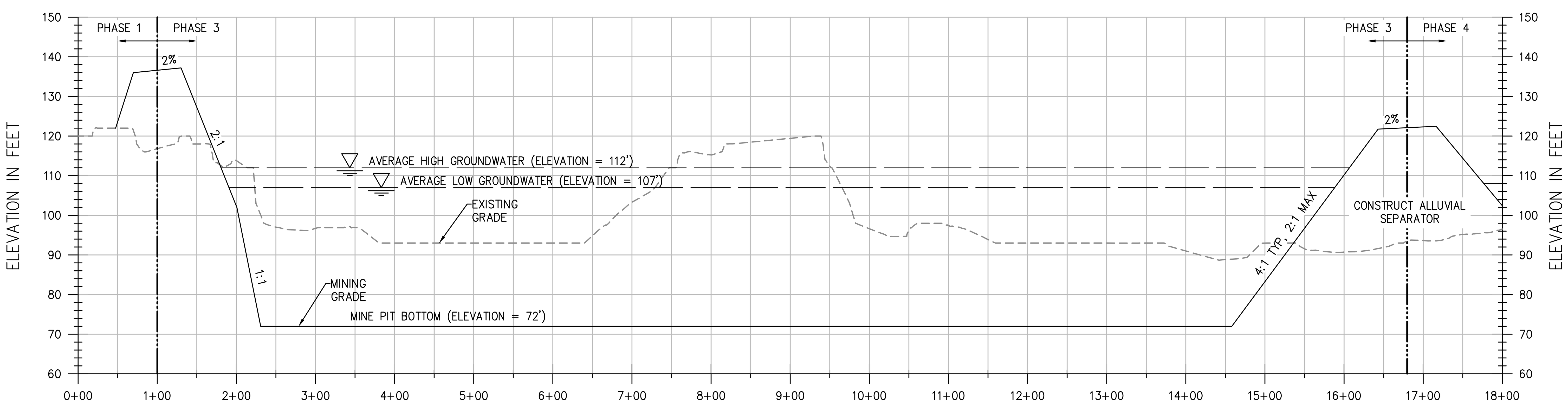
SHEET M-09 OF 15

DATE: 7/12/2021

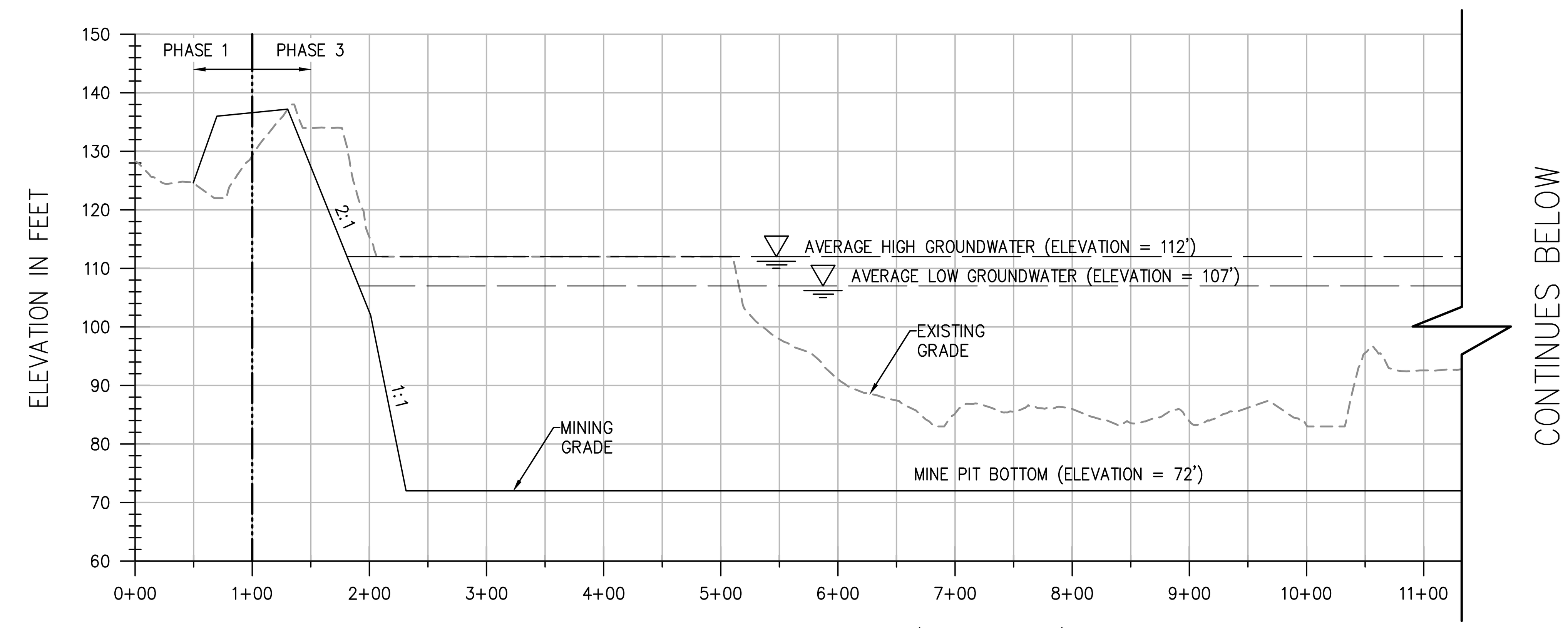
JOB NO: 253.80



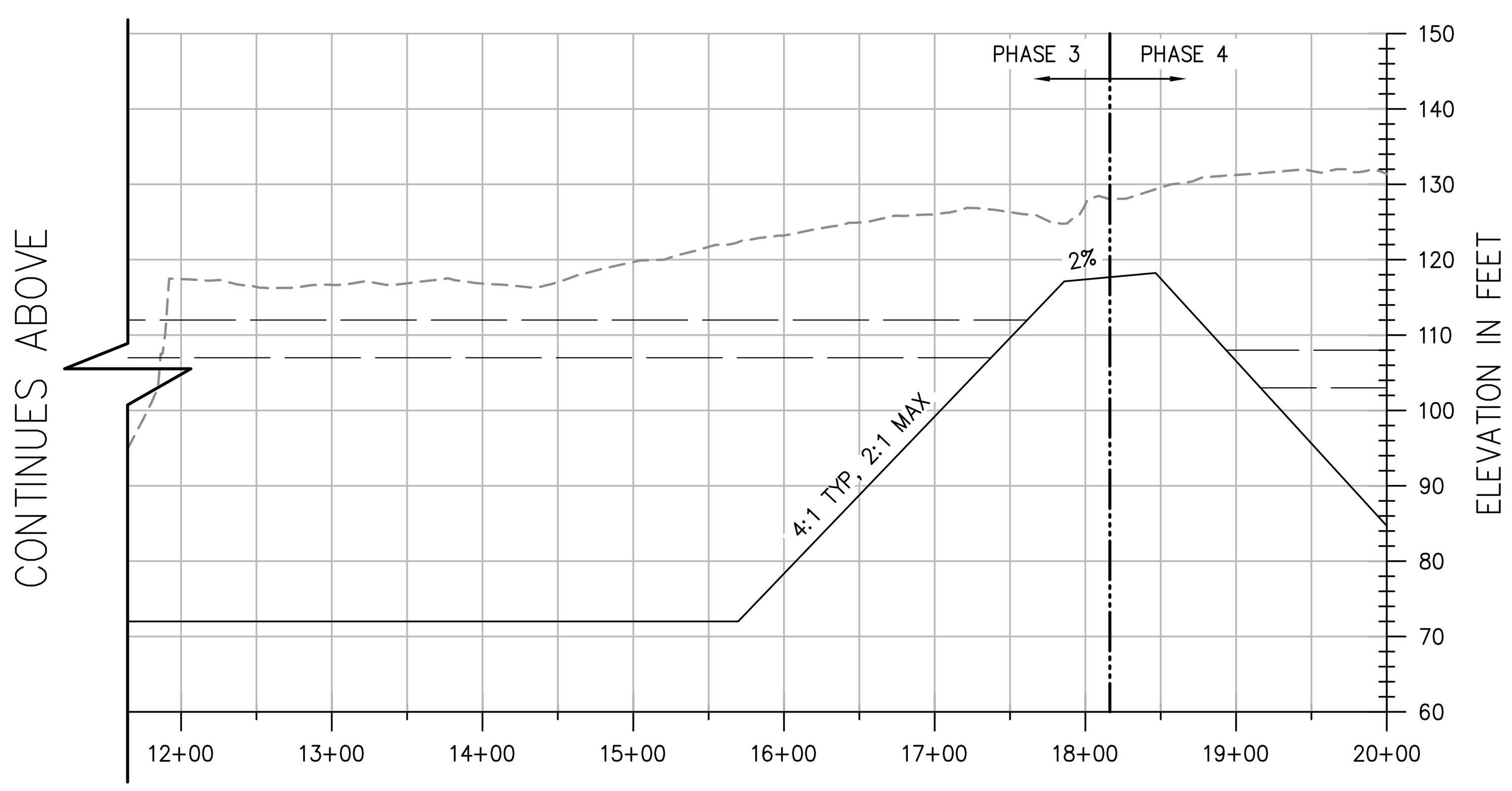
SECTION 5 (PHASE 3)
H: 1"=100'
V: 1"=20'



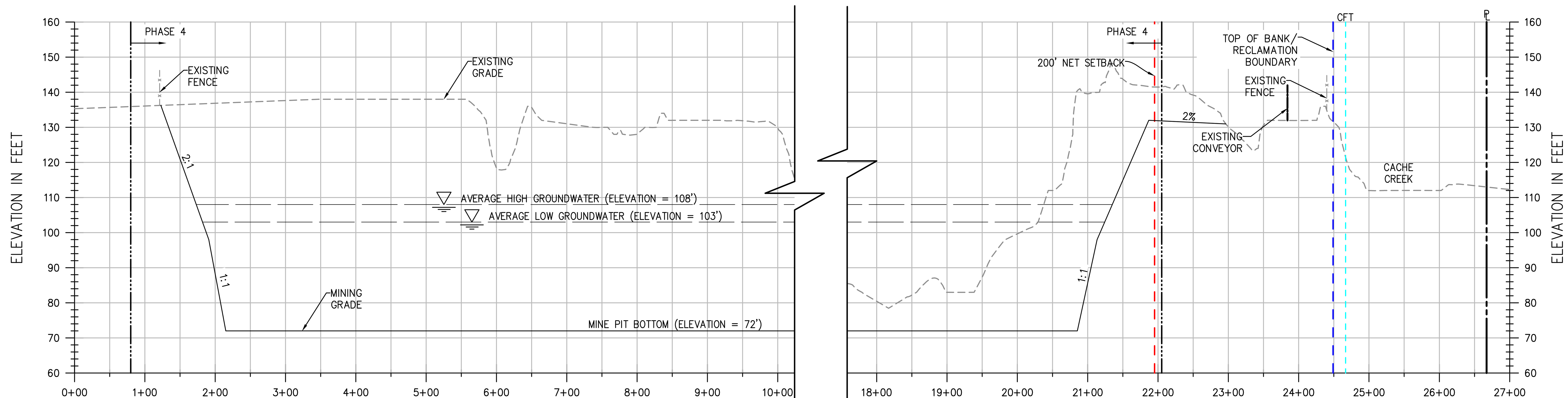
SECTION 6 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 7 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 7 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 8 (PHASE 4)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ____________
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C56163 CIVIL STATE OF CALIFORNIA
PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	H: 1"=100' V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

CEMEX

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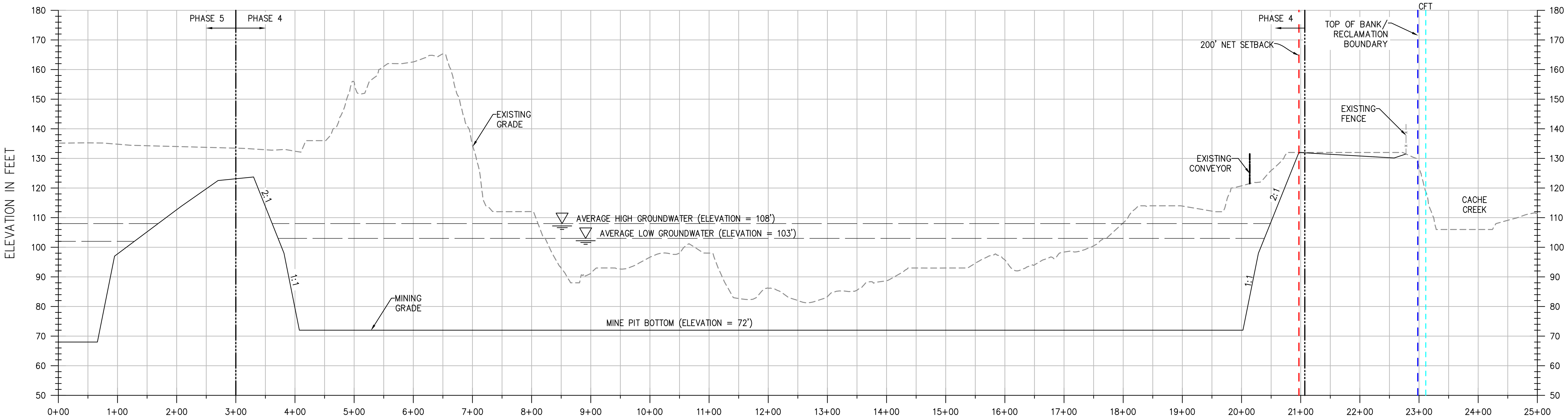
CEMEX CACHE CREEK MINING PLAN
SECTIONS 5-8

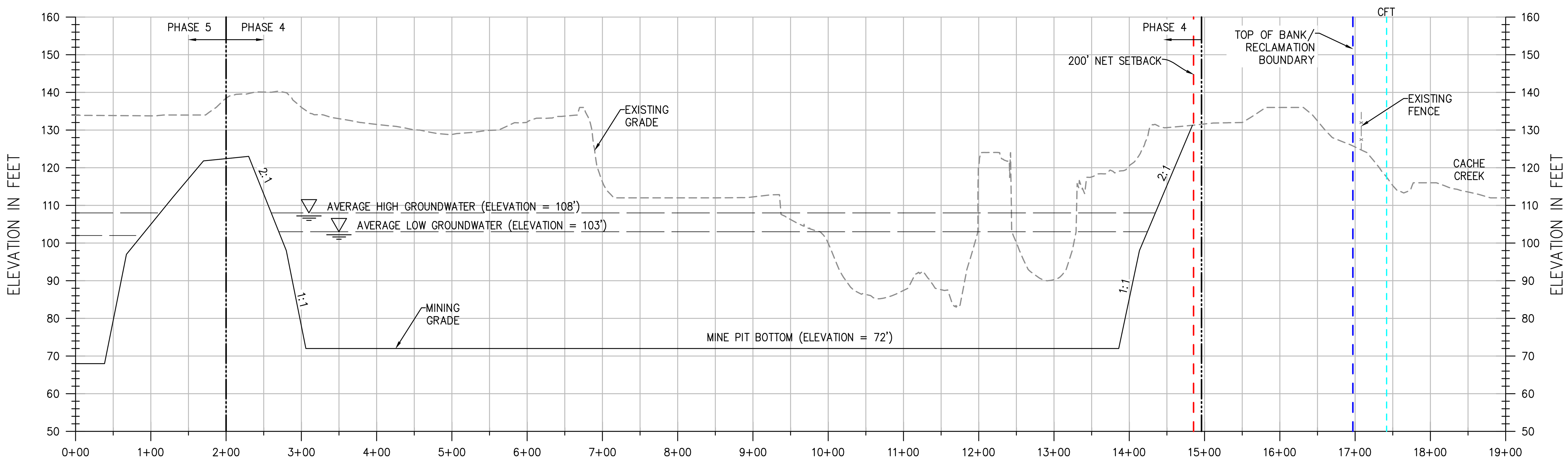
YOLO COUNTY
CALIFORNIA

SHEET
M-10
OF
15

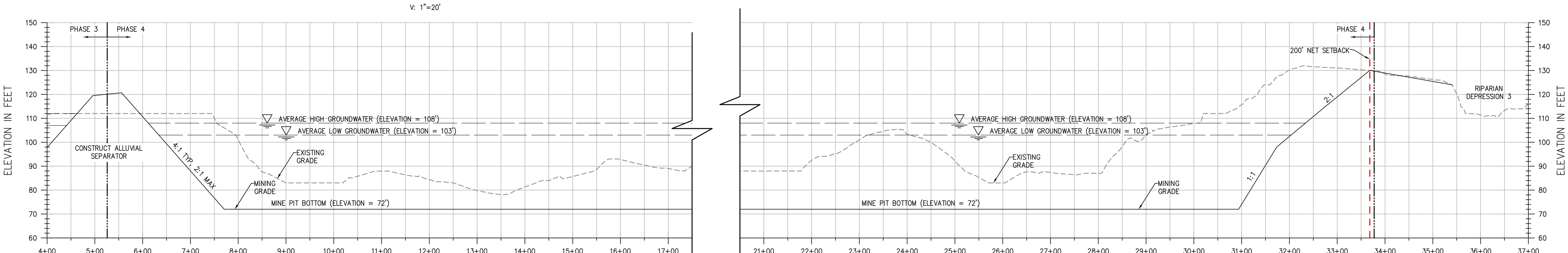
DATE: 7/12/2021
JOB NO: 253.80



SECTION 9 (PHASE 4)
H: 1"=100'
V: 1"=20'



SECTION 10 (PHASE 4)
H: 1"=100'
V: 1"=20'



SECTION 11 (PHASE 4)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ______
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG
SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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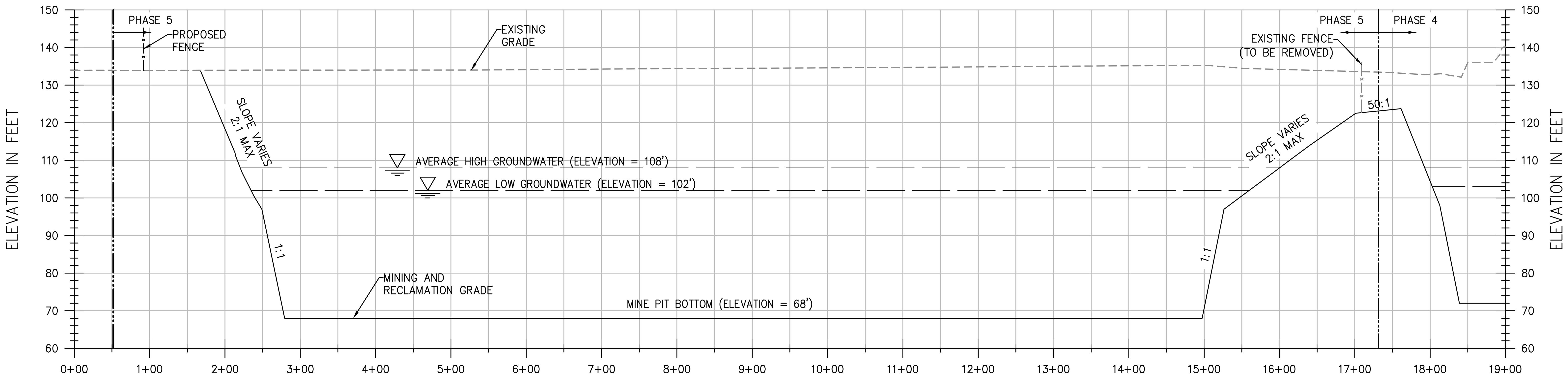
CEMEX CACHE CREEK MINING PLAN

SECTIONS 9-11

YOLO COUNTY
CALIFORNIA

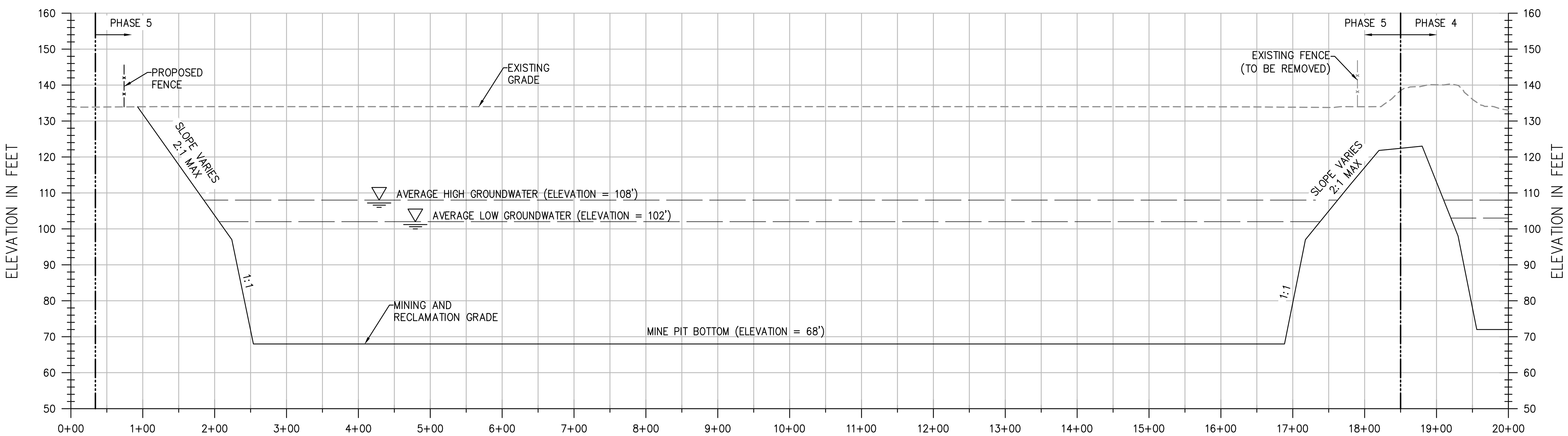
SHEET
M-11
OF
15

DATE: 7/12/2021
JOB NO: 253.80



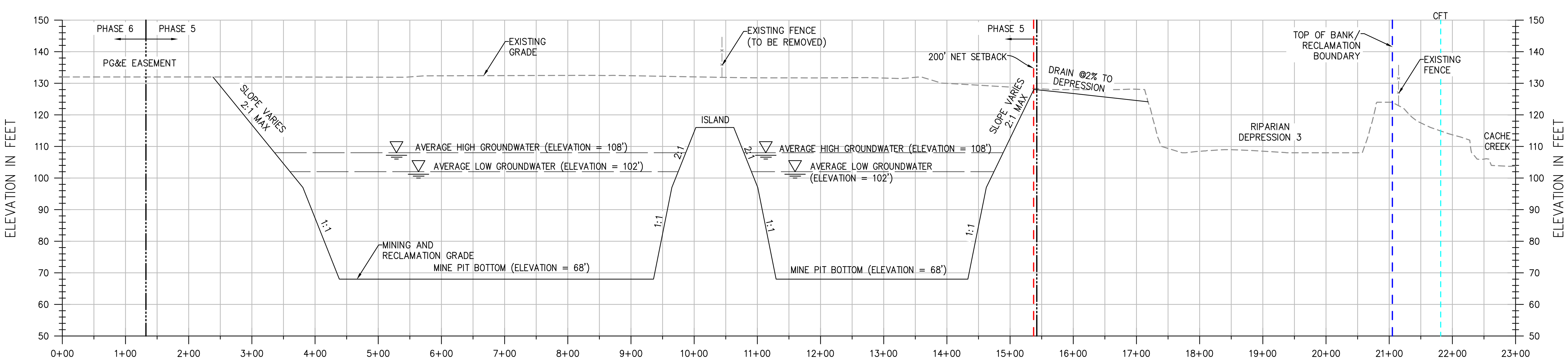
SECTION 12 (PHASE 5)

H: 1"=100'
V: 1"=20'



SECTION 13 (PHASE 5)

H: 1"=100'
V: 1"=20'



SECTION 14 (PHASE 5)

H: 1"=100'
V: 1"=20'

DATE SIGNED: ______

THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

REGISTERED PROFESSIONAL ENGINEER · STEVEN J. GREENFIELD · CIVIL · STATE OF CALIFORNIA

PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	H: 1"=100' V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

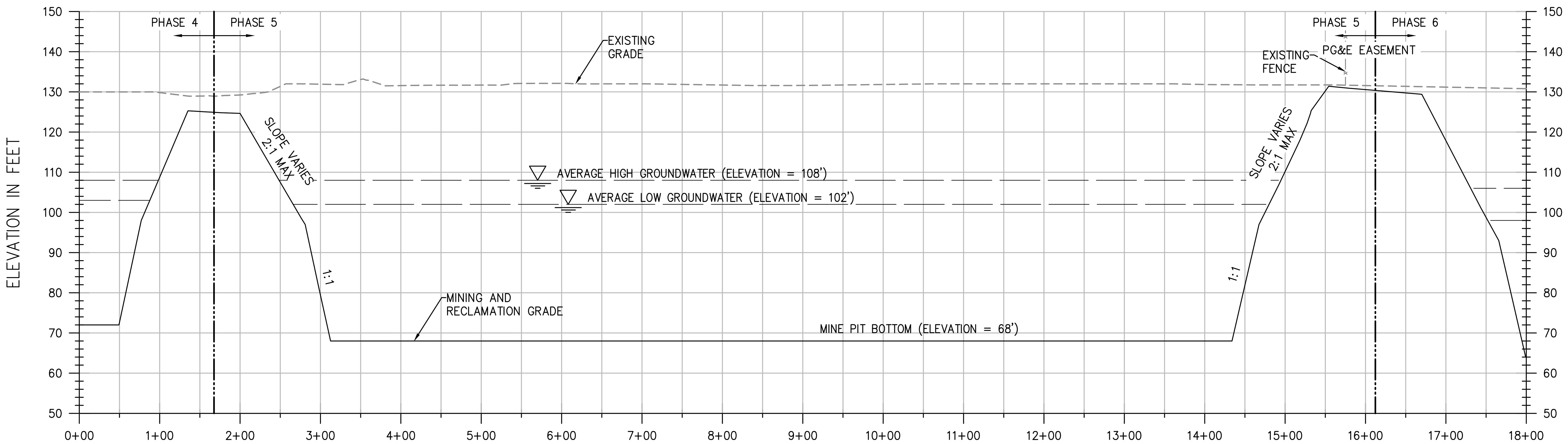
SECTIONS 12-14

YOLO COUNTY CALIFORNIA

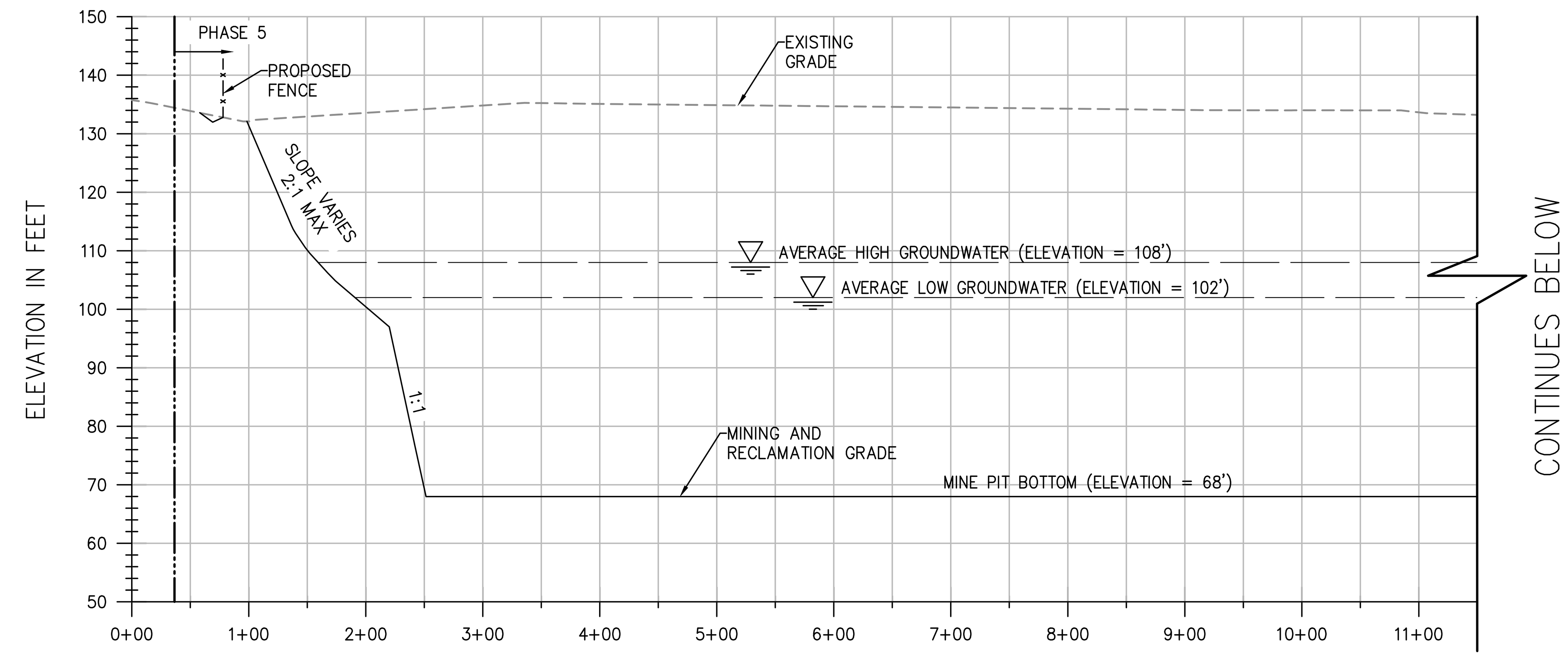
SHEET M-12 OF 15

DATE: 7/12/2021

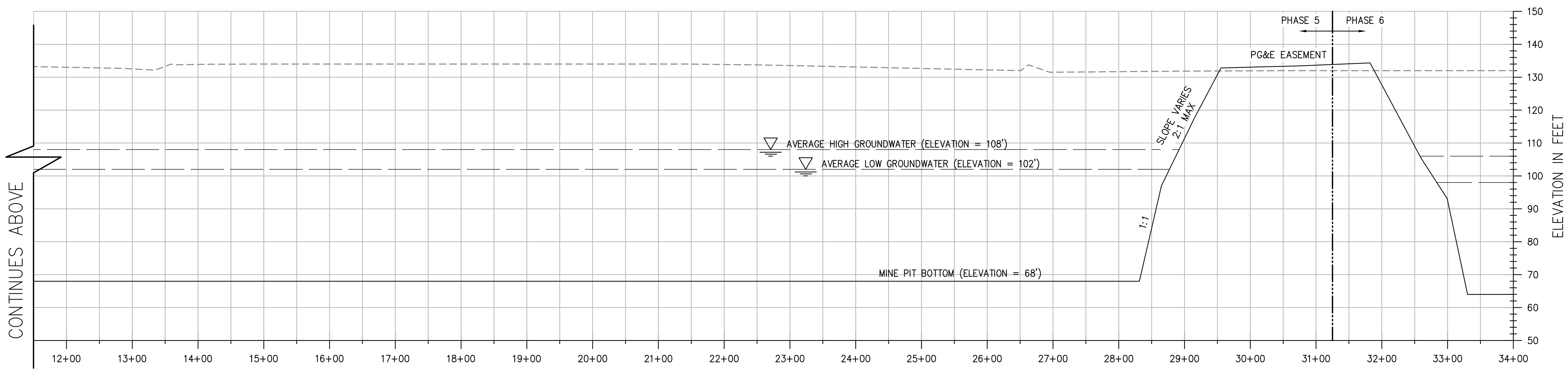
JOB NO: 253.80



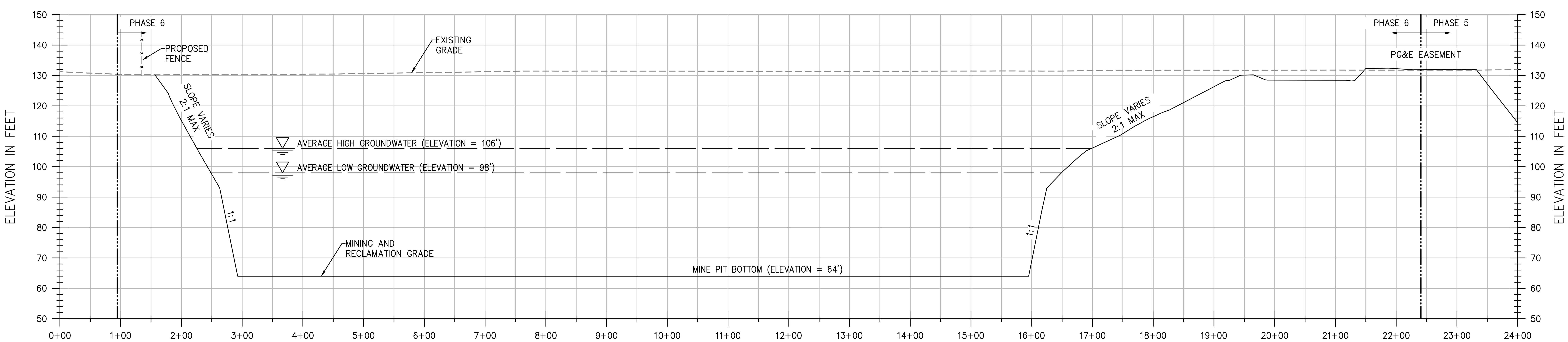
SECTION 15 (PHASE 5)
H: 1"=100'
V: 1"=20'



SECTION 16 (PHASE 5)
H: 1"=100'
V: 1"=20'



SECTION 16 (PHASE 5)
H: 1"=100'
V: 1"=20'



SECTION 17 (PHASE 6)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ____________

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REGISTERED PROFESSIONAL ENGINEER · STEVEN J. GREENFIELD · CIVIL · STATE OF CALIFORNIA · PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	H: 1"=100' V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK MINING PLAN

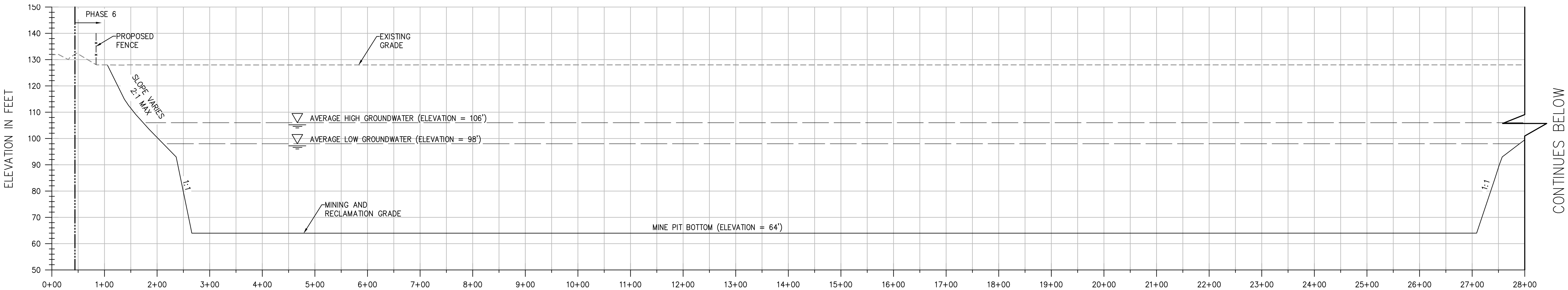
SECTIONS 15-17

YOLO COUNTY CALIFORNIA

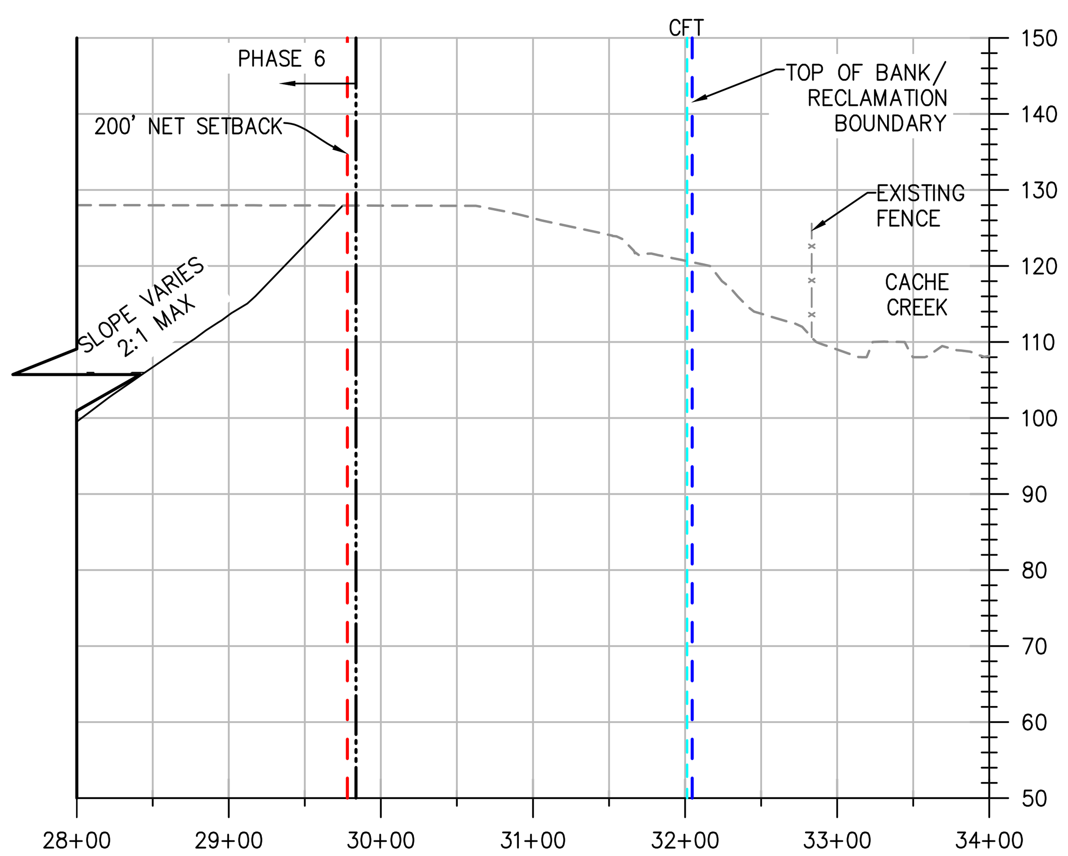
SHEET M-13 OF 15

DATE: 7/12/2021

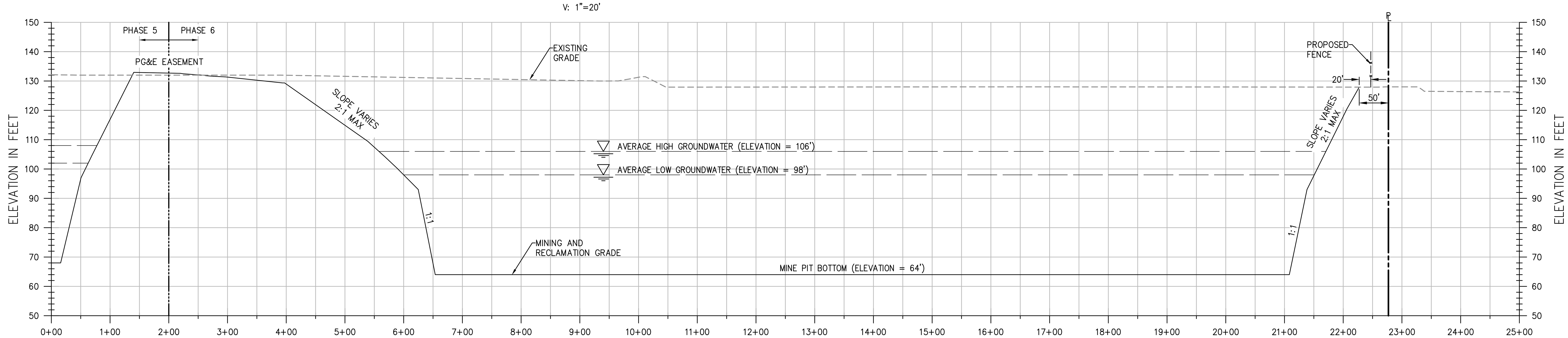
JOB NO: 253.80



SECTION 18 (PHASE 6)
H: 1"=100'
V: 1"=20'



SECTION 18 (PHASE 6)
H: 1"=100'
V: 1"=20'



SECTION 19 (PHASE 6)
H: 1"=100'
V: 1"=20'

SECTION 20 (PHASE 6)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ____________
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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Davis, CA 95618
(530) 758-2026

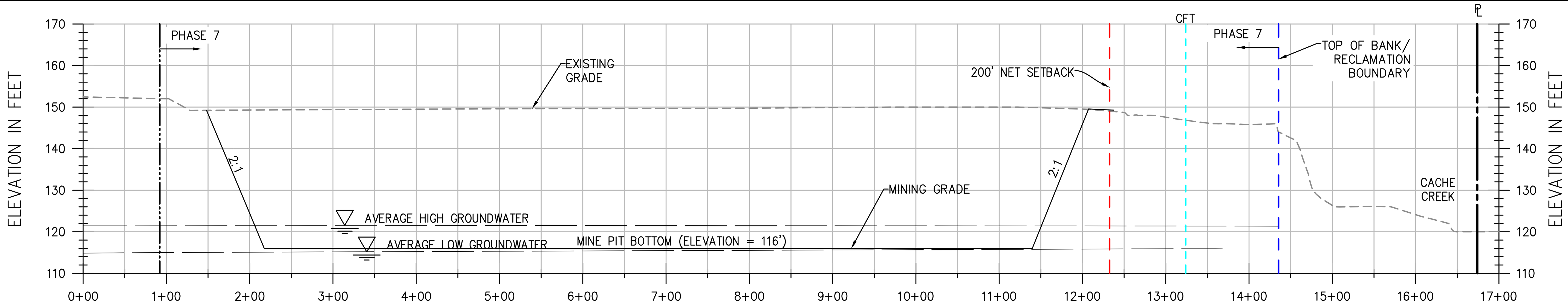
CEMEX CACHE CREEK MINING PLAN

SECTIONS 18-20

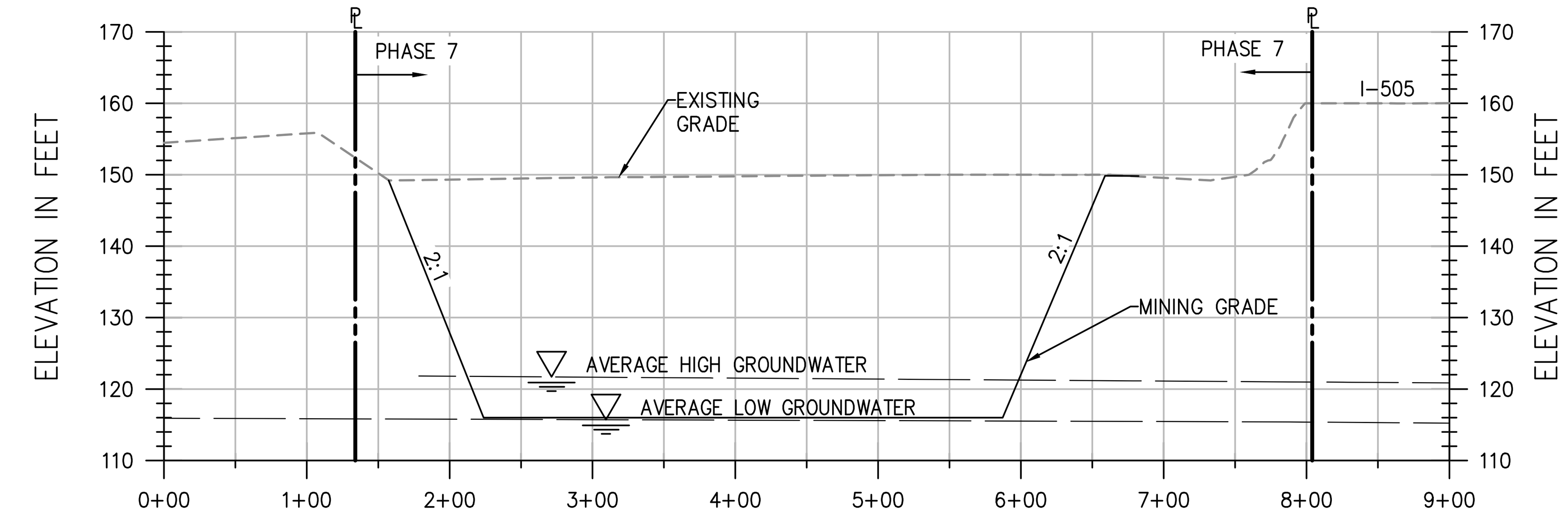
YOLO COUNTY
CALIFORNIA

SHEET
M-14
OF
15

DATE: 7/12/2021
JOB NO: 253.80



SECTION 21 (PHASE 7)
H: 1"=100'
V: 1"=20'



SECTION 22 (PHASE 7)
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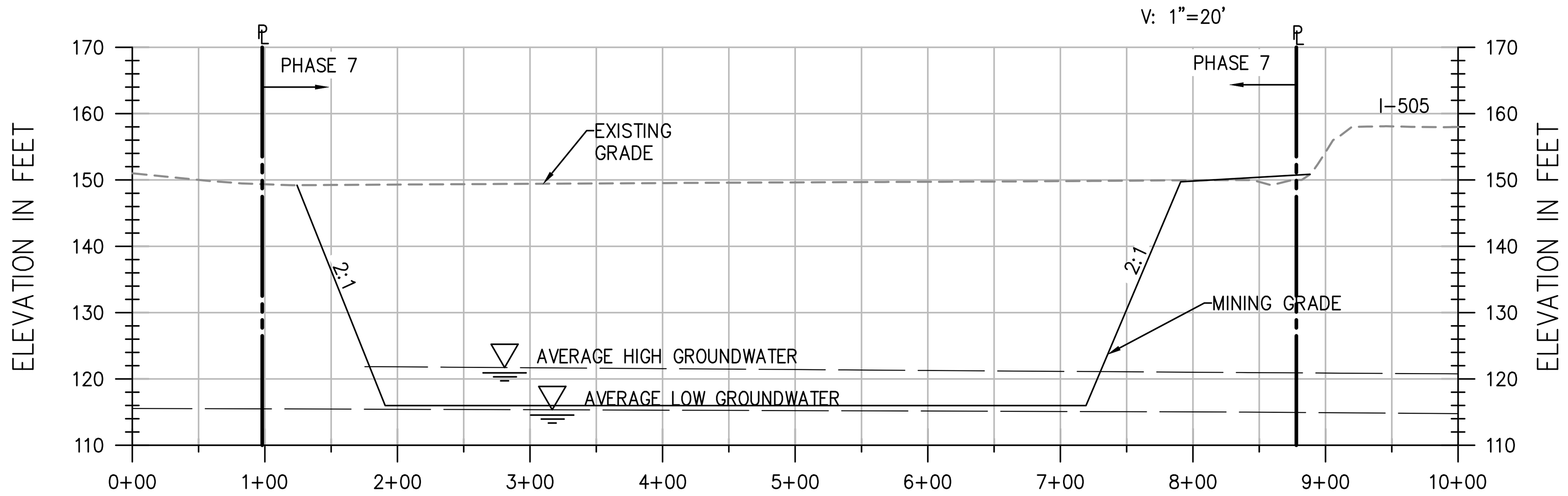
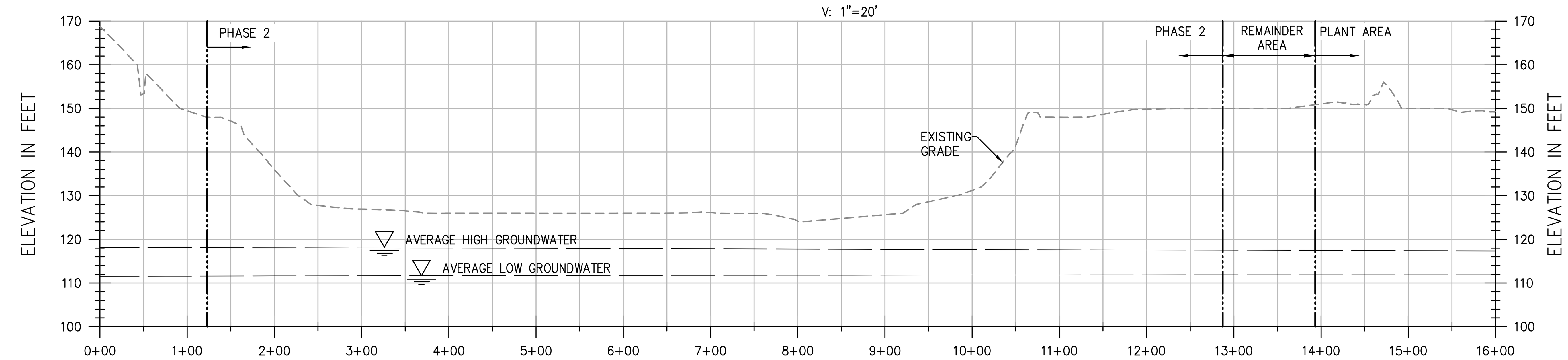
V: 1"=20'



SECTION 23 (PHASE 7)
H: 1"=100'
V: 1"=20'



SECTION 25 (PHASE 2)
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2
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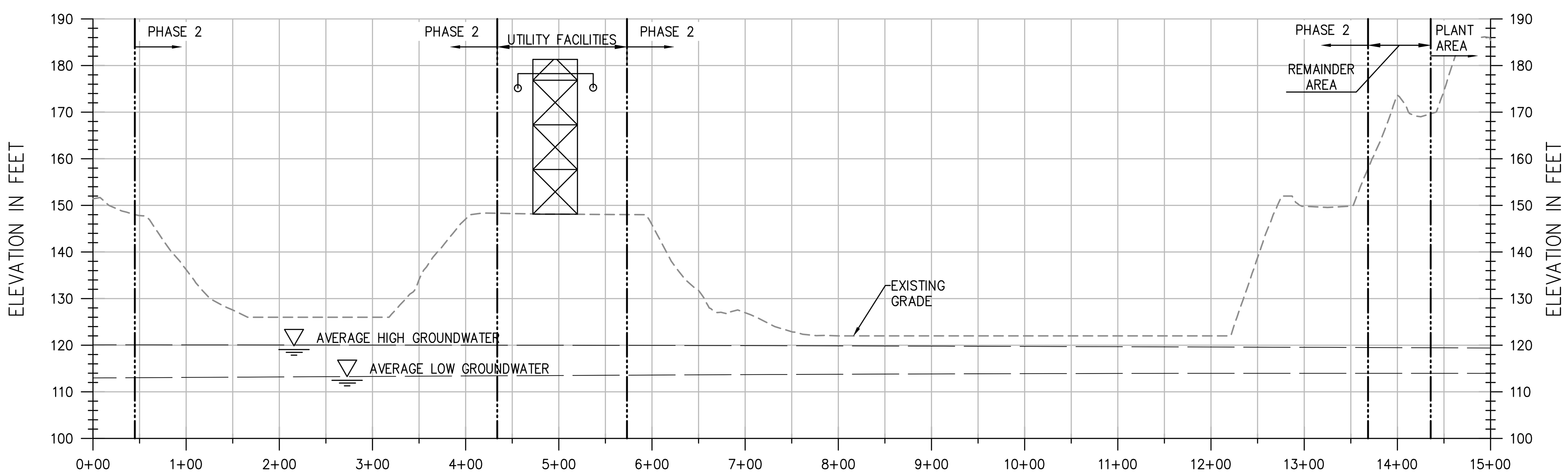
V: 1"=20'



SECTION 24 (PHASE 2)
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2
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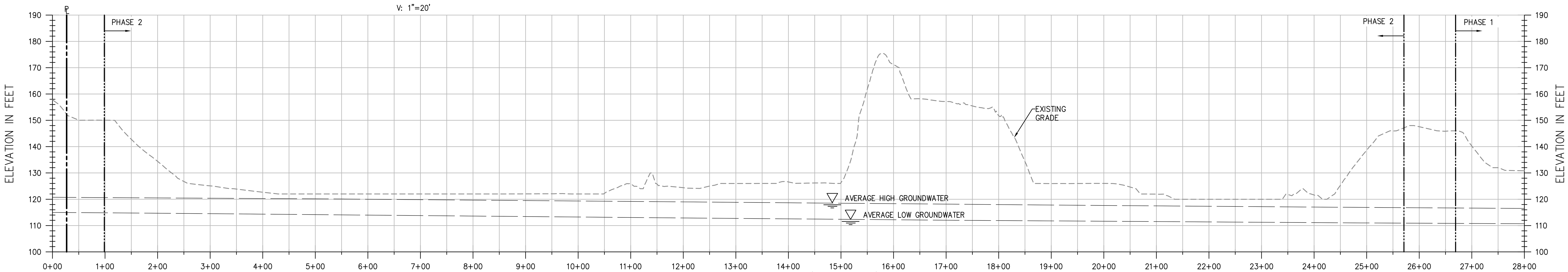
V: 1"=20'



SECTION 26 (PHASE 2)
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2
H: 1"=100'
V: 1"=20'

DATE SIGNED: ______
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

PRELIMINARY

DESIGNED BY KD	NO.	DATE	REVISIONS	BY	APPD.
DRAWN BY KD					
CHECKED BY SG					
SCALE H: 1"=100' V: 1"=20'					

CEMEX

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CEMEX CACHE CREEK MINING PLAN

SECTIONS 21-26

YOLO COUNTY CALIFORNIA

SHEET M-15 OF 15
DATE: 7/12/2021
JOB NO: 253.80

APPENDIX D

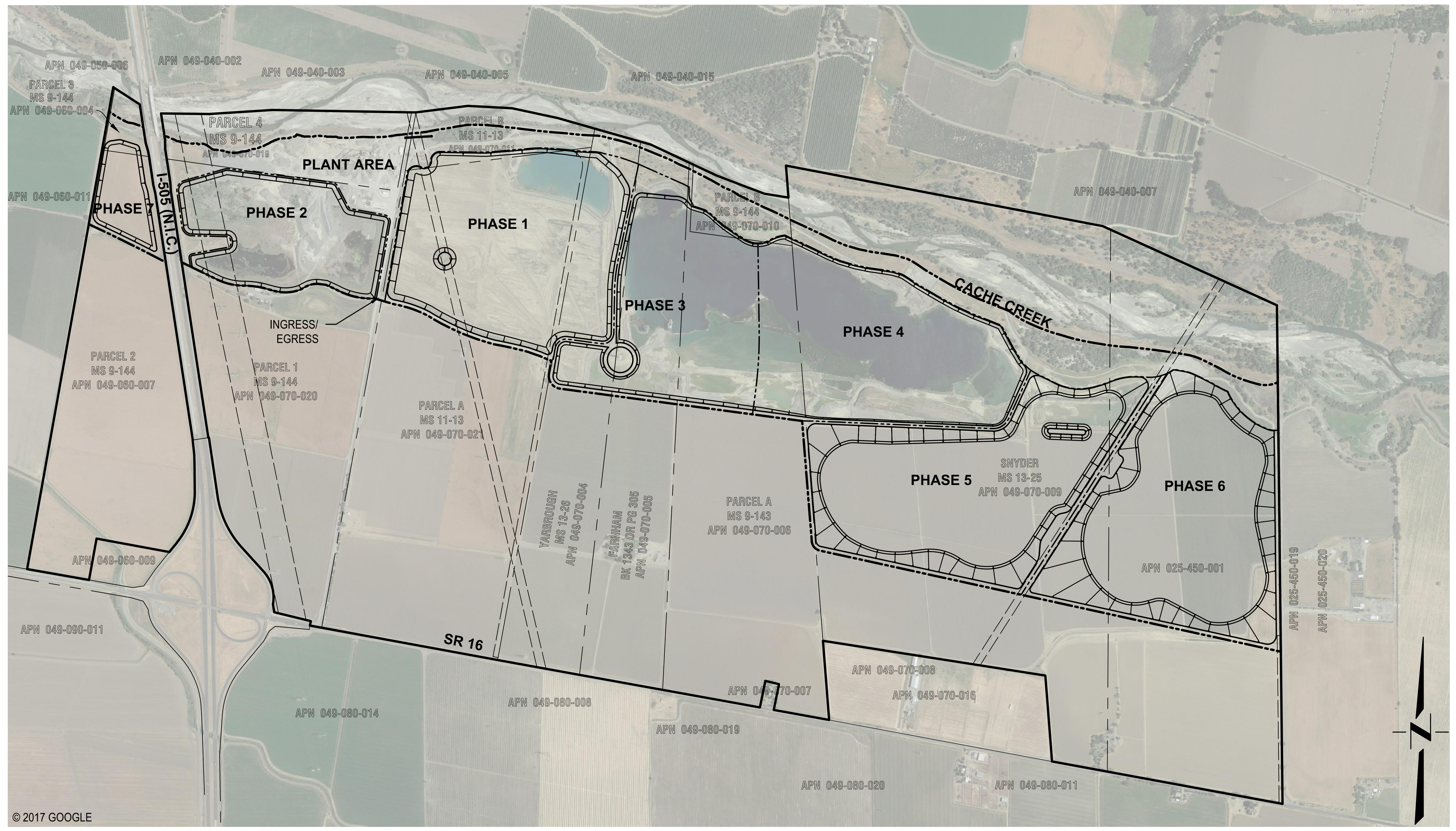
PROPOSED RECLAMATION PLAN SHEETS

OFF-CHANNEL RECLAMATION PLAN
FOR
CEMEX CACHE CREEK

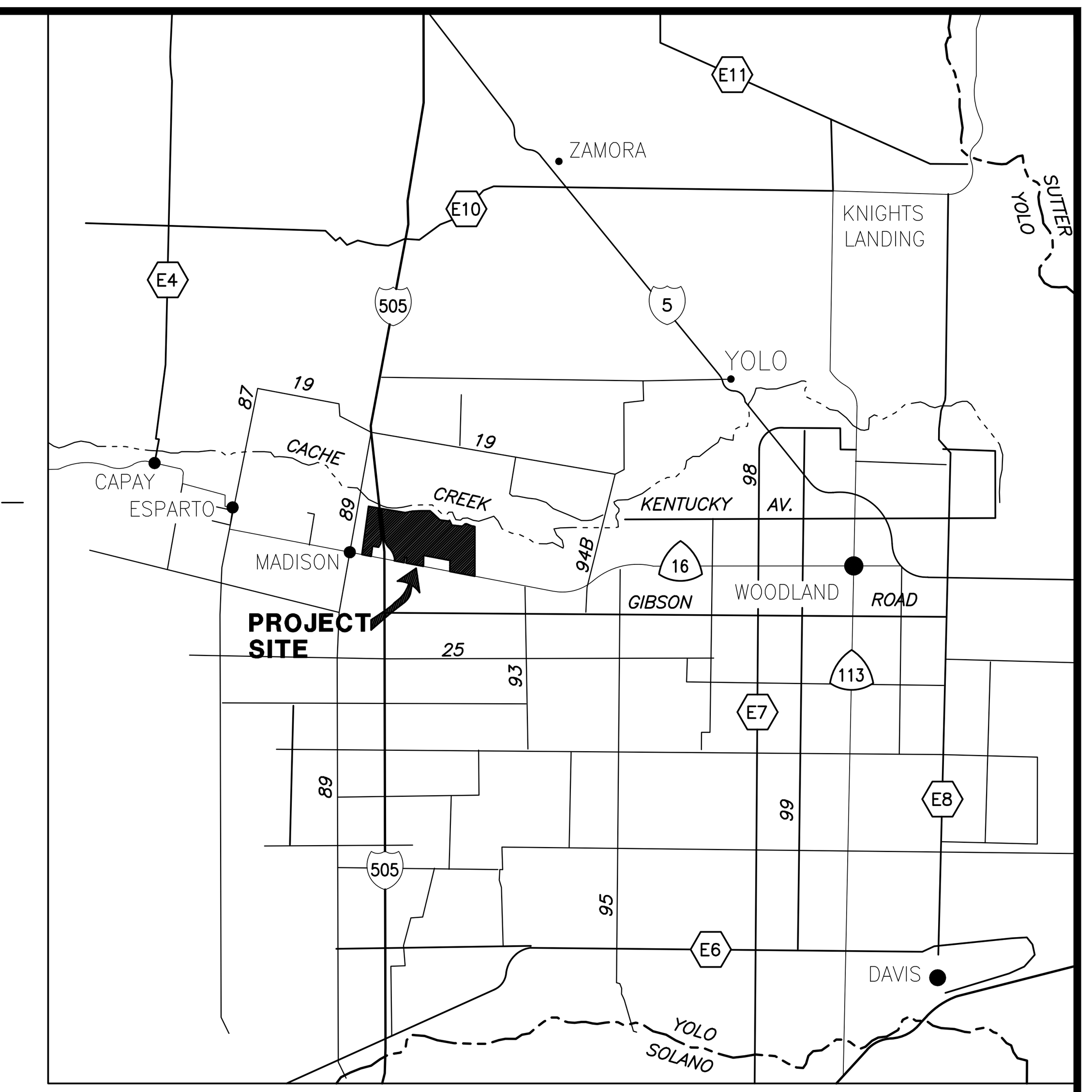
YOLO COUNTY, CALIFORNIA
JULY 2021

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- WATER WELL
- EXISTING/PROPOSED FENCE
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
- HORIZONTAL TO VERTICAL SLOPE 2:1
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- SLOPE EASEMENT
- FLOW ARROW
- TOP OF BANK
- TOE OF SLOPE
- POINT OF SLOPE INCLINATION CHANGE
- EXISTING RIP RAP RUN DOWN



KEY MAP
1"=1000'



VICINITY MAP
NOT TO SCALE

BENCHMARK:

EXISTING TOPOGRAPHY BASED ON AERIAL TOPOGRAPHY DATED MAY 4, 2011, PROVIDED BY TOWILL SURVEYING. PROPERTY INFORMATION BASED ON RECORD OF SURVEY BY ROBINSON ENGINEERING IN BOOK 2018 OF MAPS PAGES 2-4
HORIZONTAL DATUM: CA NAD83 ZONE 2
VERTICAL DATUM: NAVD 88

ASSESSORS PARCEL NOS:

025-450-001, 049-060-004, 049-060-007, 049-070-020, 049-070-021, 049-070-004, 049-070-005, 049-070-006, 049-070-009, 049-070-010, 049-070-011, 049-070-019

PROPERTY AREA:

1902± ACRES

PROPERTY OWNER:

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.
2365 IRON POINT ROAD, SUITE 120
FOLSOM, CA 95630

APPLICANT:

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.
2365 IRON POINT ROAD, SUITE 120
FOLSOM, CA 95630

CIVIL ENGINEER:

CUNNINGHAM ENGINEERING
2940 SPAFFORD STREET, SUITE 200
DAVIS, CALIFORNIA 95618
(530) 758-2026

LEGAL DESCRIPTION:

BEING A PORTION OF RANCHO GUESISOSI, ALSO KNOWN AS THE GORDON GRANT, WITHIN PROJECTIONS OF TOWNSHIP 10 NORTH, RANGE 1 WEST, AND TOWNSHIP 10 NORTH, RANGE 1 EAST, WITHIN THE MOUNT DIABLO MERIDIAN. MORE SPECIFICALLY, BEING RECORD OF SURVEY DATED MAY 19, 2017, RECORDED AS BOOK 2018 OF MAPS AT PAGE 2-4, OFFICIAL RECORDS OF YOLO COUNTY, CALIFORNIA.

SHEET INDEX

NOTE: MINING PLAN UNDER SEPARATE COVER

PROPOSED RECLAMATION AREA:

PLANT AREA: 35 ACRES
PHASE 1: 131 ACRES
PHASE 2: 64 ACRES
PHASE 3: 100 ACRES
PHASE 4: 119 ACRES
PHASE 5: 146 ACRES
PHASE 6: 146 ACRES
PHASE 7: 21 ACRES
REMAINDER: 76 ACRES
TOTAL: 837 ACRES

NOTE: AREAS MAY NOT SUM TO TOTAL DUE TO ROUNDING

DRAWING STATUS:
- ● PLAN REVIEW SET – NOT FOR CONSTRUCTION
- ○ PERMIT SET

DATE SIGNED: ____
THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C-56083 CIVIL STATE OF CALIFORNIA
PRELIMINARY

DESIGNED BY KD	NO.	DATE	REVISIONS	BY	APPD.
DRAWN BY KD					
CHECKED BY SG					
SCALE AS SHOWN					

CEMEX

CUNNINGHAM ENGINEERING
CECWEST.COM
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CEMEX CACHE CREEK RECLAMATION PLAN
TITLE SHEET
YOLO COUNTY CALIFORNIA

SHEET R-01 OF 15
DATE: 7/12/2021
JOB NO: 253.80

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE YOLO COUNTY SURFACE MINING RECLAMATION ORDINANCE (ORD. #1191), THE PROJECT SPECIFIC CONDITIONS OF APPROVAL, THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP), THE SURFACE MINING AND RECLAMATION ACT (SMARA), OSHA, MSHA, AND OTHER APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

2. EXISTING TOPOGRAPHY BASED ON AERIAL TOPOGRAPHY DATED MAY 4, 2011, PROVIDED BY TOWILL SURVEYING SUPPLEMENTED WITH AERIAL TOPOGRAPHY DATED MAY 2015, HANDHELD GPS DATED SEPTEMBER 2017, AND AERIAL IMAGERY DATED MAY 20, 2017 BY GOOGLE EARTH. THE PROJECT SITE IS AN EXISTING, ON-GOING MINING OPERATION. THE PHYSICAL CONDITIONS DEPICTED IN THESE PLANS WILL CHANGE AS A RESULT OF ON-GOING MINING AND RECLAMATION ACTIVITIES. THE CONDITIONS DEPICTED IN THESE PLANS WILL DIFFER FROM THE CONDITIONS ON THE SITE IMMEDIATELY PRIOR TO COMMENCEMENT OF THE MINING AND RECLAMATION ACTIVITIES PROPOSED IN THIS APPLICATION.

3. TEMPORARY ACCESS WITHIN A UTILITY EASEMENT AREA TO ALLOW MINING WILL BE GOVERNED BY A JOINT USE AGREEMENT WITH THE APPROPRIATE UTILITY, IF NEEDED. USE CAUTION WHEN OPERATING ANY VEHICLES OR EQUIPMENT NEAR OVERHEAD AND UNDERGROUND ELECTRIC FACILITIES. COMPLY WITH ALL CONDITIONS LISTED IN THE CONSENT AGREEMENT.

4. THE DEPTH OF MINING AND THE LIMIT-OF-MINING LINES ARE ONLY APPROXIMATE, AND ARE SUBJECT TO CHANGE BASED ON THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, AND THE ABILITY OF THE PRODUCER TO MEET THE RECLAMATION REQUIREMENTS. THE FORESEEABLE ESTIMATE OF VARIATION IS +/- 10' IN MINING DEPTH; AND +/- 20% OF AREA FOR EACH TYPE OF RECLAMATION. SURFACE ELEVATIONS AND CONTOURS SHOWN FOR RECLAMATION ON PIT FLOORS ARE MINIMUM VALUES.

5. HIGH AND LOW AVERAGE GROUNDWATER ELEVATIONS BASED ON "ESTIMATION OF AVERAGE HIGH GROUNDWATER LEVELS CEMEX MADISON PLANT, YOLO COUNTY", BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS DATED NOVEMBER 30, 2016 AND "ESTIMATION OF AVERAGE LOW GROUNDWATER LEVELS CEMEX MADISON PLANT, YOLO COUNTY", BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS DATED APRIL 26, 2017.

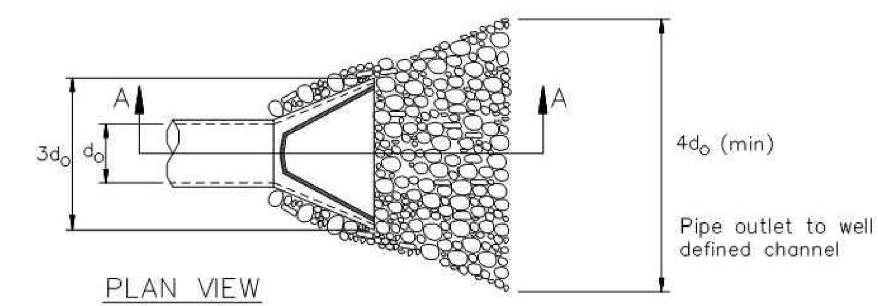
6. IF HUMAN SKELETAL REMAINS ARE ENCOUNTERED DURING EXCAVATION, ALL WORK WITHIN SEVENTY-FIVE (75) FEET SHALL IMMEDIATELY STOP, AND THE COUNTY CORONER SHALL BE NOTIFIED WITHIN TWENTY-FOUR (24) HOURS. IF ANY CULTURAL RESOURCES, SUCH AS CHIPPED OR GROUND STONE, HISTORIC DEBRIS, BUILDING FOUNDATIONS, OR PALEONTOLOGICAL MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEN ALL WORK WITHIN SEVENTY-FIVE (75) FEET SHALL IMMEDIATELY STOP AND THE DIRECTOR SHALL BE NOTIFIED AT ONCE. ANY CULTURAL RESOURCES FOUND ON THE SITE SHALL BE RECORDED BY A QUALIFIED ARCHAEOLOGIST AND THE INFORMATION SHALL BE SUBMITTED TO THE COUNTY.

7. UNNECESSARY PERSONNEL SHALL BE EXCLUDED FROM OFF-CHANNEL EXCAVATIONS. OPEN PITS SHALL BE FENCED WITH A FOUR STRAND WIRE FENCE OR THE EQUIVALENT DURING RECLAMATION. FENCING MAY ENCLOSE THE PROPERTY OF WHICH THE MINING SITE IS A PART, THE MINING SITE, OR BOTH. IN ADDITION, SIGNS SHALL BE INSTALLED AT THE PROJECT SITE BOUNDARIES AND ACCESS ROAD, INDICATING THAT THE EXCAVATION AREA IS RESTRICTED. ADDITIONAL SECURITY SUCH AS GATES WITH PROTECTED LOCKS SHALL BE PROVIDED AT ALL VEHICULAR ROUTES.

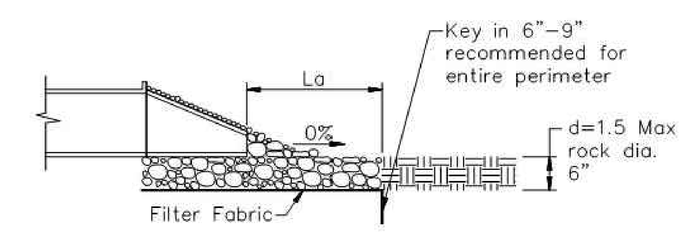
ABBREVIATIONS:

AHG	AVERAGE HIGH GROUNDWATER
ALG	AVERAGE LOW GROUNDWATER
APN	ASSESSOR'S PARCEL NUMBER
CFT	CHANNEL FORM TEMPLATE
D	DELTA
E	EAST
L	LENGTH
MS	MAPS AND SURVEYS
MSHA	MINE SAFETY AND HEALTH ADMINISTRATION
N	NORTH
N.I.C.	NOT IN CONTRACT
OHE	OVERHEAD ELECTRIC
PL	PROPERTY LINE
R	RADIUS
S	SOUTH
TYP	TYPICAL
W	WEST
ZF	ZONE FILE

Velocity Dissipation Devices EC-10



PLAN VIEW



SECTION A–A

Pipe Diameter inches	Discharge ft^3/s	Apron Length, La ft	Rip Rap D_{50} Diameter Min inches
12	5	10	4
	10	13	6
18	10	10	6
	20	16	8
	30	23	12
	40	26	16
24	30	16	8
	40	26	8
	50	26	12
	60	30	16

For larger or higher flows consult a Registered Civil Engineer
Source: USDA - SCS

DRAWING STATUS:

- ● PLAN REVIEW SET – NOT FOR CONSTRUCTION
- ○ PERMIT SET

DATE SIGNED: ____________

THESE DRAWINGS ARE NOT CONSIDERED FINAL UNTIL THE ENGINEER'S SEAL BELOW HAS BEEN SIGNED AND DATED.

REGISTERED PROFESSIONAL ENGINEER
STEVEN J. GREENFIELD
No. C60980
CIVIL
STATE OF CALIFORNIA
PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG
SCALE
NONE

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

NOTES AND DETAILS

YOLO COUNTY CALIFORNIA

SHEET R-02 OF 15

DATE: 7/12/2021

JOB NO: 253.80

S:\AutoCAD\200\253 Solano Concrete Projects CAD\Project dwgs\80 Mining and Rec Plans\SHEETS\253-80-REC-R02-NOTES.dwg - NOTES AND DETAILS 7/13/2021 - 1:58PM Plotted by: Liz

PROPOSED RECLAMATION AREA:

PLANT AREA: 35 ACRES
PHASE 1: 131 ACRES
PHASE 2: 64 ACRES
PHASE 3: 100 ACRES
PHASE 4: 119 ACRES
PHASE 5: 146 ACRES
PHASE 6: 146 ACRES
PHASE 7: 21 ACRES
REMAINDER: 76 ACRES
TOTAL: 837 ACRES

NOTE: AREAS MAY NOT SUM TO TOTAL DUE TO ROUNDING

DATE SIGNED: ________

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REGISTERED PROFESSIONAL ENGINEER · STEVEN J. GREENFIELD · STATE OF CALIFORNIA · CIVIL · PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 500'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN
OVERALL RECLAMATION PLAN

YOLO COUNTY — CALIFORNIA

SHEET R-03 OF 15

DATE: 7/12/2021

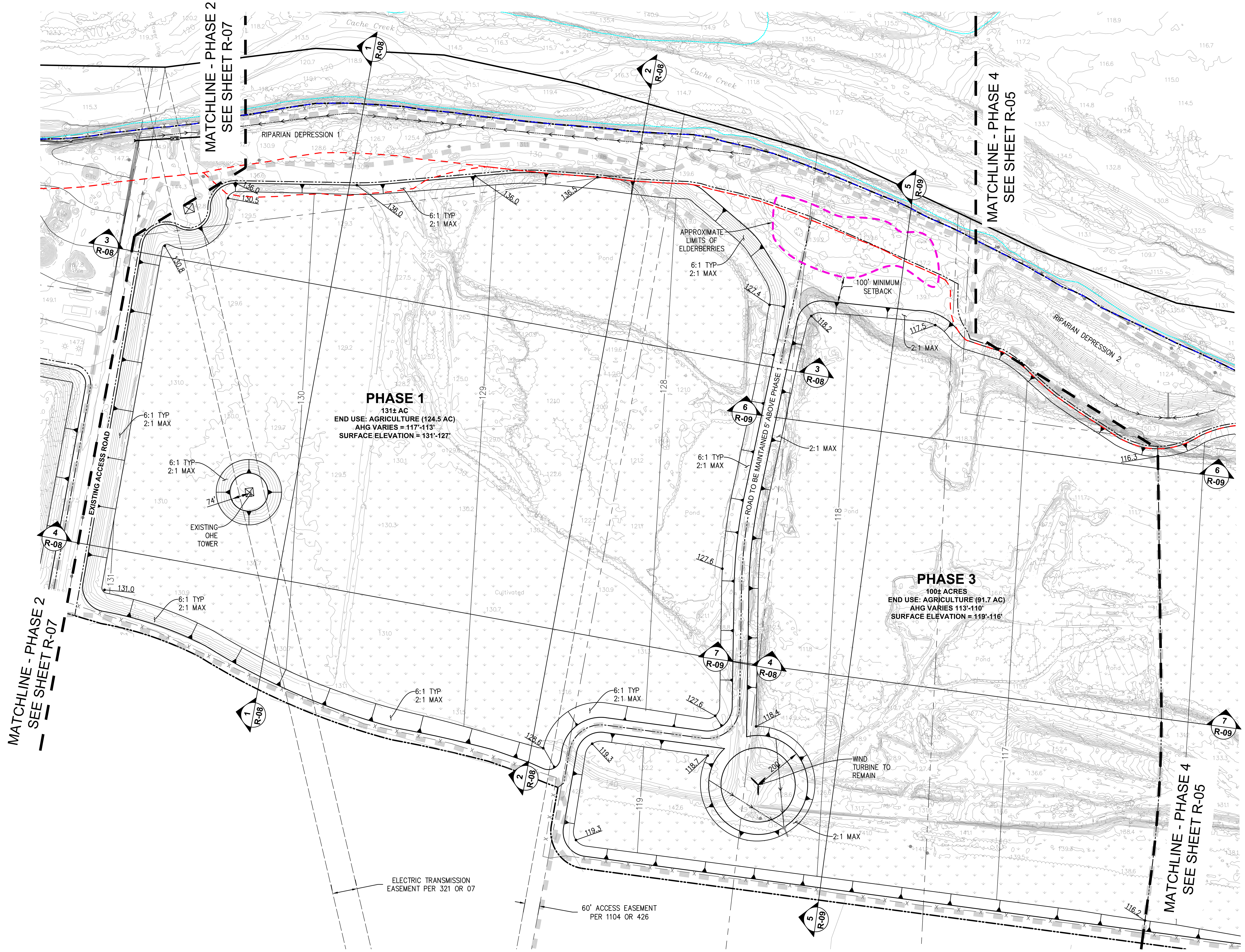
JOB NO: 253.80

LEGEND:

ELECTRIC TRANSMISSION TOWER	
EXISTING GROUND CONTOUR	100
CROSS SECTION NUMBER AND SHEET LOCATION	1 M-10 — 1 M-10
200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)	
TOP OF BANK	
CHANNEL FORM TEMPLATE	
RIPARIAN DEPRESSION	
APPROXIMATE EXISTING CONVEYOR ROUTE	
EXISTING DIRT ROAD	
PROPOSED DIRT ROAD	
V DITCH SWALE	
PHASE BOUNDARY	
RECLAMATION BOUNDARY	
WATER WELL	
EXISTING/PROPOSED	— x — x — x — x —
WIND TURBINE	
EXISTING ELEV.	195.0
PROPOSED ELEV.	100.0
HORIZONTAL TO VERTICAL SLOPE	2:1
WATER SURFACE	
PROJECT BOUNDARY	
PARCEL LINE	
EASEMENT	
FLOW ARROW	
AGRICULTURE	

NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
2. SEE SEPARATE HABITAT RESTORATION PLAN AND ASSOCIATED FIGURES PREPARED BY ZETNER PLANNING & ECOLOGY DATED FEBRUARY 2018 FOR DETAILED END USE INFORMATION.
3. SLOPES SHALL BE CONSISTENT WITH THE RECOMMENDATIONS PROVIDED BY GEOCON ENGINEERING AND THE SLOPE STABILITY REPORT DATED FEBRUARY 2018.
4. THE INTENT WITH RECLAMATION SLOPES IS TO HAVE THEM BE IN-SITU CUT SLOPES (WITHOUT BACKFILL) WHERE POSSIBLE. HOWEVER, OPERATOR RESERVES THE RIGHT TO MINE TO PROJECT LIMITS AND BACKFILL IN A MANNER THAT SUBSTANTIALLY CONFORMS WITH THE SLOPES SHOWN ON THESE SHEETS.
5. BERMS, ACCESS ROADS, AND FENCING MAY REMAIN FOLLOWING RECLAMATION TO FACILITATE END USES AND YOLO COUNTY REQUIREMENTS.



200 100 0 200 400
SCALE 1" = 200'

DATE SIGNED:
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PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN
PHASE 1 AND PHASE 3

YOLO COUNTY — CALIFORNIA

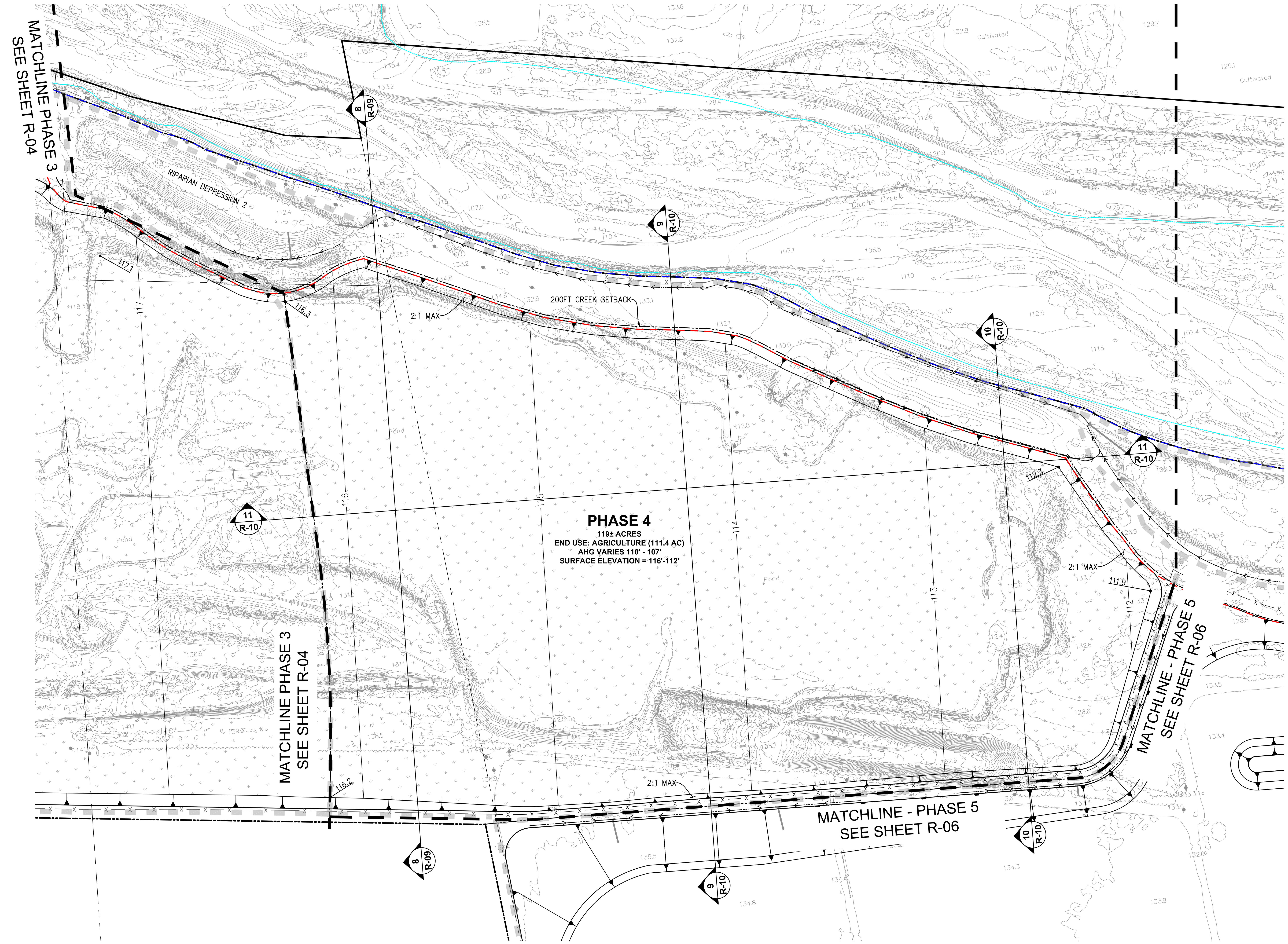
SHEET R-04 OF 15
DATE: 7/12/2021
JOB NO: 253.80

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
- WATER WELL
- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
- HORIZONTAL TO VERTICAL SLOPE 2:1
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- EASEMENT
- FLOW ARROW
- AGRICULTURE

NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
2. SEE SEPARATE HABITAT RESTORATION PLAN AND ASSOCIATED FIGURES PREPARED BY ZETNER PLANNING & ECOLOGY DATED FEBRUARY 2018 FOR DETAILED END USE INFORMATION.
3. SLOPES SHALL BE CONSISTENT WITH THE RECOMMENDATIONS PROVIDED BY GEOCON ENGINEERING AND THE SLOPE STABILITY REPORT DATED FEBRUARY 2018.
4. THE INTENT WITH RECLAMATION SLOPES IS TO HAVE THEM BE IN-SITU CUT SLOPES (WITHOUT BACKFILL) WHERE POSSIBLE. HOWEVER, OPERATOR RESERVES THE RIGHT TO MINE TO PROJECT LIMITS AND BACKFILL IN A MANNER THAT SUBSTANTIALLY CONFORMS WITH THE SLOPES SHOWN ON THESE SHEETS.
5. BERMS, ACCESS ROADS, AND FENCING MAY REMAIN FOLLOWING RECLAMATION TO FACILITATE END USES AND YOLO COUNTY REQUIREMENTS.



200 50 0 100 200

SCALE 1" = 200'

DATE SIGNED: ____________

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PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

PHASE 4

YOLO COUNTY CALIFORNIA

SHEET R-05 OF 15

DATE: 7/12/2021

JOB NO: 253.80

LEGEND:

ELECTRIC TRANSMISSION TOWER	
EXISTING GROUND CONTOUR	100
CROSS SECTION NUMBER AND SHEET LOCATION	1 M-10 — 1 M-10
200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)	
TOP OF BANK	
CHANNEL FORM TEMPLATE	
RIPARIAN DEPRESSION	
APPROXIMATE EXISTING CONVEYOR ROUTE	
EXISTING DIRT ROAD	
PROPOSED DIRT ROAD	
V DITCH SWALE	
PHASE BOUNDARY	
RECLAMATION BOUNDARY	
WATER WELL	
EXISTING/PROPOSED	x
WIND TURBINE	
EXISTING ELEV.	195.0
PROPOSED ELEV.	100.0
HORIZONTAL TO VERTICAL SLOPE	2:1
WATER SURFACE	
PROJECT BOUNDARY	
PARCEL LINE	
EASEMENT	
FLOW ARROW	
LAKE	
SHORELINE HABITAT	
APPROX LINE OF LOW GROUNDWATER ELEVATION	

NOTES:

1. FINAL ELEVATIONS, EXTENTS, SLOPES, AND MINING DEPTHS ARE ONLY APPROXIMATE AND MAY VARY BASED ON FIELD CONDITIONS, ACCESSIBILITY OF PRODUCT, THE AMOUNT AND QUALITY OF MATERIAL UNCOVERED, MARKET CONDITIONS, AND THE ABILITY OF THE OPERATOR TO MINE AND MEET THE RECLAMATION REQUIREMENTS.
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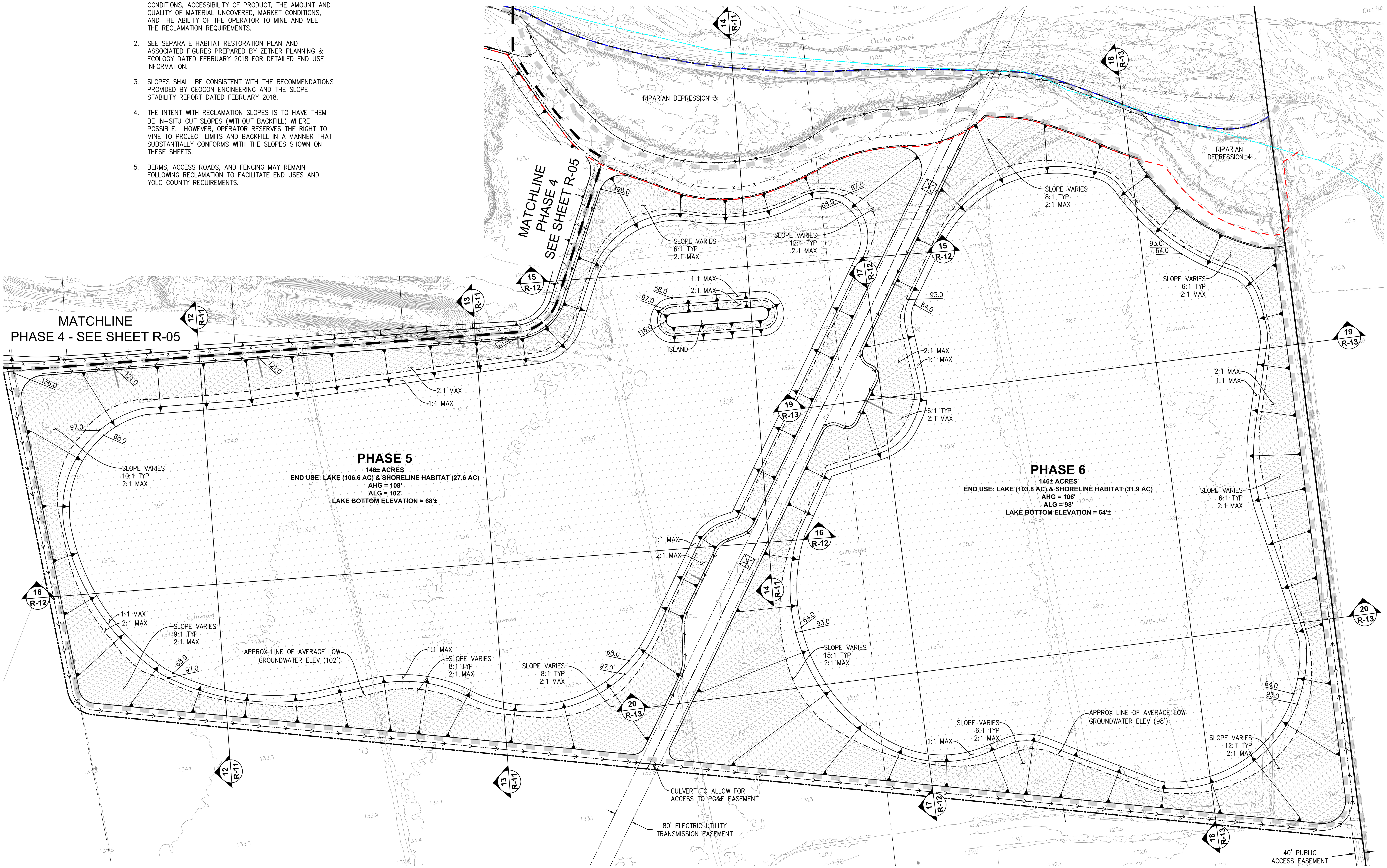
5. BERMS, ACCESS ROADS, AND FENCING MAY REMAIN FOLLOWING RECLAMATION TO FACILITATE END USES AND YOLO COUNTY REQUIREMENTS.



200 100 0 200 400

SCALE 1" = 200'

DATE SIGNED:

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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C56153 CIVIL STATE OF CALIFORNIA — PRELIMINARY

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

PHASES 5 AND 6

YOLO COUNTY — CALIFORNIA

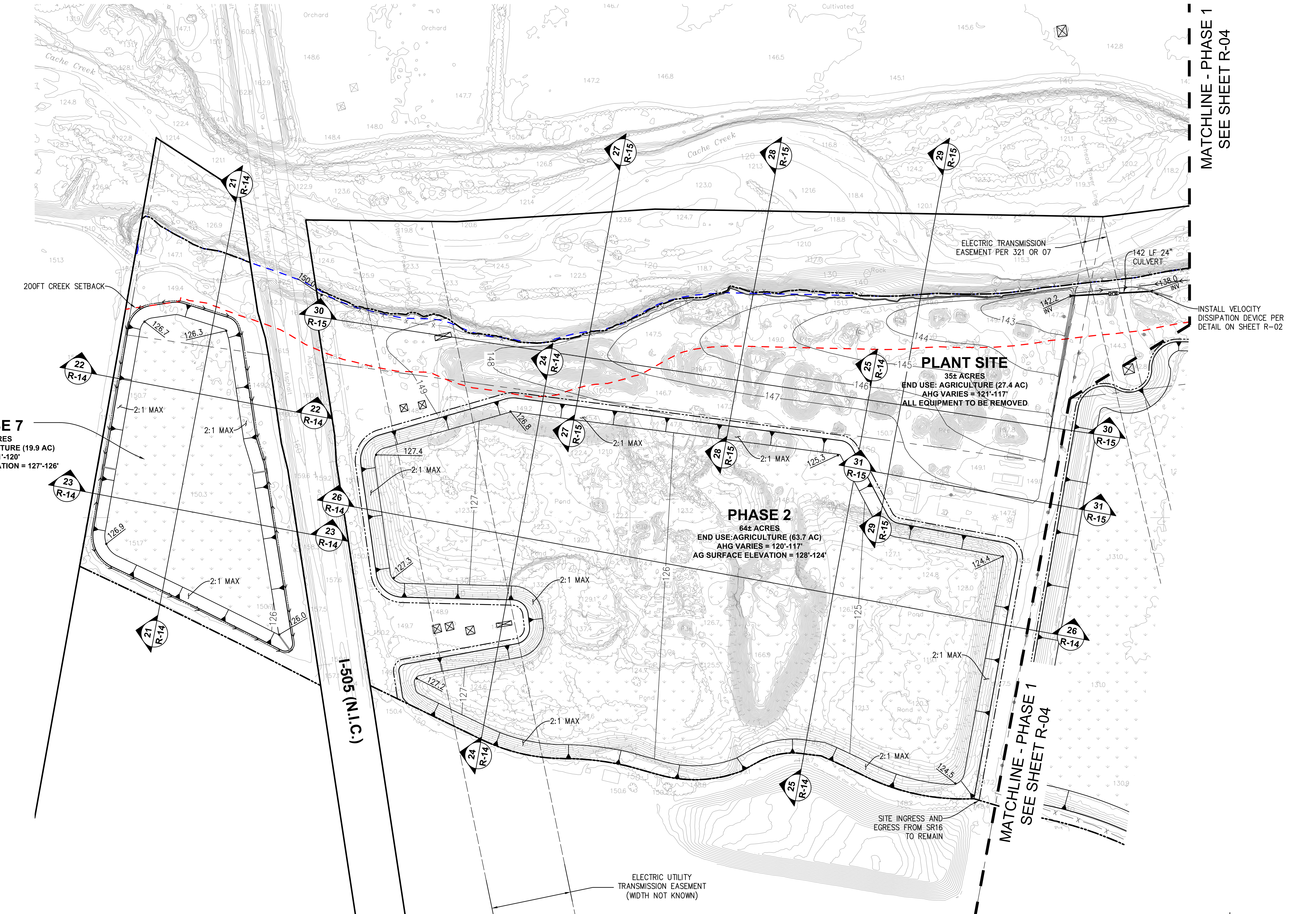
SHEET R-06 OF 15

DATE: 7/12/2021

JOB NO: 253.80

LEGEND:

- ELECTRIC TRANSMISSION TOWER
- EXISTING GROUND CONTOUR
- CROSS SECTION NUMBER AND SHEET LOCATION
- 200' TOP OF BANK SETBACK (NET RIPARIAN AREAS)
- TOP OF BANK
- CHANNEL FORM TEMPLATE
- RIPARIAN DEPRESSION
- APPROXIMATE EXISTING CONVEYOR ROUTE
- EXISTING DIRT ROAD
- PROPOSED DIRT ROAD
- V DITCH SWALE
- PHASE BOUNDARY
- RECLAMATION BOUNDARY
- WATER WELL
- EXISTING/PROPOSED
- WIND TURBINE
- EXISTING ELEV. 195.0
- PROPOSED ELEV. 100.0
- HORIZONTAL TO VERTICAL SLOPE 2:1
- WATER SURFACE
- PROJECT BOUNDARY
- PARCEL LINE
- EASEMENT
- FLOW ARROW
- AGRICULTURE



NOTES:

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5. BERMS, ACCESS ROADS, AND FENCING MAY REMAIN FOLLOWING RECLAMATION TO FACILITATE END USES AND YOLO COUNTY REQUIREMENTS.

DATE SIGNED: ____________

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PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C 54580 CIVIL STATE OF CALIFORNIA

DESIGNED BY	KD
DRAWN BY	KD
CHECKED BY	SG
SCALE	1" = 200'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

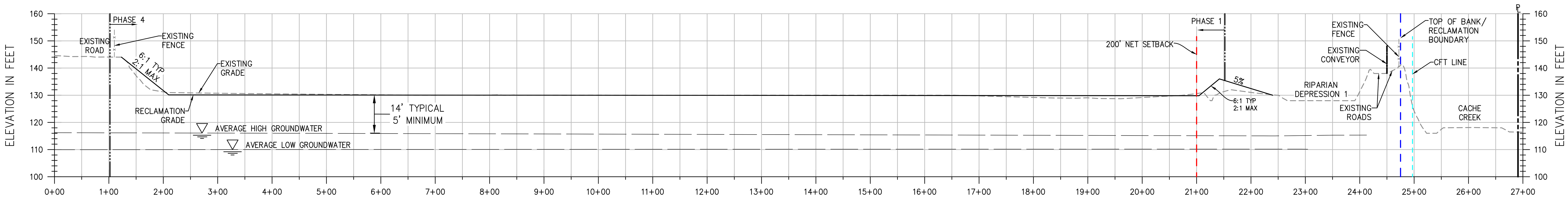
PHASES 2 AND 7

YOLO COUNTY CALIFORNIA

SHEET R-07 OF 15

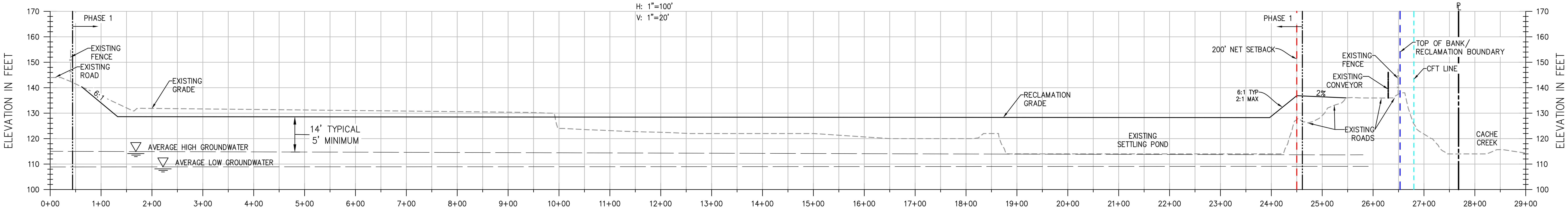
DATE: 7/12/2021

JOB NO: 253.80



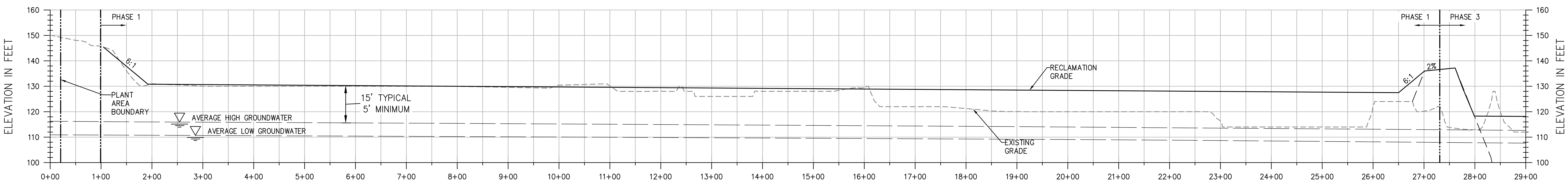
SECTION 1 (PHASE 1)
H: 1"=100'
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 2 (PHASE 1)
H: 1"=100'
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 3 (PHASE 1)
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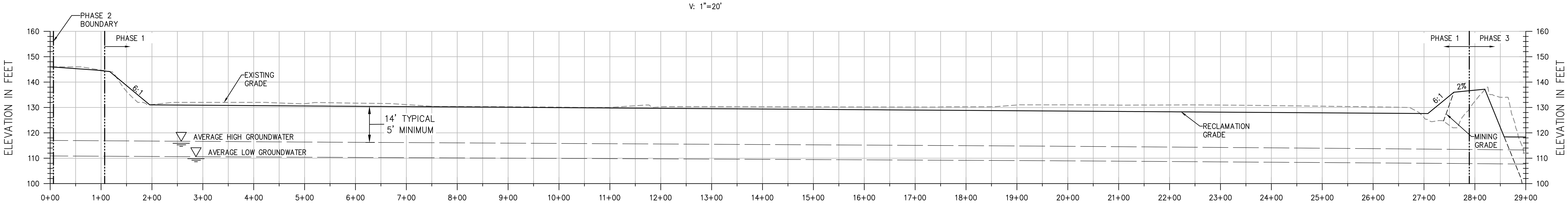
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1



SECTION 4 (PHASE 1)
H: 1"=100'
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 1

DATE SIGNED: ____________

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PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

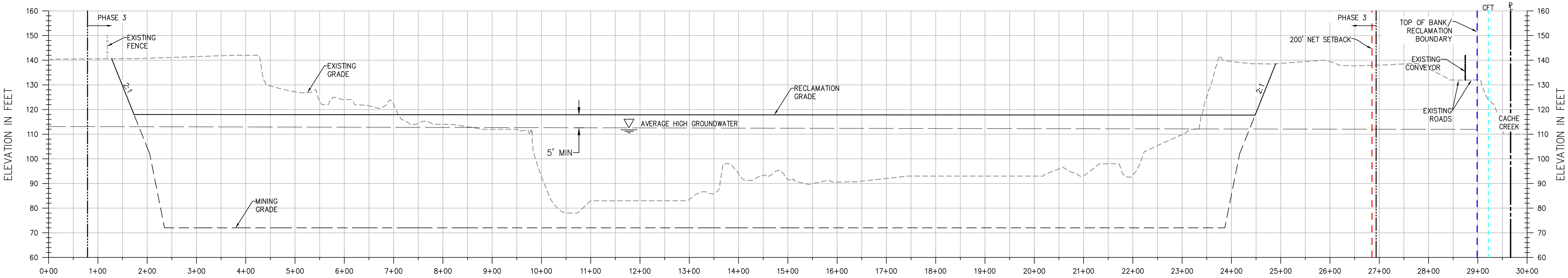
SECTIONS 1-4

YOLO COUNTY CALIFORNIA

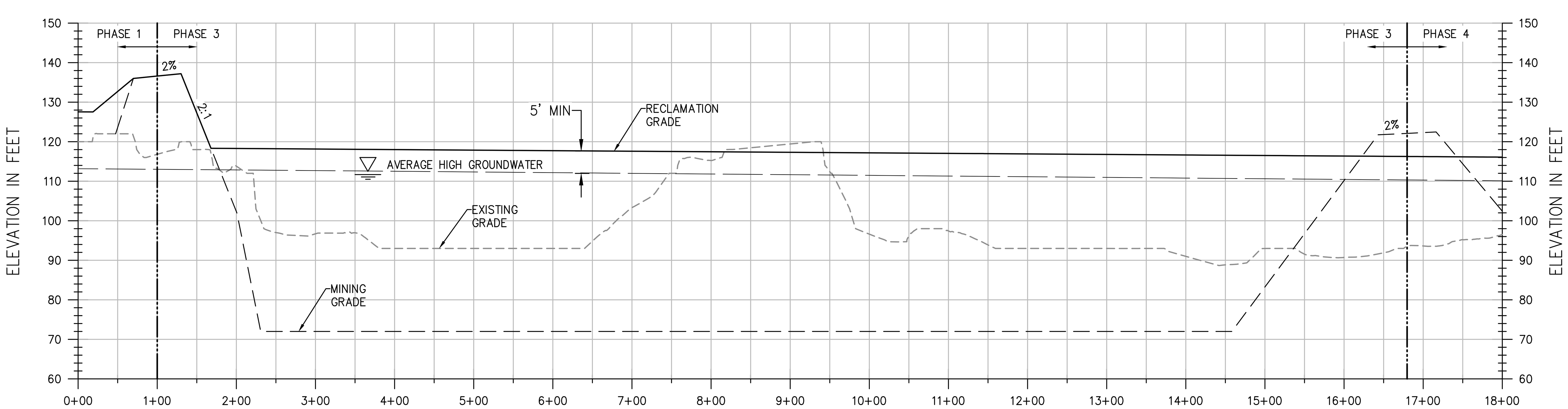
SHEET R-08 OF 15

DATE: 7/12/2021

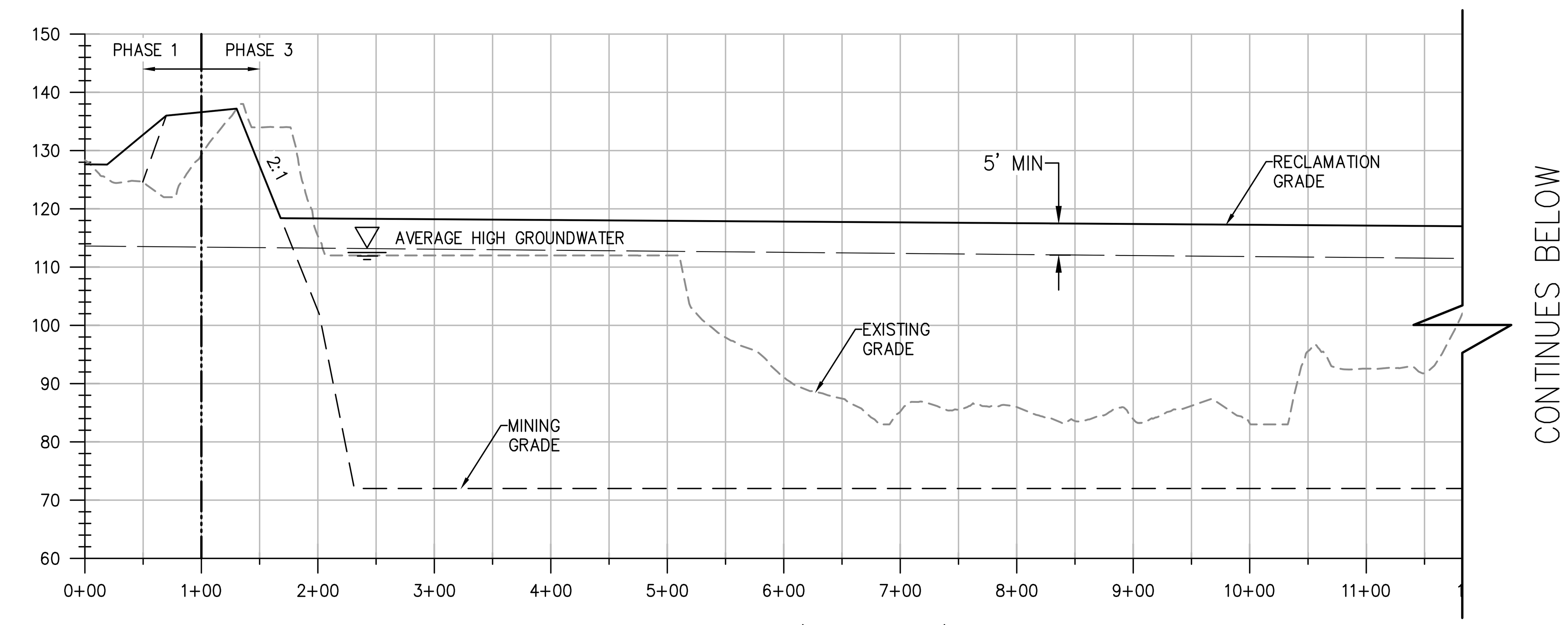
JOB NO: 253.80



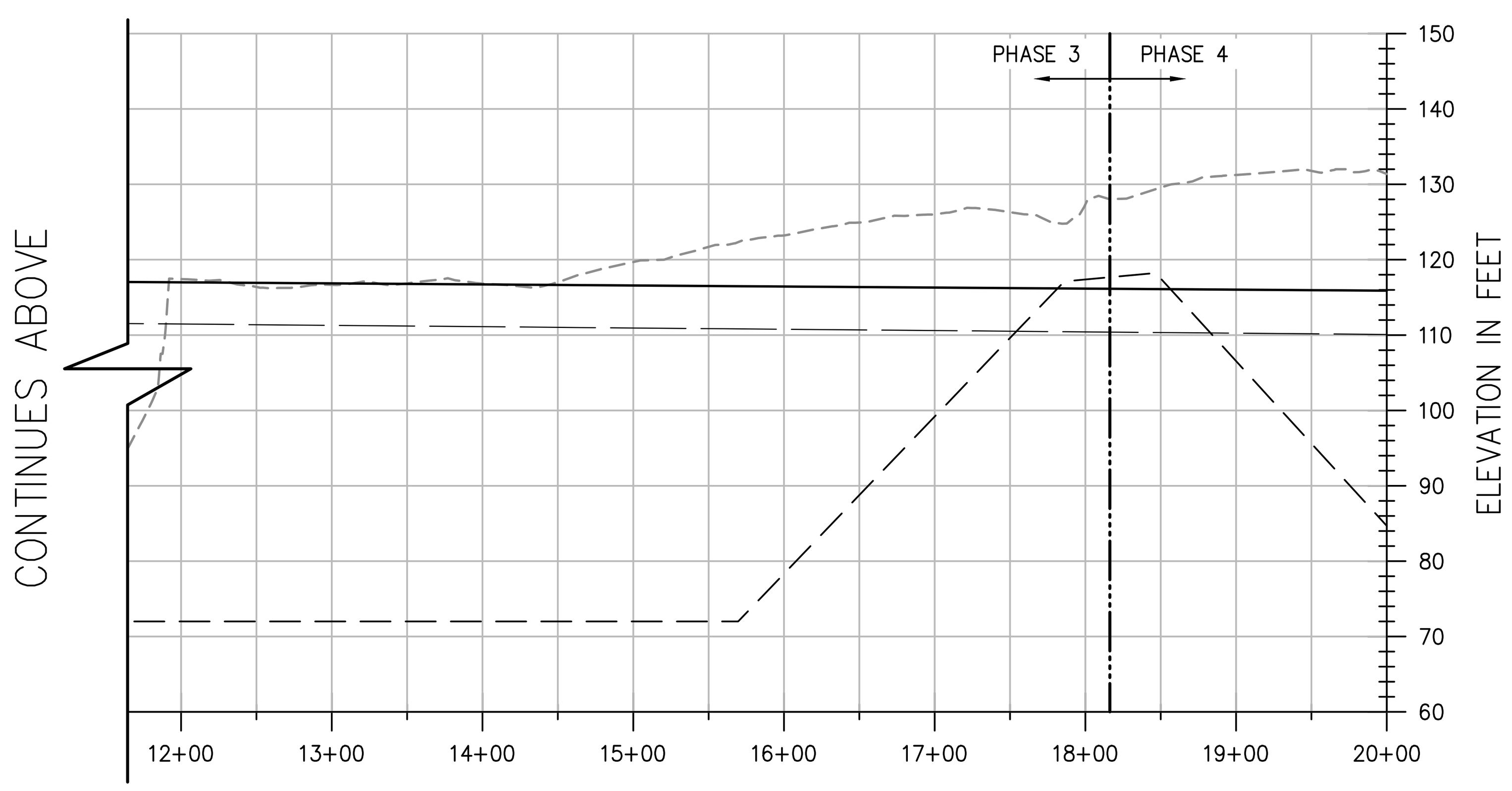
SECTION 5 (PHASE 3)
H: 1"=100'
V: 1"=20'



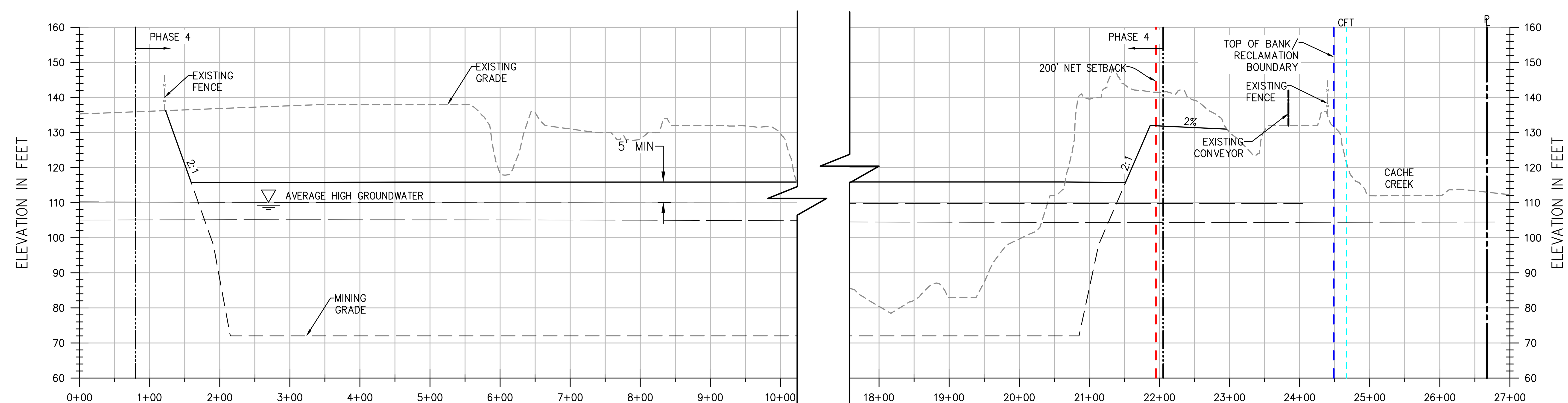
SECTION 6 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 7 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 7 (PHASE 3)
H: 1"=100'
V: 1"=20'



SECTION 8 (PHASE 4)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ________

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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C48563 CIVIL STATE OF CALIFORNIA PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

CEMEX

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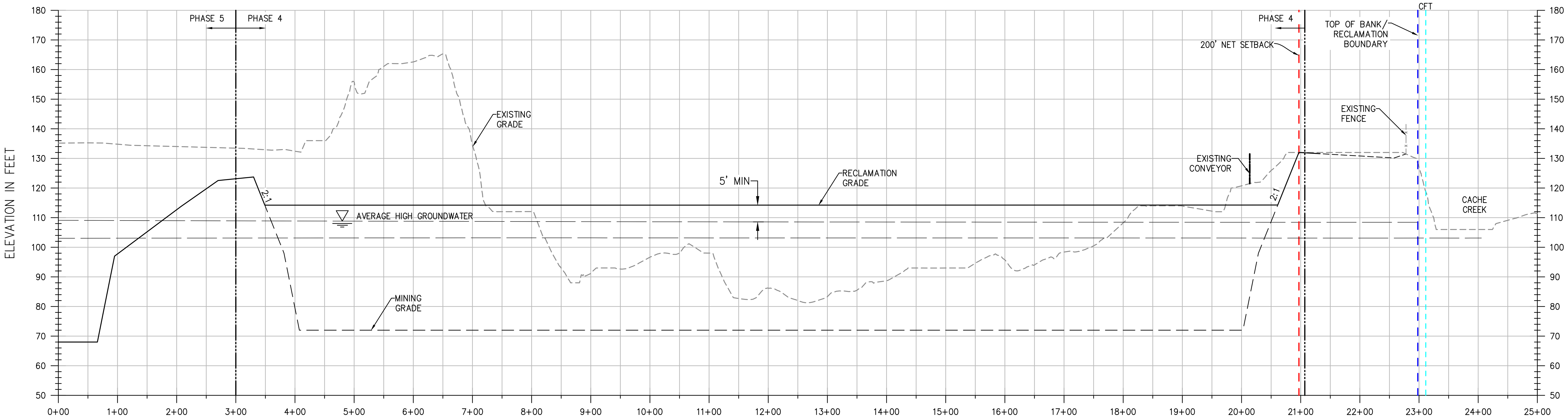
CEMEX CACHE CREEK RECLAMATION PLAN

SECTIONS 5-8

YOLO COUNTY CALIFORNIA

SHEET R-09 OF 15
DATE: 7/12/2021
JOB NO: 253.80



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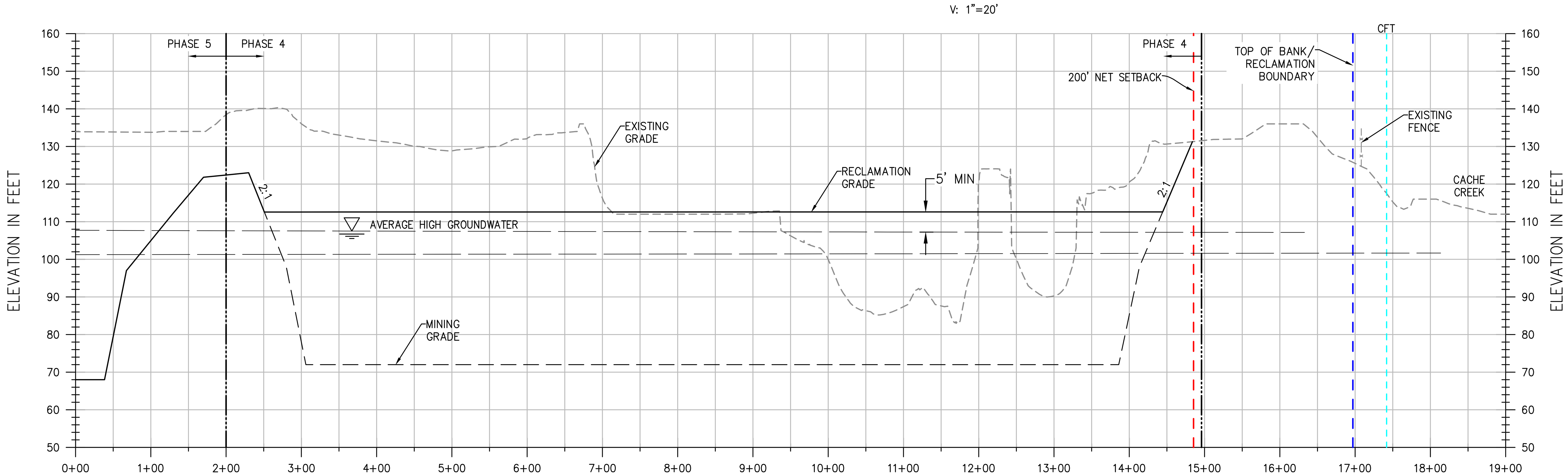

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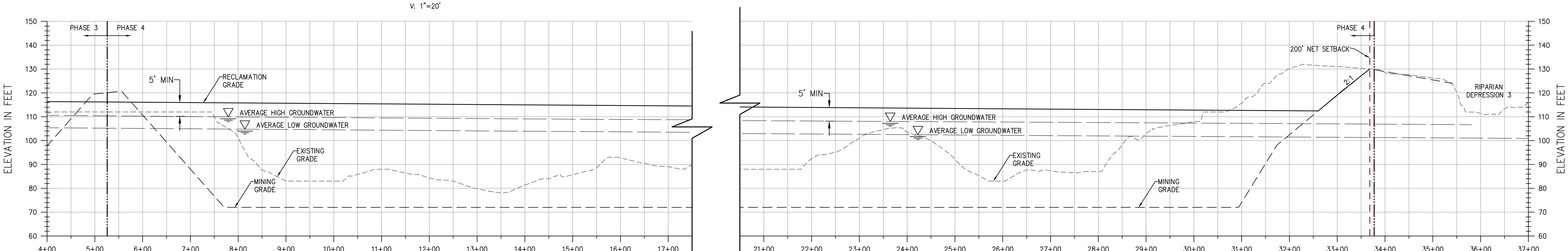

SECTION 11 (PHASE 4)

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V: 1"=20'

DATE SIGNED: ____________
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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C52163 CIVIL STATE OF CALIFORNIA
PRELIMINARY

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CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

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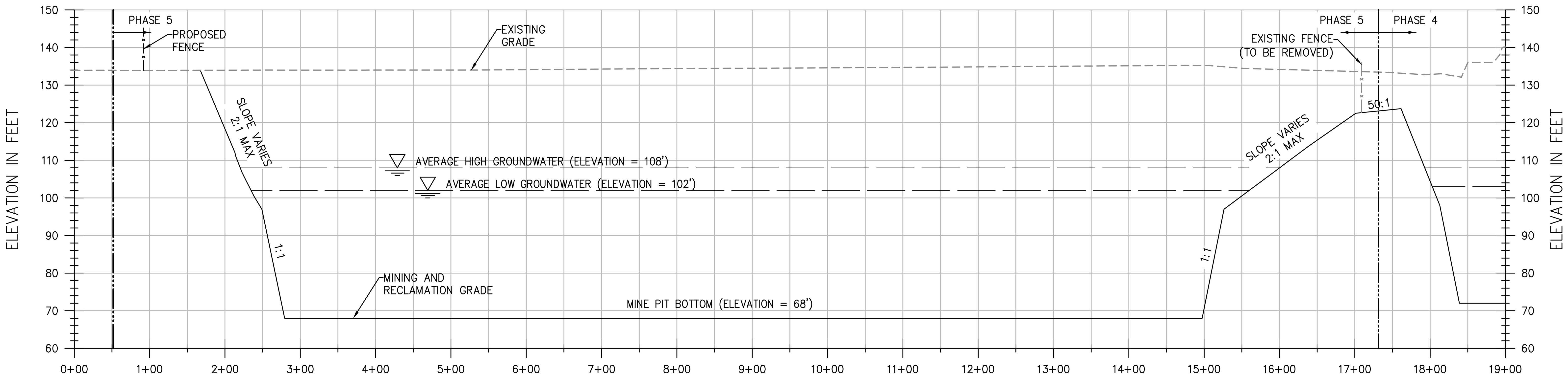
CEMEX CACHE CREEK RECLAMATION PLAN

SECTIONS 9-11

YOLO COUNTY
CALIFORNIA

SHEET R-10 OF 15
DATE: 7/12/2021
JOB NO: 253.80



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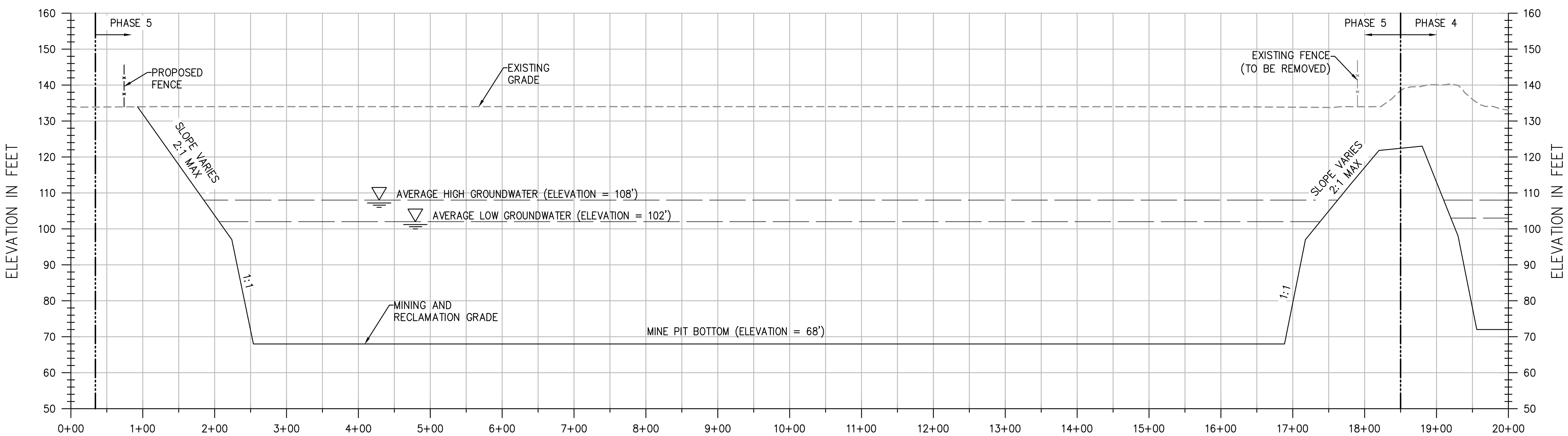

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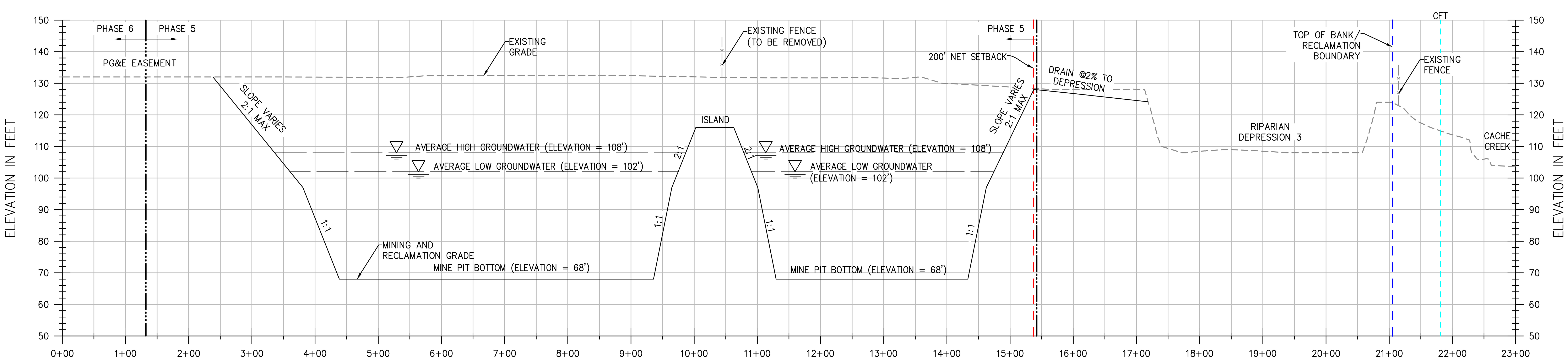

SECTION 14 (PHASE 5)

H: 1"=100'
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DATE SIGNED: ____________

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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C56630 CIVIL STATE OF CALIFORNIA — PRELIMINARY

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CHECKED BY	SG
SCALE	H: 1"=100' V: 1"=20'

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CEMEX CACHE CREEK RECLAMATION PLAN

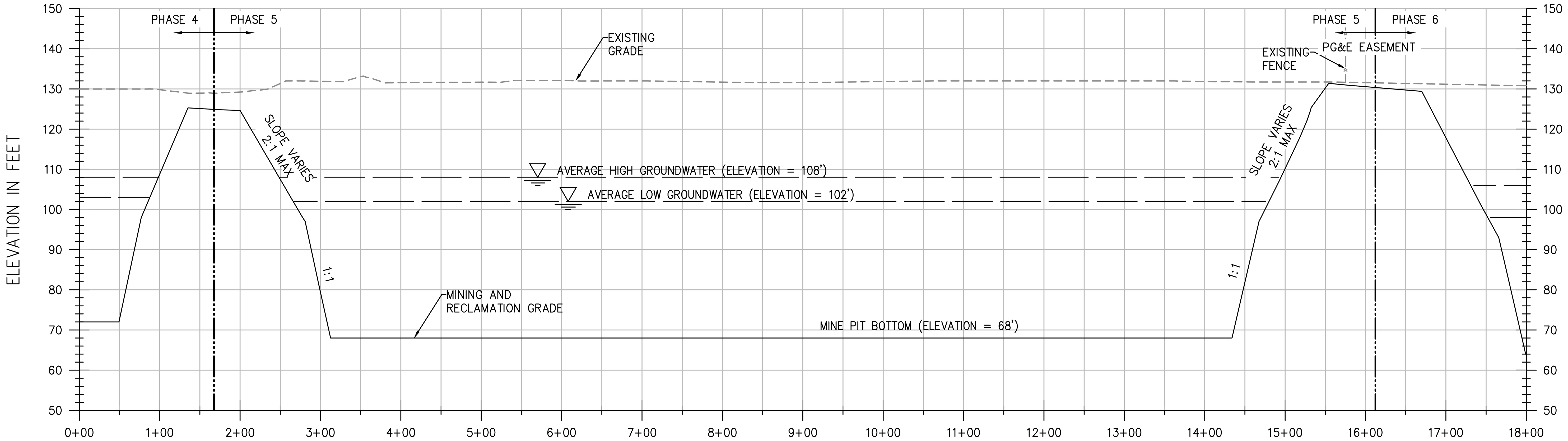
SECTIONS 12-14

YOLO COUNTY CALIFORNIA

SHEET R-11 OF 15

DATE: 7/12/2021

JOB NO: 253.80



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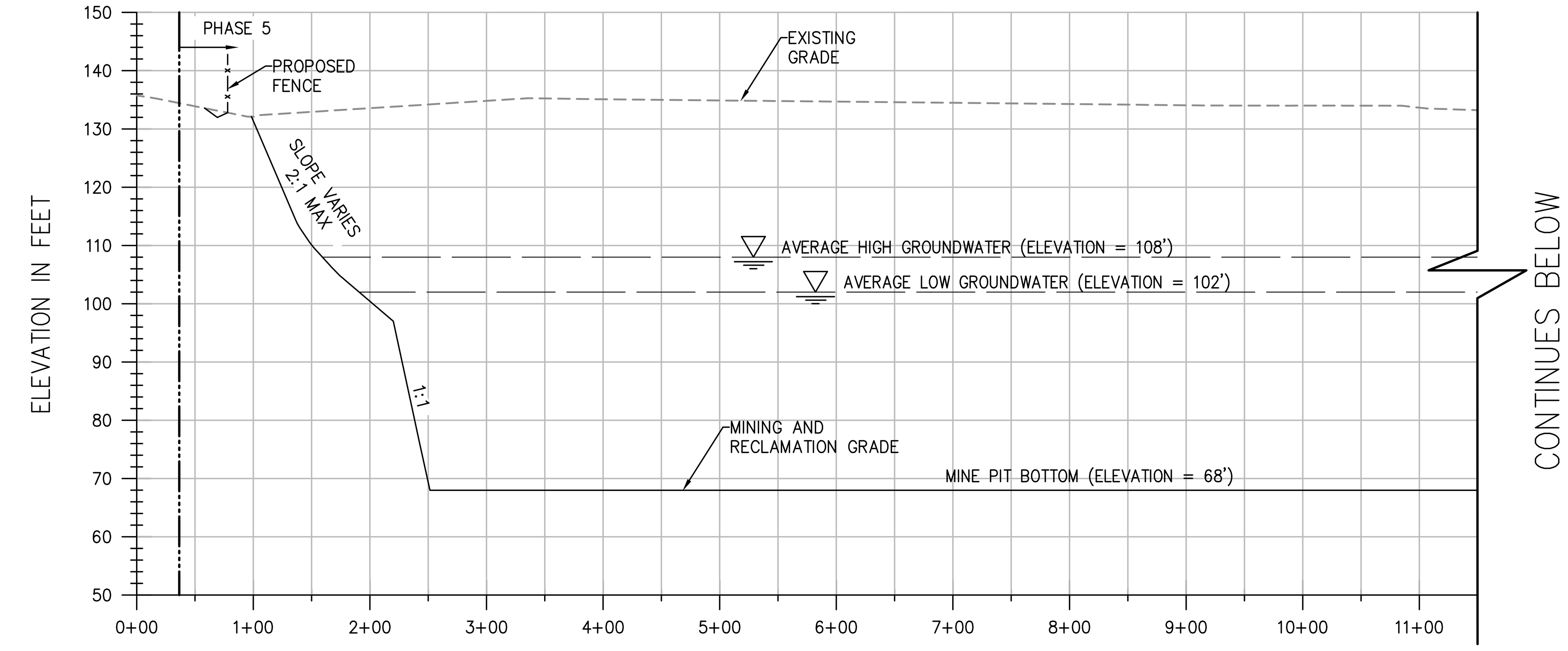

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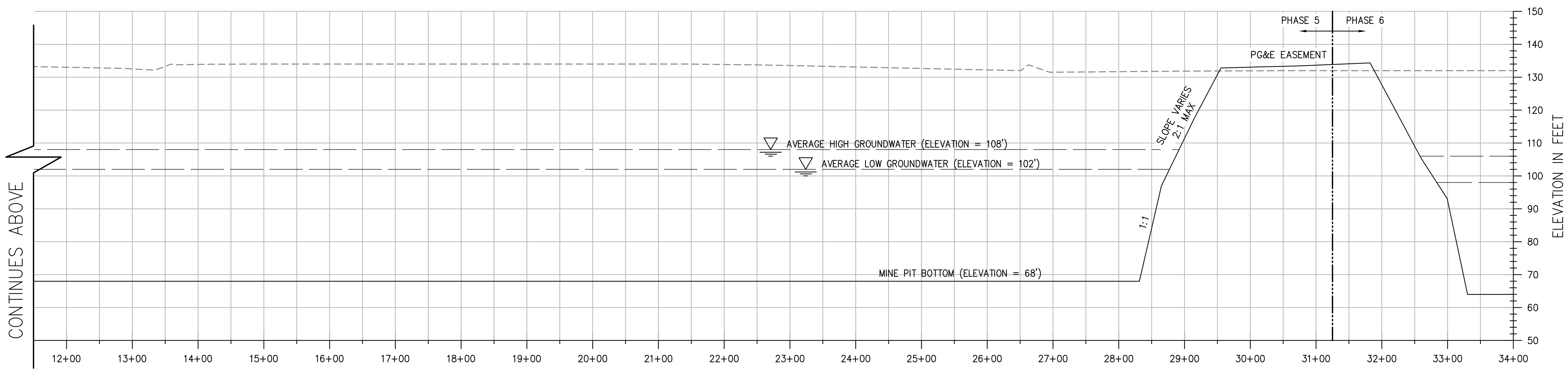

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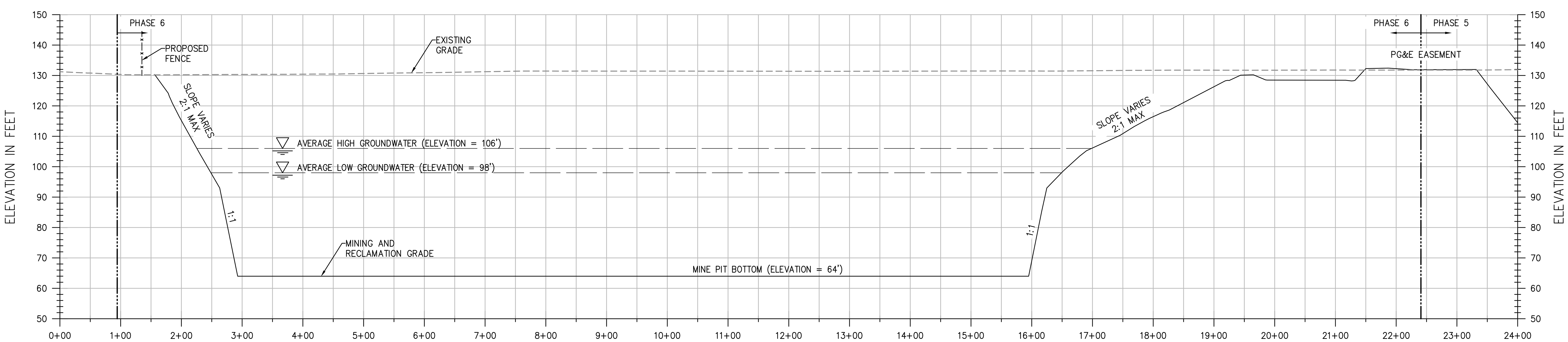

SECTION 17 (PHASE 6)
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V: 1"=20'

DATE SIGNED: ____________

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SCALE
H: 1"=100'
V: 1"=20'

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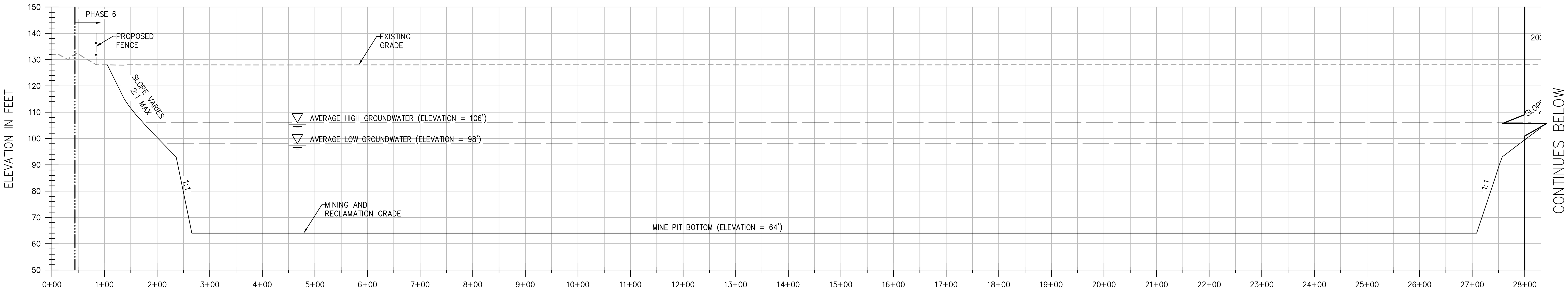
CEMEX CACHE CREEK RECLAMATION PLAN

SECTIONS 15-17

YOLO COUNTY
CALIFORNIA

SHEET
R-12
OF
15

DATE: 7/12/2021
JOB NO: 253.80



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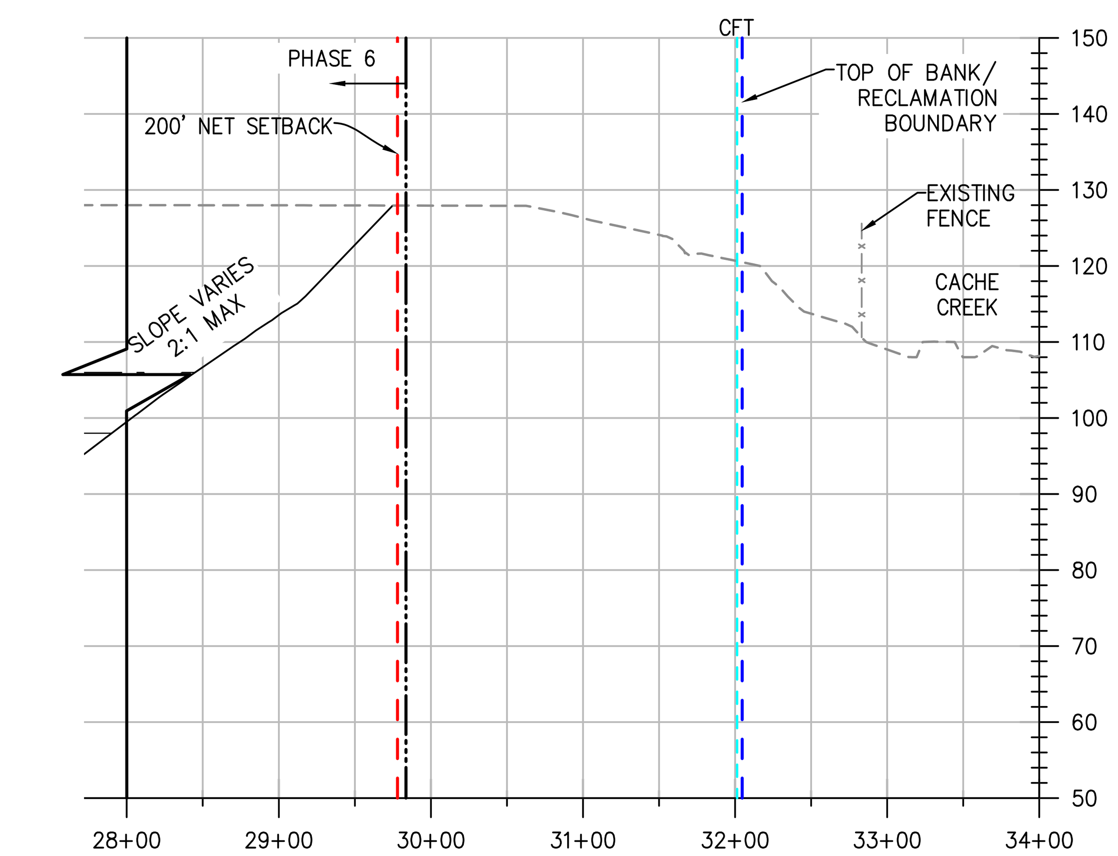

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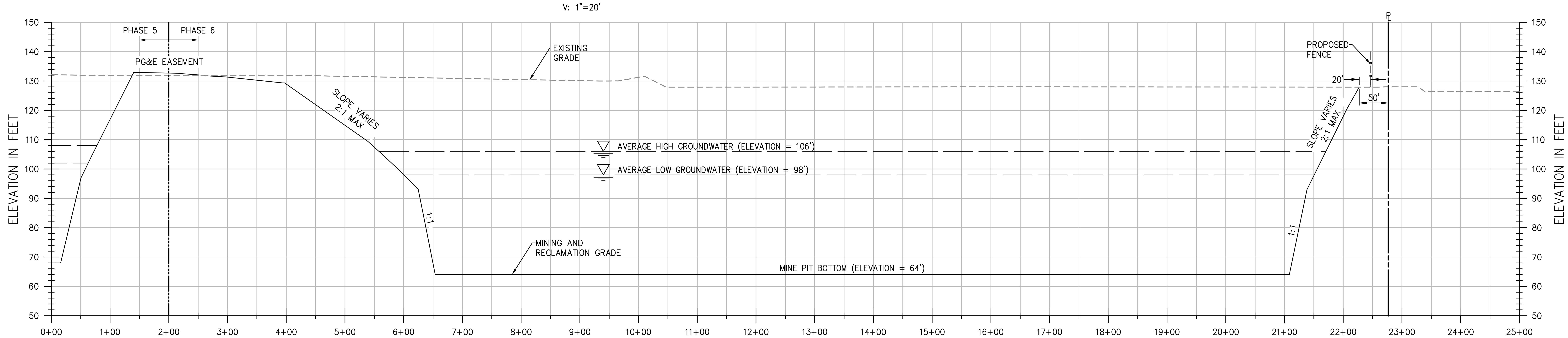

SECTION 19 (PHASE 6)
H: 1"=100'
V: 1"=20'

SECTION 20 (PHASE 6)
H: 1"=100'
V: 1"=20'

DATE SIGNED: ____________

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PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER — STEVEN J. GREENFIELD — No. C56893 — CIVIL — STATE OF CALIFORNIA

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SCALE
H: 1"=100'
V: 1"=20'

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CEMEX CACHE CREEK RECLAMATION PLAN

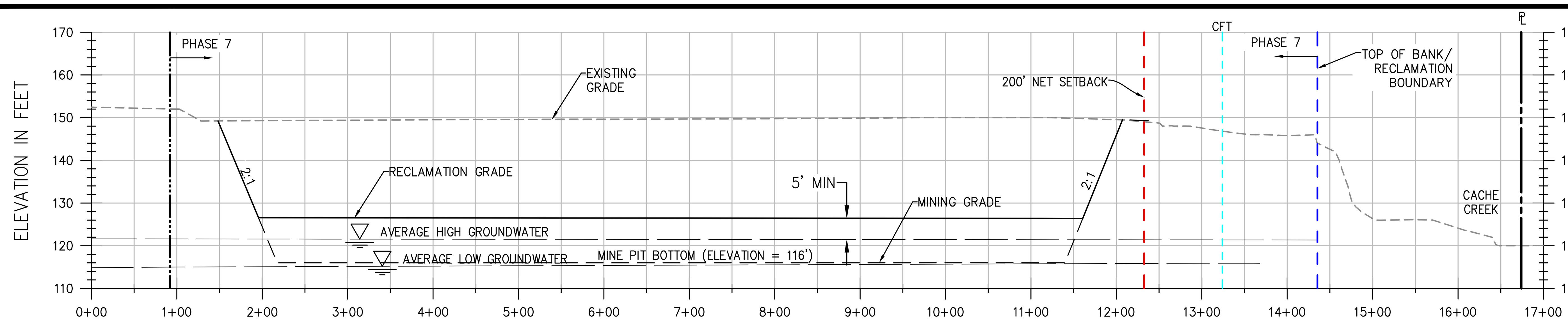
SECTIONS 18-20

YOLO COUNTY CALIFORNIA

SHEET R-13 OF 15

DATE: 7/12/2021

JOB NO: 253.80



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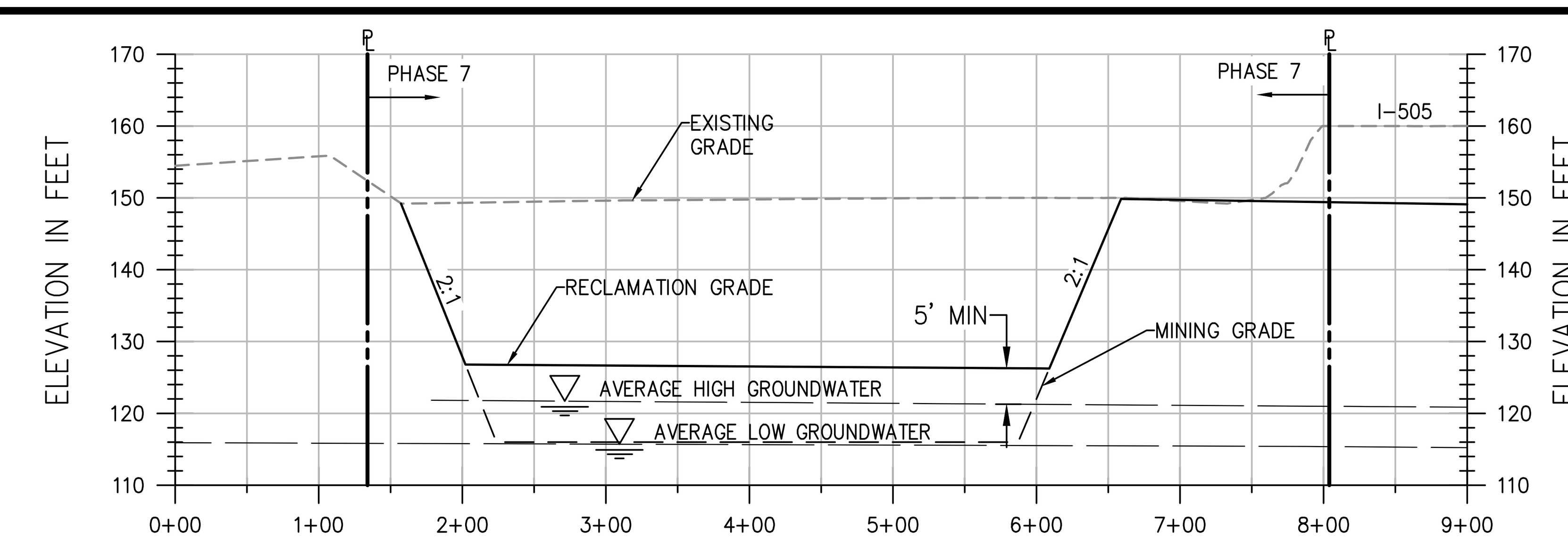

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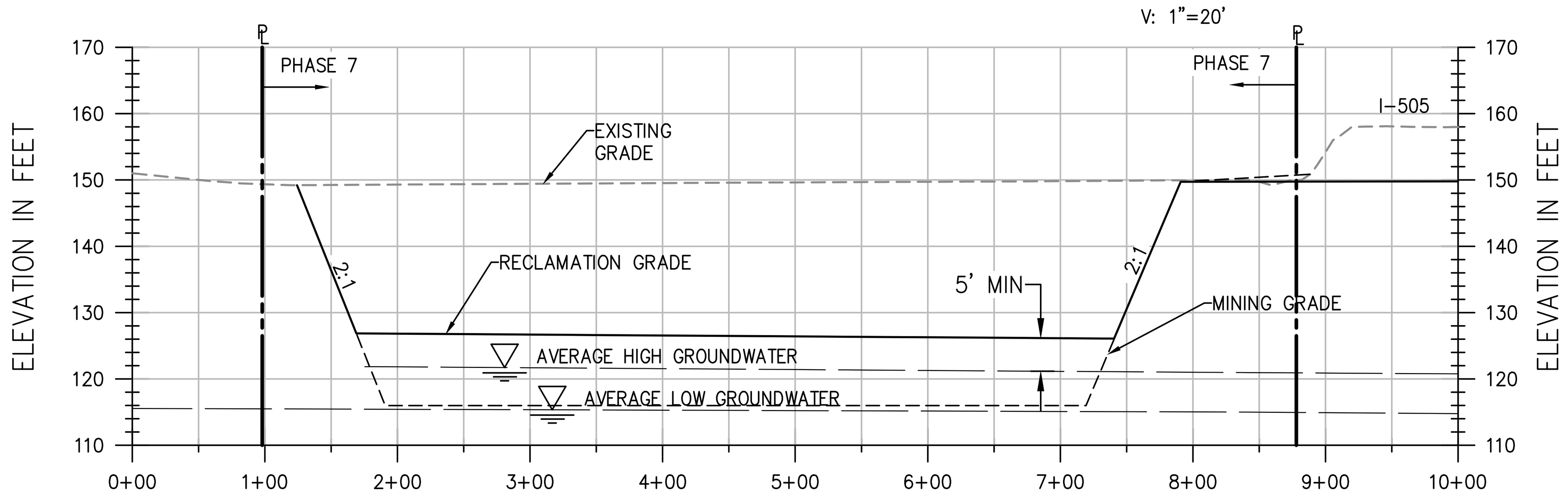

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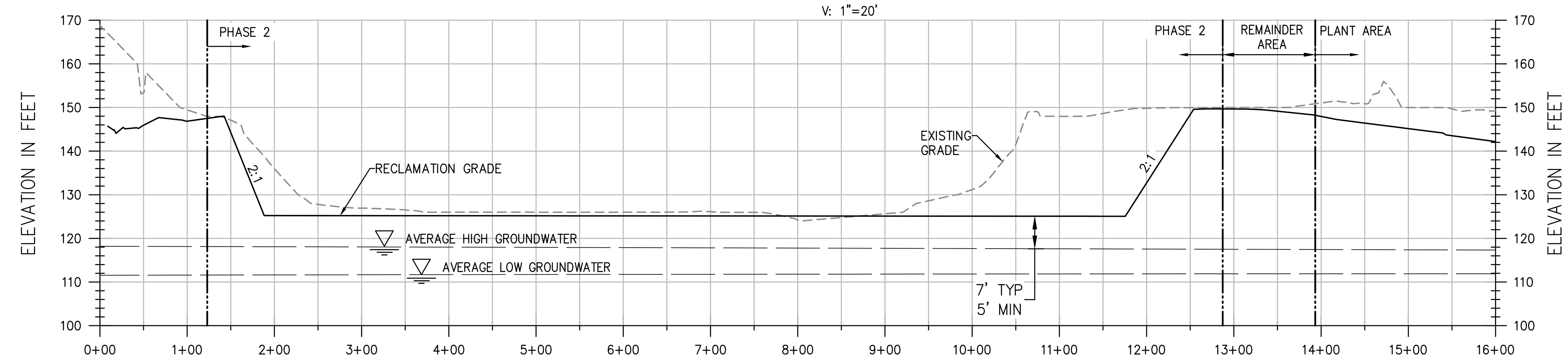

SECTION 25 (PHASE 2)
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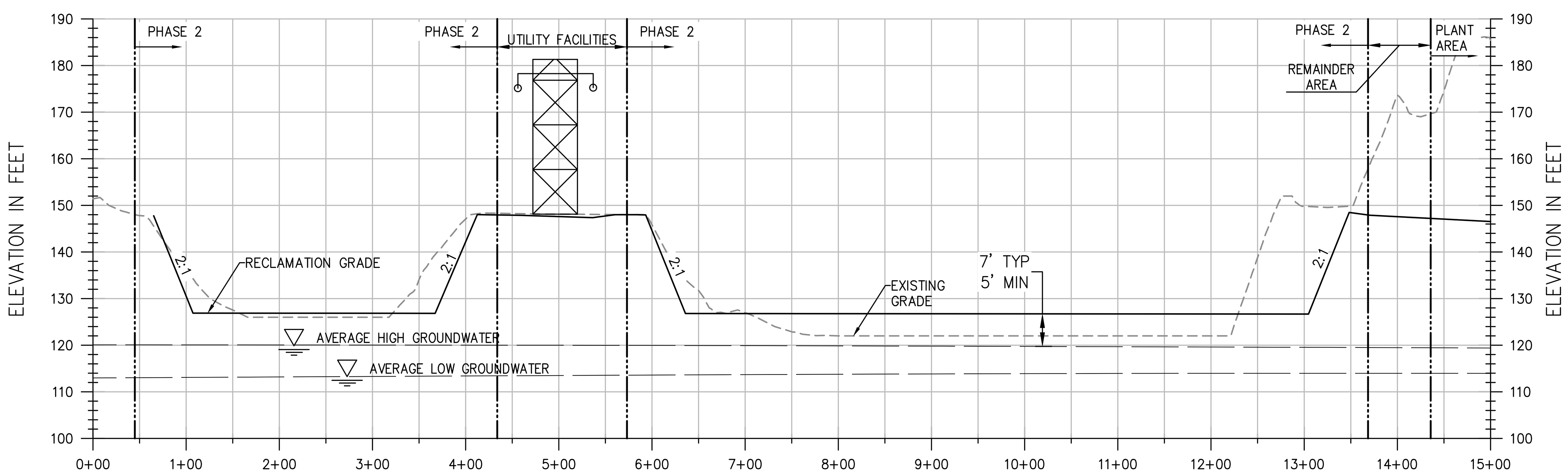
V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2



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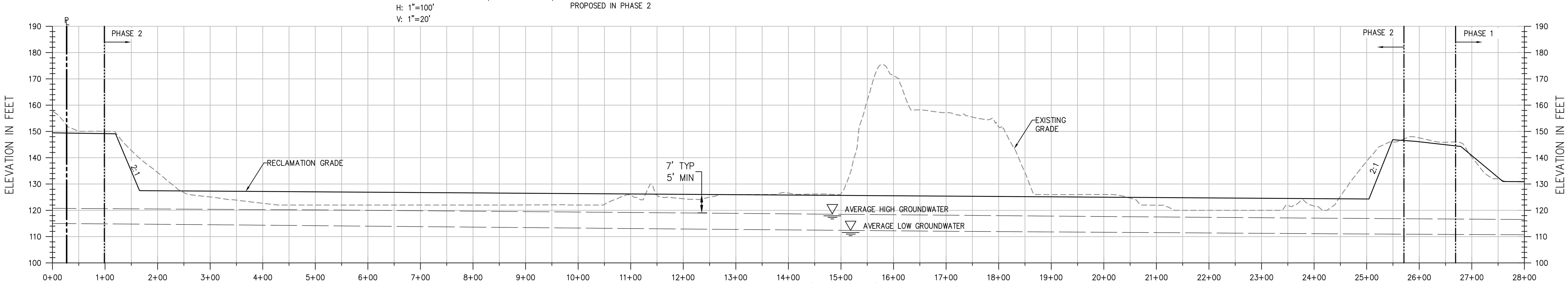
NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2



SECTION 26 (PHASE 2)
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V: 1"=20'

NOTE: NO ADDITIONAL MINING PROPOSED IN PHASE 2

DATE SIGNED: ________
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PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG
SCALE
H: 1"=100'
V: 1"=20'

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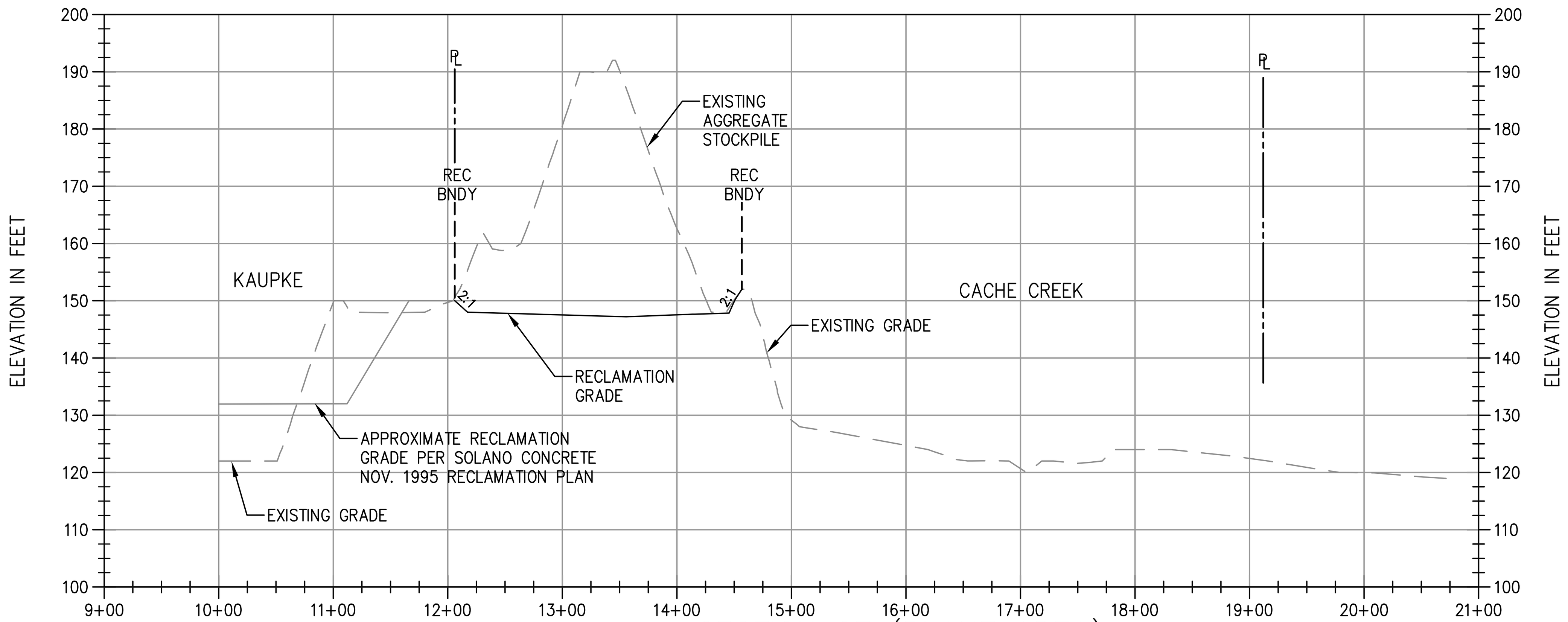
CEMEX CACHE CREEK RECLAMATION PLAN

SECTIONS 21-26

YOLO COUNTY CALIFORNIA

SHEET R-14 OF 15
DATE: 7/12/2021
JOB NO: 253.80



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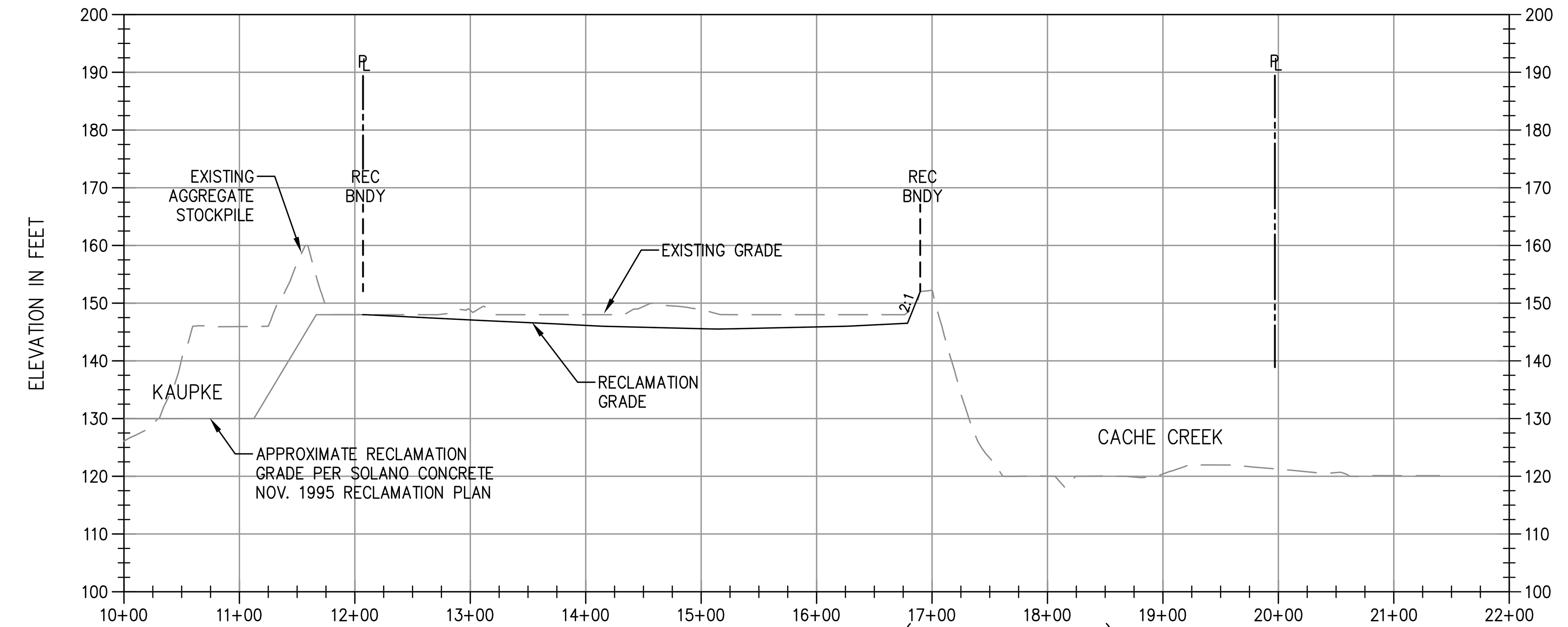

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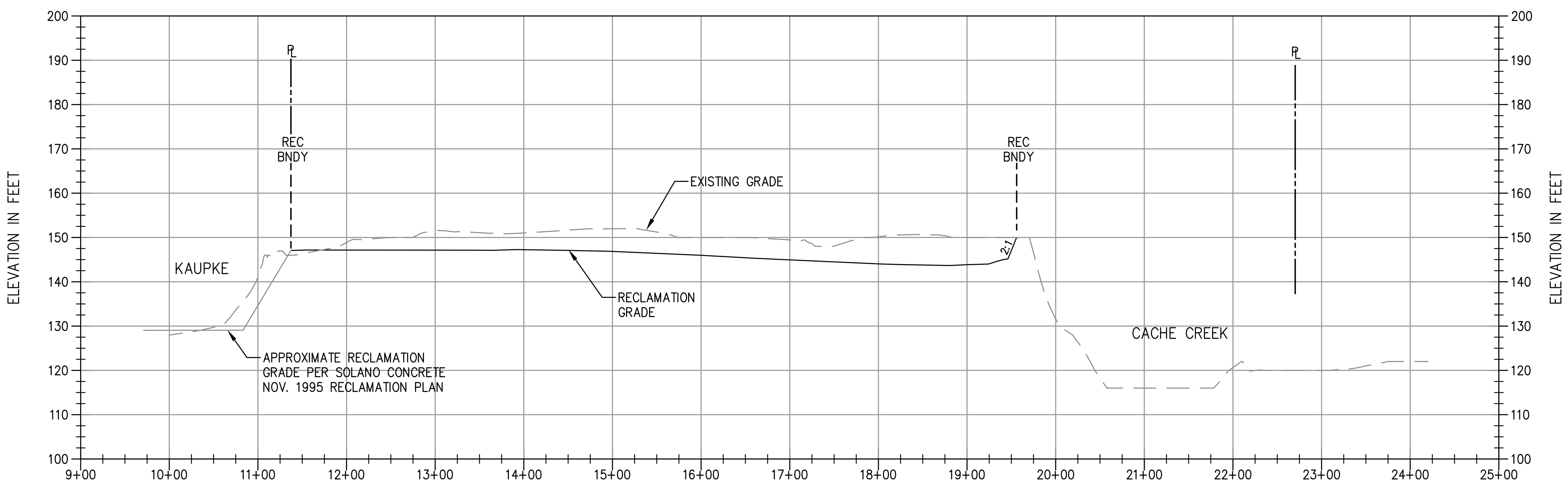

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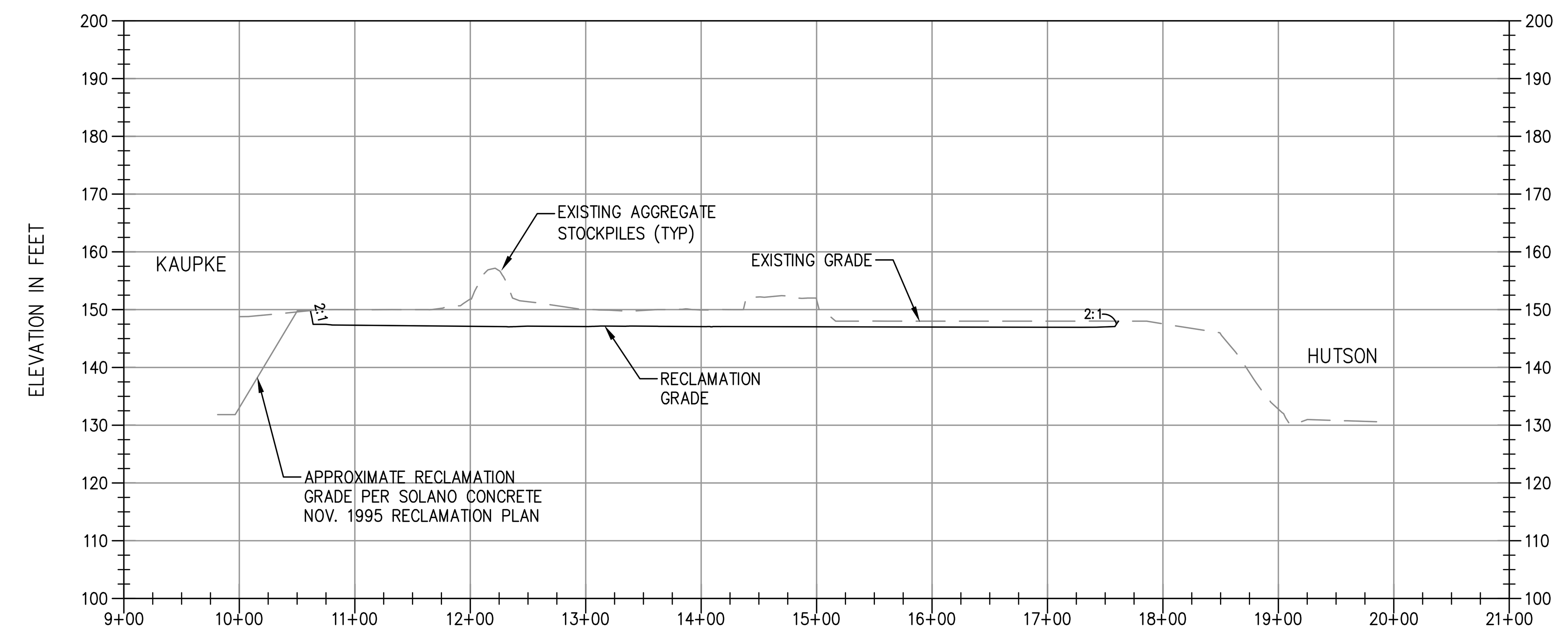

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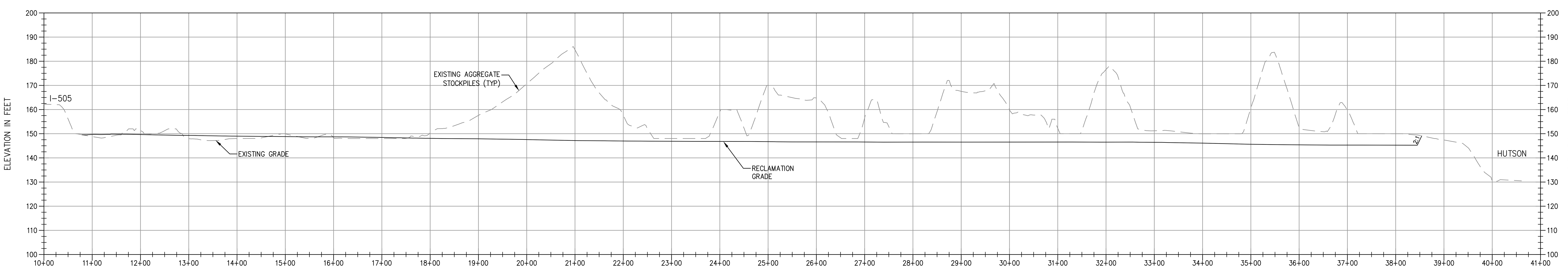

SECTION 30 (PLANT AREA)
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V: 1"=20'

DATE SIGNED: ____________

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REGISTERED PROFESSIONAL ENGINEER STEVEN J. GREENFIELD No. C46593 CIVIL STATE OF CALIFORNIA

PRELIMINARY

DESIGNED BY KD
DRAWN BY KD
CHECKED BY SG

SCALE
H: 1"=100'
V: 1"=20'

NO.	DATE	REVISIONS	BY	APPD.

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CEMEX CACHE CREEK RECLAMATION PLAN

SECTIONS 27-31

YOLO COUNTY

CALIFORNIA

SHEET
R-15
OF
15

DATE: 7/12/2021

JOB NO: 253.80

APPENDIX E

PROPOSED RECLAMATION NARRATIVE AND HABITAT RESTORATION PLAN

REVISED RECLAMATION PLAN

FOR THE

CACHE CREEK MINE

(MINE ID # 91-57-0008)

Operator:

CEMEX Construction Materials Pacific, LLC.
2365 Iron Point Road, Suite 120
Folsom, CA 95630

Prepared by:

Compass Land Group
3140 Peacekeeper Way, Suite 102
McClellan, CA 95652

November 2022

TABLE OF CONTENTS

TABLES

FIGURES

SHEETS

Mining Plan Sheets:

Reclamation Plan Sheets:

APPENDICES

CHART OF SMARA CONTENTS [PRC §2770.5]

SMARA Section		Location in Plan (e.g., Page #s)	Lead Agency Checklist
SMARA Statutes (California PRC Sections 2772, 2773 and 2773.3)			
2772(b)	Chart of contents	vi (this chart)	☐ YES ☐ NO ☐ N/A
2772(c)(1)	Operator and agent contact info	1, 4	☐ YES ☐ NO ☐ N/A
2772(c)(2)	Quantity and type of materials	4	☐ YES ☐ NO ☐ N/A
2772(c)(3)	Initiation and termination dates	4	☐ YES ☐ NO ☐ N/A
2772(c)(4)	Maximum anticipated depth	5, Sheet M-07	☐ YES ☐ NO ☐ N/A
2772(c)(5)	Reclamation plan maps	5, Sheets M-03, R-01 thru R-15	☐ YES ☐ NO ☐ N/A
2772(c)(6)	Mining description and schedule	6-7	☐ YES ☐ NO ☐ N/A
2772(c)(7)	Proposed or potential end uses	8, Sheet R-03	☐ YES ☐ NO ☐ N/A
2772(c)(8)	Reclamation description	8-9, 16-35	☐ YES ☐ NO ☐ N/A
2772(c)(9)	Effect on future mining in area	10	☐ YES ☐ NO ☐ N/A
2772(c)(10)	Statement of responsibility	35, Appendix J	☐ YES ☐ NO ☐ N/A
2772(c)(11)	Lead agency requirements	36-44	☐ YES ☐ NO ☐ N/A
2773(a)	Site specific reclamation plan	1-44, Sheets R-01 thru R-15	☐ YES ☐ NO ☐ N/A
2773.3	Requirements for metallic mines	N/A	☐ YES ☐ NO ☐ N/A
SMARA Regulations, Article 1, Surface Mining and Reclamation Practice (Title 14, California CCR §3500 et seq.)			
3502(a)	Reclamation objectives	1-3, 8-9	☐ YES ☐ NO ☐ N/A
3502(b)(1)	Environmental setting	10-15	☐ YES ☐ NO ☐ N/A
3502(b)(2)	Public health and safety	8	☐ YES ☐ NO ☐ N/A
3502(b)(3)	Final slopes	16-17, Appendix F	☐ YES ☐ NO ☐ N/A
3502(b)(4)	Borrow and settlement of fills	16-17	☐ YES ☐ NO ☐ N/A
3502(b)(5)	Disposition of old equipment	34	☐ YES ☐ NO ☐ N/A
3502(b)(6)	Stream and watershed diversions	20	☐ YES ☐ NO ☐ N/A
3503(a)	Soil erosion control	18-20	☐ YES ☐ NO ☐ N/A
3503(b)	Water quality / watershed control	17-20	☐ YES ☐ NO ☐ N/A
3503(c)	Protection of fish / wildlife habitat	21	☐ YES ☐ NO ☐ N/A
3503(d)	Disposal of waste / overburden	20	☐ YES ☐ NO ☐ N/A
3503(e)	Erosion and drainage	18-20	☐ YES ☐ NO ☐ N/A
3503(f)	Resoiling	21-23, Appendix H	☐ YES ☐ NO ☐ N/A
3503(g)	Revegetation	23-33, Appendix H	☐ YES ☐ NO ☐ N/A
SMARA Regulations, Article 9, Reclamation Standards (Title 14, California CCR §3700 et seq.)			
3703	Wildlife and habitat protection	21, Appendix A	☐ YES ☐ NO ☐ N/A
3704	Backfill, grading and slopes	16-17	☐ YES ☐ NO ☐ N/A
3704.1	…for metallic mines	N/A	☐ YES ☐ NO ☐ N/A
3705	Revegetation	23-33, Appendix H	☐ YES ☐ NO ☐ N/A
3706	Water quality, drainage, runoff	17-20	☐ YES ☐ NO ☐ N/A
3707	Standards for prime agriculture	33-34	☐ YES ☐ NO ☐ N/A
3708	Standard for other agriculture	33-34	☐ YES ☐ NO ☐ N/A
3709	Equipment storage and removal	34	☐ YES ☐ NO ☐ N/A
3710	Surface / groundwater protection	17-20	☐ YES ☐ NO ☐ N/A
3711	Topsoil salvage and redistribution	21-23, Appendix H	☐ YES ☐ NO ☐ N/A
3712	Mine waste disposal	20	☐ YES ☐ NO ☐ N/A
3713	Drill holes and water wells	35	☐ YES ☐ NO ☐ N/A

RECLAMATION PLAN SUMMARY

Mine Name:	Cache Creek Mine
California Mine ID Number:	91-57-0008
Mine Operator:	CEMEX Construction Materials Pacific, LLC.
Mine Location:	30288 CA-16 Woodland, CA 95653 Latitude 38.69º and Longitude -121.94º
Site Contact:	Steve Grace
Contact Phone:	831.970.9559
Property Owner(s):	CEMEX Construction Materials Pacific, LLC.
Address:	2365 Iron Point Road Folsom, CA 95630
Contact Person:	Oscar Frias, VP Planning & Administration – West Region
Contact Phone:	602.416.2912
Assessor Parcel(s):	025-450-001, 049-060-004 & -007, 049-070-004, -005, -006, -009, -010, -011, -019, -020, -021
Total Parcel Size(s):	1,902± acres
Area to be Reclaimed:	816± acres
Type of Material to be Mined:	Sand and gravel
Quantity of Material to be Mined:	30 million tons (mined), 26 million tons (sold)
Maximum Anticipated Depth:	70 feet below ground surface (“bgs”)
Maximum Anticipated Floor Elev:	64 feet mean sea level (“msl”)
Proposed Initiation Date:	Site is already active
Proposed Termination Date:	Est. August 11, 2047
Potential End Use(s):	Agriculture, permanent lakes, and wildlife habitat

1.0 INTRODUCTION

This Revised Reclamation Plan ("Plan") has been prepared in support of the continuation of surface mining and reclamation activities at the CEMEX Construction Materials Pacific, LLC. ("CEMEX") Cache Creek Mine ("Mine") in Yolo County, California. The Mine is located at 30288 CA-16, near the town of Madison, California in an unincorporated portion of the County (see Figure 1, Site Vicinity Map, and Figure 2, Existing Conditions Aerial Photograph).

Surface mining is planned to continue on ±470 acres and reclamation is planned to occur on ±816 acres (including formerly mined areas) on 12 parcels totaling ±1,902 acres, with the remainder left undisturbed (see Sheets M-01 through M-15 and R-01 through R-15). The Mine is planned to be developed and ultimately reclaimed in six phases, the first two of which have already been mined but not fully reclaimed. The planned end uses for the Mine are agriculture, permanent lakes and wildlife habitat (generally consistent with the original reclamation plan).

Consistent with the Surface Mining and Reclamation Act ("SMARA") Public Resources Code ("PRC") §2712, this Revised Plan has been developed 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 land 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.

(c) Residual hazards to the public health and safety are eliminated.

While the purpose of this Plan is to describe reclamation activities, the surface mining activities (e.g., excavation, overburden handling, and transport) are also described and referenced throughout for contextual purposes.

1.1 Plan Organization

Section 2.0 of this Plan provides an overview of reclamation activities and is generally organized around SMARA requirements, beginning with SMARA's key statutory requirements. Section 3.0 of this Plan addresses specific Yolo County ("County" or "lead agency") requirements, where those requirements supplement or amplify the requirements covered in Section 2.0.

This Plan has been prepared pursuant to the following requirements associated with the reclamation of mined lands:

- California Surface Mining Reclamation Act of 1975, as amended (Public Resource Code §2710 et seq.);
- State Mining and Geology Board implementing regulations (California Code of Regulations, Title 14, §3500 et seq.);

- Yolo County General Plan and Zoning Code; and
- Yolo County Off-Channel Mining Plan ("OCMP") including its Off-Channel Surface Mining Ordinance ("OCSMO") and Surface Mining Reclamation Ordinance ("SMRO").

This Plan has also been prepared in consideration of the most recent 2021 Cache Creek Annual Status Report prepared by the County's Cache Creek Technical Advisory Committee ("TAC"), which was received and filed by the County Board of Supervisors on February 8, 2022. The annual report serves as a regular opportunity for the TAC to take a larger perspective in looking at the creek and at the County's Cache Creek Resource Management Plan ("CCRMP") with a critical eye for improvement. The process is designed to be adaptive, so that monitoring requirements and management techniques can appropriately address the ever-changing riparian environment along Cache Creek. For example, the annual report contains the TAC's current observations and information related to biological resources and channel dynamics, which are important factors for reclamation and restoration projects.

Many statutory and regulatory sections of SMARA are either presented verbatim or summarized to facilitate a better understanding of plan contents and requirements. Requirements found in Article 1 (14 CCR §3500 *et seq.*) and Article 9 (14 CCR §3700 *et seq.*) of SMARA's implementing regulations are addressed under combined resource headings where possible, to minimize duplication of plan contents. SMARA citations and standards that follow section headings in *italics* have been abbreviated.

1.2 Purpose for Revised Reclamation Plan

This Revised Reclamation Plan provides for:

1. The continuation of mining on ±470 acres with reclamation on ±816 acres;
2. A change in mining phases to allow an electric dredge to efficiently move between mining phases without the need to disassemble and reassemble the dredge equipment, and establish a new settling pond for deposition of process fines;
3. A minor change to the approved mining and reclamation plan footprint consistent with the Stipulated Order to Comply entered into between CEMEX and Yolo County on June 2, 2017;
4. A change to the boundary between Phases 3 and 4 to reconfigure the alluvial separator and facilitate the use of Phase 3 as a settling pond after mining is complete in that phase;
5. The use of the east half of the existing Phase 2 area as an extension of the existing processing plant site for purposes of product stockpiling and construction materials recycling;
6. Updates to the reclamation acreages and end use objectives for agriculture, habitat, and lakes, with incorporation of modern reclamation performance standards; and
7. A 20-year extension of the mining permit to 2047 to allow for the extraction of aggregate reserves within the proposed mining footprint.

Except as outlined above, CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, maximum depth of mining, processing operations, use of settling ponds to contain and settle aggregate wash fines, water use, truck routes, or hours of operation).

2.0 SURFACE MINING AND RECLAMATION ACT REQUIREMENTS

2.1 Description of Mining Operations

2.1.1 Name and Address of Operator and Agent [PRC §2772(c)(1)]

Operator:

CEMEX Construction Materials Pacific, LLC.
2365 Iron Point Road
Folsom, CA 95630

Contact: Steve Grace
Telephone: 831.970.9559
Email: roberts.grace@cemex.com

2.1.2 Quantity and Type of Mineral to be Mined [PRC §2772(c)(2)]

The Mine will continue to produce an anticipated 30 million tons of sand and gravel (mined weight) and 26 million tons of sand and gravel (sold weight), assuming a 13% wash loss at the aggregate processing plant (that will be directed to settling ponds).[1]

2.1.3 Initiation and Termination Dates [PRC §2772(c)(3)]

The Mine is active and has been continuously mined since 1971. Operations subject to this Plan will begin as soon as all necessary County approvals are obtained. For the purposes of satisfying SMARA informational requirements, the estimated initiation date of the surface mining operation under this Plan is June 1, 2023, and the estimated termination date of the surface mining operation under this Plan is August 11, 2047. This estimated termination date represents a 20 year extension of the end date for mining approved in the 1996 County-issued mining permit. Final reclamation sign-off may not occur for an additional period of three to five years (e.g., to allow reclamation performance standards to be met), extending the estimated timeframe for final reclamation sign-off to August 11, 2052.

2.1.4 Maximum Anticipated Depth of Mining [PRC §2772(c)(4)]

The maximum anticipated depth of mining is approximately 70 feet bgs, with a finish mine floor corresponding to elevation 64 feet msl at Phase 6 (see Sheet M-07). Actual depths may vary depending on soil/geologic conditions. If economic or operating constraints are encountered

[1] Mined weight = sold weight / (100% - 13% Wash loss)

during the mining operation, then the maximum depth of mining may not be achieved. Anticipated final reclamation grades are shown on Sheets R-04 through R-15.

2.1.5 Reclamation Plan Map Requirements [PRC §2772(c)(5)]

Size, Legal Description, and Owners of Surface and Mineral Interests [PRC §2772(c)(5)(A)]

The site legal description is included on Sheet R-01, Title Sheet. See also Sheet M-03, Property Information, which reflects the specific property boundaries of the Record of Survey, filed January 12, 2018, in 2018 Book of Maps at pages 2-4.

Property Lines, Setbacks, and Reclamation Plan Boundary [PRC §2772(c)(5)(B)]

See Sheets R-01 through R-15.

Existing and Final Topography [PRC §2772(c)(5)(C)]

See Sheets R-04 through R-15.

Geologic Description [PRC §2772(c)(5)(D)]

See Figure 3, Site Geology Map.

Railroads, Utilities, Access, and Roads [PRC §2772(c)(5)(E)]

The Mine will be accessed from the existing driveway entrance on California Highway 16. Access points are shown on Sheets M-03, M-04, R-03 and R-04. High-voltage transmission lines operated by Pacific Gas and Electric ("PG&E") run across a portion of the Mine site and will be avoided with appropriate setbacks, "Consent to Use" or "Joint Use Agreements." A windmill is also located on the Mine site and will continue to be avoided with a minimum 200-foot setback. Known utilities and easements are shown on Sheet M-03.

The most prominent drainage feature in the vicinity of the site is Cache Creek, which flows generally in a west to east direction at the north end of the site (see Figure 2). At its closest point, Cache Creek is approximately 200 feet from the Mine boundary. There are no railroads on or in proximity to the Mine.

Preparation by Licensed Professionals as Required [PRC §2772(c)(5)(F)]

As required by Yolo County, the mining and reclamation plan sheets have been prepared and stamped by a California-registered engineer.

2.1.6 Mining Description and Time Schedule [PRC §2772(c)(6)]

The following description of mining operations is provided primarily for contextual purposes to facilitate understanding of this Plan. Mining methods and practices will conform to the conditions of the long-term off-channel mining permit issued by Yolo County.

Mining Methods

The Mine is planned to be further developed and ultimately reclaimed in six phases, the first two of which have already been mined but not fully reclaimed. Except where mining has already occurred, mining operations will be initiated by the removal of vegetation, topsoil/growth media, and overburden materials that lie above marketable sand and gravel deposits. The overlying materials will be removed using scrapers aided by a motor grader and bulldozer, or excavator and off-road haul trucks as needed. After overlying materials are removed, marketable sand and gravel will be excavated using conventional mining equipment such as scrapers, excavators, and bulldozers (for dry mining) and electric dredge (for wet mining). Following excavation, the sand and gravel will be transported primarily by electric conveyor to the existing aggregate processing plant for washing, crushing, sorting and sale. Figure 2 shows the existing portions of the conveyor alignment that will be extended in the future to reach mine Phases 4, 5 and 6.

Alluvial Separators

The Mine design includes 1) a "constructed" alluvial separator between Phases 3 and 4 (see Sheet M-02 for typical detail and Sheets M-04 and M-05 for location); and 2) the development of a "natural" alluvial separator between Phases 4 and 5 (see Sheets M-06 and M-07). The "constructed" alluvial separator will be comprised of gravel and/or clay and the "natural" alluvial separator will consist undisturbed, natural ground between existing and future mining pits. The purpose of the constructed alluvial separator is to re-purpose Phase 3 as a settling pond (to accept and settle process wash fines). The purpose of the natural alluvial separator between proposed Phases 4 and 5 is to facilitate backfilling of Phase 4 for a return to agriculture while maintaining a stable separation for the future open water lake in future Phase 5.

Anticipated Sequence of Mining and Reclamation

Mining will continue to progress in a manner that will allow for concurrent reclamation to be initiated at the earliest possible time on those portions of the mined lands that will not be subject to further surface mining disturbances. No further mining is planned to occur in Phases 1 and 2. Phase 1 is mostly reclaimed with approximately 110 acres ready for agricultural crop plantings in November 2022. The remainder of Phase 1 is used as a silt pond and is in the process of reclamation. of the eastern half of Phase 2 has been repurposed as an extension of the aggregate processing plant site for purposes of product stockpiling and will be reclaimed at the end of Mine life along with the remainder of the plant site. The western half of Phase 2 will be reclaimed within five years of approval of this Plan.

The Operator currently anticipates that mining will continue to progress in the following general sequence: Phase 3 and Phase 4 (to be mined concurrently), Phase 5, and Phase 6. Once fully mined, Phase 3 will be repurposed as a silt pond (with the constructed alluvial separator separating it from Phase 4) to accept wash fines from the aggregate production process, ultimately facilitating a reclamation backfill to agriculture. After Phase 6 is mined, the Operator will perform limited additional mining in the northern portion of Phase 5 as the conveyor assembly is removed to develop a habitat island as part of reclamation (see Sheets M-07 and R-06 for detail).

Reclamation will be initiated at the earliest possible time on those portions of the site that will not be subject to further disturbance by mining. An estimated time schedule for mining and reclamation is provided in Table 1, below.

TABLE 1

ANTICIPATED PROGRESSION OF MINING AND RECLAMATION[1,2]

Area	Mining (Start)	Mining (End)	Reclamation (Start)	Reclamation (End)[3]
1. Phase 1	--	Completed	In process	2025
2a. Phase 2 – West[4]	--	Completed	2025	2026
2b. Phase 2 – East[5]	--	Completed	2047	2048
3. Phase 3[6]	In process	2023	2024	2048
4. Phase 4	In process	2024	2022	2039
5. Phase 5[7]	2022	2033 / 2047	2033 / 2047	2034 / 2048
6. Phase 6	2033	2047	2047	2048
7. Phase 7 – Eliminated[8]	--	--	--	--
8. Processing Plant Site	--	--	2047	2048
9. Conveyor Alignment	--	--	2047	2048

Notes:

**

1. Anticipated mining schedule assumes annual production of approximately 1,000,000 tons per year (sold weight). Therefore, it is possible that reclamation would start/end sooner than estimated above based on actual annual rates of production.
2. Anticipated progression is approximate only. Actual timelines will vary depending on market and geologic conditions.
3. Reclamation monitoring may continue for three to five years past the anticipated reclamation end date to ensure that reclamation performance standards are met.
4. Phase 2 (west half) will be reclaimed within five years of Plan approval.
5. Phase 2 (east half) will be used for stockpiling and construction materials recycling until 2047 when all mining is complete.
6. Phase 3 will begin to be used as a silt pond in approximately 2024, which will begin the process of reclamation back to agriculture by slowly backfilling the pond. The Operator may return to Phase 3 to perform final clean-up mining of the pit floor with the dredge prior to deposition of silts.
7. After Phase 6 is mined, the Operator will perform limited additional mining in the northern portion of Phase 5 as the conveyor assembly is removed to develop a habitat island as part of reclamation. This work is anticipated to occur in 2047.
8. Phase 7 has been eliminated from the project at the request of the County.

2.1.7 Public Health and Safety (Exposure) [CCR §3502(b)(2)]

Implementation of this Plan is not expected to jeopardize public health and safety. The Mine is already active and located on private property. No substantial change from existing operations (mining or reclamation activity) is anticipated through adoption of this Plan. The public is neither presently exposed to the site, nor will be during mining or reclamation activity. The potential health and safety exposure of the mine was fully analyzed in the 1996 Environmental Impact Report ("EIR") for the Solano Long-Term Off-Channel Mining Permit Application ("1996 EIR") adopted as part of the existing entitlements (pursuant to CEQA) with appropriate mitigations requiring compliance with the County OCSMO and SMRO ordinances.

All visitors to the site are required to sign-in and undergo site-specific safety training as appropriate. Safety measures such as fencing, signs, and setbacks are implemented to ensure public safety. For example, existing fencing is in place around all areas of open excavation, which goes above and beyond the County's SMRO requirement for fencing around open water areas. While fencing may be used for public safety, it is not intended to prevent access for wildlife foraging (avian species).

No portals, shafts, tunnels or other openings to underground workings are mapped or proposed.

2.2 End Land Use

2.2.1 Proposed or Potential End Uses [PRC §2772(c)(7)]

The planned end uses for the Mine are agriculture, permanent lakes and wildlife habitat. The permanent lakes are ultimately planned to be dedicated to the County. The Owners' acknowledgment of the potential end uses is evidenced by execution of its Statement of Reclamation Responsibility (see Section 2.12.1, below).

Table 2 below summarizes reclamation end uses by mining phase or disturbance area.

2.2.2 Reclamation Measures Adequate for the End Use [PRC §2772(c)(8)]

Reclamation will be conducted in the following manner to support the potential end uses:

1. During reclamation, redistribute stockpiled topsoil/growth media in preparation for revegetation.
    - *Note: Prior to overburden removal and mining, approximately 12-24 inches of salvageable topsoil will be excavated in a separate lift and either used immediately for reclamation or stockpiled/segregated (with signage as needed) for use in future reclamation (see Sheets M-06 and M-07 for anticipated stockpile locations).*

TABLE 2
RECLAMATION END USES AND ACRES

Phase / Area	Agriculture (± acres)	Habitat (± acres)	Lakes (± acres)	Slopes & Roads (± acres)	Total (± acres)
1	124.5	5.8		0.4	130.7
2	63.7				63.7
3	91.7	5.4		2.9	100.0
4	111.3	8.1			119.4
5		27.5 (shoreline) 9.4 (other)	102.9	5.9	145.7
6		33.2 (shoreline) 7.4 (other)	101.1	4.1	145.8
Plant Site	27.4	6.2		1.3	34.9
Creek Setback		68.7			68.7
Other Buffer				4.6	4.6
I-505 Buffer		2.3			2.3
Total	**418.6**	**167.7**	**210.4**	**19.2**	**815.8**

2. Rip, disc and/or scarify revegetation areas as needed to establish a suitable root zone in preparation for plantings.

3. For areas reclaimed to an end use of wildlife habitat, revegetate disturbed surfaces with seed mixes and plantings as set forth in this Plan.

4. For areas reclaimed to an end use of agriculture, backfill and/or level fields as appropriate, conduct soil testing (if needed to fulfill reclamation success criteria), grade for positive drainage, and disc/prep for crop plantings.

5. Remove facilities, structures, stockpiles and equipment associated with mining. The following may be left in place to facilitate the potential end uses: water supply wells, fencing, perimeter berms, access roads, and conveyor network maintenance roads.

6. Unless left in place to facilitate the potential end uses, reclaim all temporary interior haul roads, and conveyor corridors similar to other reclamation areas. Specific reclamation practices would include removing road base materials, ripping, discing, and reseeding as appropriate.

7. Implement best management practices as needed to minimize erosion and sedimentation pursuant to applicable standards.

8. Collect and dispose of any incidental refuse or garbage in accordance with applicable standards.

2.2.3 Impact of Reclamation on Future Mining in the Area [PRC §2772(c)(9)]

This Plan will not preclude future mining in the area in the event marketable resources are found.

2.3 Environmental Setting [CCR §3502(b)(1)]

2.3.1 Assessor Parcels, Ownership, Zoning and General Plan Designations

Mine Assessor Parcel Numbers ("APNs"), ownership, Zoning and General Plan land use designations are shown on Table 3, below.

2.3.2 Access and Utilities

The Mine will be accessed from the existing driveway entrance on California Highway 16. Access points are shown on Sheets M-04, M-08, R-03 and R-07. On-site utilities are limited to power. High-voltage transmission lines operated by PG&E run across the Mine site and will continue to be avoided with appropriate setbacks from Phases 5 and 6. "Consent to Use" or "Joint Use Agreements" may be executed with PG&E for work within easement areas. A windmill is also located on the Mine site in Phase 3 and will continue to be avoided with a minimum 200-foot setback (see Sheet M-05). Utilities and easements are shown on Sheet M-03.

TABLE 3
ASSESSOR PARCELS, OWNERSHIP, ZONING AND GENERAL PLAN DESIGNATIONS

APN	Assessor Acres[1]	ROS Acres[2]	Ownership[3]	Zoning[4]	General Plan[5]
025-450-001	291.1	280.0	United Metro Materials Inc	A-N (SG)	AG, OS
049-060-004	6.3	6.3	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-060-007	142.8	142.4	Solano Concrete Co Inc	A-N (SG)	AG
049-070-004	112.7	110.7	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-005	98.5	112.8	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-006	200.2	200.1	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-009	444.0	461.6	United Metro Materials Inc	A-N (SG)	AG, OS
049-070-010	17.1	17.1	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-011	26.2	26.5	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-019	53.9	48.0	Solano Concrete Co Inc	A-N (SG)	AG, OS
049-070-020	212.2	218.5	United Metro Materials Inc	A-N (SG)	AG
049-070-021	276.4	278.3	Solano Concrete Co Inc	A-N (SG)	AG
Total:	**1,881.4**	**1902.3**			

Notes:
1. Source: Yolo County Assessor, accessed November 28, 2017.
2. Source: Record of Survey, filed January 12, 2018, in 2018 Book of Maps at pages 2-4.
3. United Metro Materials, Inc. and Solano Concrete Co Inc. are fully-owned subsidiaries of CEMEX.
4. A-N = Agricultural Intensive. The Sand and Gravel (SG) overlay zone applies to State designated mineral resource zones (MRZ-2) containing critical geological deposits needed for economic use in the future, as well as applying to existing mining operations. The portions of the parcels that are subject to mining already have the SG overlay.

5. Source: 2030 Countywide General Plan, with verification thru Yolo County GIS Public Viewer. AG = Agriculture. OS = Open Space. The Open Space land use designation applies to the portions of the parcels associated with Cache Creek.

2.3.3 Geology

The geology of the site is shown on Figure 3. The Mine is located in the northern portion of the Great Valley Geomorphic Province of California. The Mine is located on an alluvial terrace surface south of Cache Creek and is underlain by Quaternary alluvial deposits of the creek. The northern portion of the site is mapped as part of the active stream channel, while the central area is underlain by Holocene alluvial deposits. The southern portion of the site is underlain by older alluvium units. Mineral resources consist primarily of sand and gravel.

The site is not located in any currently established official geologic hazard zones (e.g., liquefaction, active faulting, landslides) established by the California Geologic Survey ("CGS") or local agency specific plan element.

2.3.4 Soils

The Natural Resources Conservation Service ("NRCS") has mapped eight soil units on the Mine site, as shown on Table 4, below (see also Figure 4, Soils Map).

2.3.5 Seismicity

The site is not located within a currently established Alquist-Priolo Earthquake Fault Zone. There are no active faults mapped within the Mine limits and the site is not within an Earthquake Fault Zone as mapped by the California Geological Survey. The Great Valley Fault System and a segment of the Dunnigan Hills Fault, located approximately 6 miles to the west and northwest, respectively, are the closest known active faults to the site (Geocon, 2018).

2.3.6 Biological Resources and Communities

CEMEX retained Zentner Planning & Ecology ("Zentner") to assess the potential for sensitive biological communities, special-status plant and wildlife species, and sensitive biological resources at the site (see Appendix A, Biological Resources Update). The key findings of Zentner's updated assessment are summarized below.

TABLE 4
NRCS SOIL SUMMARY

Map Unit Symbol	Map Unit Name	Typical Profile
Within surface mining disturbance boundary:		
BrA*	Brentwood silty clay loam, 0 to 2 percent slopes	H1 - 0 to 10 inches: silty clay loam H2 - 10 to 35 inches: silty clay loam H3 - 35 to 60 inches: silty clay loam
Ya*	Yolo silt loam, 0 to 2 percent slopes	Ap1 - 0 to 2 inches: silt loam Ap2 - 2 to 8 inches: silt loam A1 - 8 to 19 inches: silt loam A2 - 19 to 26 inches: silt loam C1 - 26 to 33 inches: silt loam C2 - 33 to 41 inches: silt loam Ab - 41 to 58 inches: silty clay loam C'3 - 58 to 65 inches: silt loam
So**	Sycamore silt loam, 0 to 1 percent slopes	H1 - 0 to 14 inches: silt loam H2 - 14 to 60 inches: silt loam
Rh	Riverwash, 0 to 2 percent slopes	H1 - 0 to 6 inches: gravelly sand H2 - 6 to 60 inches: stratified gravelly coarse sand to sandy loam
Outside of surface mining disturbance boundary:		
Ca*	Capay silty clay, 0 percent slopes	Ap - 0 to 11 inches: silty clay A - 11 to 18 inches: silty clay Bss1 - 18 to 36 inches: silty clay Bkss - 36 to 49 inches: silty clay B'ss2 - 49 to 64 inches: silty clay
Lm	Loamy alluvial land, 0 to 2 percent slopes	H1 - 0 to 10 inches: gravelly sandy loam H2 - 10 to 30 inches: stratified sand to gravelly loam H3 - 30 to 60 inches: stratified gravelly sand to gravelly loam
Mf*	Marvin silty clay loam, 0 to 1 percent slopes	H1 - 0 to 12 inches: silty clay loam H2 - 12 to 41 inches: silty clay H3 - 41 to 60 inches: silty clay loam
Sh	San Ysidro loam, 0 to 5 percent slopes	Ap - 0 to 8 inches: loam A - 8 to 15 inches: clay loam Bt1 - 15 to 26 inches: clay Bt2 - 26 to 34 inches: clay Bt3 - 34 to 54 inches: silty clay Ck - 54 to 80 inches: silty clay loam

Notes:

* Soil type meets the criteria for "prime farmland" as outlined in the U.S. Department of Agriculture's Land Inventory and Monitoring Project for the Yolo County soil survey.

** Soil types meets the criteria for "prime farmland" if drained.

Biological Communities:

Zentner identified the following biological communities on-site:

1. Perennial Marsh. Perennial marsh is restricted to the periphery of the deeper pools found within Cache Creek. These pools usually are formed within eroded cuts near the toe of the creek banks or within beaver dams that are common throughout the channel. These marshes support deep-rooted perennials such as bulrush (*Schoenoplectus acutus*), cattail (*Typha sp.*) and rushes (J*uncus sp.*).

2. Riparian. The riparian vegetation on site is primarily located near the toe of the creek banks along Cache Creek. It is also found in old carved out creek meanders on both the north and south banks, with some of the old meanders relatively high in elevation compared to the existing channel bed. A few of these old meanders are located within the project site within a distance of approximately 150 feet of the channel bed. These riparian areas are dominated by various species of willows (*Salix sp.*), Fremont cottonwood (*Populus fremontii*) and mulefat (*Baccharis salicifolia*).

3. Oak Savanna. The oak savanna runs along a relatively narrow band near the top of the southern bank of Cache Creek. This habitat, which is dominated by valley oak (*Quercus lobata*) with an understory of annual grassland, likely covered much of the region in proximity to Cache Creek prior to human disturbances.

4. Annual Grassland. Perennial grassland habitat, along with oak savanna, likely once co-dominated the entire site from the banks of Cache Creek to the southern edge of the property along Highway 16. The existing grassland is dominated by non-native, annual grasses such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut (*Bromus diandrus*), and rye (*Festuca perennis*). It is found along the upper banks of Cache Creek and on the terrace between the creek and the active mining areas and agricultural areas. A more ruderal form of the annual grassland is found along the margins of these mined areas and the agricultural parcels.

5. Ruderal. A portion the annual grassland habitat is dominated by ruderal (weedy) vegetation. These areas are generally located near the CEMEX operating plant or in disturbed areas adjacent to mining or agricultural fields. Habitat in these areas are dominated by thistles (milk thistle, *Silybum marianum*; bull thistle, *Cirsium vulgare*), starthistle (*Centaurea solstitialis*) and other weedy species.

6. Agriculture. The majority of the site consists of agricultural land that is currently being mined or will be mined in the future. Recently the site was in wheat and oat hay crop production. In prior years crops have included corn, sunflowers, and tomatoes.

Special-Status Species:

Zentner identified four special-status species that are either known to occur or that have the appropriate habitat to occur on site:

1. Bank swallow (*Riparia riparia*), State Threatened. Present nesting.
2. Swainson's hawk (*Buteo swainsoni*), State Threatened. Observed foraging or flying over the site.
3. Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*), Federally Threatened. Present along Cache Creek.
4. Western red bat (*Lasiurus blossevillii*), Western Bat Working Group – High Priority, CDFW Species of Special Concern. Limited potential habitat occurs within the habitat depressions and along the banks of Cache Creek.

Pursuant to PRC §2772.1, the County will evaluate the potential for impacts to these species and outline appropriate mitigations as needed in the project CEQA document.

2.3.7 Hydrology

Surface Waters and Drainage

Cache Creek, which flows generally from west to east, is located to the north of the Mine boundary (see Figure 2). Mining activity will continue to be setback a minimum of 200 feet from the creek. No wetlands or other Waters of the U.S. have been mapped within the Mine boundary.

In 2016, CEMEX retained Cunningham Engineering ("Cunningham") to utilize the County's current Cache Creek hydraulic model to plot the 100-year water surface profile along the entire mining reach. Cunningham concluded that the 100-year water surface is effectively contained within the creek (see Appendix B, Hydraulic Analysis of the CEMEX Reach).

Groundwater

CEMEX retained Luhdorff & Scalmanini Consulting Engineers ("LSCE") to prepare a groundwater assessment in support of this Plan and a 20 year mining use permit extension (see Appendix C, Groundwater Assessment). LSCE's assessment provides detailed documentation of historic and current groundwater conditions at the site, which is summarized below.

The groundwater monitoring well network at the site presently consists of a total of 19 wells, including 15 dedicated observation wells and 4 production wells. Continuous groundwater monitoring has been taking place in on-site wells since 1990 and LSCE has been preparing annual monitoring reports with cumulative data evaluation since 2003, with the most recent one dated October 25, 2022 (LSCE 2022). Results of the ongoing monitoring efforts provide a comprehensive data set of groundwater conditions in the vicinity of the Mine including pre-mining conditions and conditions throughout mining and reclamation activities that have occurred to date. The entirety of this record shows no evidence or indication that the mining and plant operations have caused any changes in groundwater levels or quality to date. (LSCE 2022).

In March 2017, the principal direction of groundwater flow was to the east, with groundwater elevations ranging from 126’ msl to 108’ msl (see Appendix C at Figure 7). During this time, groundwater levels were above Cache Creek’s theoretical thalweg elevations indicating that the groundwater was acting as a source of recharge to the creek. The conditions are typical for times of higher groundwater levels (winter and early spring) in the vicinity of the CEMEX properties, and are consistent with the historical water level record. In September 2017, the principal direction of groundwater flow was to the east, with groundwater elevations ranging from 120’ msl to 102’ msl (see Appendix C at Figure 8). During this time, groundwater levels were near to or below Cache Creek’s theoretical thalweg elevations indicating that the creek acted as a source of recharge to the local groundwater. These conditions are typical for times of low groundwater levels (late summer and fall) in the vicinity of the CEMEX Madison properties, and are consistent with the historical water level record.

CEMEX also retained LSCE to provide an estimate of average high and average low groundwater levels to inform the engineering designs for this Plan (see Appendix D, Estimation of Average High Groundwater Levels, and Appendix E, Estimation of Average Low Groundwater Levels). The average high and average low groundwater level estimates were obtained to ensure this Plan meets the following County code requirements:

1. County SMRO Section 10-5.516, which requires that reclaimed agricultural fields be backfilled to an elevation at least five feet above the average high groundwater level; and

2. County SMRO Section 10-5.530, which requires that final slopes less than five feet below the average low groundwater level shall not be steeper than 2H:1V.

The estimated average high and average low groundwater levels have been incorporated into project design, as appropriate.

2.4 Effect on Surrounding Land Uses [CCR §3502(b)(1)]

2.4.1 Surrounding Land Uses

The predominant land uses in the vicinity of the Project include aggregate mining and processing, agriculture and open space associated with Cache Creek (see Figure 2). To the north, the site is bound by Cache Creek and agricultural lands that lie beyond it. To the east, the site is bound by agriculture as well as a rural residential / commercial land use. To the south, the site is bound by California Highway 16 and agriculture, with a few rural residences. To the west, the site is bound by Interstate 505.

2.4.2 Effect that Reclaimed Site Conditions May Have on Surrounding Land Uses

Reclamation to the planned end uses of agriculture, permanent lakes and wildlife habitat are not anticipated to have any substantial effect on existing and future uses of surrounding lands. In fact, many of the surrounding lands currently exhibit similar land uses.

2.5 Slope Stability and Disposition of Fill Materials

2.5.1 Final Slopes; Slope Angles Flatter than Critical Gradient [CCR §3502(b)(3)]

CCR §3704(f).	*Final cut slopes have minimum factor of safety for end use and conform with surrounding topography and/or approved end use.*

CEMEX retained Geocon Consultants ("Geocon") to perform a slope stability evaluation in support of this Plan (see Appendix F, Slope Stability Evaluation).

Geocon assessed the following final cut slope parameters of the Mine design for a maximum slope height of 70 feet:

Slope:	Gradient (H:V):
Finish cut slopes, from surface to 5 feet below average low groundwater levels	2:1
Finish cut slopes, >5 feet below average low groundwater levels	1:1

Geocon concluded that these recommended reclamation slope angles will be stable with adequate static (≥ 1.5) and seismic (≥ 1.1) factors of safety for the proposed end uses.

For the perimeter of permanent lakes to be developed under this Plan, slopes ranging from 2:1 to 10:1 above water will be developed to enhance the development of vegetation zones, the provision of wildlife habitat, and a diverse scalloped shoreline. These gentler slopes are shown on Sheet R-06, Phases 5 and 6. These slopes may either be excavated to this condition or backfilled to achieve this final condition, as further described in Section 2.5.2, below.

2.5.2 Fill Slopes and Compaction Standards

CCR §3502(b)(4).	*Disposition of fill materials considered. Foundation fills for end use in conformance with good engineering practice.*
CCR §3704(a).	*For urban use, fill compacted in accordance with UBC, local grading ordinance, or other methods approved by the lead agency.*
CCR §3704(b).	*For resource conservation, compact to standard for that end use.*
CCR §3704(d).	*Final reclamation fill slopes not exceed 2:1, except when allowed by site-specific engineering analysis, and can be revegetated.*

CCR §3704(e).	*At closure, final landforms of fills conform with surrounding topography and/or approved end use.*

Phases 1, 2, 3, and 4 will receive backfill for reclamation to agriculture. Phases 5 and 6 will be reclaimed to permanent lakes and will generally not require backfill (unless performed at the direction of the project habitat restoration consultant to flatten perimeter lake slopes for future habitat value). Backfill with overburden and topsoil will be performed using conventional mobile equipment such as scrapers and bulldozers that will provide an appropriate level of compaction for the planned end uses. Reclaimed (backfilled) agricultural fields will have lowered elevations relative to original ground. However, as required by SMRO Section 10-5.516, the final distance between lowered surfaces reclaimed to agriculture and the average high groundwater will not be less than five feet (see Sheets R-04, R-05 and R-07). Final landforms of fills conform to County requirements and will be compatible with the end use. Final reclamation fill slopes will not be steeper than 2H:1V.

As previously described, the Mine design includes a "constructed" alluvial separator between Phases 3 and 4, which is comprised of gravel and clay with 4H:1V side slopes, to re-purpose Phase 3 as a settling pond (see Sheet M-05). Geocon specifically analyzed stability for the constructed alluvial separator and found that it would have adequate static and seismic factors of safety of 2.9 and 1.6, respectively (see Appendix F for detail). The design separator was completed in 2022.

No backfill for urban uses or resource conservation purposes is proposed.

2.6 Hydrology and Water Quality

2.6.1 Surface and Groundwater Quality Protected in Accordance with Porter-Cologne and Clean Water Acts [CCR §3710(a)]

CCR §3706(a).	*Mining and reclamation to protect downstream beneficial uses.*
CCR §3706(b).	*Water quality, recharge, and groundwater storage that is accessed by others shall not be diminished, except as allowed by plan.*
CCR §3503(b)(2).	*Substantially prevent siltation of groundwater recharge areas.*

Surface and groundwater will continue to be protected from siltation and pollutants as required by the Federal Clean Water Act, the Porter-Cologne Water Quality Control Act, County ordinances, Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board.

The site is subject to storm water events but does not discharge surface water from mined areas. The mining areas effectively function as self-contained basins. If required in the future, the Operator will comply with National Pollutant Discharge Elimination System ("NPDES") Industrial Storm Water General Permit requirements, including implementation of a Storm Water Pollution

Prevention Plan ("SWPPP") with Best Management Practices ("BMPs") to control erosion, sedimentation, and pollution. In addition, the Operator will continue to comply with its existing Waste Discharge Requirements Order No. R5-2003-0113 ("Order," issued by the RWQCB Central Valley Region), as may be amended from time to time, governing the discharge of process water and process wash fines to land.

As required, the Operator will implement a Spill Prevention, Control, and Countermeasure Plan ("SPCC Plan") and Hazardous Materials Business Plan pursuant to 40 CFR Part 112 and 19 CCR Section 2729, respectively.

Based on the results of LSCE's groundwater assessment (Appendix C), surface mining and reclamation activities are not expected to affect downstream beneficial uses of water, or the quality of water, recharge potential, or storage capacity of groundwater aquifers. LSCE concluded that the entirety of the site record shows no evidence or indication that the mining and plant operations have caused any changes in groundwater levels or quality to date, or that they would in the future.

2.6.2 Drainage, Sediment and Erosion Control [PRC §2773(a)]

CCR §3503(a)(3). *Erosion control facilities constructed and maintained where necessary.*

CCR §3503(b)(1). *Settling ponds used where they will provide significant benefit to water quality.*

CCR §3503(e). *Grading and revegetation to minimize erosion and convey surface runoff to natural drainage courses or interior basins. Spillway protection.*

CCR §3706(c). *Erosion and sedimentation controlled during all phases of construction, operation, reclamation, and closure of surface mining operation to minimize siltation of lakes and water courses per RWQCB/SWRCB.*

CCR §3706(d). *Surface runoff and drainage controlled to protect surrounding land and water resources. Erosion control methods designed for not less than 20 year/1 hour intensity storm event.*

CCR §3706(e). *Altered drainages shall not cause increased erosion or sedimentation.*

Drainage and Erosion Control

This Plan is designed to minimize erosion and retain direct precipitation and run-on in interior basins including the existing riparian depressions along the north side of the Mine. As required by CCR §3706(d), erosion control methods have been designed for the 20 year/1 hour intensity storm event (see Sheet M-02, at Note 11).

The Mine is located in the vicinity of Cache Creek (see Figure 2) and mining will continue to be set back a minimum of 200 feet from the creek. Drainage patterns for mining and reclaimed conditions are represented by arrows on Sheets M-05 through M-08 and Sheets R-04 through R-07. Erosion control facilities, such as rip-rap run downs with velocity dissipation have been incorporated into drainage design (see Sheet M-02 for typical detail).

During mining operations, surface runoff that collects in the mine floor will be allowed to evaporate, infiltrate, or be used on-site (e.g., for dust control). Berms and ditches will be used to prevent off-site drainage (e.g., from adjacent agricultural fields) from entering open water excavations. Erosion control facilities will be monitored at least annually during routine engineering evaluations of the site, as required by the County.

Per Zentner's recommendation, upland areas above the existing open water pits (north side of Phases 3, 4, and 5, within the 200-foot creek buffer) have been designed to drain into the existing riparian depressions located between the open water pits and the creek (see Appendix G, Letter Recommendation for Drainage to Riparian Depressions). Zentner assessed these riparian depressions as part of its habitat restoration plan update (described later in this Plan) and advised that their high infiltration rates and small watersheds would not sustain long-term habitats without supplemental hydrology. Zentner noted that this may be why a number of trees died within the depressions during the recent extended drought. This drainage plan also serves to direct runoff from mined areas away from the open water pit excavations in Phases 3 and 4, consistent with the requirements of County code.

Natural drainage courses will not be covered, restricted, rerouted or otherwise impacted by surface mining activities.

If required, the Operator will comply with the NPDES General Permit requirements, which involves preparation and implementation of a SWPPP, including BMPs to control erosion, sedimentation, and pollution. During initial surface disturbance activities, customary BMPs, as well as the requirements of a SWPPP, if needed, will be implemented to ensure that water courses are protected from erosion, gullying, sedimentation and potential contamination. Slopes will be vegetated with appropriate native seed mixes once final reclamation grades are achieved.

Settling Ponds

Settling ponds (accepting and settling aggregate process wash fines, or silts) have been used at the site since the onset of aggregate processing activities in the 1970s. Portions of Phase 1, which have already been substantially reclaimed to agriculture, were once used as settling ponds. Currently, a small pond in the northeast corner of Phase 1 serves as the active settling pond that receives wash fines discharged from the aggregate processing plant (see Sheet M-05). The Operator will continue to use this pond as a settling pond until it reaches its capacity.

The Operator has constructed an alluvial separator (dike) at the east end of Phase 3 to re-purpose the area as the Mine's ultimate settling pond. The Phase 3 and alluvial separator configuration was specifically designed for sufficient capacity to accommodate the wash fines that are projected to be generated from the anticipated life of the Mine (i.e., aggregate wash fines silts generated from the production of 30 million tons of mined sand and gravel). Discharge of wash fines will continue to be conducted pursuant to the WDR Order No. R5-2003-0113.

2.6.3 Contaminant Control and Mine Waste Disposal [PRC §2772(c)(8)(A)]

CCR §3503(a)(2).	*Overburden stockpiles managed to minimize water and wind erosion.*
CCR §3503(d).	*Disposal of mine waste and overburden shall be stable and not restrict natural drainage without suitable provisions for diversion.*
CCR §3712.	*Mine waste and tailings, and mine waste disposal units governed by SWRCB/IWMB (Article 1, Subchapter 1, Chapter 7, Title 27, CCR).*

Mine waste will be limited to overburden (to be used on-site for reclamation) and general refuse (which will be disposed of in accordance with applicable standards). Fill slopes (if any), perimeter berms, and temporary stockpiles will be seeded and wetted as needed to minimize water and wind erosion, and will not restrict natural drainage courses. No material stockpiles will be left following reclamation. However, any berms installed for safety along roads may be left in place, where those roads remain to facilitate the planned end uses.

2.6.4 In-stream Activities [CCR §3710(b)]

PRC §2772(c)(8)(B).	*Rehabilitation of streambanks/beds to minimize erosion.*
CCR §3502(b)(6).	*Temporary stream and water diversions shown.*
CCR §3706(f)(1).	*Stream diversions constructed in accordance with Fish and Game Code.*
CCR §3706(f)(2).	*Stream diversions constructed in accordance with Federal Clean Water Act and Rivers and Harbors Act of 1899.*
CCR §3706(g).	*All temporary stream diversions eventually removed.*
CCR §3710(c).	*In-stream channel elevations and bank erosion evaluated annually using extraction quantities, cross-sections, aerial photos.*
CCR §3710(d).	*In-stream mining not cause fish to be trapped in pools or off-channel pits, or restrict migratory or spawning activities.*

The Mine is located south of Cache Creek, and mining will continue to be set back a minimum of 200 feet from the creek. No in-stream mining or work in the active waterway is proposed. Temporary stream and water diversions are not required.

2.7 Protection of Fish and Wildlife Habitat [CCR §3503(c)]

CCR §3703(a). *Sensitive species conserved or mitigated.*

CCR §3703(b). *Wildlife habitat at least as good as pre-project, if approved end use is habitat.*

CCR §3703(c). *Wetlands avoided or mitigated at 1:1 minimum.*

CCR §3704(g). *Piles or dumps not placed in wetlands without mitigation.*

The Operator will avoid sensitive habitats and protected trees (as identified in Appendix A) until such time as it obtains the required approvals from appropriate regulatory agencies (e.g., Yolo County, U.S. Fish and Wildlife Service, Corps of Engineers, Central Valley Regional Water Quality Control Board and California Department of Fish and Wildlife). No wetlands have been mapped on-site and the undisturbed portions of future mining Phases 5 and 6 are in active agricultural production. If wetlands are identified in the future, then they will either be avoided or mitigated at 1:1 minimum ratios. For any sensitive avian species, active nests will be avoided during the nesting season or appropriate mitigation will be implemented as required by the responsible regulatory agency.

2.8 Resoiling [CCR §3503(f)]

CCR §3704(c). *Mine waste stockpiled to facilitate phased reclamation and separate from growth media.*

CCR §3503(a)(1). *Removal of vegetation and overburden preceding mining kept to a minimum.*

CCR §3711(a). *All salvageable topsoil removed. Topsoil and vegetation removal not precede mining by more than one year.*

CCR §3711(b). *Topsoil resources mapped prior to stripping, location of stockpiles on map. Topsoil and growth media in separate stockpiles.*

CCR §3711(c). *Soil salvage and phases set forth in plan, minimize disturbance, designed to achieve reveg success.*

CCR §3711(d). *Topsoiling phase ASAP. Topsoil stockpiles not be disturbed until needed. Topsoil stockpiles clearly identified and planted with vegetation or otherwise protected.*

CCR §3711(e). *Topsoil redistributed in stable site and consistent thickness.*

CCR §3707(b). *Segregate and replace topsoil by horizon.*

CCR §3705(e). *Soil altered or other than native topsoil, requires soil analysis. Amend if necessary.*

CEMEX retained Zentner to prepare an updated Habitat Restoration Plan, which includes recommendations on resoiling and substrate preparation that have been incorporated in this Plan (see Appendix H, Habitat Restoration Plan). Resoiling will occur in mined areas south of the 200-foot Creek buffer, primarily to return mined areas back to agriculture production. Some resoiling will also occur in the buffer areas around the reclaimed agricultural fields and the permanent lakes for habitat restoration.

Consistent with Zentner's recommendations, prior to revegetation the Operator will generally handle soils and prepare a revegetation substrate in the following manner:

1. Remove soils only as necessary to access new mining areas and use them for reclamation as soon as it can be accommodated by the mining schedule.

2. To the extent practicable, limit topsoil and vegetation removal to within one year of fill placement.

3. Where possible, place soils that have been removed for direct use in reclamation. Where salvaged topsoil cannot be used immediately for reclamation, stockpile it separately from other overburden and do not disturb until needed for reclamation.

4. Seed soil stockpiles with an appropriate native seed mixture as needed to prevent water and wind erosion and to discourage weed growth (see Table 10 in Section 2.9.1, below).

5. Prior to resoiling, rip, disc and/or scarify fill areas as needed to relieve compaction and remove rills, ruderal vegetation, or other surface irregularities.

    - For areas to be reclaimed to agriculture, rip all A-horizon and B-horizon soils to a depth of three (3) feet after every (2) foot layer of soil placement, per SMRO §10-5.531.

6. Redistribute topsoil in preparation for revegetation, with a target thickness of 12- to 24-inches of topsoil atop overburden and/or other native substrate materials in the mine floor.

    - The thickness of topsoil salvaged and redistributed on the site during reclamation will vary. The target thickness of 12- to 24-inches is only a guideline based on available site specific soil information.

    - For areas to be reclaimed to agriculture, where distinct soil horizons are present, the sequence of horizons will have the A atop the B, the B atop the C, and the C atop the graded surface.

7. Following resoiling, where soil has been compacted, till or scarify the ground surface to create a favorable seedbed.

Growth media for revegetation will consist of native topsoil and overburden. The average thickness of overburden and topsoil replaced on the site during reclamation will vary depending on the reclamation use of an area. Where salvaged topsoil and growth media cannot be used immediately, topsoil (A horizon) and other growth media (e.g., B and C horizon) will be stockpiled separately and will not be disturbed until needed for reclamation. Stockpiles will be properly identified with signage to help ensure topsoil and other growth media are not mistakenly blended. Soil stockpiles will have maximum heights of 40 feet and maximum side slopes of 2H:1V. These stockpiles will be seeded with an appropriate seed mixture as needed to prevent water and wind erosion and to discourage the growth of weeds.

Soil amendments, if required during revegetation efforts, will be applied according to manufacturer's specifications.

2.9 Revegetation [CCR §3705]

2.9.1 Vegetative Cover and Planting Procedures

CCR §3503(g).	*Revegetation and plant survival (use available research).*
CCR §3705(a).	*Vegetative cover, suitable to end use, self-sustaining. Baseline studies documenting cover, density and species richness.*
CCR §3705(c).	*Decompaction of site.*
CCR §3705(g).	*Use native plant species, unless exotic species meet end use.*
CCR §3705(h).	*Plant during correct season.*
CCR §3705(i).	*Use soil stabilizing practices and irrigation, when necessary to establish vegetation.*
CCR §3707(d).	*Fertilizers and amendments not contaminate water.*

Revegetation Goals and Objectives

The Mine site will be reclaimed to agriculture, permanent lakes and wildlife habitat end uses. In support of these end use objectives, Zentner prepared an updated Habitat Restoration Plan, which includes detailed recommendations on restoration and revegetation that have been incorporated in this Plan (see Appendix H). Restored wildlife habitats will feature lakes with habitat peninsulas and islands, riparian woodland, perennial marsh, oak savannah, and native grasslands. Supplemental tree-screening is also planned along Interstate-505. Zentner's plan includes the following principles to create quality, self-sustaining habitats that provide native plant diversity for native wildlife:

1. Provide for a diversity of native habitat types and vegetative communities that have the potential to support a variety of native wildlife including special status species.

2. Provide native grassland buffers around reclaimed agricultural parcels as well as a wide, continuous native buffer between Cache Creek and reclaimed habitats.

3. Provide a continuous corridor between the lakes and Cache Creek.

4. Provide for a structurally diverse shoreline around the lakes with variable slopes and communities.

5. Provide diverse riparian habitats around the lakes and within the preserved depressions to provide important roosting and nesting habitats.

6. Provide islands in the Phase 5 and Phase 6 lakes with native riparian, oak savannah and grassland habitats to provide refugia and nesting habitat for native waterfowl and other wildlife.

Site Preparation for Revegetation

As disturbed areas become available for reclamation, habitat restoration areas will generally be prepared for revegetation as follows (see Appendix H at Section III for detail):

1. *Preconstruction Activities.* The restoration contractor will establish and stake the limits of planting areas. Where necessary, preconstruction surveys will be conducted and orange construction fencing or similar visible barrier will be installed to delimit sensitive areas adjacent to construction areas.
2. *Site Preparation.* Non-native vegetation, trash, debris, and weeds will be cleared. Prior to habitat restoration in the riparian depressions, grading within the adjacent oak savannah and upland mining areas will be completed to enlarge the watersheds for the riparian depressions as much as practicable (see also Appendix G). Unless already completed as a component of mining, the shoreline of the Phase 5 and Phase 6 lakes will be scalloped to provide a variety of slopes, peninsulas, and shallow water habitats.
3. *Resoiling*. As described in Section 2.8 above, each area to be re-vegetated will undergo resoiling as necessary or applicable to the end use with substrate scarification to promote revegetation efforts.

4. *Application of Herbicides*. Application of herbicides may be used ahead of planting to minimize potential for weed growth, as directed by the restoration contractor.

General Revegetation Practices

Revegetation will generally proceed in the following manner:

1. *Seeding and Planting*. Following site and substrate preparation for each area to be reclaimed, seeding and planting will occur as summarized below and detailed in Appendix H. Specific planting techniques are set forth in Appendix H at Chapter V.

2. *Timing*. To the extent practicable, seeding and planting will take place between October 1st and the end of February in order to take advantage of early season rainfall.

3. *Supplemental Irrigation*. Native trees and shrubs to be planted (e.g., in the riparian, oak savannah and native grassland habitats) will be irrigated through a simple, temporary drip system. Drip irrigation will be supplied for the planted trees and shrubs for up to two years from their initial planting with a gradual tapering in the third year and no irrigation in the fourth and fifth years. The species chosen for inclusion in the seed mixes (described below) are intended to be self-sustaining without dependence on long-term irrigation or ongoing applications of soil amendments or fertilizers.

Restoration Plantings

The following restoration planting details are sourced from Appendix H, Section V, Restoration Planting.

Riparian Woodland

Riparian woodland will be planted around the perimeter of the lakes and peninsulas in Phases 5 and 6, around the islands, and within the riparian depressions that are located within the geographic limits of the 200-foot Cache Creek setback. Within the lake and island areas, riparian woodland will be planted on the slopes buffering the lake starting at or just inside of average high water (AHW). This riparian habitat will slowly transition to oak savannah and native grassland. The result will be a complete system of grasslands and woodlands that will provide native diversity and cover for wildlife foraging and movement.

The riparian depressions will also be planted with riparian woodland. The surrounding slopes within the oak savannah and upland mining areas between Phases 3 and 4 and the riparian depressions will be graded such that they drain into these areas and help support the riparian hydrology of these depressional habitats. Invasive vegetation including but not limited to tamarisk, giant reed grass and several species of thistles will be removed and/or treated with an herbicide prior to revegetation work as appropriate for each species. For a complete list of the priority invasive plants that are subject to weed control please refer to Appendix H, Section IX.

Table 5 provides the planting pallet for restoration to Riparian Woodland. See Appendix H at Figure 3 for an illustrative typical cross-section.

TABLE 5
RIPARIAN WOODLAND PLANT LIST

Common Name	Scientific Name	Size	lbs/Acre
TREES			
red Willow	*Salix laevigata*	tree pot	32
arroyo willow	*Salix lasiolepis*	tree pot	25
black willow	*Salix gooddingii*	tree pot	15
Fremont cottonwood	*Populus fremontii*	tree pot	27
N. California walnut	*Juglans hindsii*	tree pot	10
boxelder	*Acer negundo*	tree pot	8
SHRUBS			
buttonbush	*Cephalanthus occidentalis*	1 gal	35
mugwort	*Artemesia douglasiana*	1 gal	40
mulefat	*Baccharis salicifolia*	1 gal	35
Calif. rose	*Rosa californica*	1 gal	23
Calif. blackberry	*Rubis ursinus*	1 gal	10
wild grape	*Vitis californica*	1 gal	10
		TOTAL	**270**
GRASSES			
creeping wildrye	*Elymus triticoides*	Plug	800

Perennial Marsh

Native perennial marsh vegetation will be planted around the Phase 5 and 6 lakes. This habitat most naturally occurs between average high water (AHW) and average low water (ALW), which is the zone where planting will take place. Vegetation will consist of relatively deep-rooted perennials that are adapted to perennially wet conditions. This vegetation will transition naturally to riparian woodland.

Table 6 provides the planting pallet for restoration to Perennial Marsh. See Appendix H at Figure 3 for an illustrative typical cross-section.

TABLE 6
PERENNIAL MARSH PLANT LIST

Common Name	Scientific Name	Size	lbs/Acre
bulrush	*Schoenoplectus acutus*	tree band	15
bulrush	*Schoenoplectus americanus*	tree band	15
cattail	*Typha domingensis*	tree band	20
baltic rush	*Juncus balticus*	rose-pot	100
common rush	*Juncus effuses*	tree band	15
dense sedge	*Carex densa*	rose-pot	100
horsetail	*Equisetum hyemale*	1 gal	10
		TOTAL	**275**

Oak Savannah and Native Grassland

The Oak Savannah habitat will be restored within the 200-foot buffer between Cache Creek and the mined areas. This habitat will contain relatively sparse trees with denser shrubs and a native grassland understory. This habitat better approximates the vegetation that existed in this zone prior to habitat conversion associated with human disturbances. As well, this vegetation is better adapted to the soils in this zone. The soils in this area are generally well-drained but contain pockets of more and less well drained soils. The planting pallet below allows for planting appropriate vegetation based upon soil micro-habitats as well as native grassland that is adapted to all of these soils. This vegetation will also be planted in the upper banks around the Phase 5 and 6 lakes above the riparian woodland vegetation and just up to the top of bank. Oak Savannah and native grassland understory vegetation will also be planted within the interior portion of the islands, in an elevation just above the riparian woodland. In both instances, the riparian woodland vegetation will transition to the oak savannah and native grassland vegetation.

Table 7 provides the tree and shrub planting pallet for oak savannah. The grassland seed mix component is detailed further below. See Appendix H at Figure 3 for an illustrative typical cross-section, Figure 6 for the peninsula planting plan, and Figure 7 for the island planting plan.

TABLE 7
OAK SAVANNAH PLANT LIST

Common Name	Scientific Name	Size	Qty/Acre
TREES			
Valley oak	*Quercus lobata*	tree pot	5
buckeye	*Aescuslus californica*	tree pot	7
interior live oak	*Quercus wizlensii*	tree pot	2
SHRUBS			
coyote bush	*Baccharis pilularis*	1 gal	39
yerba santa	*Eriodictyon californicum*	1 gal	28
coffeeberry	*Frangula californica*	1 gal	11
hollyleaf redberry	*Rhamnus ilicifolia*	1 gal	8
		TOTAL	**100**
GRASSES			
See Native Grassland Plant List ***(Table 8)*** *below*			

Native Grassland Buffer

The native grassland buffer habitat restoration will be located in areas that abut restored habitats including the lakes and the oak savannah. This habitat is meant to provide both a buffer from agricultural land uses and as a habitat transition to the restored habitats. As such, this habitat will be dominated by grasses and forbs. The restoration will occur by drill-seed in areas 3:1 or flatter and broadcast seeding in other instances. Rose-pots will generally be planted in clusters of between five to seven plants.

Table 8 provides the plant and seed mix for the native grassland lake buffer. See Appendix H at Figure 3 for an illustrative typical cross-section.

For these habitats, grass and grass-like plug plantings will be placed on one-foot centers. Trees and shrubs will be placed in clusters of approximately 3-5 plants except within the oak savannah, where trees will be relatively widely spread over the habitat.

Interstate 505 Tree Screen

Fremont cottonwoods will be planted to fill in the gaps of the existing cottonwoods that make up the Interstate 505 tree screen. A total of 40 trees will be planted to fill in these areas. In addition, a small portion of the screen closest to Cache Creek will be planted with California walnut, as these have been successful in this portion of the project area, and they will integrate into those that already exist.

Table 9 provides the planting pallet for the Interstate 505 tree screen.

TABLE 8
NATIVE GRASSLAND BUFFER PLANT LIST

Common Name	Scientific Name	Size	lbs/Acre
creeping wild rye	*Elymus triticoides*	seed	9
slender wheatgrass	*Elymus trachycaulus*	seed	7
purple needlegrass	*Stipa pulchra*	seed	6
blue wildrye	*Elymus glaucus*	seed	8
six-weeks fescue	*Festuca microstachys*	seed	2.5
meadow barley	*Hordeum brachyantherum*	seed	4
yarrow	*Achillea millefolium*	seed	2.5
California poppy	*Eschscholzia californica*	seed	3
sky lupine	*Lupinus nanus*	seed	3.5
gumplant	*Grindelia camporum*	seed	3
		TOTAL	**48.5**
milkweed	*Asclepias fascicularis*	rose pot	45
mugwort	*Artemesia douglasiana*	rose pot	15
		TOTAL	**60**

Note: Composition of seed mix (and appropriate modifications) to be determined based on availability from suppliers, test plot results (if applicable) and species determined most suitable at the time planting occurs.

TABLE 9
INTERSTATE 505 SCREENING PLANT LIST

Common Name	Scientific Name	Size	Number
TREES			
Fremont cottonwood	*Populus fremontii*	tree pot	40
California walnut	*Juglans hindsii*	tree pot	15

Soil Stabilizing Practices and Temporary Erosion Control

Should any supplemental soil stabilizing practices be needed, straw mulch, fiber rolls, erosion control blankets and/or other BMPs will be used as necessary to control soil erosion. Table 10 provides a fast growing erosion control seed mix that may be used for temporary disturbances (e.g., long-term overburden storage stockpiles).

TABLE 10
NATIVE EROSION CONTROL BROADCAST SEED MIX

Common Name	Scientific Name	Size	lbs/acre
blue wildrye	*Elymus glaucus*	seed	6
California brome	*Bromus carinatus*	seed	6
meadow barley	*Hordeum brachyantherum*	seed	5
six-weeks fescue	*Festuca microstachys*	seed	3.5
California poppy	*Eschscholzia californica*	seed	2.5
		TOTAL	**23**

Note: Composition of seed mix (and appropriate modifications) to be determined based on availability from suppliers, test plot results (if applicable) and species determined most suitable at the time planting occurs.

Agriculture Areas

For areas reclaimed to agriculture (e.g., row crop), fields will be backfilled/leveled as appropriate, graded for positive drainage, and prepared for crop plantings. The ultimate crop type to be planted is at the discretion of the landowner.

2.9.2 Revegetation Test Plots [CCR §3705(b)]

Disturbed mining slopes (in Phase 3) and agricultural backfill areas (in Phase 1) that have reached their final configuration and will not be further disturbed will serve as test plots for the respective revegetation seed mixes. If a portion of the Phase 4 area is seeded with the erosion control mix (from Table 10 above), then test plots may be set up in this area as a substitute for one of the above areas. For detail, see Appendix H at Section VIII, Test Plots.

2.9.3 Revegetation of Roads and Traffic Routes

CCR §3705(d). *Roads stripped of roadbase materials, resoiled and revegetated, unless exempted.*

CCR §3705(f). *Temporary access not bladed. Barriers installed.*

The existing and future perimeter road network are planned to be left in place for safety, fire protection, access between properties, and to facilitate the potential end uses. Temporary roads in the mine floor will be stripped of any roadbase materials, resoiled and revegetated as described above. No temporary access routes are anticipated as part of reclamation.

2.9.4 Noxious Weed Management [CCR §3705(k)]

During the revegetation establishment period, noxious weeds will be managed: (1) when they threaten the success of the proposed revegetation; (2) to prevent spreading to nearby areas; and (3) to eliminate fire hazard. Noxious weeds will be removed using a combination of herbicides, mechanical controls, and hand weeding. In some cases, complete eradication may not be feasible unless the weed-infested patches are small. Noxious weed identification and management will be an element of the revegetation monitoring period overseen by a qualified biologist.

For additional detail, see Appendix H at Section IX, Weed Control Plan, which includes a full list of priority noxious weeds developed for the CCRMP based on local observations documented in the 2020 Cache Creek Annual Status Report.

2.9.5 Plant Protection Measures, Fencing, Caging [CCR §3705(l)]

Shrubs may be subject to herbivory that could result in damage or loss of plants. At the direction of the restoration contractor, any or all of the following corrective measures may be implemented during plant installation if it is determined that plants may be jeopardized by wildlife:

- Plants susceptible to browsing will be protected using wire cages, tree shelters (e.g., hardware wire cages, etc.), or exclosure fencing (e.g., temporary rabbit fences).
- Wire screening will be installed around the roots of plants to prevent damage attributed to subterranean herbivores (e.g., gophers).
- Protective devices will be maintained in place for at least three years, or until herbivory is no longer a threat to the survival of the plants.
- During annual monitoring visits, the restoration contractor will observe for evidence of browsing and direct implementation of the measures outlined above as appropriate.

2.9.6 Revegetation Performance Standards and Monitoring [PRC 2773(a)]

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 confident level, as minimum.*
CCR §3705(j).	*If irrigated, demonstrate self-sustaining without for two years minimum.*

Monitoring

For <u>wildlife habitat end uses</u>, qualified biologists or botanists will monitor re-vegetated areas annually for a minimum of three years or until the final performance standards outlined below are met. The monitoring program shall be considered complete if during the last two years plantings required no human intervention. If intervention is necessary after the second year of monitoring, then remedial measures will be implemented and monitoring will continue until such time as the performance standards can be met or this Plan is modified.

Monitoring reports will summarize the reclamation responsibilities, construction and revegetation completed, monitoring implemented, and revegetation results compared to established success criteria. Photo documentation and field data will also be provided in appendices to the monitoring reports. If it is apparent that some reclamation features may not achieve intended success criteria, potential remediation opportunities will be evaluated or suggested and provided in the report. Monitoring results, including photographs, will be submitted as an annual report to the County by November 1 of each monitoring year. For additional detail see Appendix H at Section VII, Monitoring and Reporting.

For agriculture end uses, the Operator will monitor crop yields for two years as described in more detail below.

Revegetation Performance Standards

For areas reclaimed to wildlife habitat, reclamation will be measured against the following year five success criteria (see Appendix H for detail). Vegetation monitoring of the marsh, grassland, and understory (non-trees and shrubs) will be conducted in the same fashion for all of the habitat types, using permanent 1 square meter (approx. 10' x 10') plots.

The revegetation success criteria outlined below will be updated, if necessary, in consultation with the County following monitoring of the proposed test plot.

Perennial Marsh

Habitat Element	Performance Criteria
Vegetation Cover	≥60% per plot avg
Relative hydrophyte Cover	≥60% per plot avg
Relative cover of Native Species	≥60% per plot avg
Average number of Native Species (Species Richness)	≥3 native species per plot avg
Invasive cover	<10%

Riparian Woodland and Oak Savannah

Habitat Element	Performance Criteria
Woodlands	
Average Number of Native Trees	70% of target density *
Height of Trees	≥6’
Shrubs	
Number of Shrubs	70% of target density *
Height of Shrubs	≥2’

* Performance criteria can be met via planted materials or recruitment of native species or a combination of both

Native Grassland Buffer and Savannah Understory

Habitat Element	Performance Criteria

Vegetation Cover (Across all stratums)	≥60% per plot avg
Average Number of Natives (Across all stratums) (Species Richness)	≥3 native species per plot avg
Relative Cover of Natives (Across all stratums)	≥30% per plot avg
Invasive cover (Across all stratums)	<10% per plot avg

2.9.7 Agricultural Fertility Performance Standards [CCR §3707 and CCR §3708]

CCR §3707(a). *Return prime agriculture to fertility level specified in approved plan.*

CCR §3707(c). *Productivity rates equal pre-project or similar site for two consecutive years. Rates set forth in plan.*

CCR §3708. *Other ag capable of sustaining crops common to area.*

The Mine operates on prime agricultural lands as defined by the U.S. Soil Conservation Service (see Table 4 for reference). Table 2 shows the post-reclamation land uses for the six mining phases, as well as the plant site and remaining disturbed areas (e.g., conveyor alignment and creek buffer). Of the total site reclamation, ±419 acres are planned for a return to agriculture. The reclaimed agricultural fields will be backfilled to an elevation at least five feet above the average high groundwater level, consistent with the requirements of SMRO Section 10-5.516. Crops will be grown in the reclaimed areas in rotations as appropriate to sound farming practices in the area. Row crop types are likely to include tomatoes, grains (e.g., wheat), corn and sunflower.

Dellavalle Laboratory, Inc. ("Dellavalle") collected soil samples from existing overburden stockpiles at the Mine to test them for agricultural fertility (see Appendix I, Soil Fertility Results). Dellavalle concluded that there are no limitations to using any of the overburden or open field soils for agricultural crop production.

The following success criteria, consistent with CCR §3707 (performance standards for *prime* agricultural land) are proposed for the portions of the site to be returned to agriculture.

Fertility: Reclaimed areas should be capable of providing sufficient fertility to support reclaimed row crop production, such as tomatoes and grains (e.g., wheat), based on soil testing.

Topsoil Handling: Upon reconstruction of soils, the sequence of horizons will have the A atop the B, the B atop the C, and the C atop graded overburden.

Productivity Rates	Reclamation will be deemed complete when productive capability of the affected land is equivalent to or exceeds, for two consecutive crop years, that of the unmined agricultural lands adjacent to and south of the mining areas.
Amendments:	To prevent contamination of surface or groundwater, fertilizers and other soil amendments will be applied by qualified professionals in accordance with manufacturer specifications. In addition, reclaimed agricultural fields will be restricted from draining into the permanent lakes or Cache Creek.

2.10 Equipment Removal and Incidental Waste Disposal

CCR §3709(a). *Equipment stored in designated area and waste disposed of according to ordinance.*

CCR §3709(b). *Structures and equipment dismantled and removed.*

CCR §3502(b)(5). *Disposition of old equipment.*

Equipment used in mining and reclamation will be stored in designated areas near site access points and removed from the site following final reclamation.

Conveyor equipment will be dismantled and removed as part of reclamation unless needed to facilitate future mining in the area. Fences and roads providing access between properties will be left in place to facilitate the potential end uses.

Any incidental refuse or garbage will be collected, hauled off-site and disposed of in accordance with state and local standards.

The existing asphaltic concrete batch plant and ready-mix concrete batch plant are permitted and operate under separate County-issued entitlements and may be left in place at the Owner's discretion at the time of reclamation to continue to support future mining in the area and/or the construction materials needs of the region.

2.11 Closure of Portals, Shafts and Openings

CCR §3713(a). *Drill holes, water wells, monitoring wells completed or abandoned in accordance with laws.*

CCR §3713(b). *All portals, shafts, tunnels, or openings, gated or protected from public entry, but preserve access for wildlife.*

No portals, shafts, tunnels or other openings to underground workings are mapped or proposed. No drill holes (other than temporary drill holes used for exploration or quality testing purposes) are planned. Any water wells installed in support of surface mining or reclamation activities will be left in place to facilitate the potential end uses or abandoned in accordance with state and local laws and regulations.

2.12 Administrative Requirements

2.12.1 Statement of Reclamation Responsibility [PRC §2772(c)(10)]

Please see Appendix J, Statement of Reclamation Responsibility.

2.12.2 Financial Assurances [PRC §2773.1]

Financial assurances will remain in effect for the duration of the mining operation and any additional period until reclamation is complete. A Financial Assurance Cost Estimate will be updated annually following approval of this Plan and associated County Use Permit. Financial assurances may be adjusted up or down as appropriate based on updated estimates in future years.

2.12.3 Lead Agency Approvals and Annual Inspection [PRC §§2772.1 and 2774]

Upon Plan approval, the conditions of approval and/or mitigation measures pertinent to Plan requirements will be added to this Plan pursuant to PRC §2772.1(b)(7)(B) as Appendix K, Reclamation Related Conditions of Approval.

The Operator will submit a Mining Operation Annual Report to DMR and the County. This report will summarize the previous year's production and reclamation activities. SMARA also requires the County to conduct an annual inspection of the site to ensure compliance with the approved Plan.

2.12.4 All Mining Operations Since 1/1/76 Included in Reclamation Plan [PRC §2776]

Other than the processing plant site (portions of which have been in operation since approximately 1971) that is included in this Plan's boundary, no pre-1976 mining disturbances are apparent at the Mine.

2.12.5 Mining in 100-year Floodplain and Within One Mile of State Highway Bridge [PRC §2770.5]

Portions of Phase 1 of the Mine are located within the 100-year floodplain of Cache Creek, Zone A, as mapped by the Federal Emergency Management Agency ("FEMA") on its Flood Insurance Rate Map ("FIRM") No. 06113C0412G effective June 18, 2010. In addition, the Mine is located within one mile of the Interstate 505 bridge at Cache Creek. Therefore, because the Operator has requested a renewal (extension) of its permit in connection with approval of this Plan, the County (lead agency) is required to notify the State Department of Transportation ("DOT") that the application has been received. The DOT shall have a period of not more than 45 days to review and comment on the proposed surface mining operations with respect to any potential damage to the state highway bridge from the proposed surface mining operations. The lead agency shall not issue or renew the permit until the DOT has submitted its comments or until 45 days from the date the application for the permit was submitted, whichever occurs first.

3.0 LEAD AGENCY REQUIREMENTS [PRC §2772(C)(11)]

Section 3.0 of this Revised Plan addresses specific lead agency reclamation requirements, where it is believed those requirements either supplement or amplify the requirements of SMARA as outlined in Section 2.0. This part is not intended to restate or address every SMARA code section or policy related to the reclamation of mined lands.

Yolo County recognizes that the extraction of sand and gravel is essential to the continued economic well-being of the state and to the needs of society. Although the County encourages the production of sand and gravel, it believes that consideration must also be balanced by other societal values, including but not limited to recreation, water resources, wildlife, agriculture, and aesthetics.

For context, surface mining is regulated by Yolo County primarily through the Off-Channel Mining Plan (a component of the County's General Plan). The OCMP contains the structure and policies for implementing a program to manage the wide variety of resources associated with Cache Creek, including habitat, water resources, aggregate, agriculture, and recreation. The OCMP primarily regulates mine reclamation through the Surface Mining Reclamation Ordinance ("SMRO"), which contains detailed and specific reclamation performance standards. The SMRO also directs the information needed for reclamation plan applications, and provides regulations that relate to financial assurances, reporting, inspections, and violations.

This Section 3.0 only addresses requirements that specifically relate to the reclamation of mined lands, and not those requirements associated with regulation of the mining activities (e.g., development standards), including any associated environmental review or land use approvals.

3.1 Surface Mining Reclamation Ordinance

SMRO Section 10-5.601 sets forth minimum contents for reclamation plan applications, each of which is specifically addressed below.

3.1.1 Narrative Description of the Proposed Use of Mined Lands and the Manner in Which Reclamation will be Accomplished [§10-5.601(a)]

A narrative description of the proposed use of mined lands after reclamation has been completed and the manner in which reclamation will be accomplished are addressed in Sections 1.0 and 2.0, above.

3.1.2 General Plan, Zoning and SMRO Consistency [§10-5.601(a)(1)]

The Mine's General Plan and Zoning designations are provided in Table 3. The General Plan designation of Agriculture supports surface mining (see General Plan Policy LU-1.1 at page LU-

14) and all areas proposed for mining have this designation. The portions of the site that carry the Open Space designation apply to the portions of the parcels associated with Cache Creek. Further, the General Plan supports the continuation of mining through the following policies:

Policy ED-1.2 Support the continued operation of existing aggregate mining activities within the county as well as new aggregate mining in appropriate areas, to meet the long-range construction needs of the region.

Policy ED-1.8 Retain and encourage growth in important economic export sectors, including mining, natural gas, tourism and manufacturing.

Surface mining is allowed in the A-N zone with approval of a Major Use Permit for lands that are in the OCMP area on lands within the mineral resources overlay zone (see Yolo County Code, Title 8, §8-2.304 and §8-2.306(t)). The Project site is within this area and carries a mineral resource zone “SG” (sand and gravel) overlay.

This Plan’s consistency with the SMRO is detailed in Table 11, below. Other than the County General Plan and the County CCAP, which is implemented through the OCMP and its respective ordinances, the Operator is not aware of any other Specific Plan applicable to the Project.

TABLE 11
SMRO CONSISTENCY MATRIX

SMRO Performance Standard	Project Consistency
10-5.501. Scope.	Consistent. The Revised Reclamation Plan will return the site to end uses of agriculture, permanent lake, and wildlife habitat, which are consistent with the General Plan and Zoning designations for the site. Consistency with specific performance standards are set forth below, and described in more detail in the Revised Reclamation Plan.
10-5.502. Aesthetics.	Consistent. The Revised Reclamation Plan includes an updated Habitat Restoration Plan that promotes aesthetic quality for reclaimed conditions.
10-5.503. Backfilled excavations: groundwater flow impacts.	Consistent. No change (increase) in mining depth or reclamation backfill depths are proposed. Consistent with existing entitlements, the Revised Reclamation Plan proposes backfills for the purpose of reclaiming portions of the mine to agriculture, which is a high priority mine reclamation end use in the CCAP. Luhdorff & Scalmanini concluded the Project would not adversely impact off-site wells (see the groundwater assessment included as an appendix to the Revised Reclamation Plan).
10-5.504. Backfilled excavations: Improvements.	Consistent. No change. No new improvements are proposed to be constructed in reclaimed mining pits.
10-5.505. Backfilled excavations: Inspections.	Consistent. Acknowledged.
10-5.506. Bank stabilization maintenance.	Consistent. No change. No new bank stabilization features are proposed as part of the Project. CEMEX will continue to update its Financial Assurance Cost Estimate on an annual basis and submit it to the County for review and approval. CEMEX will also continue to have an annual inspection conducted by a Registered Civil Engineer as a component of its Annual Report pursuant to OCSMO §10-4.701 and SMRO §10-5.1205.
10-5.507. Drainage.	Consistent. The Revised Reclamation Plan provides for drainage to minimize erosion and convey runoff from reclaimed mining areas to natural outlets and interior basins (see Plan at Section 2.6.2). See also Revised Reclamation Plan Sheets R-02, and R-04 through R-07 for drainage detail.

SMRO Performance Standard	Project Consistency
10-5.508. Erosion control.	Consistent. No substantial change to current practices. Reclamation timing and revegetation practices are described in the Revised Reclamation Plan.
10-5.509. Fence row habitat.	Consistent. The Revised Reclamation Plan provides for ground cover along the margins of reclaimed agricultural fields (see Plan at Section 2.9).
10-5.510. Fencing.	Consistent. Fencing is in place around the perimeter of mining areas and will be expanded in the future as needed. See Revised Reclamation Plan Sheets R-04 through R-07 for fence locations.
10-5.511. Field drainage.	Consistent. Reclaimed agricultural surfaces are designed for positive drainage. See Revised Reclamation Plan Sheets R-04 through R-07.
10-5.512. Field releveling.	Consistent. No change. Acknowledged.
10-5.513. Floodplain development.	The Project proposes no new development in the floodplain.
10-5.514. Habitat management plan compliance.	Consistent. The Revised Reclamation Plan includes an updated Habitat Restoration Plan that complies with SMARA, the OCSMO and the SMRO.
10-5.515. Habitat plan referral.	Consistent. Acknowledged. The updated Habitat Restoration Plan can be presented to agencies for review as part of the Project CEQA process.
10-5.516. Lowered elevations for reclaimed agricultural fields.	Consistent. Reclaimed agricultural surfaces are designed to be at least five feet above average high groundwater. See Revised Reclamation Plan Sheets R-04 through R-07.
10-5.517. Mercury bioaccumulation in fish.	Consistent. No change. Permanent lake end uses were approved under existing entitlements and were fully analyzed in the 1996 EIR.
10-5.518. Mining in reclaimed lands.	Consistent. Acknowledged. Once reclamation is complete, no further mining will occur without approval of an amendment to the mining permit and reclamation plan.
10-5.519. Motorized watercraft prohibition.	Consistent. No change. With the exception of the existing dredge, no motorized watercraft are allowed on the lakes.
10-5.520. Operational areas.	Consistent. Operational areas and haul roads that are not required to facilitate future end uses will be reclaimed as set forth in the Revised Reclamation Plan. See, for example, Plan Section 2.2.2.

SMRO Performance Standard	Project Consistency
10-5.520.1. Parkway plan consistency.	Consistent. No change. Restoration along Cache Creek and development of permanent lake end uses were approved under existing entitlements and were fully analyzed in the 1996 EIR.
10-5.520.2. Permanent easements.	Consistent. No change. Upon completion of reclamation within each phase of the project, for land that will not be dedicated or deeded to the County, the operator will enroll each parcel reclaimed to agriculture in Williamson Act contract, or other equivalent long-term easement or deed restriction satisfactory to the County, for the purpose of protecting the agricultural use of the reclaimed land in perpetuity.
10-5.521. Permanent stockpiles.	Consistent. Mine waste and overburden stockpiles will be removed as described in the Revised Reclamation Plan at Section 2.6.3.
10-5.522. Phasing plans.	Consistent. The Revised Reclamation Plan proposes the mine to be developed and reclaimed in six phases (see, for example, Sheet R-03).
10-5.523. Planting plans.	Consistent. An updated Habitat Restoration Plan prepared by a qualified biologist is included as an appendix to the Revised Reclamation Plan.
10-5.524. Post-reclamation groundwater monitoring.	Consistent. No change. CEMEX anticipates that the County will maintain and/or adopt conditions of approval as appropriate.
10-5.525. Prime farmland conversion.	Consistent. The Revised Reclamation Plan maximizes the acreage to be reclaimed to agriculture, while adhering to the requirement of SMRO 10-5.516. Potential impacts to prime farmlands will be evaluated in the Project CEQA document. If needed, CEMEX anticipates that the County will adopt mitigation measures and conditions of approval as appropriate.
10-5.526. Repair of damage due to natural disaster.	Consistent. No change. CEMEX will continue to update its Financial Assurance Cost Estimate on an annual basis and submit it to the County for review and approval.
10-5.527. Recreational and habitat uses of permanent wet pits.	Consistent. The updated Habitat Restoration Plan included as part of the Revised Reclamation Plan accounts for groundwater fluctuations in permanent wet pits.

SMRO Performance Standard	Project Consistency
10-5.528. Sewage storage prohibition.	Consistent. No change. The Project does not propose to use wet pits for storage and treatment of sewage effluent or for landfill purposes.
10-5.529. Shallow depths.	Consistent. The updated Habitat Restoration Plan included as part of the Revised Reclamation Plan provides for habitat restoration around the shoreline of the permanent lakes.
10-5.530. Slopes.	Consistent. Final reclaimed slopes have been evaluated in the Slope Stability Evaluation (Geocon 2018) included as an appendix to the Revised Reclamation Plan. Final slope angles have an adequate factor of safety for the proposed end uses.
10-5.531. Soil ripping.	Consistent. The requirement for ripping A- and B-horizon soils to a depth of three feet is included in the Revised Reclamation Plan at Section 2.8 (Resoiling).
10-5.532. Use of overburden and fine sediments in reclamation.	Consistent. No change. The Project does not propose to use sediment fines associated with processing for backfill or reclamation of permanent lakes. Aggregate process wash fines will continue to be pumped to settling ponds, which will ultimately be reclaimed to agriculture end uses.
10-5.533. Wetland habitat.	Consistent. The Revised Reclamation Plan provides for permanent lakes with scalloped basin perimeters, peninsulas, grassland margin habitat, and islands (in Phases 5 and 6). See Revised Reclamation Plan Sheets R-03 and R-06
10-5.534. Exceptions.	Consistent. No exceptions are currently proposed or believed to be necessary.

3.1.3 Contamination Control [§10-5.601(a)(2)]

See Sections 2.6.2 and 2.6.3.

3.1.4 Erosion Minimization for Affected Streambed Channels and Streambanks [§10-5.601(a)(3)]

See Sections 2.6.2 and 2.6.4. Flood protection is already in place (see Appendix B).

3.1.5 Effect that Reclamation will have on Future Mining [§10-5.601(a)(4)]

See Section 2.2.3.

3.1.6 Time Schedule of Reclamation Activities [§10-5.601(a)(5)]

See Table 1 in Section 2.1.6.

3.1.7 Compliance with Minimum Performance Standards [§10-5.601(a)(6)]

See Table 12 in Section 3.1.2.

3.1.8 Signed Statement of Reclamation Responsibility [§10-5.601(a)(7)]

See Appendix J.

3.1.9 Acreages of Proposed Reclaimed Uses [§10-5.601(a)(8)]

See Table 2 in Section 2.2.1.

3.1.10 Drainage and Erosion Control After Reclamation; 100-Year Flood Protection [§10-5.601(a)(9)]

See Section 2.6.2.

3.1.11 Maximum Disturbance at One Time [§10-5.601(a)(10)]

The Plan covers ±816 acres of maximum surface disturbance area, which will be reclaimed in a phased manner as set forth in Table 1 in Section 2.1.6.

3.1.12 Williamson Act Contracts or Agricultural Preserves [§10-5.601(a)(11)]

The Operator is not aware of any active Williamson Act contracts covering the site, or any agricultural preserves on the site. Mining in Phases 3 through 6 will occur on lands that have been at least partially defined as prime farmlands.

3.1.13 Narrative Description of the Type of Surface Mining to be Employed [§10-5.601(b)]

See Section 2.1.6.

3.1.14 Name and Address of Operator and Agent for Application Processing [§10-5.601(b)(1)]

See Section 2.1.1. In addition to itself, the Operator has designated Compass Land Group, this Plan's preparer, as an agent for application processing.

3.1.15 Anticipated Quantity and Type of Materials [§10-5.601(b)(2)]

See Section 2.1.2.

3.1.16 Proposed Dates for Initiation and Termination of the Surface Mining Operation [§10-5.601(b)(3)]

See Section 2.1.3.

3.1.17 Maximum Anticipated Depth [§10-5.601(b)(4)]

The maximum anticipated depth is 70 feet bgs, consistent with the original Solano Long-Term Off-Channel Reclamation Plan No. ZF #95-093.

3.1.18 Evidence that all Owners of Possessory Interest have given Authority to Mine and Reclaim in Accordance with Plan [§10-5.601(b)(5)]

CEMEX owns and operates the Mine. Please see also Appendix J.

3.1.19 Acreage of the Lands Affected and Legal Descriptions [§10-5.601(b)(6)]

See Tables 2 and 3, as well as Sheets M-01 and R-01.

3.1.20 Description of Geology [§10-5.601(b)(7)]

See Section 2.3.3, as well as Figure 3.

3.1.21 Names and Addresses of Owners [§10-5.601(b)(8)]

See Reclamation Plan Summary for Owner's address and contact information and Section 2.3.1 for a parcel-by-parcel listing of ownership. CEMEX owns all parcels to be mined and reclaimed.

3.1.22 Site Specific Technical Studies [§10-5.601(c)]

The following site-specific technical studies are appended to this Plan:

Appendix A	Biological Resources Update (Zentner)
Appendix B	Hydraulic Analysis of the CEMEX Reach (Cunningham Engineering)
Appendix C	Groundwater Assessment (Luhdorff & Scalmanini)
Appendix D	Estimation of Average High Groundwater Levels (Luhdorff & Scalmanini)
Appendix E	Estimate of Average Low Groundwater Levels (Luhdorff & Scalmanini)
Appendix F	Slope Stability Evaluation (Geocon)
Appendix G	Letter Recommendation for Drainage to Riparian Depressions (Zentner)
Appendix H	Habitat Restoration Plan (Zentner)
Appendix I	Soil Fertility Results (Dellavalle Laboratory)

3.1.23 Site Plan and Cross Sections [§10-5.601(d)-(f)]

See Sheets M-01 through M-15, and Sheets R-01 through R-15.

3.1.24 Estimate of Financial Assurances [§10-5.601(g)]

The Operator has an existing Financial Assurance Cost Estimate and Financial Assurance Mechanism (bond) on file with the County, which will continue to be updated annually and submitted to the County for review and approval.

3.1.25 Land Survey or Record of Survey [§10-5.601(h)]

Sheet M-03 reflects the Record of Survey filed January 12, 2018, in 2018 Book of Maps at pages 2-4.

3.1.26 Initial Environmental Assessment [§10-5.601(i)]

An "Applicant's Draft Initial Study" was submitted to the County under separate cover as part of the project application filed in February 2018.

3.1.27 Discretionary Permits Required by Other Public Agencies [§10-5.601(j)]

CEMEX is not aware of any other applicable discretionary permits required by other public agencies to carry out mining and reclamation in the manner set forth in this Plan.

3.1.28 Chart of SMARA Contents [§10-5.601(k)]

See page "vi" at the beginning of this Plan.

ZENTNER
Planning & Ecology

CEMEX Cache Creek Mine

Habitat Restoration Plan

Project No.:

1076 CMX

Zentner Planning & Ecology

Oakland, CA

Prepared for:

Cemex

Revised:

October 2022

TABLE OF CONTENTS

I. INTRODUCTION

Zentner Planning and Ecology (Zentner) has prepared this Habitat Restoration Plan (Plan) in support of the CEMEX Construction Materials Pacific, LLC. (CEMEX) Cache Creek Mining Permit and Reclamation Plan Amendment Project (Project). Specifically, CEMEX proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20-year time extension.

This Plan is an update of the mine's existing Habitat Restoration Plan (Zentner and Zentner 1995), which was originally approved in 1996 as a component of the Existing Entitlements and subsequently amended to address conditions of approval. This Plan will become effective only upon County approval of the proposed Project.

The Habitat Restoration Plan has been developed to guide the restoration of natural habitats at the Project Site as part of mine reclamation. This Plan is written to comply with the California Surface Mining and Reclamation Act of 1975 (SMARA) regulations and the Yolo County Off-Channel Surface Mining Ordinance (OCSMO) and Surface Mining Reclamation Ordinance (SMRO), and bring more focus to revegetating the remainder of the quarry along with performance standards that meet current SMARA regulations.

While CEMEX's Revised Reclamation Plan will include returning much of the site to agriculture, reclamation end uses will also feature habitats including open water lakes, riparian woodland, perennial marsh, oak savannah and native grassland buffers adjacent to restored habitats.

A. Objectives

This Plan details the overall objectives and methods for habitat restoration, including resoiling, restoration planting, performance standards, monitoring, reporting, weed control and maintenance. Zentner has 20 plus years' experience with on-site monitoring and maintenance and considers the restoration methods to be highly effective for the conditions present at the mine.

II. SETTING

A. Existing Conditions

The CEMEX Cache Creek Mine ("Mine", sometimes also referred to as the Madison Quarry or Madison Plant) is an active sand and gravel mining operation currently approved on ±586 acres between Highway 16 and Cache Creek (**Figure 1**). Interstate 505 marks the site's western boundary with the exception of a small portion of site (final phase) lying west of the Interstate. CEMEX's existing processing plant facilities are located near the western end of the property, just west of the entrance road, which runs north off of Highway 16. Just east of the plant is a former mined pit (part of Phase 1) that has already been reclaimed to agricultural production. Further to the east are active mine pits, some of which are open water as a result of permitted excavation into groundwater. The southern bank of Cache Creek is buffered from the active pits by at least a 200-foot buffer.

B. Site Ecology

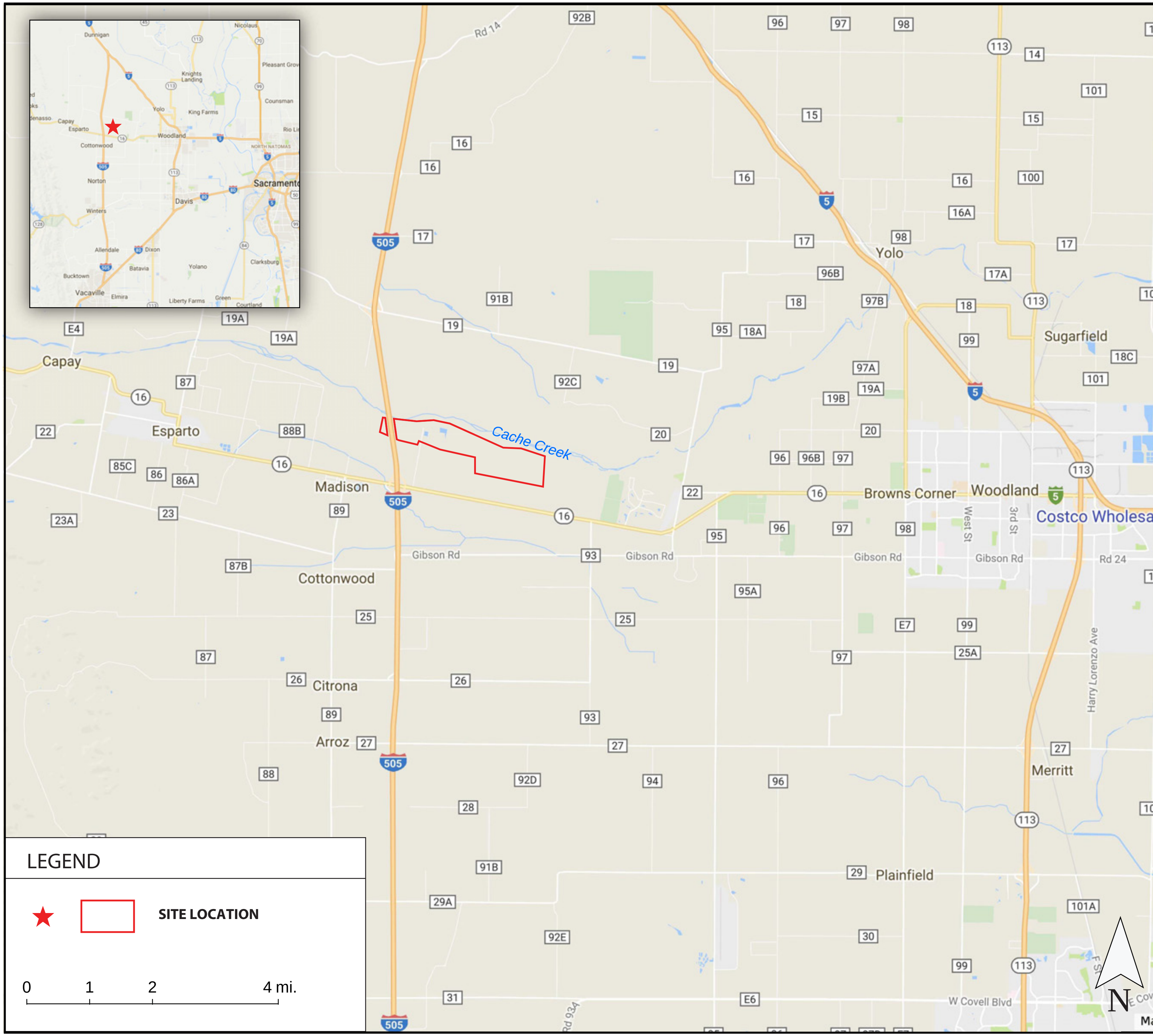
The site consists primarily of mining and agricultural land that is in various stages of mining or reclamation. Agricultural production on and around the site is mainly row crops. Riparian vegetation forms a relatively narrow band on the southern bank of Cache Creek (north side of the Mine), which drops about 35 feet below the agricultural plain where mining is taking place. Remnant sections of riparian habitat also lay in depressions within the 200-foot buffer between the Creek and the mining pits (hereafter referred to as "riparian depressions"). Annual grassland with sections of ruderal vegetation is found around the perimeter of the agricultural and actively mined areas as well as in much of the 200-foot buffer.

C. Soils

The parent material of all Project area soils is quaternary alluvium. Its thickest local unit is sand and gravel, but the high terrace south of Cache Creek is largely covered by varying thicknesses of loamy material that permit it to be farmed.

The soils of the creek and flood channels tend to be coarse and excessively drained with finer sediments washing away downstream. The soil series for the creek and bank include Riverwash and Soboba Gravelly Sandy Loam (SCS 1972).

Immediately adjacent to the creek are the flats, which are a highly variable mix of relatively coarse to medium textured loams. The band closest to the creek is mapped as Sycamore silt loam and the one south of that as Yolo silt loams (SCS 1972). In general, the farther away from the creek channel, the more finer-grained the soil, which once supported oak savannah and native grassland.



ZENTNER Planning & Ecology
120A Linden Street, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 1
SITE LOCATION

CACHE CREEK CEMEX MINE
Madison, California

BY: **CJL**

PROJECT: **1076**

BASE MAP: **GOOGLE MAPS 2017**

FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1076 Cache Creek\Adobe\1076 site location 17-11-09

DATE: **11/09/2017, 04:28 pm**

D. Habitats and Vegetation

1. Perennial Marsh

Perennial marsh is restricted to the periphery of the deeper pools found within Cache Creek. These pools usually are formed within eroded cuts near the toe of the creek banks or within beaver dams that are common throughout the channel. These marshes support deep-rooted perennials such as bulrush (*Schoenoplectus acutus*), cattail (*Typha sp.)* and rushes (*Juncus sp.)*.

2. Riparian

The riparian vegetation on site is primarily located near the toe of the creek banks along Cache Creek. It is also found in old carved out creek meanders on both the north and south banks, with some of the old meanders relatively high in elevation compared to the existing channel bed. A few of these old meanders are located within the Project Site within a distance of approximately 150 feet of the channel bed. These riparian areas are dominated by various species of willows (*Salix sp.),* Fremont cottonwood (*Populus fremontii*), and mulefat (*Baccharis salicifolia*).

3. Oak Savanna

The oak savanna runs along a relatively narrow band near the top of the southern bank of Cache Creek (north side of the Mine). This habitat, which is dominated by valley oak (*Quercus lobata*) with an understory of annual grassland, likely covered much of the region in proximity to Cache Creek prior to human disturbance.

4. Annual Grassland

Perennial grassland habitat, along with oak savanna, likely once co-dominated the entire site from the banks of Cache Creek to the southern edge of the property along Highway 16. The existing grassland is dominated by non-native, annual grasses such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut (*Bromus diandrus*), and rye (*Festuca perennis*). It is found along the upper banks of Cache Creek and on the terrace between the creek and the active mining areas and agricultural areas. A more ruderal form of the annual grassland is found along the margins of these mined areas and the agricultural parcels.

5. Ruderal

A portion the annual grassland habitat is dominated by ruderal (weedy) vegetation. These areas are generally located near the CEMEX processing plants or in disturbed areas adjacent to mining or agricultural fields. Habitat in these areas are dominated by thistles (milk thistle, *Silybum marianum*; bull thistle, *Cirsium vulgare*), starthistle (*Centaurea solstitialis*) and other weedy species.

III. RESTORATION PLAN

Restoration is proposed for the areas around the reclaimed agricultural fields, around the created lakes, and between Cache Creek and the reclaimed habitats (**Figure 2**). These restored habitats will not only provide buffers, but will also provide native habitat and wildlife corridors between the reclaimed mining areas and the creek and along the south bank of Cache Creek (**Figure 3**).

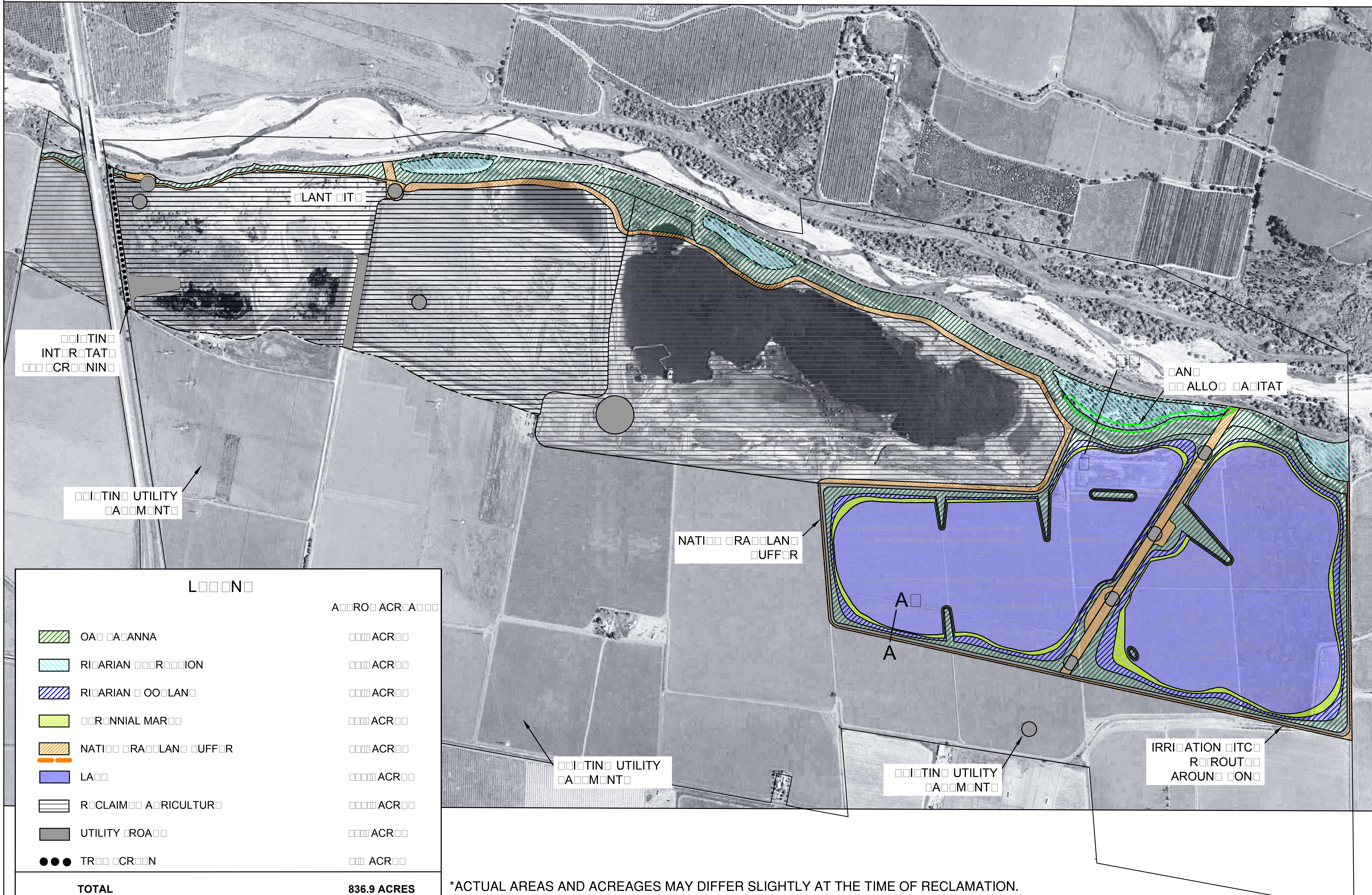
A. Goals for Restoration

This plan is designed to meet the goals and objectives of the OCSMO, SMRO and SMARA to provide for the protection and beneficial use of mined lands. In particular, the goal of this Plan is to create quality, self-sustaining habitats that provide native plant diversity for native wildlife where doing so is consistent with planned end uses. To meet these goals the Plan includes the following principles:

1. Provide for a diversity of native habitat types and vegetative communities that have the potential to support a variety of native wildlife including special status species.
2. Provide native grassland buffers around reclaimed agricultural parcels as well as a wide, continuous native buffer between Cache Creek and reclaimed habitats.
3. Provide a continuous corridor between the lakes and Cache Creek.
4. Provide for a structurally diverse shoreline around the lakes with variable slopes and communities.
5. Provide diverse riparian habitats around the lakes and within the preserved depressions to provide important roosting and nesting habitats.

B. Restored Habitats

This section describes this Plan's restored habitat objectives. The restoration phasing and approximate acreage by each phase is shown in **Figure 4**. The primary objectives are to restore native habitats onsite for diversity and wildlife. These reclaimed and restored habitats will be an integrated, sustainable, and biologically diverse system formed by a variety of natural communities. The habitats will be restored to a condition equal to or greater, than what existed prior to the project. Planting details are described later in Section V of the Plan.



*ACTUAL AREAS AND ACREAGES MAY DIFFER SLIGHTLY AT THE TIME OF RECLAMATION.

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FIGURE 2
RESTORATION PLAN

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA

N

0 500' 1000'

SOURCE: GOOGLE EARTH 5/20/17
CUNNINGHAM ENGINEERING 10/20/17

PROJECT NO. 1076

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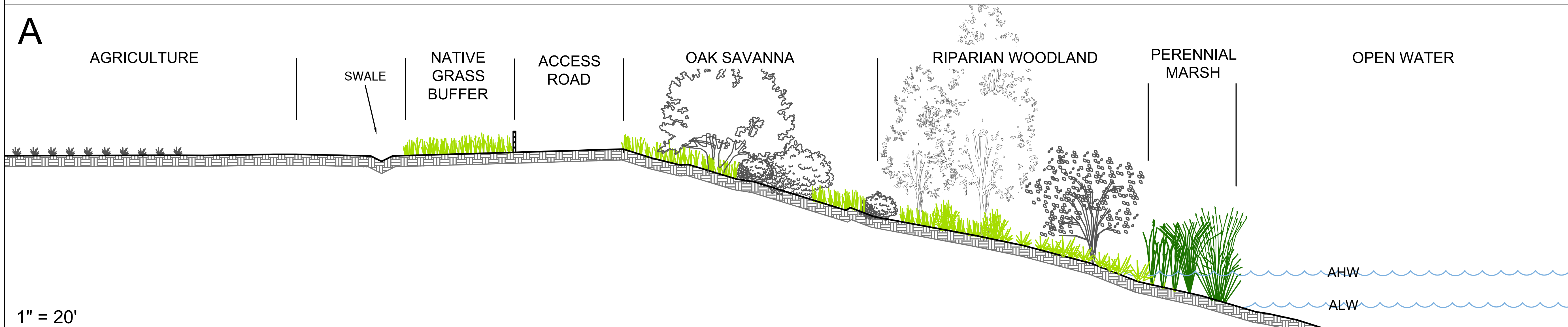
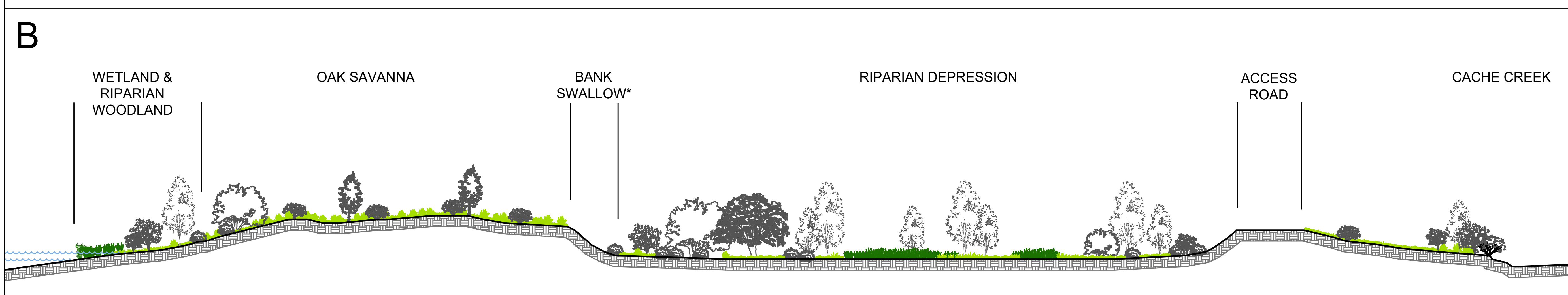
BY: JPE / XM

DATE: 9/28/2022



1" = 20'



1" = 60'

NOTES:

1. ACTUAL DISTANCES AND AREAS MAY VARY SLIGHTLY AT THE TIME OF RECLAMATION.
2. *BANK SWALLOW HABITAT PRESERVED WHERE APPLICABLE.

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FIGURE 3
TYPICAL CROSS SECTIONS

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA

N

SCALE VARIES

SOURCE: CUNNINGHAM ENGINEERING

PROJECT NO. 1076

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BY: CJL

DATE: 9/28/2022

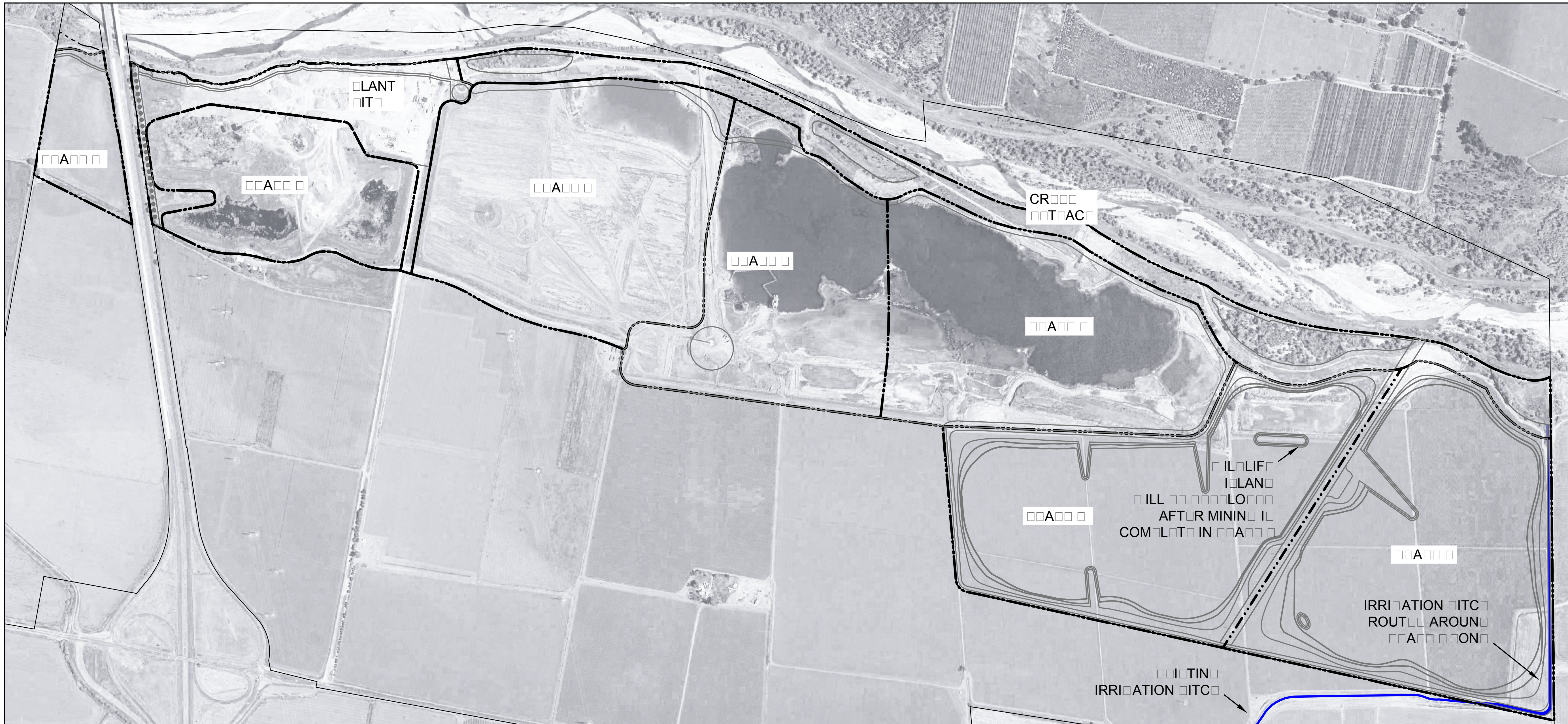

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FIGURE 4
RESTORATION PHASING

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA

N
0 500' 1000'

SOURCE: GOOGLE EARTH 5/20/17
CUNNINGHAM ENGINEERING 10/20/17

PROJECT NO. 1076

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BY: JPE / XM

DATE: 11/18/2022

NOT□□□

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□I□LAN□□ TOTAL □□ ACR□□ AN□ □□NIN□ULA□ TOTAL □□ ACR□□□T□□ A□□ITIONAL ACR□A□ □□ AR□ INCLU□□□ A□ □ART OF T□□ □□R□NNIAL MAR□□□RI□ARIAN □ OO□LAN□□AN□ OA□ □A□ANNA □A□ITAT□ □ IT□ A CORR□□□ON□IN□ □□CR□A□□ IN T□□ O□□RALL ACR□A□ □ OF T□□ LA□□ □A□ITAT□

□C□M□□ □A□ □RO□O□□□ TO □LIMINAT□ □□A□□ □FROM T□□ □RO□□CT□

APPROXIMATE ACREAGE BY PHASE*

	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	CREEK SETBACK	PLANT SITE	OTHER BUFFER	I-505 BUFFER	APPROX TOTAL
OAK SAVANNA	□□	0	3.7	0	14.4	16.0	0.8	47.3	3.7	0	0	**87.8**
RIPARIAN DEPRESSION	0	0	0	0	0	0	0	20.7	0	0	0	**20.7**
RIPARIAN WOODLAND	□	0	0	0	9.8	10.3	0	0	0	0	0	**20.1**
PERENNIAL MARSH	0	0	0	0	7.1	8.2	0	0	0	0	0	**15.3**
NATIVE GRASSLAND BUFFER	3.9	0	1.7	8.1	5.6	6.1	0.3	0.7	2.5	0	0	**28.9**
LAKE	0	0	0	0	102.9	101.1	0	0	0	0	0	**204.0**
RECLAIMED AGRICULTURE	124.5	63.7	91.7	111.3	0	0	20.0	0	27.4	□	□	**438.6**
UTILITY / ROADS	□□	□	2.9	□	□□	□□	0.0	□□□	□□	□□	□	**19.2**
TREE SCREEN	□	□	□	□	□	□	□	□	□	□	□□	2.3
SHORELINE HABITAT	0	0	0	0	27.5	33.2	0	0	0	A□□RO□ TOTAL		□□□□

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1. Lake

The lake habitat will be created by mining in the Phase V and VI areas. The surrounding lake slopes will be restored with riparian woodland and oak savannah habitats (see below). Each lake will contain an island that will provide refugia and potential nesting habitat for native waterfowl and other wildlife. The islands will total approximately 1.6 acres and they will be reclaimed after mining in Phase V and VI. The islands will also be planted with perennial marsh, riparian woodland and oak savannah habitats (**Figure 5**).

The Phase V and Phase VI lakes will also include peninsulas that extend into the lakes. Three peninsulas are proposed within the Phase V lake and one peninsula is proposed in the Phase VI lake (Figure 5). The peninsulas will have a combined area of 4.6 acres. The geographic position of the peninsulas may be adjusted over time based on the mine plan, however, the total surface area of the peninsulas will remain the same. Similar to the island, the peninsulas will provide refugia and potential nesting habitat for waterfowl and other wildlife. The peninsulas will be planted with perennial marsh, riparian woodland, and oak savannah habitat.

2. Riparian Woodland

The riparian woodland restoration will take place along the fringes of the mined lakes, edges of the peninsulas, fringes of the islands, and within the riparian habitat depressions along the creek buffer (**Figure 2**). Lake banks above water will be graded to provide a range of slopes between 2:1 and 4:1 or flatter (**Figure 3**). This will provide for a variable shoreline resulting in more structurally diverse habitats around its perimeter. The groundwater, which provides the water levels in the lakes, will fluctuate as much as five to ten feet in elevation (from average high to average low water). The riparian vegetation will be planted where it would naturally occur, which is starting from just inside the average high water mark to about halfway up the slopes.

The peninsulas will be graded at a 2:1 slope or flatter. Similar to the other parts of the lakes, riparian woodland will be planted from just below the average high water mark to about halfway up the slope. Perennial marsh habitat will be planted below the riparian woodland and oak savannah above (**Figure 6**).

The islands slopes will be graded at 2:1 beginning at 5 feet below low water and above and may transition to 1:1 slopes below this level. Therefore, the elevational band of riparian woodland beginning at average high water is expected to be somewhat more compressed along the fringes of the islands than around the perimeter of the lakes (Figure 5). Nevertheless, the result will be a sizable band of riparian vegetation relative to the islands, which will transition

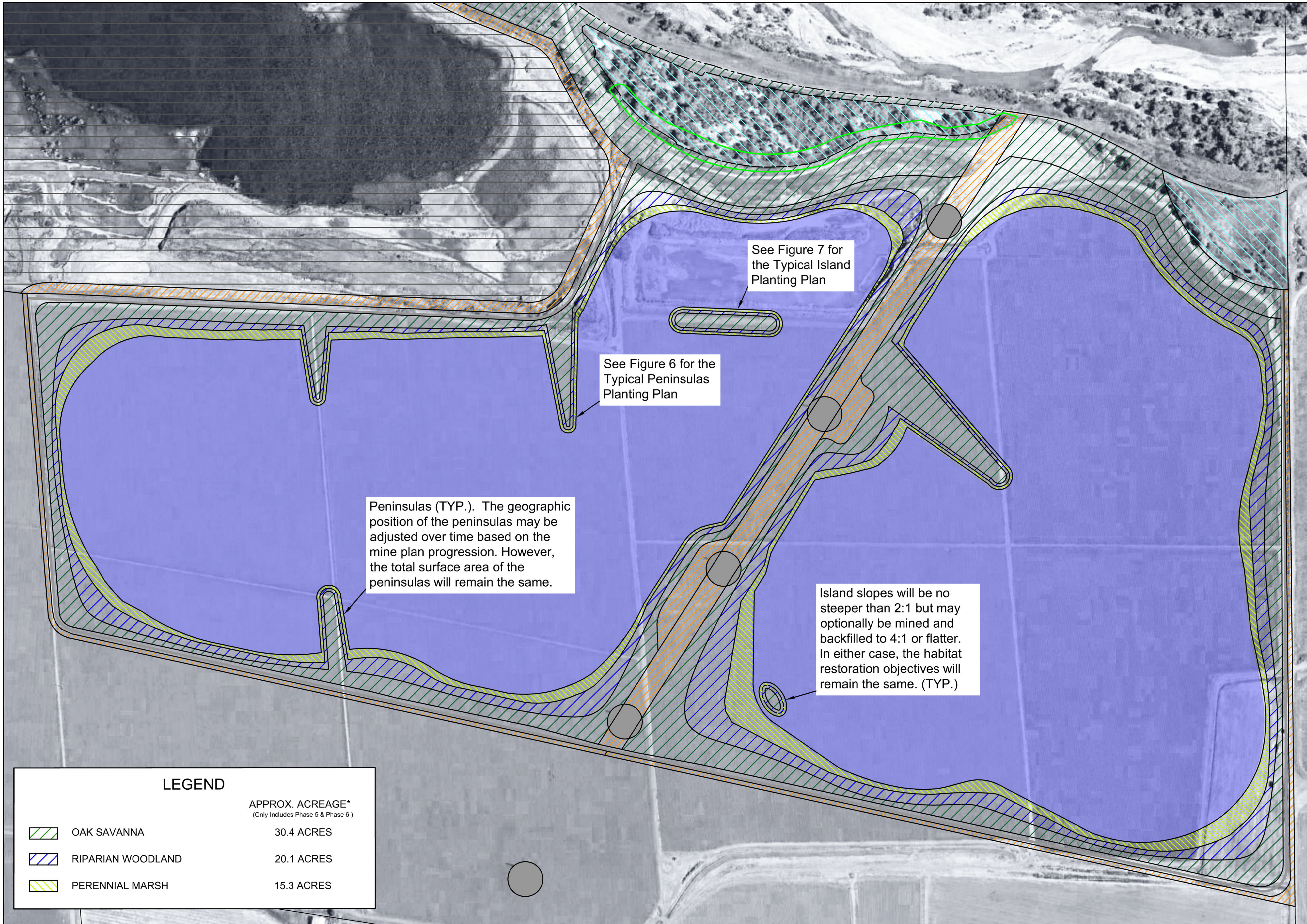

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FIGURE 5
PENINSULAS & ISLANDS CONCEPTUAL PLAN

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA

N

0 200' 400'

SOURCE: GOOGLE EARTH 5/20/17
CUNNINGHAM ENGINEERING 10/20/17

PROJECT NO. 1076

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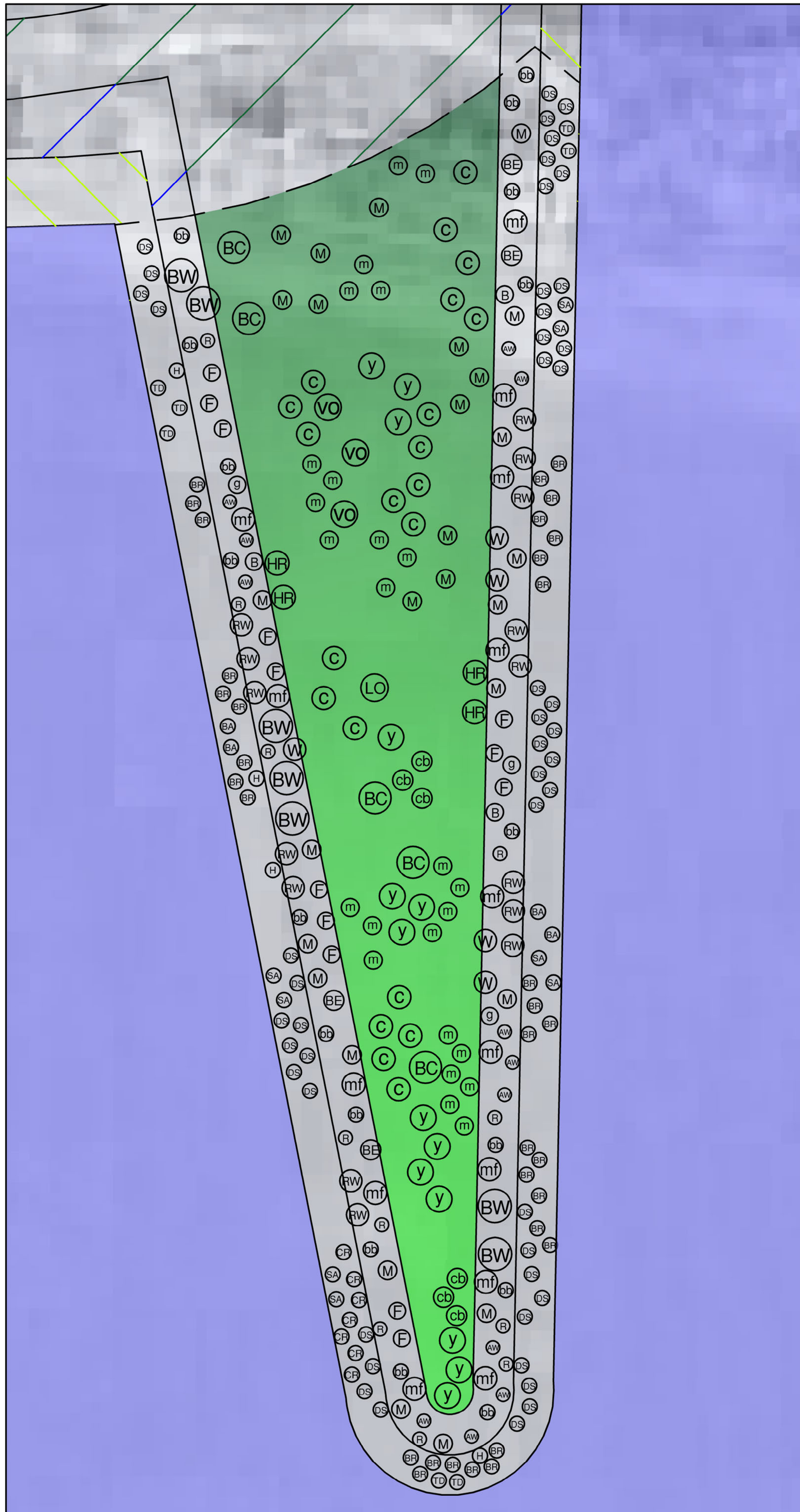
BY: XM

DATE: 9/28/2022



PLANT LEGEND - OAK SAVANNA

SYMBOL	BOTANICAL / COMMON NAME	QTY.
	TREES	
VO	Valley Oak / Quercus lobata	3
BC	Buckeye / Aesculus californica	5
LO	Interior live oak / Quercus wizlensii	1
	SHRUBS	
c	Coyote Bush / Baccharis pilularis	21
y	Yerba Santa / Eriodictyon californicum	14
cb	Coffeeberry / Frangula californica	6
HR	Hollyleaf Redberry / Rhamnus ilicifolia	4
m	Milkweed / Asclepias fascicularis	25
M	Mugwort / Artemesia douglasiana	11
	GROUND COVER	
	Native grassland mix	

PLANT LEGEND - PERENNIAL MARSH

SYMBOL	BOTANICAL / COMMON NAME	QTY.
SA	Bulrush / Schoenoplectus acutus	8
BA	Bulrush / Schoenoplectus americanus	4
TD	Cattail / Typha domingensis	7
BR	Baltic Rush / Juncus balticus	33
CR	Common Rush / Juncus effusus	7
DS	Dense Sedge / Carex densa	48
H	Horsetail / Equisetum hyemale	4

PLANT LEGEND - RIPARIAN WOODLAND

SYMBOL	BOTANICAL / COMMON NAME	QTY.
	TREES	
RW	Red Willow / Salix laevigata	15
AW	Arroyo Willow / Salix lasiolepis	12
BW	Black Willow / Salix gooddingii	7
F	Fremont Cottonwood / Populus fremontii	13
W	N. California Walnut / Juglans hindsii	5
BE	Box Elder / Acer negundo	4
	SHRUBS	
bb	Buttonbush / Cephalanthus occidentalis	17
M	Mugwort / Artemesia douglasiana	16
mf	Mulefat / Baccharis salicifolia	14
R	Calif. Rose / Rosa californica	11
B	Calif. Blackberry / Rubis ursinus	3
g	Wild Grape / Vitis californica	3

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FIGURE 6
TYPICAL PENINSULA PLANTING PLAN

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA

N

0 50' 100'

SOURCE: GOOGLE EARTH 5/20/17
CUNNINGHAM ENGINEERING 10/20/17

PROJECT NO. 1076

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BY: XM

DATE: 9/19/2022

from riparian woodland around the perimeter to savannah in its center (**Figure 7**).

The other area, which will be enhanced and restored with riparian woodland will be the riparian depressions. Some of these areas contain good cover by riparian species, however it is made up with just a few species. Therefore, native diversity should be increased. As well, some of these depressions also contain relatively high levels of non-native vegetation including tamarisk (*Tamarix sp.)* and perennial pepperweed (*Lepidium latifolium*). To the extent practicable, these invasive species will be removed and controlled before native vegetation is planted. The Maintenance section of this report contains a detailed weed management program. In order to increase native diversity, a mix of riparian trees, shrubs and wetland vegetation are proposed for these areas.

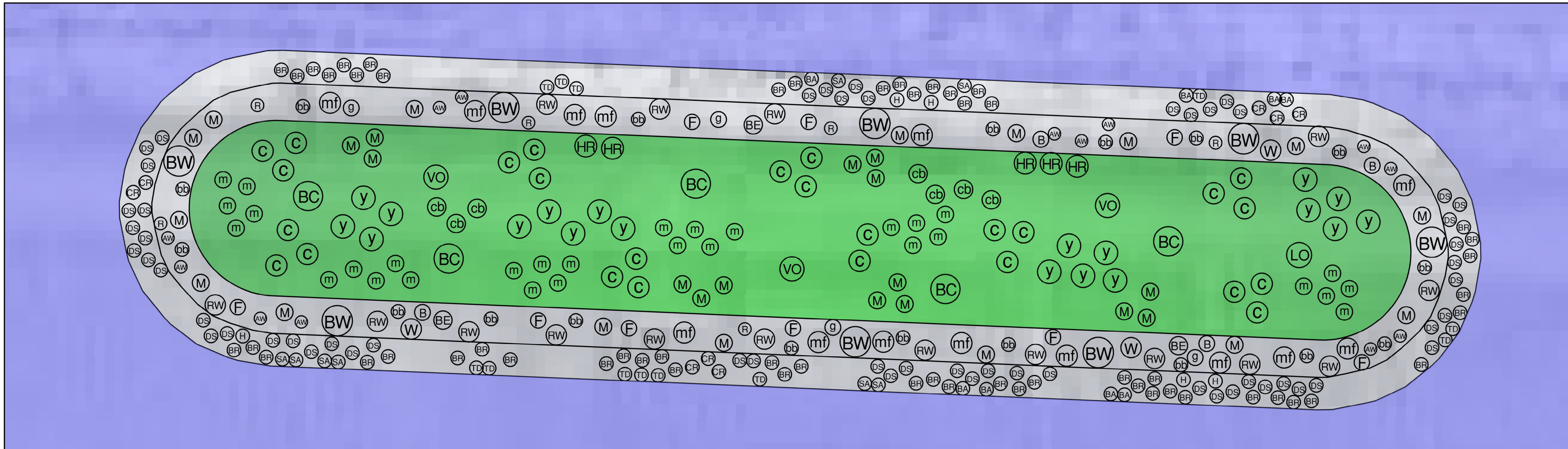
Restoration of the riparian depressions will include enlargement of the watershed that drains into the riparian depressions. Grading within the oak savannah habitat, which surrounds the depressions, will be completed so that a larger area than what currently exists, will drain into the depressions and augment their existing hydrology. The current plan calls for draining as much area as is practicable into these depressions, up to approximately 7 acres. These changes will help simulate flood hydrology during rain events and provide better riparian hydrology to these preserved and enhanced areas.

3. Perennial Marsh

The perennial marsh will be formed between ALW and AHW around the perimeter of the lakes and peninsulas and on the islands (Figures 2 and 3). This habitat will occur at the elevation just below the riparian habitat. As noted above, the proposed grading plan includes scalloping the lake shorelines to produce varied slopes. This will result in areas with wider and narrower bands of perennial marsh, with dominance by different species. The perennial marsh will be planted with deep-rooted, native perennial vegetation such as tule, cattails, and rush.

4. Oak Savannah

The oak savannah habitat will be restored within the 200' Creek setback, around the upland perimeter of the lakes, on the peninsulas and on the interior of the islands (Figures 2, 6 and 7). These areas will be planted with oak savanna species and seeded with native grasses for the savannah understory. The native grass understory is shown in the island planting plan (Figure 7), which also provides a detailed plan of the oak savannah for the island. Valley oak (*Quercus lobata*) and coyote bush (*Baccharis pilularis*) will be dominant woodland species mixed within a perennial grassland understory in the oak savannah habitats. Because



PLANT LEGEND - OAK SAVANNA

SYMBOL	BOTANICAL / COMMON NAME	QTY.
	TREES	
VO	Valley Oak / Quercus lobata	3
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LO	Interior live oak / Quercus wizlensii	1
	SHRUBS	
C	Coyote Bush / Baccharis pilularis	26
y	Yerba Santa / Eriodictyon californicum	19
cb	Coffeeberry / Frangula californica	7
HR	Hollyleaf Redberry / Rhamnus ilicifolia	5
m	Milkweed / Asclepias fascicularis	30
M	Mugwort / Artemesia douglasiana	15
	GROUND COVER	
	Native grassland mix	

PLANT LEGEND - RIPARIAN WOODLAND

SYMBOL	BOTANICAL / COMMON NAME	QTY.
	TREES	
RW	Red Willow / Salix laevigata	16
AW	Arroyo Willow / Salix lasiolepis	13
BW	Black Willow / Salix gooddingii	8
F	Fremont Cottonwood / Populus fremontii	14
W	N. California Walnut / Juglans hindsii	5
BE	Box Elder / Acer negundo	4
	SHRUBS	
bb	Buttonbush / Cephalanthus occidentalis	18
M	Mugwort / Artemesia douglasiana	20
mf	Mulefat / Baccharis salicifolia	18
R	Calif. Rose / Rosa californica	12
B	Calif. Blackberry/Rubis ursinus	5
g	Wild Grape/Vitis californica	5

PLANT LEGEND - PERENNIAL MARSH

SYMBOL	BOTANICAL / COMMON NAME	QTY.
SA	Bulrush / Schoenoplectus acutus	8
BA	Bulrush / Schoenoplectus americanus	8
TD	Cattail / Typha domingensis	12
BR	Baltic Rush / Juncus balticus	56
CR	Common Rush / Juncus effusus	8
DS	Dense Sedge / Carex densa	56
H	Horsetail / Equisetum hyemale	5

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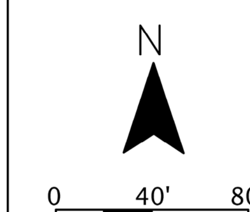
FIGURE 7
TYPICAL ISLAND PLANTING PLAN

CEMEX
CACHE CREEK MINE
MADISON, CALIFORNIA



SOURCE: GOOGLE EARTH 5/20/17
CUNNINGHAM ENGINEERING 10/20/17

PROJECT NO. 1076

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BY: XM

DATE: 9/19/2022

the 200′ setback is actively used for mining access and transporting mine materials as the conveyer is located within this zone, this area will not be restored until at or near the end of active mining.

5. Native Grassland Buffer

A native grassland buffer will be restored between the existing and reclaimed agricultural fields and the restored areas including the lakes and oak savannah. (Figure 2). The slopes around these fields will be graded to approximately 2:1 or flatter. Areas that have slopes of 3:1 or flatter will be drill seeded with a mix of native grassland species. Drill seeding with native grasses, which was completed on significant portion of the Phase 2 area and within a portion of the 200′ creek buffer, has already proven effective at the site. Areas steeper than 3:1 will be prepared and broadcast seeded with the same mix of native grassland species. A forb and sub-shrub component are included in the grassland habitat as well, which was present within the historical grasslands in the region and provides benefits to local wildlife.

While a small maintenance road will run around the lakes the native grass buffer will be restored between the road and the agricultural fields. A swale will run between the buffer and the fields to capture reclaimed drainage water from the agricultural fields and prevent that water from draining into the lakes.

6. Interstate 505 Screening

As part of earlier phases of the existing Habitat Restoration Plan (Zentner 1995), Interstate 505 screening was initiated (Figure 2). This screening was completed using Fremont cottonwoods (*Populus fremontii*) and was very successful. Over time, however, some gaps have formed along the screen where trees have fallen. Therefore, additional Fremont cottonwood and California walnut trees will be planted to fill in the gaps to restore the screen. A few patches of invasive vegetation including tamarisk (*Tamarix sp.)* and perennial giant reed grass (*Arundo donax*) occur in the northern portion of the screen area. To the extent practicable, these invasive species will be removed and controlled before native vegetation is planted.

7. Bank Swallow Habitat

As part of the Existing Entitlements, the project applicant agreed to restore the bluffs above the large, easterly riparian depression (shown in Figure 2). This riparian depression was found to be suitable habitat for bank swallows with near-vertical bluffs. Bank swallows were noted as having recently begun nesting in these bluffs as of approximately 1997. Therefore, the steep banks associated with this riparian depression will be protected and preserved as is.

C. Planting and Revegetation Methods

1. Technical Supervision

Revegetation activities should be conducted under the supervision of an experienced Ecological Monitor (EM). The EM and Restoration Contractor (RC) will work closely together to assure that revegetation is accomplished according to plans. Any substantial deviation from the revegetation plans will need to be approved by the EM and the County.

2. Experienced Contractor

Only contractors with previous experience in native habitat restoration should be considered for this project. By limiting this work to personnel that have developed a working knowledge of the nuances and complications of native habitat restoration, the risk of failure or damage to existing habitats is significantly reduced. This also allows greater flexibility for making adjustments in the field as is often necessary.

3. Preconstruction Activities

Prior to initiation of plantings, the EM and RC will establish and stake the limits of habitat planting areas. Flagging of the new habitats may involve making minor adjustments from plan locations as dictated by field conditions.

Access routes, staging areas, and similar features will also be located and staked in the field. Where necessary, preconstruction surveys will be conducted and orange construction fencing or similar visible barrier will be installed to delimit sensitive areas adjacent to construction areas (see Biological Resources Update, Zentner Planning and Ecology 2017 for more details).

4. Site Preparation

New habitat and restoration areas will generally be prepared for revegetation as follows:

- Non-native vegetation, trash, debris, and weeds will be cleared.
- Prior to habitat restoration in the riparian depressions, grading within the adjacent Oak Savannah and upland mining areas will be completed in order to enlarge the watersheds for the Riparian depressions as much as practicable. Adding very shallow slopes that drain into the depressions will be completed to augment existing hydrology.

- The shoreline of the Phase 5 and 6 lakes will be scalloped as shown on the Project Reclamation Plan drawings to provide a variety of slopes as well as shallow water habitats.
- Resoiling will occur as necessary, especially within the reclaimed agricultural parcels. Please see Section IV Resoiling, for more detailed information.
- In the case of seeding, grow-kills should be completed as detailed in Section 9c of Chapter V entitled Restoration Planting.

5. Supplemental Irrigation System

Several areas call for the planting of trees and shrubs, which require supplemental irrigation. These areas include the Riparian habitat and the Oak Savannah/Native Grassland. The native trees and shrubs planted will be irrigated through a simple, temporary drip system. Drip irrigation will be supplied for the planted trees and shrubs for up to two years from their initial planting with a gradual tapering in the third year and no irrigation in the fourth and fifth years. No broadcast irrigation will be applied at any time. The species chosen for inclusion in the seed mixes and are intended to be self-sustaining without dependence on long-term irrigation, or ongoing applications of soil amendments or fertilizers.

A planting basin shall be formed around each installed plant to help hold water near these plants, to ensure adequate irrigation. The basin consists of a two-foot diameter water ring two inches deep with a surrounding berm two inches above grade centered on the plant. An emitter will be placed directly on top of the root ball. After installation, the plant will be watered thoroughly. Plants will all be checked for settling and stress within two to three days of installation. All rooted plantings will be watered-in at the time of planting.

Seeded areas rely upon seasonal rainfall for water and, therefore, should not be watered in. This will help ensure that adequate rainfall occurs after seeding and germination. Additional irrigation of the seeded graminoids (grasses) should not occur beyond this initial watering, however, the need for supplemental watering may be deemed necessary if these plants show serious stress due to any prolonged dry spells during monitoring in the first winter/spring after planting.

At the direction of the EM, irrigation may be continued on an as-needed basis during the third year following initial planting to facilitate root development, so that plants will be sufficiently established. However, irrigation should not extend beyond this and will not be required as part of the long-term management.

The amount and frequency of irrigation of each planting area will be determined through monitoring soil moisture conditions and plant vigor during the initial irrigation period. The goal is to provide deep, infrequent watering to encourage deep rooting of all perennial species.

6. Timing and Phasing

Phasing for the restoration work should generally follow the phasing of the Mining and Reclamation Plan. Restoration work on each phase should be initiated in the same season as the reclamation for that phase is complete. Currently, resoiling in the phase 1 area is nearly complete. Therefore, restoration of the native grass slopes may be initiated upon approval of this Plan and based upon the timing described below.

Container and cutting plant materials will be installed between October 1 and February in the same year as reclamation; fall and winter are the optimal periods for planting as many plants are dormant and weather conditions are favorable. Any replacement plantings, if required, will also be installed during the fall or early winter. Seeding (both drill seeding and broadcast seeding) will be conducted between October 1 and November 31 within the same year that a restoration phase has been completed. Specific planting dates will be based on weather conditions and based on guidance by the EM.

The exception will be the Oak Savannah within the 200-foot creek buffer, including the upland surface mining disturbances on the north side of Phases 3 and 4. This area will continue to be actively used for material transport until reclamation is complete. Therefore, this area will be restored after equipment removal (e.g., conveyor removal) has been completed.

IV. RESOILING

Resoiling is the process of artificially building or reconstructing a soil profile. This Section addresses SMARA regulations related to resoiling as codified in the California Code of Regulations (CCR) Section 3500 et. seq. The specifics of these regulations are further detailed in CEMEX's Revised Reclamation Plan.

Resoiling will occur in mined areas south of the 200-foot Creek buffer. The majority of the resoiling will take place primarily to return mined areas back to agriculture production. As shown in the Reclamation Plan and in Figure 2, Phases 1 through 4 are slated to be reclaimed to agriculture, while Phases 5 and 6 will not require substantial resoiling (except limited resoiling around the perimeter of the lake on mining cut slopes) as they will remain as lakes. Some resoiling will also occur in the buffer areas around the reclaimed agricultural fields and the mined lakes. At the County's request, CEMEX has proposed to eliminated Phase 7 from the project.

Growth media for revegetation will consist of native topsoil and overburden. The average thickness of overburden and topsoil replaced on the site during reclamation will vary depending on the reclamation use of an area. Where salvaged topsoil and growth media cannot be used immediately, topsoil (A horizon) and other growth media (e.g., B and C horizon) will be stockpiled separately and will not be disturbed until needed for reclamation. Stockpiles will be properly identified to help ensure topsoil and other growth media are not mistakenly blended. Soil stockpiles will have maximum heights of 40 feet and maximum side slopes of 2:1 (horizontal:vertical). These stockpiles will be seeded with an appropriate seed mixture as needed to prevent water and wind erosion and to discourage the growth of weeds.

Prior to revegetation, the operator will generally handle soils and prepare a revegetation substrate in the following manner:

1. Remove soils only as necessary to access new mining areas and use them for reclamation as soon as it can be accommodated by the mining schedule.
2. To the extent practicable, limit topsoil and vegetation removal to within one-year of fill placement, unless a longer time period is administratively approved by the County.
3. Where possible, place soils that have been removed for direct use in reclamation. Where salvage topsoil cannot be used immediately for reclamation, stockpile it separately from other overburden and do not disturb the soils until needed for reclamation.
4. Prior to resoiling, rip, disc and/or scarify fill areas as needed to relieve compaction and rills, ruderal vegetation, or other surface irregularities.

5. Distribute topsoil in preparation for revegetation, with a target thickness of 12-inches of topsoil atop overburden and/or other native substrate materials.
    a. The thickness of topsoil salvaged and redistributed on the site during reclamation will vary. The target thickness of 12-inches is only a guideline based on available site-specific soil information.
    b. Where prime agricultural reclamation is intended, and distinct soil horizons are distinguishable, then the sequence of horizons will have the A atop the B, the B atop the C, and the C atop the graded surface.
6. Following resoiling, where soil has been compacted, till or scarify the ground surface to create a favorable seedbed.

Soil amendments, if required during revegetation efforts, should be applied according to manufacturer's specifications.

V. RESTORATION PLANTING

A. Riparian Woodland

Riparian woodland will be planted around the perimeter of the lakes and peninsulas in Phases 5 and 6, around the islands, and within the riparian depressions that are located within the geographic limits of the 200-foot Creek buffer[1]. Within the lake and island elements, riparian woodland will be planted on the slopes buffering the lake starting at or just inside of average high water (AHW). This riparian habitat will slowly transition to oak savannah and native grassland. The result will be a complete system of grasslands and woodlands that will provide native diversity and cover for wildlife foraging and movement.

The riparian depressions will also be planted with riparian woodland. The surrounding slopes within the oak savannah and upland mining areas between Phases 3 and 4 and the riparian depressions will be graded such that they drain into these areas and help support the riparian hydrology of these depressional habitats. Invasive vegetation including tamarisk will be removed and treated with an herbicide prior to revegetation work.

The plant list for the riparian woodland habitat is detailed in **Table 1.** Figure 3 provides a cross-section of these areas. The island details and planting plan are provided in Figures 5 and 7 and the peninsula detail and planting plan are provided in Figures 5 and 6 respectively. The planting plans in Figures 6 and 7 are derived from the plant lists provided in **Tables 1 and 3**.

Table 1

Riparian Woodland Plant List

Common Name	Scientific Name	Size	# per Acre
TREES			
red willow	*Salix laevigata*	tree pot	32
arroyo willow	*Salix lasiolepis*	tree pot	25
black willow	*Salix gooddingii*	tree pot	15

[1] Note: The riparian depressions are excluded from the calculation of the 200-foot creek buffer. Therefore, where the riparian depressions are present, the actual measured distance between the creek bank and the top of the mining slopes is greater than 200 feet.

Common Name	Scientific Name	Size	# per Acre
Fremont cottonwood	*Populus fremontii*	tree pot	27
N. California walnut	*Juglans hindsii*	tree pot	10
boxelder	*Acer negundo*	tree pot	8
SHRUBS			
buttonbush	*Cephalanthus occidentalis*	1 gal	35
mugwort	*Artemesia douglasiana*	1 gal	40
mulefat	*Baccharis salicifolia*	1 gal	35
Calif. rose	*Rosa californica*	1 gal	23
Calif. blackberry	*Rubis ursinus*	1 gal	10
wild grape	*Vitis californica*	1 gal	10
		TOTAL	**270**
GRASSES			
creeping wildrye	*Elymus triticoides*	Plug	800

B. Perennial Marsh

Native perennial marsh vegetation will be planted around the Phase 5 and 6 lakes. This habitat most naturally occurs between average high water (AHW) and average low water (ALW), which is the zone where planting will take place. Vegetation will consist of relatively deep-rooted perennials that are adapted to perennially wet conditions. This vegetation will transition naturally to riparian woodland.

The plant list for the perennial marsh is detailed in **Table 2**. Figure 3 provides an illustrative cross-section of this and other habitats.

Table 2

Perennial Marsh Plant List

Common Name	Scientific Name	Size	# per Acre
bulrush	*Schoenoplectus acutus*	tree band	15

Common Name	Scientific Name	Size	# per Acre
bulrush	*Schoenoplectus americanus*	tree band	15
cattail	*Typha domingensis*	tree band	20
Baltic rush	*Juncus balticus*	rose-pot	100
common rush	*Juncus effuses*	tree band	15
dense sedge	*Carex densa*	rose-pot	100
horsetail	*Equisetum hyemale*	1 gal	10
		TOTAL	**275**

C. Oak Savannah and Native Grassland

The oak savannah habitat will be restored within the 200-foot buffer between Cache Creek and the mined areas. This habitat will contain relatively sparse trees with denser shrubs and a native grassland understory. This habitat better approximates the vegetation that existed in this zone prior to habitat conversion. As well, this vegetation is better adapted to the soils in this zone. The soils in this area are generally well-drained but contain pockets of more and less well drained soils. The planting pallet below allows for planting appropriate vegetation based upon soil micro-habitats as well as native grassland that is adapted to all of these soils.

This vegetation will also be planted in the upper banks around the Phase 5 and 6 lakes above the riparian Woodland vegetation and just up to the top of bank. Oak Savannah and native grassland understory vegetation will also be planted within the interior portion of the island, in an elevation just above the riparian woodland. In both instances, the riparian woodland vegetation will transition to the oak savannah and native grassland vegetation.

The tree and shrub plant list for the oak savannah is detailed in **Table 3**, while the grassland component is detailed in **Table 4**. Figure 3 provides an illustrative cross-section. Figure 6 provides the peninsula's detailed planting plan and Figure 7 provides the island's, which follows from the vegetation details provides in **Tables 1 and 3**.

Table 3

Oak Savannah/Native Grassland Plant List

Common Name	Scientific Name	Size	# per Acre
TREES			
valley oak	*Quercus lobata*	tree pot	5
buckeye	*Aesculus californica*	tree pot	7
interior live oak	*Quercus wizlensii*	tree pot	2
SHRUBS			
coyote bush	*Baccharis pilularis*	1 gal	39
yerba santa	*Eriodictyon californicum*	1 gal	28
coffeeberry	*Frangula californica*	1 gal	11
hollyleaf redberry	*Rhamnus ilicifolia*	1 gal	8
		TOTAL	**100**
GRASSES			
See Native Grassland Plant List **(Table 4)** below			

D. Native Grassland Buffer

The Native Grassland Buffer habitat restoration will be located in areas that abut the restored habitats including the lakes and the oak savannah. (Figure 2). This habitat is meant to provide both a buffer from agricultural land uses and as a habitat transition to the restored habitats. As such, this habitat will be dominated by grasses and forbs. The restoration will occur by drill-seed in areas 3:1 or flatter and broadcast seeding in other instances at the rates provided in **Table 4** below. Rose-pots will generally be planted in clusters of between five to seven plants at the rates indicated in Table 5.

The plant list for the native grassland buffer is detailed in **Table 4**. Figure 3 provides an illustrative detail for this habitat.

Table 4

Native Grassland Buffer Plant List

Common Name	Scientific Name	Size	# per Acre
creeping wild rye	*Elymus triticoides*	seed	9
slender wheatgrass	*Elymus trachycaulus*	Seed	7
purple needlegrass	*Stipa pulchra*	seed	6
blue wildrye	*Elymus glaucus*	seed	8
six-weeks fescue	*Festuca microstachys*	seed	2.5
meadow barley	*Hordeum brachyantherum*	seed	4
yarrow	*Achillea millefolium*	seed	2.5
California poppy	*Eschscholzia californica*	seed	3
sky lupine	*Lupinus nanus*	seed	3.5
gumplant	*Grindelia camporum*	seed	3
		TOTAL	**48.5 lbs/ Acre**
milkweed	*Asclepias fascicularis*	rose pot	45
mugwort	*Artemesia douglasiana*	rose pot	15
		TOTAL	**60**

Note: Composition of seed mix (and appropriate modifications) to be determined based on availability from suppliers, test plot results (if applicable) and species determined most suitable at the time planting occurs.

For the above habitats, grass and grass-like plug plantings will be placed on one-foot centers. Trees and shrubs will be placed in clusters of approximately 3-5 plants except within the oak savannah, where trees will be relatively widely spread over the habitat.

The native grassland seed mix in **Table 4** may also be used for temporarily disturbed areas outside of these planned restoration areas as needed. Alternatively, a native erosion control seed mix may be used for temporary disturbances (see, e.g., Table 13).

E. Interstate 505 Screening

Fremont cottonwoods will be planted to fill in the gaps of the existing cottonwoods that make up the Interstate screening. A total of 40 of these will be used to fill in these areas. In addition, a small portion of the screen closest to Cache Creek will be planted with California walnut, as these have been successful in this portion of the project area, and they will integrate into those that already exist in this area. The plant list is provided in **Table 5**.

A relatively small amount of invasive vegetation including tamarisk and giant reed grass, is currently found within the northern end of the screening area. These plants will be removed and treated with an herbicide prior to revegetation work.

Table 5

Interstate 505 Screening Plant List

Common Name	Scientific Name	Size	Number
TREES			
Fremont cottonwood	*Populus fremontii*	tree pot	40
California walnut	*Juglans hindsii*	tree pot	15

F. Bank Swallow Habitat

No planting measures are necessary for this habitat as more open areas are preferred for nesting by bank swallow. However, the southern edge of the habitat, which contains the near-vertical bluffs should be protected with orange construction fencing to ensure that grading does not get to close to the edge or that soil materials are not accidentally pushed over the edge of the habitat and impact the steep banks. This fencing will be erected prior to work commencing within 50 feet of the area and may be removed after work is completed.

G. Planting Techniques

Trees and shrubs will be planted in clusters within their respective habitats. These clusters will vary based on proximity to water, slope, exposure and other factors. The plant contractor shall work with the EM to ensure proper placement of plantings.

1. Plugs

The following specifications will be employed for installing the plugs:

- Planting holes shall be slightly deeper than the plug, by about ¼" to provide for additional soil on top of the plug surface. This will prevent excessive transpiration after planting.
- Roots will be protected from the sun and/or drying winds.
- After plants are removed from the plug trays, the root ball will be bent and slightly twisted to free the roots from the tray form.
- Plants will be set in planting holes so that the crown of the root ball is just below the ultimate soil surface (i.e., finished grade).
- Finely broken-up backfill will be tamped firmly on top of the plug.
- Immediately following installation, plug planting areas will be watered in with sufficient water to reach the lower roots.

2. Shrubs

The following specifications will be employed for installing the shrubs:

- Planting holes will have vertical sides with roughened surfaces. Each planting hole will be partially backfilled with soil excavated from the planting hole.
- Roots will be adequately protected from the sun and/or drying winds.
- After plants are removed from containers, the sides of the root ball will be scarified to promote development of new roots. Any roots wrapped around the sides of the container will be pulled loose from the root ball.
- Plants will be planted with the roots untangled, and spread out in the planting hole to promote even root penetration.
- Plants will be set in planting holes so that the crown of the root ball is at or just above the ultimate soil surface (i.e., finished grade).
- Finely broken-up backfill will be tamped firmly around the root ball, making certain not to depress the crown of the plant.
- The top of the root collar shall be exposed rather than covered with soil; however, the sides of the root ball will not be exposed.
- Immediately following installation, each plant will be deep soaked with sufficient water to reach the lower roots.

3. Seed Installation Technique

Seeding will take place in October or November using the current weather forecast in order to provide the most optimal time as practicable in regards to early season rainfall.

Prior to seeding grow-kill cycles will be used in order to remove non-native and invasive weeds. A grow-kill cycle involves irrigating the soil (or using natural rainfall), allowing the existing seedbank to germinate, followed by removing the vegetation using a chemical, post-emergent herbicide treatment. The cycles will be conducted a sufficient number of times to remove the majority of the weed species present in the seed bank, but a minimum of at least one grow-kill cycle will be completed for any seeded area. If rainfall is to occur early enough in the year, this could be completed, in part, through early season rainfall. Otherwise, supplemental water from a water truck or other source should be used.

Before seeding, all debris will be removed from the area to be seeded. If the soil has been compacted, the ground surface will be tilled to a minimum 12-inch depth if practicable but at least scarified to 3 inches in depth to create an adequate seed bed for planting. Seed will be sown via broadcast seeding or drill seeding and then raked in and watered.

H. Plant Protection

Shrubs may be subject to herbivory that could result in damage or loss of plants. Based on the recommendation of the EM, any or all of the following corrective measures may be implemented during plant installation, if it is determined that plants may be jeopardized by wildlife:

- Plants susceptible to browsing will be protected using wire cages, tree shelters (e.g., hardware wire cages, etc.), or exclosure fencing (e.g., temporary rabbit fences).
- Wire screening will be installed around the roots of plants to prevent damage attributed to subterranean herbivores (e.g., gophers).
- Protective devices will be maintained in place for at least three years, or until herbivory is no longer a threat to the survival of the plants.

- During annual monitoring visits, the EM will observe for evidence of browsing and direct implementation of the measures outlined above as appropriate.

VI. PERFORMANCE STANDARDS

This Plan proposes to restore habitats that feature California native vegetation and wildlife diversity. The success of achieving these goals will be determined by comparing the mitigation habitats with the performance standards established for each habitat type. The success of the restored areas will be evaluated over a three to five-year period after construction they have been restored and at least two years after any replacement of any failed plantings.

A. Proposed Mitigation Performance Standards

The performance criteria, provided in **Tables 6, 7, and 8**, will be used to determine successful completion of restoration responsibilities. Fulfillment of these criteria will indicate that the restoration areas are progressing well toward the habitat characteristics, functions, and values that fulfill the long-term goals of this Plan. The restored habitats will be monitored annually and performance standards should be met by between the third and fifth year of monitoring.

Vegetation monitoring of the marsh, grassland, and understory (non-trees and shrubs) will be conducted in the same fashion for all of the habitat types, using permanent 1 square meter (approx. 10' x 10') plots.

1. Perennial Marsh

The perennial marsh will be planted in the zone between AHW and ALW, which will ensure ponding throughout the year and lead to high cover by native perennials. These two factors are the most significant with regards to the functional analysis: both contribute strongly to water storage, nutrient, pollutant and sediment transformation/sequestration as well as the maintenance of native plant and wildlife communities. As well, high perennial cover should help reduce the potential for invasive, non-native species to establish. **Table 6** details the performance criteria.

Table 6

Perennial Marsh Performance Criteria

Habitat Element	Final Performance Criteria
Vegetation Cover	≥60% per plot avg
Relative hydrophyte Cover	≥60% per plot avg

Relative cover of Native Species	≥60% per plot avg
Average number of Native Species (Species Richness)	≥3 native species per plot avg
Invasive cover	<10%

2. Riparian Woodland and Oak Savannah

Though the Riparian Woodland habitat is quite different from the Oak Savannah the performance standards relating to the health and survivorship of the woodland plantings is the top priority as is reflected in **Table 7**. All of these areas will serve as high quality habitat and movement corridors for wildlife.

Table 7

Riparian Woodland and Oak Savannah

Performance Criteria

Habitat Element	Final Performance Criteria
Woodlands	
Average Number of Native Trees	70% of target density *
Height of Trees	≥6′
Shrubs	
Number of Shrubs	70% of target density *
Height of Shrubs	≥2′

* Performance criteria can be met via planted materials or recruitment of native species or a combination of both

3. Native Grassland Buffer and Savannah Understory

The species composition of native grasslands and the understories of woodland and savannahs are quite similar with minor differences relating to the effects of woody vegetation on soil and shading, which tend to evolve over time. The perennial grassland cover in these areas provides cover and habitat for wildlife while filling space that would otherwise be filled with non-native or invasive vegetation. Overall cover in these areas should be relatively high with a base of native grasses and forbs (wildflowers) and other vegetation, which is what the performance standards provided in **Table 8**, will measure.

Table 8

Native Grassland Buffer and Savannah Understory

Performance Criteria

Habitat Element	Final Performance Criteria
Native Grassland	
Vegetation Cover (Across all stratums)	≥60% per plot avg
Average Number of Natives (Across all stratums) (Species Richness)	≥3 native species per plot avg
Relative Cover of Natives (Across all stratums)	≥30% per plot avg
Invasive cover (Across all stratums)	<10% per plot avg

VII. MONITORING AND REPORTING

A. Post-Construction Monitoring

After completion of any portion of Restoration construction, usually after the reclamation of each Phase, all the elements discussed below will be monitored for a minimum of three years or until the performance standards are met for at least two consecutive years. Monitoring results, including photographs, will be submitted as an annual report to the County by November 1 of each monitoring year.

B. Monitoring Frequency and Season(s)

Generally, Project monitoring will be completed annually. However, qualitative hydrology monitoring of the riparian depressions will be completed up to three times during the first rainy season after the oak savannahs are graded to provide a larger watershed for the depressions. This will help ensure that the riparian areas are receiving a proper water supply. Vegetation monitoring will be completed in the spring or early summer when plant growth and blooming periods are high. Specific monitoring activities shall occur at the frequency and season(s) indicated in **Table 9**. Also, see the maintenance description above for additional detail site reviews focused on weed control.

Table 9

Monitoring Frequency & Seasons

Category	Frequency and Seasons
Hydrology	Up to 3x in the rainy season after completion of wetland depressions and Phases 5 and 6; then yearly
Vegetation	Annually, in late spring or early summer
Maintenance activities	As completed

C. Monitoring Methods

Performance monitoring will include both qualitative and quantitative assessment. Qualitative monitoring will occur during periodic inspections of the restoration areas. These inspections will occur frequently the first few months of some restoration phases and annually in subsequent years as noted above. Quantitative monitoring will take place annually until the final performance criteria are met and will typically occur annually in the late spring or early summer beginning the first year after planting.

1. Qualitative Monitoring

Qualitative monitoring methods will include visual observation and photo documentation from set stations. There are no specific performance criteria associated with this monitoring.

a. Visual Observation

During monitoring events, the EM will document the condition of the restoration area based on visual observations. Current conditions, potential problems (i.e., vandalism, fence damage, presence of exotic plant species, herbivory, etc.), and any recommended actions will be documented in a Field Memo that will be provided to the operator. Any recommended actions will also be documented in the annual Monitoring Report for that year.

b. Photo Documentation

Annual photographs, which are taken to qualitatively document the progress of the habitat restoration over time, will be taken from preset photo stations during scheduled quantitative data collection events. Additional photographs will be taken of any potential problem areas. All photographs will be logged and representative photos included in each annual report.

c. Hydrology

After grading in the oak savannah has been completed, the hydrology of the riparian depressions will be qualitatively assessed. The amount of soil saturation or the depth of recent ponding will be noted. Rainfall will be tabulated during the rainy season from a local source and the depth and extent of ponding defined will be compared to rainfall and the assessed depth.

2. Quantitative Monitoring

a. Marsh and Grassland Vegetation

Vegetation monitoring will be conducted in the same fashion for the perennial marsh and all of the grassland and understory areas. Permanent square meter (approx. 10' x 10') plots will be randomly established throughout each habitat. Enough plots will be placed within each habitat in order to obtain an adequate sample of each. At a minimum, the total number of plots within each habitat will equal at least 10% of the total acreage (i.e. a 50-acre habitat would require a minimum of 5 plots).

The percent cover of unvegetated ground and of each species will be recorded from these plots in the late spring or early summer of each year during the monitoring period (beginning at the end of the first growing season), using Braun-Blanquet cover classes. Other data will then be calculated from the cover data for each plot, using the mid-point of the range for each code (**Table 10**, below).

Table 10

Braun-Blanquet Cover Classes

Percent Cover	Braun-Blanquet Code	Value Used for Calculations
75-100%	5	87.5%
50-75%	4	62.5%
25-50%	3	37.5%
5-25%	2	15%
many-5%	1	2.5%
Few	+	.1%
one individual	r	.01%

Plants will also be categorized as either "wetland species" or other species. Indicator status will be based on the most current National Wetland Plant List for this region. For comparison to performance criteria, values for all stands within a habitat type will also be averaged. Formulas are described in **Table 11**, below.

Table 11

Vegetation Cover Calculations

Cover Calculation	Formula
Total Species Cover (totals can exceed 100 with shading or 'overlap' between species.)	Sum of cover for all species.
Vegetation Cover	100 minus non-plant cover
Relative Cover by Native Species	Sum of cover for the native species / Total Species Cover.
Relative Cover of Hydrophytes	Sum of cover for the wetland species /Total Species Cover.

b. Woodland Vegetation

All planted trees and shrubs will be checked annually in the spring or early summer for height and health. All trees and shrubs will be placed in one of the height categories in **Table 12**.

Table 12

Tree and Shrub Height Categories

	Class 1	Class 2	Class 3
Trees	<2′	2-6′	>6′
Shrubs	<1′	1-2′	>2′

Each tree and shrub will also be identified as healthy or unhealthy, based on general appearance. Data will be displayed in the annual report by species, including live, dead, and unhealthy plants.

c. Maintenance Activities

All maintenance activities will be reported in the annual monitoring report, including the date and a short description of the work involved. Maintenance activities to be reported include mowing, herbicide use, replacement of dead or unhealthy shrubs, replacement of plantings, major debris removal and irrigation line repair.

D. Annual Reports

As required by the OCSMO Section 10-4.701, monitoring reports will be submitted annually beginning the first year after construction and continuing until the project meets the performance standards. Reports will include both raw data (as appendices) and summary tables and graphs of the data required to assess project progress. These reports will be due by the 1st of November of each year. In addition to evaluating the progress relative to the performance standards quantitatively and qualitatively, the reports will include representative photographs taken each year from permanent photo stations. The reports will include a list of names, titles, and companies of all persons who prepared the reports and who participated in the monitoring.

VIII. TEST PLOTS

Beginning in 2018 or upon County adoption of this Plan, disturbed mining slopes (in Phase 3) and agricultural backfill areas (in Phase 1) that have reached their final configuration and will not be further disturbed will serve as test plots for the respective revegetation seed mixes. If a portion of the Phase 4 area is seeded with the erosion control mix, test plots will be set up in this area as a substitute for one of the above areas.

The test plots will be used to study the success of the prescribed native grassland and erosion control mixes. The native grassland mix is provided in **Section V, Table 4**. The erosion control mix is provided below in **Table 13**. At least two plots of each mix will be tested, with at least 1 plot in each of the areas described above. In addition, at least one plot in each area, which will remain unseeded, will be used as a control.

Table 13

Native Erosion Control

Broadcast Seed Specification

Common Name	Scientific Name	Size	lbs/acre
blue wildrye	Elymus glaucus	seed	6
California brome	Bromus carinatus	seed	6
meadow barley	Hordeum brachyantherum	seed	5
six-weeks fescue	Festuca microstachys	seed	3.5
California poppy	Eschscholzia californica	seed	2.5
		TOTAL	**23**

The test plots, which will be 100m2 in size, will be monitored during the late spring at a time that best corresponds to identification of the majority of the species. The plots will be surveyed by biologist experienced in the identification and ecology of these species. Data that is to be collected during the surveys of each plot will include:

- A list of all species found within the plot
- Total cover
- Total native cover
- Total non-native cover
- Total invasive plant cover using the species from **Section IX Table 14**
- Total relative cover of each of the species within the prescribed grassland and erosion control mixes.

The test plots will be monitored over the course of two consecutive years after seeding. The results of the test plot monitoring will be used to update planting procedures, species, and success criteria monitoring as necessary in consultation with the County.

IX. WEED CONTROL PLAN

This section describes the weed maintenance activities that the operator will implement on the restoration site during the time period between initiation of the restoration and once reclamation has been completed and all phases have met their performance standards.

A. Control of Weeds and Exotic Plants

Weed control is likely to be the foremost issue for maintenance. **Table 14** shows the invasive species found on or near the mitigation site or likely to occur. These are arranged by their California Invasive Plant Council (IPC) class (Cal-IPC 2020). An explanation of the IPC ratings is provided below the table.

The current version of this Plan was updated with the any species ranked high by the Cache Creek Resources Management Plan (CCRMP) Priority list (2002). These species included Himalayan blackberry (*Rubus armeniacus*) and poison hemlock (*Conium maculatum*), both of which are found in limited distribution on the site. Tree of heaven (*Alianthus altissima*) was also added, though this species is not known from the site.

In addition, any relevant species from the 2020 and 2021 Cache Creek Annual Status Report (Cache Creek TAC 2021 and 2022) were also included. Table 5-2 of the 2020 Status Report summarizes the non-native species of note by reach. The bulk of the site is within the Guesisosi Reach with a smaller portion in the Dunnigan Hills Reach and a fraction within the Madison Reach. Purple loosestrife, which was noted in both the Guesisosi Reach and the Dunnigan Hills Reach was added to the list, though it is also currently found in limited distribution on the site.

Table 14

Invasive Plant Species On-Site

Species		IPC Rating	CCRMP Priority	Frequency of Occurrence
Common Name	**Botanical Name**			
ravennagrass	*Saccharum ravennae*	**Moderate/ Alert**	**High**	Sparse
giant reed grass	*Arundo donax*	**High**	**High**	Limited distribution
stinkwort	*Dittrichia graveolens*	**Moderate/ Alert**	Low	Co-Dominant

tamarisk	*Tamarix sp.*	**High**	**High**	Limited distribution
perennial pepperweed	*Lepidium latifolium*	**High**	**High**	Limited distribution
yellow starthistle	*Centaurea solstitialis*	**High**	**High**	Co-Dominant on creek slopes
tree tobacco	*Nicotiana glauca*	Moderate	**High**	Co-Dominant near creek
smilo grass	*Stipa miliacea var. miliacea*	Limited	NA	Limited distribution
Russian thistle	*Salsola tragus*	Limited	NA	Limited distribution
white horehound	*Marrubium vulgare*	Limited	NA	Sparse
bull thistle	*Cirsium vulgare*	Moderate	**High**	Co-Dominant
Italian thistle	*Carduus pycnocephalus*	Moderate	**High**	Abundant
milk thistle	*Silybum marianum*	Limited	**High**	Co-Dominant
summer mustard	*Hirschfeldia incana*	Moderate	NA	Co-Dominant
Himalayan blackberry	*Rubus armeniacus*	**High**	**High**	Limited distribution
tree of heaven	*Ailanthus altissima*	Moderate	**High**	Not currently present
poison hemlock	*Conium maculatum*	Moderate	**High**	Limited distribution
purple loosestrife	*Lythrum sp.*	**High**	Medium	Limited distribution

IPC RATINGS KEY

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert – An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

Watch – These species have been assessed as posing a high risk of becoming invasive in the future in California.

(IPC 2017)

Maintenance work will be conducted to reduce the cover of species rated High or Alert by the IPC. Reductions in these aggressive weeds, which outcompete native plant species for resources (e.g. space, water, nutrients, and light), will help the restoration work meet the required performance standards. However, complete eradication may not be feasible unless the weed-infested patches are small.

Once sprouted, these invasive weeds should be removed mechanically to the maximum extent practicable through hand-pulling, mowing, and similar strategies. If mechanical control is not effective or practicable, an EPA-approved systemic herbicide may be applied. Herbicides will be applied under the direction of a licensed applicator and shall be consistent with protection of wildlife potentially occurring on-site, e.g. VELB, Bank swallow, Bat species, Swainson's hawk. More specific recommendations for each of these plant species is provided below.

Ravennagrass/hardy pampas grass (*Saccharum ravennae*): Ravennagrass is an extremely large (up to approximately 12 feet) perennial grass with dense, purplish-colored plumes.

This plant is found sparsely along the channel and channel banks of Cache Creek where it is known to be spreading. When observed, pampas should be spot sprayed with a broad spectrum herbicide. Larger plants will likely require repeated treatments to be effective. Given the limited spread and distribution, new invaders along the edge of Cache Creek should be relatively easy to control.

Giant reed grass (*Arundo donax*): Giant reed grass is also an extremely tall (up to 20 feet) grass with relatively short wide leaves and tall, white plumes. This species is found sporadically along the banks of Cache Creek and in the high terrace zone. Once established, this plant forms dense, impenetrable stands.

Stands should be cut to near ground level before using a broad spectrum herbicide, which may be painted on the stems. Early identification and eradication of establishing grasses greatly simplifies control. Given the limited spread and distribution, new invaders along the edge of Cache Creek should be relatively easy to control.

Stinkwort (*Dittrichia graveolens*): Stinkwort is an annual sticky, glandular plant with a pungent odor. It normally grows between 1 to 3 feet high, though it can get up to as much as 6 feet tall. It has small yellow flowers that produce large amounts of seed that are carried by the wind.

Stinkwort is a plant species that is spreading relatively rapidly throughout the region. Treatment of these plants should be completed prior to flowing and seed development. Prior to maturation, the plant is easy to remove and control. At early stages well before flowering, the plant can be removed using weed whips. When flowering or close to flowering, all cut plant material should be bagged and properly disposed of as seed can continue to mature after the plant has been cut and this species is highly successful at spreading through relatively disturbed areas through seeding. Given the ongoing disturbances at the site and the relatively high level of wind that the area experiences, this plant has a high potential to spread. Once spread, the plant will be very difficult to control. Therefore, this species should be subject to ongoing control measures during plant operation and reclamation.

Tamarisk (*Tamarix sp.):* This species is being found more often in the lower banks of cache creek and is also present in the riparian depressions, especially the largest one near the eastern border. This plant is a known invader of riparian areas and should be treated when found on the slopes of Cache Creek. Those that are found within the habitat depressions do not pose a risk to the remainder of the site as they are very unlikely to spread out of those areas. Tamarisk in these depressions should be removed and treated during the restoration process of these areas.

Perennial pepperweed (*Lepidium latifolium*): Perennial pepperweed was observed primarily around the shop and the roadside to the shop. This plant spreads quickly in mesic areas. Currently, the amount of area this plant takes up is relatively small and therefore, should be treated before it can spread and while it is comparatively easy to control. A broad-leaf herbicide should be used to treat this species.

Yellow starthistle (*Centaurea solstitialis*): This species is widespread throughout the site. However, it has been successfully treated in a number of areas during reclamation and restoration. The westernmost portion of the Phase 1 area was completely dominated by yellow starthistle for a number of years. However, the site was successfully restored by discing the field and applying herbicide treatment prior to drill seeding. Therefore, given this success and the already widespread nature of the plant on the site, it should be dealt with during the reclamation and restoration process of each phase and once at final reclamation.

Himalayan blackberry: This species is found in limited distribution, primarily along the Cache Creek bank near the Madison Reach. This thorny, perennial plant is a difficult species to control even with the use of chemicals. Experience has shown that mowing back to the roots and then treating with a reduced application rate of broad spectrum herbicide on the plant regrowth works with repeated doses over time.

Purple loosestrife: This species is usually found as individuals along the edges of perennial waters or riparian areas. Purple loosestrife spreads primarily by seed, but also by root and stem fragments. This species was noted within both the Guesisosi and Dunnigan Hills reaches of Cache Creek on the south bank, which includes the site. Individuals of these species should be cut and spot sprayed with a broad spectrum herbicide before going to seed.

Besides these plants, which have the potential to become invasive on the site, there are a number of other weeds, primarily mustards and thistles that are known on the site. While these weeds can dominate locally disturbed areas, they are unlikely to become invasive outside of these areas. Treatment without replacement does little good with these weeds. There are areas that have been dominated by these weeds for many years, but have not moved off of these sites. Control by burning or herbicides provides short term relief, but does little good in the long term. These areas including both vegetation and soils are best left undisturbed and should be dealt with during the reclamation and restoration process of each phase and once at final reclamation. When ready, the top 12 inches or so of soil should be removed and buried to a depth of at least 5 feet so as to kill off the seed bank.

These species include:

Smilo grass (*Stipa miliacea var. miliacea*): This species is very localized in a few locations around the banks of Cache Creek and is not spreading rapidly. Given its limited distribution and ability to spread, it should be dealt with during the reclamation and restoration process of each phase and in the final condition.

Russian thistle (*Salsola tragus*): Outside of a few individuals, this species is noted almost exclusively from the disturbed northeastern portion. This outbreak should be controlled while it is relatively small and easier to manage. Adult individuals should be cut and removed. Seedlings can be sprayed with a post emergent, or cut at the base with hand tools or weed whips.

White horehound (*Marrubium vulgare*): A very few individuals of this species were noted sporadically around the site. It does not appear to be a large danger of spreading

Tree tobacco (*Nicotiana glauca*): Tree tobacco has been found occasionally along and near the banks of cache creek and in some of the gravel piles near the plant. In the past, these have been successfully treated with herbicide during restoration.

Bull thistle (*Cirsium vulgare*), **Italian thistle** (*Carduus pycnocephalus*), **Milk thistle** (*Silybum marianum*), **Summer mustard** (*Hirschfeldia incana*): These plants are often found together in the margins of agricultural land or on previously disturbed areas. They are not in danger of spreading and should be left undisturbed until the final condition when the top foot or so of soil should be removed and buried to control the seed bank.

Poison hemlock: This species is biennial, flowering and seeding in its second year. Poison hemlock is found in relatively mesic areas especially in and around riparian areas and perennial wetlands. While it can form monolithic stands, it is often found mixed with the thistles and mustards noted above. When found in these areas and in similar situations, it should be treated in the same fashion as noted above. When it is found in monolithic stands, which have not been previously noted on the site, it should be mowed/weed whipped repeatedly, up to three times, to keep the plant from flowering and setting seed. Alternatively, a broad spectrum herbicide can be used when the plant is in the rosette stage or before it bolts.

In general, weed control will require at least annual surveys and reporting, followed by active management. Weed control on the site will include the following steps:

1. The biological monitor will complete a spring (March - May) survey of the site to identify sprouted material. They will define and map areas that are in need of invasive weed control including the species and note any recommendations.
2. The results of the weed control measures will be reviewed in the annual vegetation monitoring survey. The report will identify the areas and species that were noted for control, identify results, and provide additional recommendations to help meet the restoration performance standards.

3. The weed control methods will take an adaptive management approach. The methods will continue to be refined based upon the previous year's results until the most practicable approach is found.

As mentioned above, complete eradication of weeds may not be feasible unless the weed-infested patches are small.

X. MAINTENANCE PLAN

A. Supplemental Irrigation

As previously noted, artificial drip irrigation will be supplied during the two years after planting to facilitate the establishment of plants. Spray type irrigation should not be used as it facilitates the spread of non-native and invasive vegetation.

B. Protective Devices

Protective devices, *e.g*. tubex tree shelters or wire cages, if installed, will be maintained in good condition. Additional devices will be installed or other measures taken if monitoring indicates shrub damage from herbivory. However, these will be removed prior to the onset of long-term management.

C. Replacement of Dead or Diseased Plant Materials

The planting densities and the performance standards, which are detailed in this plan, assume a certain level of mortality during the monitoring period as well as potential colonization of the site by native species. As long as the performance standards are met, replacement of plant materials will not be necessary. If mortality levels exceed the performance standards, however, the cause of mortality will be investigated and corrective actions taken as necessary to resolve any problems prior to plant replacement. Plants will be replaced only during the appropriate time of year as noted above. Note, though, that plant replacement will not be required as part of the long-term management. Dead species that are not replaced may remain onsite and be allowed to naturally decompose.

XI. REFERENCES

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APPENDIX F

2020 TEN-YEAR PERMIT REVIEW

CONDITIONS OF APPROVAL
MINING PERMIT AND RECLAMATION PLAN NO. ZF #95-093

CEMEX MINING AND RECLAMATION PROJECT

2020 Ten-Year Permit Review: As approved by the Planning Commission February 11, 2021

The following conditions of approval include all mitigation measures contained within the Final EIR, except where noted in the staff report. Modification to mitigation measures can only occur if: 1) the effectiveness of the measure in reducing the applicable environmental impact is not affected; or, 2) subsequent environmental analysis is performed to examine the new proposed measure and associated environmental impact.

Annotations are added below in italics to identify where actions and approvals since 1996 have further modified these conditions. These annotations are informational and not a part of the conditions of approval.

MISCELLANEOUS CONDITIONS

1. The operator shall agree to indemnify, defend, and hold harmless the County or its agents, officers, and employees from any claim, action, or proceeding (including damage, attorney's fees, and court cost awards) against the County or its agents, officers, or employees to attack, set aside, void, or annul an approval of the County, advisory agency, appeal board, or legislative body concerning the permit or entitlement when such action is brought within the applicable statute of limitations.

   The County is required to promptly notify the operator of any claim, action, or proceeding, and must cooperate fully in the defense. If the County fails to promptly notify the operators of any claim, action, or proceeding, or if the County fails to cooperate fully in the defense, the operators shall not thereafter be responsible to defend, indemnify, or hold the County harmless as to that action. The County may require that the operators post a bond in an amount determined to be sufficient to satisfy the above indemnification and defense obligation.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

2. Annual production is limited to 1,000,000 tons (sold weight) and 1,204,819 tons mined weight). The annual production level may be exceeded by 20 percent to 1,200,000 tons (sold weight) in any one year, so long as the running ten-year production average does not exceed 10,000,000 tons (sold weight). Under no circumstances may annual production exceed 1,200,000 tons (sold weight). Pursuant to Action 2.4-9 of the OCMP and Action 6.4-4 of the

CCRMP, this limit shall not apply to recycled waste material or aggregate obtained from in-channel maintenance work performed in accordance with the CCAP.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

3. The operator shall pay tonnage fees to the County and the Cache Creek Conservancy for every ton of aggregate materials sold. Payment of these fees shall be in accordance with the CCAP and all implementing ordinances, and the Gravel Mining Fee Ordinance enacted for this purpose.
This condition was modified as a part of the 2020 Ten-Year Permit Review. CEMEX has been paying all required fees.
The tonnage fees are adjusted annually per Gravel Mining Fee Ordinance Section 10-11.01(c) as amended. This fee is allocated as follows:

    - *CCRMP Implementation (creek stabilization fee) currently 55.56% of per-ton fee*
    - *Maintenance and Remediation (contingency fund fee) currently 4.44% of per-ton fee*
    - *OCMP Implementation (administration fee) currently 17.78% of per-ton fee*
    - *Cache Creek Conservancy Contribution (habitat restoration fee) currently 22.22% of per-ton fee (paid directly to the Cache Creek Conservancy)*
    - *Twenty Percent Production Exception Surcharge (currently fixed at $0.20 per ton)*

4. Pursuant to Section 10-11.02(e) of the Gravel Mining Fee Ordinance, operators approved to utilize the Twenty Percent Production Exception Surcharge shall pay an additional $0.20 per ton for tonnage in excess of the base amount. Payment of these fees shall be in accordance with the CCAP and all implementing ordinances, and the Gravel Mining Fee Ordinance enacted for this purpose.
This condition was modified as a part of the 2020 Ten-Year Permit Review. CEMEX has been paying all required fees.

5. The processing of aggregate material approved under this Mining Permit shall cease when either permitted reserves are depleted or the life of the permit has expired, whichever event occurs first. The operator may apply for permit approval to extend aggregate processing beyond the limits described above. The extension may not exceed an additional period of twenty years and shall be subject to appropriate environmental review.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Mining commenced August 11, 1997. Written confirmation was mailed to Yolo County on August 12, 1997, and the County has acknowledged receipt. The permit expires August 11, 2027. CEMEX applied for a 20-year extension to the permits in February 2018. The application is currently being processed.

6. The Mining Permit is approved for a period not to exceed thirty years, starting from the date that mining begins. The operator shall certify in writing that mining has commenced. Written notification shall be received by the County within three days of mining

commencement. If notification has not been received by the County within one year of permit approval, then this Mining Permit and its accompanying entitlements shall be null and void.

If permitted aggregate reserves are still available at the end of the approved thirty-year period, the operator may apply to renew the permit. The extension may not exceed an additional period of twenty years and shall be subject to appropriate environmental review.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. See Condition #5.

7. The operator shall be responsible for all costs associated with implementing and monitoring these conditions.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

8. The operator shall submit financial assurances, in a form consistent with Section 10-5.702 of the Surface Mining Reclamation Ordinance, in the amount of $699,655 for reclamation of Phase 1, naming the County of Yolo and the California Department of Conservation as beneficiaries, prior to the commencement of mining.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Financial assurances are updated annually by the operator pursuant to SMARA.

9. The project to which these conditions are applicable is as described in the Project EIR and summarized in the Yolo County Board of Supervisors Staff Report dated November 25,1996, as modified only by the adopted conditions of approval including mitigation measures. Any subsequent substantive changes in the project description (as determined by Yolo County) may only occur subject to amendment or modification of the Mining Permit and/or Reclamation Plan.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The project was approved December 17, 1996. There have been various modifications to this permit since that time. CEMEX applied for a permit amendment and 20-year extension in February 2018.

10. In compliance with Section 10-5.520.2 (Permanent Easements) of the Reclamation Ordinance, upon the completion of reclamation within each phase of the project, the operator shall enroll each reclaimed parcel in Williamson Act contracts, or other equivalent long-term easements or deed restrictions satisfactory to the County, for the purpose of protection of the agricultural use of the reclaimed land in perpetuity.

This condition was clarified as a part of the 2020 Ten-Year Permit Review. The operation is approved with seven phases. Only Phase 1 (Hutson) is complete. A Williamson Act Contract for the entire Hutson parcel was approved by the Yolo County Board of Supervisors on March 24, 1998. A conservation easement was also approved and accepted by the Board of Supervisors on August 25, 1998, but was not recorded at the time. The Operator and County staff worked together to revise the easement to reflect current dates and obtain all necessary signatures. The conservation easement was recorded on July 30, 2012. This easement provides for the preservation of agricultural activities on 175 acres of prime farmland to prevent future conversion to non-agricultural uses. Implementation is ongoing.

11. In order to comply with the compatibility findings in Section 51238 et al. of the California Land Conservation Act (Williamson Act), only that portion of the Farnham East parcel in Phase 3 (APN: 049-070-05) which will be reclaimed to prime agricultural land, shall be mined prior to 2006.

The phasing plan was modified to comply with the condition as written. Mining began in Phase 3 in 2001. The Williamson Act Contract expired on that portion of the Farnham East parcel that will be reclaimed to lakes and habitat uses. This condition is implemented and fully discharged.

12. This Mining Permit and the accompanying entitlements, shall not be considered effective until a Development Agreement between the County and the operator has been executed. The Development Agreement shall include, but not be limited to, provisions for the following: implementation of net gain improvements, funding mechanisms for various programs associated with the project, all approved conditions of approval including EIR mitigation measures, relinquishment of existing in-channel permit rights, sunsetting of the processing plant and all operations at the mining site, dedication of reclaimed land and access to the County or other non-profit organization, and other items as deemed appropriate by the executing parties.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The Development Agreement was recorded in January 7, 1996. The First Amendment was approved May 22, 2001. The Second Amendment was approved April 15, 2003.

13. The operator shall reclaim the areas south of the permanent lakes in Phases 1, 3, 4, 5, and 6 to the agricultural production of tree crops, as described in the application.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Currently portions of this land are in row crop production. CEMEX applied for a permit amendment that would modify reclamation in these areas and 20-year extension in February 2018.

14. The aggregate processing plant, located on the northern 20 acres of the Kaupke parcel (APN: 049-070-13) shall be reclaimed in accordance with the CCAP.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The Reclamation Plan for the CEMEX plant site was separately approved by the County through a Minor Modification (Zone File No. 2013- 0003) approved by the Director in March 2014 to clarify the reclamation boundary and end use of the plant site. The plant site reclamation plan commits CEMEX to reclaim the plant site to agricultural use. The site will be graded and leveled, and planted in row crops. This Minor Modification resulted from the September 5, 2012, California Department of Conservation Lead Agency Review of Yolo County.

15. Temporary soil stockpiles shall be located on unmined phases within the approved mining areas or may be located outside of the mining area if the stockpile is to be farmed and harvested with an agricultural crop. Stockpiles shall not otherwise impact adjoining agricultural fields outside of the mining area. A revised reclamation plan shall be submitted to the Community Development Director for review and approval, if the stockpile locations change from the original proposal as a result of this condition.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The soil stockpile south of Phase 2 is planted and recently harvested as a hay crop.

16. The operator shall comply with both the spirit and intent of all applicable requirements of SMARA, the County Code (particularly Chapters 4 and 5), and all conditions of approval. The operation must remain consistent with the spirit and intent of the Cache Creek Area Plan.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. On June 5, 2017, the County and CEMEX entered into a Stipulated Order to Comply (SOTC) to address SMARA compliance items relating to: 1) mining beyond the approved mining and reclamation limits; and 2) pit side slope erosion along the north shore of Phase 3 Orrick Pit 2. With the permit amendment application currently being processed, CEMEX has substantially fulfilled its compliance commitments related to the SOTC. CEMEX is in substantial compliance with the Surface Mining and Reclamation Act (SMARA), the Off-Channel Mining Plan (OCMP), and conditions of approval as set forth in the Development Agreement (#96-287).

17. The operator is prohibited from proceeding with any new wet excavation, unless ambient mercury levels in the creek have been determined pursuant to Section 10-5.517 of the Reclamation Ordinance, six months prior.

    Ambient mercury levels were determined in the report entitled: "Mercury in Lower Cache Creek Biota: Baseline Assessment", by Slotton, Ayers, and Reuter (Fall 1997). This condition is implemented and fully discharged. Monitoring and reporting are ongoing.

18. The operator shall modify the mining and reclamation plans to account for the required 200-foot buffer from the channel boundary, less "credit" for the existing road levee. The pit

slopes in modified areas may be steepened to 2:1, if supported by site-specific slope stability analyses. A slope stability analysis, prepared by a Registered Engineer, and revised mining and reclamation plans shall be submitted to the Community Development Director prior to the commencement of mining in Phase 3.

Revised mining and reclamation plans, and site-specific slope stability analyses were submitted to the County on April 24, 1997. Slopes in the affected areas were adjusted to 2:1. Slope stability analysis was submitted to support the modifications and the adjusted slopes. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

In 2016, the Operator and County observed over-steepened slopes along the north shores of the pit lakes in Phases 3 and 4 that resulted from back-breaking of dredge excavations. Beginning at the end of June 2017 (within 45 days of the execution of the SOTC), CEMEX began placing backfill along the north shores of Phases 3 and 4 to correct the priority encroachments onto the 200-foot Cache Creek setback. This work was completed in July 2017. On October 2, 2017, the County performed a site visit with CEMEX personnel to observe the backfilled locations. See also response to Condition 16, above.

19. Pursuant to Action 2.4-13 of the Off-Channel Mining Plan, the CEMEX aggregate processing plant and all associated facilities must be closed, moved, and the site reclaimed consistent with the CCAP when mining has concluded at the site under the terms of the long-term permit, unless extended under subsequent permits to allow mining of additional aggregate deposits.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. CEMEX applied for a permit amendment and 20-year extension in February 2018.

20. The operation is prohibited from processing imported aggregate material. This condition shall not apply to materials needed to meet construction specifications, recyclable material, aggregate obtained from in-channel maintenance work performed in accordance with the CCAP, or previously stockpiled material from prior permits.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

21 - 24. Deleted due to repeat language.

These conditions were deleted during the approval process. They were not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

25. Pursuant to Action 2.4-2 of the Off-Channel Mining Plan, comply with Mining Ordinance Section 10-4.403 (Accident Reporting) related to reporting of accidents and/or hazardous conditions at the site, and Section 10-4.419.1 (Hazardous Material Storage) related to annual

submittal/update of a Hazardous Materials Business Plan (HMBP) and Spill Prevention Countermeasure Contingency Plan (SPCCP).

This OCMP action was modified as part of the CCAP Update to require annual rather than biennial updates. CEMEX submitted their 2020 HMBP on January 1, 2020. Update of that plan and submittal of a SPCCC will be required in 2021 and annually thereafter.

26. Pursuant to Action 6.4-8 of the OCMP, Section 10-4.440 of the Mining Ordinance, and Section 10-5.523 of the Reclamation Ordinance, hedgerows and other vegetated buffers required between restored habitat areas and adjoining farmland, shall use entirely native species. These hedgerows/buffers are intended to minimize the potential for riparian areas to serve as harbors for predators and insect pests. These buffers are intended to also reduce noise, dust, and spraying generated by agricultural operations.

    This requirement was modified as part of the CCAP Update to require native plants. CEMEX shall modify their approved reclamation plans to eliminate non-native species from required hedgerows and vegetative buffers. The operator has submitted a permit modification that would include revisions to the reclamation plan to include all native species.

27. The operator shall enter into a legally-binding agreement which ensures the implementation of channel improvements/maintenance required pursuant to Section 10-4.429 (Setbacks) of the Mining Ordinance and/or Section 10-5.506 (Bank Stabilization Maintenance) of the Reclamation of Ordinance, along the creek frontage adjoining the proposed mining area. Mining within each phase may occur concurrently with the CCAP channel improvements. However, CCAP channel improvements along the entire frontage of the mined phase shall be completed prior to the commencement of overburden removal and mining within the next subsequent phase. The agreement shall also require that a deed restriction be placed on those parcels on which the improvements occur, to require future owners of the property to maintain the streambank protection improvements. A bond or other financial instrument shall be provided by the operator prior to the commencement of mining within 700 feet of the CCAP channel boundary for the maintenance of any bank stabilization features during the 30-year mining period. Maintenance of the bank stabilization features following the completion of reclamation shall be the responsibility of the property owner.

    If, in moving from any one phase of mining to the next, the operator is unable to fulfill this condition within 12 months, due to delays outside of the control of the operator, the operator may optionally enter into an agreement with the County that allows deferral of construction of the channel improvements that would have otherwise been required at that time, to a reasonable future time when the events outside of the operator's control will no longer preclude meeting the condition. The operator must demonstrate to the County a good faith effort to satisfy the condition in order to enter into the optional deferral agreement. The use of the optional deferral agreement shall not allow any channel improvements that would have been required under this condition to be waived. The intent of allowing the optional deferral agreement to address a possible situation wherein the operator may be unable to satisfy the condition due to disagreement between responsible/permitting agencies, delay on the part of the County in identifying the specific improvements, or other similar circumstances.

The CEMEX Development Agreement constitutes the required legally binding agreement. Mining was not undertaken in any phase without compliance with this requirement. Mining was approved to occur in seven phases and is currently in Phases 3 and 4. Required streambank improvements have been completed and there are no additional requirements triggered until Phase 7. The Technical Advisory Committee approved the streambank improvements included in the application as part of Phase 2 in 1997. The improvements, designated as Site A, were completed in November 1998. The Site A improvements stabilized the south bank of the creek adjacent to the PG&E transmission tower, east of the Interstate 505 bridge. Subsequent bank stabilizations have occurred to repair other areas of bank erosion and instability, as those areas became known during the course of routine annual and periodic engineering inspections. Cemex will modify the financial assurance bond to reflect the requirements of this condition. Deed restrictions must be implemented following reclamation.

28. All approved modifications to the application, as documented in the Yolo County Board of Supervisors Staff Report dated November 25, 1996, shall be implemented by the operator as a condition of approval.

Required modifications to the reclamation plans were completed as part of revised mining and reclamation plans submitted to the County on April 24, 1997. This condition is implemented and fully discharged.

28.3 The operator shall install conveyors to transport aggregate from the mining area to the processing plant site by 2005. If conveyors have not been constructed by the projected date, then the operator shall submit a letter to the Community Development Director by January 1, 2006, describing the reasons for delay and a revised deadline for installation.

Conveyors were installed and operational as of October 2002. This condition is implemented and fully discharged.

28.6 Total production allowed under this Mining Permit shall not exceed 26.7 million tons (sold weight) and 32.2 million tons (mined weight). No mining in excess of this limit shall occur without additional approval by the Planning Commission and appropriate environmental review. Pursuant to Action 2.4-9 of the OCMP and Action 6.4-4 of the CCRMP, this limit shall not apply to recycled waste material or aggregate obtained from in-channel maintenance work performed in accordance with the CCAP.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

28.7 The applicant shall be in full compliance and good standing at all time with the terms of other required federal, state, and regional agency permits.

Condition added by the Board of Supervisors on March 20, 2007, pursuant to Ten-Year Interim Review of Cache Creek Long Term Gravel Mining Permits (Minute Order No. 07-74).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Cemex will add this condition to the compliance report.

EIR MITIGATION MEASURES

Land Use and Planning

29. Implement Mitigation Measures 4.4-3a, 4.4-4a, and 4.4-7a of the Final EIR for the proposed project (Mitigation Measure 4.2-1a).

Project-level Mitigation Measures 4.4-3a and 4.4-4a were OCMP Mitigation Measures 4.4-2a and 4.4-3(a) which became the following regulations in the Mining Ordinance: 10-4.413 (Drainage), 10-4.417 (Groundwater Monitoring Programs), 10-4.427 (Protection of Nearby Drinking Water Wells), 10-4.428 (Sanitary Facilities), and 10-4.429 (Setbacks); and the following regulations in the Reclamation Ordinance: 10-5.510 (Fencing), 10-5.517 (Mercury Bioaccumulation in Fish), 10-5.519 (Motorized Watercraft Prohibition), 10-5.524 (Post-Reclamation Groundwater Monitoring), and 10-5.532 (Use of Overburden and Fine Sediments in Reclamation). Project-level Mitigation Measure 4.4-7a became 10-5.516 (Lowered Elevations for Reclaimed Agricultural Fields).

All of the sections of the Mining Ordinance identified in the list above were modified as a part of the CCAP Update, with the exception of 10-4.427 (Protection of Nearby Drinking Water Wells). All of the sections of the Reclamation Ordinance identified in the list above were modified as a part of the CCAP Update, with the exception of 10-5.510 (Fencing), 10-5.516 (Lowered Elevations for Reclaimed Agricultural Fields), 10-5.519 (Motorized Watercraft Prohibition), and 10-5.524 (Post-Reclamation Groundwater Monitoring).

The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications simply clarify the original regulatory language and have no substantive effect on the conditions. The following sections were materially modified, apply to this operation going forward, and are noted for the purpose of this review: 10-4.413 (Drainage), 10-4.429 (Setbacks), 10-5.517 (Mercury Bioaccumulation in Fish) and 10-5.532 (Use of Overburden and Fine Sediments in Reclamation). The modifications do not change the underlying intent/effect of the regulation but add considerable specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going *forward, and specifically address compliance with the revised requirements in the 2021 compliance report.*

30. The project mining schedule or reclamation plan shall be modified to ensure that if Phase 3 lands are to be mined before the Williamson Act contracts expire, then reclamation shall be to prime agricultural uses only. Alternatively, if mining in Phase 3 does not begin until after 2006, no change to the reclamation plan would be required (Mitigation Measure 4.2-3a).

    The phasing plan was modified to comply with the condition as written. Mining began in Phase 3 in 2001. The Williamson Act Contract expired on that portion of the Farnham East parcel that will be reclaimed to lakes and habitat uses. This condition is implemented and fully discharged.

31. The County shall determine whether the operator's offer to dedicate reclaimed lands in Phases 5 and 6 for the proposed Recreation Node fulfill the policies of the CCRMP. The County and the operator shall enter into discussions to resolve how public access to the future recreation facility can be accommodated. If determined to be feasible, the project plans shall be modified to include a public access road along the eastern boundary of the site (Mitigation Measure 4.2-8a).

    As reflected in Section 2.2.8 of Development Agreement No. 96-287, the County has accepted the dedication of reclaimed lands in Phases 5 and 6 as fulfilling the policies of the CCAP. Included within the dedication is a provision for a 40-foot wide easement for access to State Highway 16. This condition is fully discharged. Implementation will occur with reclamation. Cemex has proposed a permit modification that includes a public easement around the permanent lakes in Phases 5 and 6, providing a larger total easement area than currently committed.

Geology and Soils

32. Implement the performance standards included in Sections 10-5.504, 10-5.505, 10-5.512, and 10-5.526 of the County Surface Mining Reclamation Ordinance. (Mitigation Measure 4.3-1a).

    With the exception of Section 10-5.512 (Field Releveling), all of the sections of the Reclamation Ordinance identified in the list above were modified as a part of the CCAP Update. The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. The section modifications simply clarify the original regulatory language and have no substantive effect on the conditions.

33. Implement the performance standards included in Sections 10-4.406, 10-4.413, and 10-4.431 of the County Off-Channel Mining Ordinance; and Sections 10-5.507, 10-5.508, and 10-5.530 of the County Surface Mining Reclamation Ordinance (Mitigation Measure 4.3-2a).

    All of the sections of the Mining and Reclamation Ordinances identified in the list above were modified as a part of the CCAP Update. The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications simply clarify the original regulatory language and have no substantive effect on the conditions. The following sections were materially modified, apply to this operation going forward, and are noted for the purpose of this review: 10-4.413 (Drainage) and 10-5.508 (Erosion Control). The modifications do not change the underlying intent/effect of the regulation but add considerable specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

    Section 10-5.508 (Erosion Control) was materially modified to eliminate the use of non-native grasses which will affect the allowed seed mix used on slopes in the future to prevent erosion. The operator shall modify their approved erosion control seed mix to eliminate non-native species.

    The operator has submitted a permit modification that would include revisions to the reclamation plan to include all native species.

34. The County shall revise the CCRMP channel boundary in the vicinity of the site to reflect the Cunningham Engineering (1995) 100-year floodplain boundary. The hydraulic model used to determine the boundary assumes replacement of the Capay Bridge with a three-span bridge. If this assumption changes, additional HEC-2 modeling shall be required to establish the revised CCRMP boundary. If this boundary changes significantly upon modeling, additional review may be required (Mitigation Measure 4.3-4a).

    Resolution No. 96-181 was approved by the Board of Supervisors on November 25, 1996, revising the CCRMP channel boundary to reflect the 100-year floodplain calculated by Cunningham Engineering. The Capay Bridge was built with three spans, as assumed in the hydraulic model included in the Operator's project description. This condition is implemented and fully discharged.

35. Portions of the northern margin of Phases 2, 3, 5, 6, and 7 shall be redesigned to provide a minimum 200-foot setback from the existing Cache Creek stream bank, in conformance with the requirements of Section 10-4.429 of the County Off-Channel Mining Ordinance. The revised project design shall be submitted prior to the commencement of mining within Phase 3 and shall be consistent with the recommended slope design presented in the current

application. If the redesigned project results in changes in any other mining area boundaries, additional CEQA review may be required (Mitigation Measure 4.3-4b).

Revised mining and reclamation plans prepared by Cunningham Engineering were submitted to staff by the Operator on April 24, 1997, showing the minimum 200-foot setback between the channel boundary and the edge of proposed mining. This condition is implemented and fully discharged. Monitoring and compliance are ongoing per the requirements of Section 10-4.429 which was modified as a part of the CCAP Update, consistent with Section 10-5.506. The modifications do not change the underlying intent/effect of the regulation but add specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

36. The portions of the levee in Phases 3, 5, and 6 shall be raised to provide 100-year flood protection for these areas. Prior to raising the levee, a hydraulic analysis prepared and signed by a licensed engineer, demonstrating that off-site flooding impacts would not be created, must be submitted to the County for review. This mitigation measure would be consistent with the proposed project and the requirements of the OCMP. Any levee work performed shall be completed prior to the commencement of mining within the affected phases (Mitigation Measure 4.3-4c).

A hydraulic analysis was prepared by Cunningham Engineering on April 22, 1997, showing that the raised levee flood protection measures would increase the base flood elevation by less than 0.1 feet. This indicates that the proposed work would not have any significant off-site flooding impacts. In addition, at the County's request, Cunningham Engineering verified compliance with this condition and summarized its findings in a report titled, "Cache Creek: Hydraulic Analysis of the Cemex Reach" (March 10, 2016), which was provided to the County. Cunningham demonstrated that the 100-year water surface is effectively contained within Cache Creek along the CEMEX Reach. This analysis was reviewed and confirmed by the TAC Hydrologist. This condition is implemented and fully discharged.

37. Implement the performance standards included in Sections 10-4.416 and 10-4.429 of the County Off-Channel Mining Ordinance and Section 10-5.506 of the County Surface Mining Reclamation Ordinance. Specifically, the operator shall conduct annual monitoring and maintenance of the channel banks and levees at the northern margin of the project site during the mining and reclamation period. The monitoring shall be conducted by a licensed engineer and shall minimally include visual inspection of channel banks and levees for evidence of erosion or slope instability. Evidence of erosion shall include, but not be limited to, the existence of oversteepened banks and loss of vegetation. Evidence of slope instability shall include formation tension cracks, arcuate scarps, or unexcavated benches.

The annual report of channel bank and levee conditions shall be submitted to the Yolo County Community Development Director with the Annual Mining and Reclamation Report. The report shall identify the location (on scaled maps and photographs), the estimated area and volume of eroded materials or slope failure, a determination of the cause(s) of erosion or slope failure, and recommendations for remedial action. Recommended remedial actions shall be implemented prior to November 1 of each year (Mitigation Measure 4.3-4d).

All of the sections of the Mining and Reclamation Ordinances identified in the list above were modified as a part of the CCAP Update. The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications simply clarify the original regulatory language and have no substantive effect on the conditions.

Section 10-4.429(e)(7) was modified as a part of the CCAP Update, consistent with Section 10-5.506. The modifications do not change the underlying intent/effect of the regulation but add specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

38. Following reclamation, the YCCDA shall determine, on the basis of inspection of the performance of the channel banks and levees during the mining and reclamation period, the need for continued channel bank and levee monitoring and reporting. The landowner shall be responsible for continued monitoring and maintenance. A restriction shall be placed on the deed for the underlying property requiring continued inspection and maintenance of channel banks and levees, and allowing access by the County for same (Mitigation Measure 4.3-4e).

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

39. The project design shall be revised to provide a biotechnical bank protection design to replace the placement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge unless engineering evaluations demonstrate that rip rap must be used to control erosion. The revised project design shall be submitted to the Yolo County Community Development Director and Caltrans for approval prior to the commencement of mining in Phase 7 (Mitigation Measure 4.3-4f).

    A biotechnical bank protection solution was submitted to the County and approved in June 1997. The project was completed in September 1998. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

40. In compliance with Section 10-4.429 and 10-5.506, mining within Phase 7 shall not be conducted within 700 feet of the existing stream bank until stream bank stabilization is provided for that portion of the south bank of Cache Creek upstream from the I-505 bridge. The bank protection shall be performed in accordance with the guidelines presented in the Cache Creek Resource Management Plan and Cache Creek Improvements Plan. The bank

protection design shall be submitted to the Yolo County Community Development Director for approval prior to the commencement of mining in Phase 7 (Mitigation Measure 4.3-4g).

This condition was clarified as a part of the 2020 Ten-Year Permit Review.

41. Recommendations of the geotechnical report for stabilization of the south bank of Cache Creek shall be implemented within one year after the commencement of mining. Bank stabilization shall be implemented only if mining will occur within 700 feet of the channel bank and stabilization measures shall be required only within the creek frontage of the phase to be mined. Prior to construction of the improvements, detailed plans identifying the type of stream bank protection shall be submitted to the Technical Advisory Committee (TAC) for review and approval. The bank protection plans shall incorporate biotechnical methods of bank stabilization when appropriate to erosion control (Mitigation Measure 4.3-4h).

    The operator installed the bank stabilization measures pursuant to Condition #39 in September 1998. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

42. The operator shall enter into a Development Agreement with the County that commits the operator to participate in implementation of the Cache Creek Improvements Program for that portion of the Creek frontage owned or controlled by the operator, adjoining the permitted off-channel mining area, as required by Condition #27. Participation shall include, but not be limited to, contribution of equipment and labor for channel widening projects and channel maintenance mining recommended by the County (Mitigation Measure 4.3-4i).

    Development Agreement No. 96-287 was executed between the County and the Operator on December 30, 1996. Section 3.1 of the agreement requires the Operator to abide by the CCRMP. The condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

43. Prior to the commencement of mining below the groundwater level, the operator shall contact the California Division of Safety of Dams (DSD) for a determination on whether the alluvial separators that would be created by the project fall under DSD jurisdiction (Mitigation Measure 4.3-4j).

    In a letter dated October 17, 1996, the Division of Dam Safety determined that the alluvial separators created by the project would not be subject to their jurisdiction. The condition is implemented and fully discharged.

Hydrology and Water Quality

44. The operator must apply for, and receive, a floodplain development permit from Yolo County prior to mining activities within U.S. Department of Housing and Urban Development

designated 100-year floodplains, as required by the County General Plan and the County Flood Damage Prevention Ordinance (Mitigation Measure 4.4-1a).

The County approved Flood Hazard Development Permit No. 96-070 on December 17, 1996, including additional separate conditions with which the operator must comply. This condition is implemented and fully discharged.

45. Implement the performance standards contained in Sections 10-4.413, 10-4.417, 10-4.427, and 10-4.428 of the County Off-Channel Mining Ordinance; and Sections 10-5.507, 10.5.510, 10-5.519, 10-5.524, 10-5.528, and 10-5.530 of the County Surface Mining Reclamation Ordinance (Mitigation Measure 4.4-3a).

All of the sections of the Mining Ordinance identified in the list above were modified as a part of the CCAP Update, with the exception of 10-4.427. All of the sections of the Reclamation Ordinance identified in the list above were modified as a part of the CCAP Update with the exception of 10-5.510 (Fencing), 10-5.519 (Motorized Watercraft Prohibition), 10-5.524 (Post-Reclamation Groundwater Monitoring), and 10-5.528 (Sewage Storage Prohibition).

The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications simply clarify the original regulatory language and have no substantive effect on the conditions. The following sections were materially modified, apply to this operation going forward, and are noted for the purpose of this review: 10-4.413 (Drainage), 10-5.517 (Mercury Bioaccumulation in Fish) and 10-5.532 (Use of Overburden and Fine Sediments in Reclamation). The modifications do not change the underlying intent/effect of the regulation but add considerable specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

46. Implement the performance standards contained in Section 10-4.413, 10-4.417, 10-4.427, and 10-4.428 of the County Off-Channel Mining Ordinance; and Section 10-5.507, 10-5.510, 10-5.517, 10-5.519, 10-5.524, 10-5.528, 10-5.530, and 10-5.532 of the County Surface Mining Reclamation Ordinance. (Mitigation Measure 4.4-4a).

All of the sections of the Mining Ordinance identified in the list above were modified as a part of the CCAP Update, with the exception of 10-4.427. All of the sections of the Reclamation Ordinance identified in the list above were modified as a part of the CCAP Update with the exception of 10-5.510 (Fencing), 10-5.519 (Motorized Watercraft Prohibition), 10-5.524 (Post-Reclamation Groundwater Monitoring), and 10-5.528 (Sewage Storage Prohibition).

The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications *simply clarify the original regulatory language and have no substantive effect on the conditions. The following sections were materially modified, apply to this operation going forward, and are noted for the purpose of this review: 10-4.413 (Drainage), 10-5.517 (Mercury Bioaccumulation in Fish) and 10-5.532 (Use of Overburden and Fine Sediments in Reclamation). The modifications do not change the underlying intent/effect of the regulation but add considerable specificity regarding ongoing compliance. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.*

47. Pursuant to Section 10-5.516 of the Reclamation Ordinance, all reclaimed lowered agricultural surfaces shall be, at minimum, five feet above average high groundwater. The reclamation plan for the Solano West parcel (Phase 7) shall be modified to meet this requirement (Mitigation Measure 4.4-7a).

    This condition was clarified as a part of the 2020 Ten-Year Permit Review. Revised mining and reclamation plans showing the modifications to Phase 7 were submitted to staff on April 24, 1997. All reclaimed agricultural fields have been designed to be a minimum of five feet above the average high water table.

Agriculture

48. Implement the performance standards included in Sections 10-5.525 of the County Surface Mining Reclamation Ordinance to reduce the impact of the permanent loss of agricultural land. Compliance with this mitigation may be phased to track with the phasing of the mining. Compliance shall be verified by phase (Mitigation Measure 4.5-2a).

    Section 10-5.525 (Farmland Conversion) was materially modified as part of the CCAP Update; however, agricultural offsets required for this project are satisfied. The total 1:1 offset required for permanent conversion of prime farmland at the CEMEX site (ZF# 95-093) was 162 acres (of a total of 252 acres converted). Mitigation for this was identified to occur with reclaimed agriculture at the Hutson parcel (175 acres). A permanent conservation easement was placed on 175 acres of the unmined Hutson parcel to prevent future conversion to non-agricultural uses. The conservation easement was approved and accepted by the Board of Supervisors on August 25, 1998, and recorded on July 30, 2012. This condition is implemented and fully discharged.

49. Implement the performance standard included in Section 10-5.516 of the County Surface Mining Reclamation Ordinance to mitigate the potential impacts of high seasonal groundwater on crop productivity. The mitigation requires that all reclaimed agricultural surfaces are a minimum of five feet above the average seasonal high groundwater level. To meet this standard, the elevation of the reclaimed agricultural fields within the Solano West parcel in Phase 7 shall be raised two or more feet above the reclaimed surface elevation (Mitigation Measure 4.5-5a).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Revised mining and reclamation plans showing the modifications to Phase 7 were submitted to staff on April 24, 1997. All reclaimed agricultural fields have been designed to be a minimum of five feet above the average high water table.

50. Implement Mitigation Measure 4.5-2a of the Final EIR for the proposed project (Mitigation Measure 4.5-8a).

    See Condition #48. This condition is implemented and fully discharged.

Biological Resources

51. Figure 8 of the HRP shall be revised to indicate the location of hedgerow plantings, around the Hutson parcel in Phase 1 or as specified as part of habitat enhancement in a Section 2081 permit if required by the CDFG, or to mitigate as a 1:1 ratio the actual loss of fence row habitat (Mitigation Measure 4.6-2a).

    A revised HRP was submitted to staff on April 24, 1997. The amended HRP indicates the location of hedgerow plantings around the north and west border of the Hutson Parcel, which mitigates for the loss of hedgerow plantings in Phase 1 on the Farnham West Parcel. Plantings have occurred on the northern border of the Hutson parcel in the area of the agricultural tailwater catchment basin. An addendum to the HRP was submitted to Jeff Anderson of Yolo County by email on September 11, 2016. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

52. Mature oak trees at the fringe of mining areas shall be preserved. These shall include: the two oaks at the southwestern corner of the mining area on the Solano West parcel in Phase 7; the two oaks at the southeastern corner of the mining area along the boundary between the Farnham West and Hutson parcels on Phase 1; and the single oak at the southeastern edge of the mining area on the Snyder East parcel in Phase 4. Stockpiling of topsoil and overburden in the vicinity of these five trees shall be restricted to beyond the tree driplines. As required by Section 10-4.436 of the County Off-Channel Mining Ordinance, temporary fencing shall be provided around the dripline of these trees to prevent possible construction-related damage. Fencing shall remain in place until stockpiles are removed and the surrounding lands are returned to agricultural production (Mitigation Measure 4.6-2b).

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The operator verifies the condition of the protective tree fencing annually. Cemex will add information regarding compliance with this condition to the upcoming compliance report.

53. As required by Section 10-4.436 of the County Off-Channel Mining Ordinance, temporary fencing shall be installed at the boundary of the habitat restoration area along the Cache Creek corridor, prior to initiation of any mining activity for each phase of the project. The

fencing shall remain in place throughout the duration of active mining until reclamation has been completed for each project phase (Mitigation Measure 4.6-2c).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

54. Levee and channel stabilization improvements shall be designed to avoid impacts to riparian habitat on the site. Levee improvements on the Snyder East and West parcels in Phases 3, 5, and 6 shall be set back from the edge of the upper terrace to eliminate fill slopes which would extend into the riparian habitat. The project design shall be revised to provide a biotechnical bank protection design to replace the replacement of rip rap on that section of the south bank of Cache Creek extending 1,500 feet downstream from the I-505 bridge, unless engineering evaluations demonstrate that rip rap must be used at certain locations to control severe erosion (Mitigation Measure 4.6-2d).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The plan revisions and all improvements required by this condition have been completed. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing.

55. The HRP shall be revised to include provisions to remove tamarisk and giant reed from the site as part of the creek restoration effort and to modify restoration plans for the in-channel depression north on the Snyder East parcel in Phase 6 to enhance the existing riparian woodland rather than establishing seasonal marsh at this location (Mitigation Measure 4.6-2e).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. A revised restoration plan was submitted April 27, 1997. The improvements required by this condition were subsequently completed. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing. Cemex has proposed a permit modification which includes a weed management plan.

56. At least one permanent island shall be created on one of the permanent lakes to improve their wildlife habitat value. The artificial islands and submerged peninsulas described in the HRP shall be retained on all lakes. Characteristics of the permanent island shall include the following:

   a. The elevation of the island shall extend a minimum of five feet above the average high groundwater level (approximately 125-foot elevation) to prevent complete inundation during the winter months. Slopes of the island shall not exceed 3:1 above the average low groundwater level.

   b. The channel of water separating the island from the mainland shall have a minimum distance of 20 feet and a depth reaching at least 5 feet during the average summer low groundwater level to prevent predators from wading to the island during the summer months. A temporary levee to permit vehicle access and maintenance of restoration plantings on the island shall be included in the design, but the levee shall be removed following completion of the minimum five year monitoring program for the restoration effort.

c. The island shall be revegetated according to the HRP, with perennial marsh at the lowest elevations and low terrace riparian species up to the average high groundwater level, with a cover of grassland and scattered shrubs provided over the top of the island (Mitigation Measure 4.6-3a).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The plan revisions required by this condition have been completed. The improvements will occur with final reclamation of the lakes.

57. The unique bluff habitat between the upper terrace and the existing haul road on the Snyder East parcel in Phase 6 shall be preserved. Mitigation Measure 4.3-4a of the Final EIR for the proposed project provides appropriate mitigation for this impact (Mitigation Measure 4.6-3b).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The bluff habitat has not been disturbed. There will be no mining within 100 feet of the area, as a result of changes to the channel boundary and the 200-foot mining setback. The bluff will be preserved and dedicated to the County upon the completion of reclamation and the release of financial assurances of Phase 4. The original Phase 6 was changed to Phase 4 by action of the Board of Supervisors on April 15, 2003.

58. A CDFG Code Section 2081 authorization, or the posting of a reclamation bond or letter of credit naming CDFG as the beneficiary, or other alternative mechanism acceptable to CDFG, shall be executed prior to commencement of mining (Mitigation Measure 4.6-4a).

A 2081 authorization was executed between the Operator and the Department of Fish and Game in July 1997. A copy of the authorization was submitted to the County. The August 25, 1998 staff report for the easement states that the hawk habitat is "stacked" on the same lands as the agricultural conservation easement. The text on page 4.6-40 of the Draft EIR confirms this: "Implementation of the mitigation measures would reduce the potential impacts from loss of suitable Swainson's hawk foraging habitat to a less-than-significant level. It is anticipated that the 1:1 offset mitigation required for loss of prime agriculture and (OCMP EIR Mitigation Measure 4.5-2a) would apply as mitigation for this impact as well." This condition is implemented and fully discharged.

59. The proposed HRP shall be revised to include specific provisions to ensure compliance with the USFWS "General Compensation Guidelines for the Valley Elderberry Longhorn Beetle." This shall include measures to: protect all elderberry shrubs to be retained; transplanting shrubs that cannot be avoided; planting replacement elderberry seedlings and associated

riparian vegetation at appropriate ratios; and defining short and long-term maintenance, monitoring, and protection methods for the designated mitigation areas. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to commencement of mining. The survey shall serve to confirm previous mapping of elderberry locations and determine whether any new shrubs have become established within the new mining area for which protection or replacement should be provided. The results of the survey shall be submitted to the USFWS as a report summarizing the purpose, findings, and recommendations consistent with the provisions of the revised HRP. All elderberry shrubs to be retained shall be flagged and fencing provided where necessary to preclude possible damage or loss of shrubs (Mitigation Measure 4.6-5a).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. The elderberry shrub survey was completed in 1997. A revised HRP including the above requirements was submitted to the County on April 24, 1997. Implementation is ongoing. Cemex will confirm flagging and fencing, and provide annual verification in the upcoming compliance report.

60. Implement the performance standard included in Section 10-4.433 to prevent the inadvertent take of bank swallows (Mitigation Measure 4.6-5b).

Section 10-4.433 (Soil Stockpiles) was modified as a part of the CCAP Update to require native vegetative cover. See Condition #80

61. The HRP shall be revised to include specific provisions to replace the artificial bank swallow nesting habitat created by past mining activities on the Hutson parcel. These provisions shall include design, construction, and maintenance activities necessary to implement one or more of the following options: establishing suitable nesting habitat on designated side slopes of the permanent lakes, replicating conditions on the Hutson parcel in Phase 1 at a new location; restoring the vertical bluffs above the mining-related riparian habitat in the northern portion of the Snyder East parcel in Phase 6; and/or creating and perpetuating a vertical bank along a designated segment of the active channel of Cache Creek (Mitigation Measure 4.6-5c).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. A revised HRP including the above requirements was submitted to the County on April 24, 1997. The vertical bluffs above the riparian habitat in Phase 6 have been restored as required. This condition is implemented and fully discharged. Maintenance and monitoring are ongoing. Cemex will provide information regarding bank swallow occupancy at the vertical bluffs in the upcoming compliance report.

61.5 A pre-construction raptor survey shall be conducted by a qualified wildlife biologist prior to initiation of mining to determine the presence or absence of active raptor nests which could be disturbed or lost within the new mining area. The results of the survey shall be submitted to the CDFG as a report summarizing the purpose, findings, recommendations, and status of any nests encountered. Elements of the pre-construction nesting survey and construction restrictions shall include the following:

- Conduct the survey 30 days prior to any grading or other habitat modifications if proposed during the breeding season for tree nesting raptors (from March 1 through August 15). Confirmation surveys on presence or absence of burrowing owl ground nesting colonies shall be required prior to initiation of a particular phase of mining at any time of year to ensure absence of any resident owls.

- If an active raptor nest is encountered, establish an appropriate buffer around the nest location, as determined in consultation with representatives of CDFG. The perimeter of the buffer zone shall be flagged in the field at 50-foot intervals, and all construction activities, including grading, tree removal, equipment storage, and stockpiling of soils, shall be prohibited within this buffer zone.

- Prohibit construction activities within the designated buffer zone until the consulting wildlife biologist has determined that breeding was unsuccessful, that the young have fledged from the nest, or that a CDFG-approved relocation plan has been successfully implemented.

- Prohibit construction activities, including removal of any nest tree or burrow, within the designated buffer zone unless written confirmation from the wildlife biologist on the status of nesting activity has been submitted in writing to CDFG (Mitigation Measure 4.6-5d).

Phase 1 is in the process of being reclaimed. A raptor survey was conducted prior to mining under the short-term permit and no nest sites were discovered. A raptor survey was completed for Phase 2 in the Spring of 1997 by Zentner and Zentner. No nest sites were discovered. A raptor study for Phase 3 was completed in October 1999 and included in the 1999 Annual Compliance Report. A pre-construction survey for Phases 4 and 5 was completed in September 2002. No listed species were found on site. The Operator has not yet commenced mining in Phases 5, 6 or 7. Additional surveys will be conducted per the terms of the condition to ensure no impacts to active hawk nests as a result of approved activities.

Mitigation for loss of hawk foraging was addressed with the 2081 requirement (Condition #58) which is fulfilled. There are no outstanding habitat mitigation requirements for this project under the approval -- only survey requirements by phase to avoid impacts to nesting birds. Future surveys shall be in compliance with applicable HCP/NCCP Avoidance and Mitigation Measure.

62. Channel bank modifications shall be coordinated with the U.S. Army Corps and California Department of Fish and Game. If required by jurisdictional agencies, appropriate authorization to modify jurisdictional habitat shall be obtained prior to grading or other

modifications. Use of biotechnical bank protection design methods shall be encouraged where bank stabilization is required, such as the segment of active erosion on the Kaupke parcel north of Phase 2 (Mitigation Measure 4.6-6a).

All required channel bank modifications have received required agency approvals/permits and have been constructed. This condition is implemented and fully discharged with respect to known conditions. Implementation is ongoing with respect to subsequent identified conditions.

Air Quality

63. Implement the performance standard included in Section 10-4.407 of the County Off-Channel Mining Ordinance (Mitigation Measure 4.7-1a).

This section requires conveyors which were installed and operational as of October 2002. See Condition #28.3. This condition is implemented and fully discharged.

64. Implement the performance standards included in Sections 10-4.407 and 10-4.415 of the Off-Channel Mining Ordinance (Mitigation Measure 4.7-2a).

This condition was not substantively affected by the CCAP Update or the 2020 Ten-Year Permit Review. Section 10-4.415 (Equipment Maintenance) was clarified as a part of the CCAP Update. The operator must ensure compliance with both sections (as modified) going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

65. Implement Mitigation Measures 4.7-1a and 4.7-2a of the Final EIR for the proposed project (Mitigation Measure 4.7-3a).

This condition was not substantially affected by the CCAP Update or the 2020 Ten-Year Permit Review. See Conditions #63 and #64.

65.1 The operators are encouraged to use cleaner vehicles and equipment and retrofit existing vehicles and equipment with diesel particulate filters (DPFs). Pursuant to Section 10-4.414.1 (Energy) of the Mining Ordinance, w<u>herever practical and feasible, aggregate facilities shall use clean electric energy from the grid or install alternative on-site electricity generation systems to replace diesel equipment and reduce criteria pollutant emissions.</u>

Condition added by the Board of Supervisors on March 20, 2007, pursuant to Ten-Year Interim Review of Cache Creek Long Term Gravel Mining Permits (Minute Order No. 07-74).

Resolution No. 00-228, approved by the Board of Supervisors on December 12, 2000 (Minute Order No. 00-048), contained several advisory/voluntary conditions regarding air emission *reductions from aggregate mining operations. Staff has determined that these conditions have been superseded by Condition 65.1.*

This condition is modified as part of the 2020 Ten-Year Permit Review by the addition of new Section 10-4.414.1 (Energy) to the County Mining Ordinance related to use of clean electric energy to replace diesel equipment whenever and reduce criteria pollutant emissions whenever practical and feasible. Cemex will add this condition to the compliance report.

Cemex installed a wind turbine energy system in 2012 which supplies renewable energy for 20% to 30% of the energy demand at their plant facility.

Traffic and Circulation

66. By July 1, 1999, the operator shall construct a left-turn lane for eastbound movements on State Route 16 into the processing plant. The operator shall be responsible for 100 percent of the costs of the improvement. Encroachment Permits from Caltrans will be obtained prior to construction (Mitigation Measure 4.8-1a).

Condition modified by Board of Supervisors on June 16, 1998, pursuant to Minute Order No. 98-241. The left turn lane was completed in 1999. The condition is implemented and fully discharged.

67. The operator shall pay a fair share toward the construction of left-turn lanes on each approach, and the installation of a traffic signal, at the SR 16/County Road 98/Main Street intersection to maintain acceptable levels of service. Prior to the commencement of mining, the operator shall pay $1,200 to the City of Woodland Public Works Department, to be used in the construction of turn lanes and a traffic signal at the intersection of State Route 16 and County Road 98. This amount has been determined to be the operator's fair share portion of the cost of improvements at the intersection and will fully mitigate the potential traffic impacts at this location (Mitigation Measure 4.8-2a).

The operator fulfilled this obligation with a payment to the City of Woodland in September 1997. This condition is implemented and fully discharged.

Noise

68. In compliance with Section 10-4.421 (Noise: General Standard) of the Mining Ordinance, daytime noise levels at the property boundary shall not exceed 80 dBA L_{eq} during mining and reclamation of the site. If earth-moving operations are conducted at grade within less than 58 feet from the property boundary, the operator shall ensure that no more than one scraper is used at any one time (Mitigation Measure 4.9-1a).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Implementation is ongoing.

69. Implement the performance standards included in Section 10-4.421 of the County Off-Channel Mining Ordinance (Mitigation Measure 4.9-1b).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. Compliance with Section 10-4.421 (Noise: General Standard) is ongoing. See Condition #48.5.

70. Implement the performance standard included in Section 10-4.422 (Noise: Sonic Safety Devices) of the County Off-Channel Mining Ordinance (Mitigation Measure 4.9-3a).

This requirement was clarified as a part of the CCAP Update to apply to conveyor alarms as well as vehicular back-up beepers. Compliance with Section 10-4.422 is ongoing for nighttime mining within 1,500 feet of residences.

Aesthetics

71. Implement the performance standard included in Section 10-4.429 of the County Off-Channel Mining Ordinance (Mitigation Measure 4.10-1a).

This Section was modified as part of the CCAP Update, primarily as related to setbacks from property lines, and excavation within 700 feet of the channel bank. The project was approved to mine to within 200 feet of the channel bank subject to installation of bank stabilization consistent with the Test 3 improvements in effect at the time. Ongoing compliance with all applicable required setbacks in this section is required.

Cultural Resources

72. Implement the performance standard included in Section 10-4.410 (Cultural Resources) of the County Off-Channel Mining Ordinance (Mitigation Measure 4.11-1a).

Section 10-4.410(a) and (b) of the County Mining Ordinance were modified as a part of the CCAP Update. The revised language will apply if unknown cultural resources are found.

73. The operator shall implement a training program that alerts project employees involved with earthmoving as to the nature of paleontological and archaeological resources in the region, the laws that protect the resources, and responsibilities for reporting potential findings to appropriate authorities. This program shall be developed by a qualified cultural resource professional (Mitigation Measure 4.11-1b).

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review. CEMEX has reported that a training video was prepared by Holman and is shown to all employees on a regular basis. will implement and confirm that an updated training video is *shown annually to all employees. Cemex will provide written confirmation in the upcoming compliance report.*

74. No mining within the Snyder West parcel (Phases 4 and 6) shall be conducted until an accurate mapping of YOL-69 is completed, and the site is evaluated by an archaeologist to determine its significance and uniqueness. The following tasks shall be performed:

    a. Contract a surveyor to accurately map the cultural resource site on a topographic map, based on information, preliminary map, and recommendations contained in the YOL-69 mechanical subsurface testing report (Holman & Associates, 1996). Upon completion of mechanical testing, the borders of the deposits shall be staked by the archaeologist.

    b. Mapping of the resource shall be completed prior to commencement of mining in mining areas that include the resources.

    c. Register the information obtained, including a map of the Yol-69 site, on State of California Archaeological Site Survey forms for filing at the State Historical Preservation Regional Office located at Sonoma State University. Prepare a professional report with all cultural resources information obtained and submit it for approval to the Northwest Information Center. A copy shall also be sent to the Community Development Director.

    d. Before mining begins on Yol-69, an archaeologist shall be contracted to evaluate the Yol-69 site and determine its significance and uniqueness as defined in Appendix K of CEQA. A program of in-field evaluation testing shall be undertaken inside the newly recorded borders of Yol-69 to determine its significance. The evaluation of this site shall be extensive enough to guide the development of a mitigation program if the site is found to be significant. If the site is not found to be significant or unique, no archaeological mitigation program, such as in-field data retrieval through hand excavation and recording of findings, will be required. However, an archaeologist must be present during the excavation of this site to monitor for indicators of human skeletal remains.

    e. If it is determined that the site contains significant cultural resources, an appropriate mitigation program shall be developed, before mining begins on Yol-69, based on the information obtained during the site evaluation. This mitigation program shall include an extensive in-field data retrieval through hand excavation. This program of data retrieval must be conducted by an archaeologist and could include but not be limited to professional in-field excavation of a percent of the area to be destroyed by the project to record the artifacts encountered and other data that might contribute to the scientific understanding of the culture and the way of life of the prehistoric people who lived in the region. In addition, an archaeologist must be present during the mining of the portion of the site that was not hand excavated to monitor for any indication of human skeletal remains (Mitigation Measure 4.11-2a).

This condition is implemented and fully discharged as described in the operator's compliance reports. Section 10-4.410(a) and (b) of the County Mining Ordinance were modified as a part of the CCAP Update. The revised language will apply if unknown cultural resources are found.

75. Implement Mitigation Measure 4.11-1b of the Final EIR for the proposed project (Mitigation Measure 4.11-2b).

    See Condition #73.

76. Implement Mitigation Measure 4.11-1a of the Final EIR for the proposed project (Mitigation Measure 4.11-2c).

    See Condition #74.

Hazards

77. Implement the performance standard included in Section 10-4.415 of the County Off-Channel Mining Ordinance (Mitigation Measure 4.12-1a).

    Section 10-4.415 (Equipment Maintenance) was modified as a part of the CCAP Update to clarify the requirements. Implementation is ongoing.

78. Implement the performance standard included in Sections 10-4.406 and 10-4.431 of the County Off-Channel Mining Ordinance; and Sections 10-5.510 and 10-5.530 of the County Surface Mining Reclamation Ordinance (Mitigation Measure 4.12-3a).

    All of the sections of the Mining and Reclamation Ordinances identified in the list above were modified as a part of the CCAP Update with the exception of 10-5.510 (Fencing). The revised language in all sections will apply if the circumstances covered by the specific regulation are relevant to ongoing operations at the site and/or ongoing regulatory obligations such as annual monitoring and reporting. Most of the section modifications simply clarify the original regulatory language and have no substantive effect on the conditions. The operator must ensure compliance with the modified regulation going forward, and specifically address compliance with the revised requirements in the 2021 compliance report.

2020 CCAP TEN-YEAR PERMIT REVIEW CONDITIONS

79. Comply with Section 10-4.420.1 of the County Mining Ordinance and 10-5.517 of the County Reclamation Ordinance related to Mercury Bioaccumulation in Wildlife.

    Earlier conditions reference Section 10-5.517 but do not reference new Section 10-4.420.1. The addition of this condition creates no new obligation, but does insure uniformity between all operators and the code requirements, adds a uniform reference to the new section, and makes it easier to track compliance with this requirement which received important clarifications in the CCAP Update.

80. Pursuant to Sections 10-4.433 (Soil Stockpiles), 10-5.508 (Erosion Control), 10-5.533 (Wetland Habitat), and 10-5.601(c)(1) of the Reclamation Ordinance, reclamation, restoration, vegetative erosion control, etc. occurring after December 31, 2020 shall utilize plant material and/ seed mixes collected in the vicinity of the project site in order to control the origin of the genetic stock and provide the most site-adapted ecotypes. Native seeds, plants, and cuttings used for such activities shall be ecotypes of Cache Creek Watershed genetic origin including areas outside of Yolo County and of Yolo County genetic origin when materials are used that originate from outside of the Cache Creek Watershed.

    The operator has submitted a permit modification that would include revisions to the reclamation plan to include all native species.

Additional relevant conditions of approval:

Cemex will add these conditions to the upcoming compliance report.

Board of Supervisors Resolution No. 00-228, approved via Minute Order No. 00-048 on December 12, 2000:

Staff has determined these conditions were superseded by Condition 65.1 adopted on March 20, 2007.

Board of Supervisors Minute Order No. 01-126, approved April 22, 2001:

1. The project shall be in compliance with all adopted conditions of approval for Zone File #2000-087 as contained herein and identified below. In addition, the project shall be in compliance with all existing permits and conditions of approval, including Zone Files 1901, 95-093, and ZA 736.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

2. The project shall be completed in compliance with all applicable Federal and State laws, Yolo County Code Regulations and Engineering Design Specifications and Standards.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

3. In accordance with Yolo County Code Section 8-2.2415, the applicant shall agree to indemnify, defend, and hold harmless the County or its agents, officers and employees from any claim, action, or proceeding (including damage, attorney fees, and court cost awards) against the County or its agents, officers, or employees to attach, set aside, void, or annul an approval of the County, advisory agency, appeal board, or legislative body concerning the permit or entitlement when such action is brought within the applicable statute of limitations. The County shall promptly notify the applicant of any claim, action or proceeding and that the County cooperates fully in the defense, the applicant shall not thereafter be responsible to defend, indemnify, or hold the County harmless as to that action. The County may require that the applicant post a bond in an amount determined to be sufficient to satisfy the above indemnification and defense obligation.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

4. Caltrans shall be forwarded a copy of any future development on the subject parcels to ensure that no significant impact to State Highway 16 and right-of-way are created.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

5. Properties which are subject to a single Williamson Act Contract shall not be divided for the purpose of sale, non-agricultural lease or financing unless a division of the Williamson Act Contract is first approved as provided in Yolo County Zoning Ordinance and Land Conservation Act of 1965 (Williamson Act).

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

6. Upon acceptance and approval of the Williamson Act Contracts by the Yolo County Board of Supervisors, a record copy shall be provided by the applicant to the Planning and Public Works Department.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

7. A “Certificate of Acceptance” will be issued by the Planning and Public Works Department within 30 days of receiving the recorded contracts.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

8. Within thirty (30) days of the issuance of the "Certificate of Compliance" the applicant shall record the certificate accompanied by map and legal description of the approved Lot Line adjustment and Williamson Act Contract Division with the County Recorder's Office, or it shall be deemed null and void.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

9. Prior to final Building Approval for the new batch plant, any areas of bare ground at the abandoned batch plant site in the town of Madison shall be re-vegetated to the satisfaction of the and Public Works Director to increase filtration and prevent erosion and runoff onto State Highway 16.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

10. The applicant shall obtain all necessary building permits for any demolition, construction and/or repair of any existing structures on either site, including approval from the County Environmental Health Division and the Madison Fire District, if appropriate, for compliance with adopted Health, Safety, Building, and Fire Codes, as amended.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

11. Relocation of the batch plant shall commence within one (1) year of the effective date of the Planning Commission's approval, or said Use Permit shall be deemed null and void without further action.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

12. The site of the existing batch plant shall be cleared of all weeds, brush and debris, prior to issuance of the Final Building Permit for the relocated batch plant.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

13. Prior to issuance of the Final Building Permit, the applicant shall submit a bond or other financial instrument acceptable to the Planning and Public Works Director in the amount of $30,000 to provide financial assurance for the new plant area.

    This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

14. Failure to comply with the Conditions of Approval, as approved by the Board of Supervisors, may result in the following actions:

    - Non-issuance of future building permits;
    - Revocation of the Conditional Use Permit and/or Mining Permit;
    - Legal action.

This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

Board of Supervisors Minute Order No. 03-112, approved April 15, 2003:

1. The project shall be in compliance with all adopted conditions of approval for Zone File #2002-127 as contained herein and identified below. In addition, the project shall be in compliance with all existing permits and conditions of approval, including Zone Files 1901, 95-093, and ZA 736, and in particular, Condition No. 74 and Mitigation Measure 4.11-2a of Development Agreement No. 96-287 for the CEMEX Long-term Off-channel Mining Permit.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

2. The project shall be completed in compliance with all applicable Federal, State and County laws and regulations.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

3. All aspects of Phases IV and VI shall be included as part of the interchange in the phasing sequence.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

4. There shall be no change to any aspect of the approved Mining and Reclamation Plan with the exception of the interchanging of Phases IV and VI. All other aspects of Development Agreement No. 96-287 for the CEMEX Long-Term Off-Channel Mining Permit shall remain in full force and effect.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

5. Prior to conducting any mining activity in Phase VI (propose Phase IV) the applicant shall submit a bond or other financial instrument acceptable to the Planning and Public Works Director in the amount of $348,372 to provide financial assurance for the subject phase.

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

6. Failure to comply with the Conditions of Approval, as approved by the Board of Supervisors, may result in the following actions:

   - Non-issuance of future permits to the applicant for projects or activities at the site;
   - Revocation of the approved Mining Permit;
   - Legal action

   This condition was not affected by the CCAP Update or the 2020 Ten-Year Permit Review.

APPENDIX G

AIR AND GREENHOUSE GAS EMISSIONS STUDY

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.

CACHE CREEK MINING PERMIT AND RECLAMATION PLAN AMENDMENT PROJECT

AIR AND GREENHOUSE GAS EMISSIONS STUDY

PREPARED FOR:
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Planning Division
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Woodland, California 95695

COMPASS LAND GROUP

REVISED JULY 2022

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1.0 PURPOSE AND SCOPE

Compass Land Group ("Compass") has prepared this Air and Greenhouse Gas Emissions Study ("Study") in support of the CEMEX Construction Materials Pacific, LLC. ("CEMEX") Cache Creek Mining Permit and Reclamation Plan Amendment Project in Yolo County, California ("Project"). This Study evaluates the potential air quality and greenhouse gas ("GHG") emissions from the proposed Project, as well as from CEMEX's existing operations at the Cache Creek facility. These emissions are compared to determine the net changes in emissions anticipated from the Project. Net emission changes from the Project are then compared against significance thresholds adopted by the Yolo-Solano Air Quality Management District ("YSAQMD") or recommended by Yolo County ("County"). This Study also evaluates the potential odor and energy use impacts of the Project. This Study is intended to support the County's evaluation of air quality and GHG impacts pursuant to the California Environmental Quality Act ("CEQA").

The sections that follow provide a description of the Project, methods for air quality and GHG emissions evaluation, YSAQMD significance thresholds, and emissions estimates for use in Project CEQA review.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

The Project proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20-year time extension. The Project includes a change in phasing to promote the efficient and continuous operation of the electric dredge, eliminating the need to disassemble and relocate the dredge between phases. The Project would result in an increase in lake area of ±57 acres, an increase in shoreline and other habitat of ±37 acres, and a decrease in farmland area of ±37 acres.

The Project is an extension and modification of an approved project. CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, maximum depth of mining, processing operations, use of settling ponds to contain and settle aggregate wash fines, water use, truck routes, or hours of operation).

Surface mining is proposed to continue on 485± acres and reclamation is proposed to occur on 837± acres of the 1,902± acre property to a maximum depth of 70 feet below ground surface in seven phases. The mine is planned to be further developed and ultimately reclaimed in seven phases, the first two of which have already been mined. Consistent with Existing Entitlements, all of the proposed mining areas are located outside the active channel of Cache Creek.

3.0 METHODS AND ASSUMPTIONS

This Study evaluates the potential air quality and GHG emissions from the proposed Project, as well as from CEMEX's existing operations at the Cache Creek facility. These emissions are compared to determine the net changes in emissions anticipated from the Project. The net emissions changes from the Project are then compared against significance thresholds adopted by YSAQMD or recommended by the County.

The CEQA baseline used for purposes of this Study is based on review of historical production information and consultation with the County. CEMEX's existing facility activities include mining, conveyor transport, aggregate processing, ready-mix concrete processing, and construction materials recycle processing, with associated off-road and on-road mobile equipment use.

For baseline for the mining operation and aggregate plant, Compass utilized the 2021 actual production rate with the applicable 2021 emissions factors to provide a representative estimate of baseline emissions during the CEQA Notice of Preparation ("NOP") year. Based on a review of historical trends, the 2021 production rate is consistent with the 10-year average production rate, within 1.5%. Compass also determined averages for both plant raw feed tons (to account for all particulate matter emissions associated with the production process) and for tons sold (to account for mobile source emissions associated with truck hauling).

For baseline for the ready-mix concrete plant and recycle plant, Compass first reviewed each plant's production for the 10-year period between 2012 and 2021. Unlike for the aggregate plant, the production years 2021 for ready-mix concrete and 2021 and 2019 for recycling had either zero or atypically low production compared to the 10-year average. The ten-years of tonnage data for each (ready-mix concrete and recycling) show that 2021 was not representative of typical production levels at either plant. Conversely, the ten-year average is a representative range and therefore better representative of actual conditions. No recycling occurred in 2021 and 2019 because CEMEX was not able to source concrete and asphalt rubble as other recycle locations were closer to the jobs that generated the source materials. There is no specific limitation in the current permit on the amount of recycling. Recycling relies on imported material and is not included in the max aggregate production tonnage numbers. The County's mining program encourages recycling. Recycling impacts are indirect impacts of the mining operation. While impacts annually are not expected to change as a result of the project, the proposal will allow for 20 more years of those impacts, and to the extent cumulative impacts are relevant, the cumulative impacts will also change.

Ready-mix production was minimal in 2021 due to the location of customer's jobs in relation to the CEMEX and other ready-mix sites. CEMEX only operated the plant a few times when the volume for a particular job warranted opening the plant for production. In general, CEMEX has indicated that it does not make economic sense to operate the plant when the quantities requested by customers are low. Overall, the 10-year averaging period represents a baseline that captures economic changes resulting from fluctuating market demand. There is no specific limitation in the current permit on production at the ready-mix plant and ready-mix production relies on rock already included in the max allowed aggregate production tonnage. In other words the max tonnage is a “throttle” on the amount of concrete produced and importation of aggregate material does not occur. The concrete batch plant process involves adding other raw materials (cement and fly ash) to rock and sand from the mining site to make concrete which is a different product, with a different market, different customers and different trucks from the aggregate market. Ready-mix impacts are indirect impacts of the mining operation. While impacts annually are not expected to change as a result of the project, the proposal will allow for 20 more years of those impacts, and to the extent cumulative impacts are relevant, the cumulative impacts will also change.

For stripping and mining related emissions, Compass used the latest version of the California Emissions Estimator Model (“CalEEMod”) version 2020.4.0. CalEEMod is a widely accepted modeling tool maintained by the California Air Pollution Control Officers Association (“CAPCOA”). CalEEMod incorporates state and locally approved emission factors and methodologies for estimating both the daily maximum and annual average emissions levels for criteria pollutants and GHG emissions associated with land development projects, including industrial activities. For processing plant and conveyor transport related emissions, Compass used U.S. Environmental Protection Agency (“EPA”) AP-42 emission factors. For mobile source emissions, Compass used the California Air Resources Board’s (“CARB’s”) 2021 EMFAC[1] model for mobile source emissions.

For both baseline and Project conditions, mobile source emissions are evaluated using estimates of VMT based on the average annual production and employee workforce. Trip distances for raw material imports to the existing ready-mix plant and finish product deliveries from the Project site to customers were provided by CEMEX. For raw material imports the actual average trip distance of 33 miles from the CEMEX cement terminal at the Port of West Sacramento was used. For finish product deliveries an average trip distance of 31 miles was used based on a full year of truck trip delivery information provided by CEMEX, which is higher than the EMFAC model estimate of 6 miles for a haul truck. On-road mobile source emissions were then estimated by multiplying the VMT estimates for each trip type by the applicable EMFAC emissions factor. For greenhouse gas emissions estimates, Compass used emission factors from *2021 The Climate Registry*, Table 3.8, for Pacific Gas & Electric (2019) for CO2 emissions and the CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH_4 and N_2O emissions.

The following CalEEMod model selection parameters were used for stripping and mining related emissions:

1. ***Project Location:*** Location is set to the County level for Yolo County. This sets windspeed and precipitation frequency assumptions for modeling. The Project site is located within the jurisdiction of the YSAQMD and part of the Sacramento Valley Air Basin (“SVAB”). The SVAB is currently designated as a nonattainment area for State and National ozone and respirable particulate matter (PM10) ambient air quality standards.

[1] EMFAC is short for “EMission FACtor.”

2. ***Lot Acreage:*** The Project area subject to surface mining encompasses ±485 acres of the ±837 acre reclamation plan boundary. The model includes a more refined assumption of up to 20 acres subject to grading each year based on average aggregate yields per acre.

3. ***Urbanization:*** The land use setting for purposes of modeling is designated as rural given the general absence of adjacent developments in the unincorporated County and surrounding communities.

4. ***Climate Zone:*** The site is located within Climate Zone 2 based on the site's zip code.

5. ***Mitigated Construction:*** The "mitigated construction" results (as reported in the modeling outputs) assume that disturbed surfaces would be wetted at least two times per day for dust control. On-model mitigation assumes the use of cleaner engines based on CEMEX's actual equipment fleet. No other mitigations have been modeled or credited in CalEEMod. Based on the foregoing, the "mitigated construction" results have been presented in the emissions summary below.

The Project emissions evaluation accounts for stripping and mining related emissions, processing plant emissions, vehicle traffic, indirect GHG emissions from electricity use, off-road heavy equipment, and on-road mobile source emissions.

For evaluation of local carbon monoxide ("CO") emissions, Compass first considered YSAQMD's preliminary screening approach, which can be used to estimate whether or not a project's traffic impact would cause a potential CO hotspot at any given intersection. Section 4.1.2 of the YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts* (July 11, 2007) ("YSAQMD Handbook") presents the following screening approach for CO emissions:

If either of the following criteria is true of any intersection affected by the project traffic, then the project can be said to have the potential to create a violation of the CO standard (in the absence of project specific modeling that suggests otherwise):

- *A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or*
- *A traffic study indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.*

In relation to this screening approach, the Project is not likely to adversely affect peak-hour level of service given that the Project does not propose an increase in permitted production levels and all truck traffic exits directly onto CA Highway 16 and with the exception of local deliveries merges onto Interstate 505 ("I-505"). However, since a Project traffic study was not available for review at the time of this Study, Compass was not able to definitively rule out a potential CO impact on the basis of the screening approach alone. However, if a traffic study is completed by the County (or its consultants) as part of the CEQA process then it is anticipated that the screening criteria alone could be used rule out a potentially significant CO impact. Moreover, mining and aggregate transport related activities are not usually a significant source of CO as most equipment used in the mining process and truck transport is diesel-powered and produces much lower CO emissions than gasoline combustion engines. In fact, as presented later in this Study, the mass emissions of CO associated with the Project's net emissions are expected to be very low and in relation to much busier roadways and congestion areas CO contributions from the Project are expected to be de-minimis.

As a second step for evaluation of CO emissions, Compass reviewed data from the closest Sacramento Valley Air Basin air monitoring station (i.e., the Sacramento-Bercut Drive air monitoring station) that records CO data for CARB to show that the Project's CO contribution from operational activity would be de-minimis compared to the sum of all the sources that are monitored by that station adjacent to Interstate 5 ("I-5", a major freeway). The measured CO concentrations at the Sacramento-Bercut Drive air monitoring station at I-5 are well below the National Ambient Air Quality Standards ("NAAQS") and California Ambient Air Quality Standards ("CAAQS").

The Project would not involve or introduce new odor-generating sources aside from direct exhaust emissions associated with operation of construction and mobile equipment that generally dissipate rapidly into the atmosphere as distance increase from the source. For consideration of odors, YSAQMD recommends screening of potential odor impacts for the following two situations:

- *Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and*
- *Residential or other sensitive receptor projects or other projects that may attract people locating near existing odor sources.*

(YSAQMD Handbook, Section 4.1.3).

For this Project neither situation applies. The Project is not located near a substantial number of existing sensitive receptors or places where people are expected to congregate, and does not propose any residential or other land uses that would introduce sensitive receptors to the existing facility.

In addition, YSAQMD presents a list of common types of facilities that are known to produce odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. The YSAQMD Handbook states that if a project would locate receptors and known odor sources in proximity to each other (up to one mile) a full analysis should be undertaken. While Vulcan Materials operates an existing asphalt concrete plant on the CEMEX property, the asphalt plant operation is separately permitted and not subject to any modifications proposed by the Project. Therefore, the Project activities do not propose or fall under any of the land use categories for which odors would typically be a concern, or meet the criteria for a full site-specific analysis of odors. Further, the YSAQMD Handbook states that for projects locating near a source of odors where there is currently no nearby development and for odor sources locating near existing receptors, the determination of significance should be based on whether odor complaints from the public have occurred in the vicinity of a similar facility at a similar distance.

Compass obtained compliance history from YSAQMD for CEMEX's existing facility as well as Vulcan's existing asphalt concrete plant located at the CEMEX facility to determine whether existing operations have resulted in any odor complaints. YSAQMD has recorded zero odor complaints at the Cache Creek facility.

Detailed estimating methods and assumptions are provided in this Study's appendices.

4.0 SIGNIFICANCE CRITERIA

4.1 Criteria Pollutants, Toxic Air Contaminants, and Odors

CARB and the EPA currently focus on the following air pollutants as indicators of ambient air quality: ozone, particulate matter (PM), nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants." These pollutants are found all over the U.S and can harm human health and the environment. Sources and health effects of the criteria air pollutants are summarized in Table 1, below.

Ambient air quality standards define clean air, and are established to protect the health of the most sensitive groups in our communities. Initially, in 1959 the California Legislature directed the State Department of Public Health to develop the CAAQS, which were in place by 1962. Later, the federal Clean Air Act required the EPA to set the NAAQS, which were in place by 1971. Today, the CAAQS are generally more restrictive than the NAAQS. Air districts, including the YSAQMD, adopt thresholds of significance in consideration of these standards.

The YSAQMD has established significance thresholds for criteria pollutants to assist Lead Agencies in determining whether a proposed project may have a significant air quality impact. These thresholds, contained within Section 3.0 of the YSAQMD Handbook are presented in Table 2, below. These thresholds apply to both construction and operational impacts.

TABLE 1
COMMON SOURCES OF HEALTH EFFECTS FOR CRITERIA AIR POLLUTANTS

Pollutants	Sources	Health Effects
Ozone	Atmospheric reaction of organic gases with nitrogen oxides in sunlight	Aggravation of respiratory and cardiovascular diseases; reduced lung function; increased cough and chest discomfort
Fine Particulate Matter (PM10 and PM2.5)	Stationary combustion of solid fuels; construction activities; industrial processes; atmospheric chemical reactions	Reduced lung function; aggravation of respiratory and cardiovascular diseases; increases in mortality rate; reduced lung function growth in children
Nitrogen Dioxide (NO2)	Motor vehicle exhaust; high temperature stationary combustion; atmospheric reactions	Aggravation of respiratory illness
Carbon Monoxide (CO)	Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust; natural events, such as decomposition of organic matter	Aggravation of some heart diseases; reduced tolerance for exercise; impairment of mental function; birth defects; death at high levels of exposure
Sulfur Dioxide (SO2)	Combination of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ore; industrial processes	Aggravation of respiratory diseases; reduced lung function
Lead	Contaminated soil	Behavioral and hearing disabilities in children; nervous system impairment

Source: Bay Area Air Quality Management District 2017.

TABLE 2
YSAQMD THRESHOLDS OF SIGNIFICANCE FOR CRITERIA POLLUTANTS OF CONCERN

Pollutant	Operational / Cumulative Threshold
ROG	10 tons/year
NO_X	10 tons/year
PM_{10}	80 lbs/day
CO	Violation of a state ambient air quality standard for CO

Source: Handbook for Assessing and Mitigating Air Quality Impacts. YSAQMD July 11, 2007.
Definitions: CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ROG = reactive organic gases.

The YSAQMD has also adopted thresholds for toxic air contaminants ("TACs"), odors, and cumulative impacts. For TACs, proposed development projects that have the potential to expose the public to TACs from *stationary sources* in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more.
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to 1 for the MEI or greater.

Regarding TACs, the Project does not propose any new stationary sources or any increase in permitted production levels for the existing stationary sources. CEMEX would continue to operate the facility in accordance with its existing Permits to Operate for stationary sources issued by the YSAQMD.

Regarding odors, the YSAQMD suggests that a project may reasonably be expected to have a significant adverse odor impact where it "generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property." (YSAQMD CEQA Handbook, Section 3.2.5).

Regarding cumulative impacts, the YSAQMD suggests that an air quality analysis should address a project's cumulative impact on ozone and localized pollutants. Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact. CO impacts are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects (i.e., background concentration) will exceed air quality standards. The cumulative impact should be evaluated using the screening criteria mentioned in the project level thresholds to determine if cumulative development could cause a violation of the CAAQS.

4.2 Greenhouse Gasses

GHGs are gasses that trap heat in the earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted only through human activities. The main GHGs of concern are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated carbons. Each of these gases can remain in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All of these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world, regardless of the source of the emissions. For each greenhouse gas, a Global Warming Potential ("GWP") has been calculated to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to warming the earth.[2]

The YSAQMD has not adopted a GHG-related threshold of significance for use in CEQA analysis. Although YSAQMD has not adopted a formal threshold, Compass reviewed other sources to inform an appropriate threshold for use in this Study. First, the Bay Area Air Quality Management District ("BAAQMD") has published quantitative thresholds that can be applied to this Project. This approach is permissible per CEQA Guidelines Section 15064.4, which states that lead agencies are granted discretion to establish their own significance thresholds, including looking to thresholds developed by other public agencies, so long as the threshold chosen is supported by substantial evidence (CEQA Guidelines Section 15064.7(c)). This approach is also supported by the recent court case, *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming*, whereby the Court explained that an agency may rely on existing numerical thresholds of significance for GHG emissions developed by another air district.

BAAQMD's bright line operational threshold is 10,000 MT/year for CO2e emissions, which was adopted to achieve California Assembly Bill 32's ("AB-32's") goal of reducing GHG emissions to 1990 levels by year 2020. A project-specific threshold could be linearly scaled by applying California Senate Bill 32's ("SB-32's") reduction target of 40 percent below 1990 GHG emissions level to the 10,000 MTCO2e/year bright-line threshold, which would bring the threshold of significance for operational GHG emissions to 6,000 MTCO2e/year. Compass recognizes that this linear reduction approach oversimplifies the threshold development process and it is not the intent of this document to propose the adoption of this threshold as a mass emissions limit or CEQA GHG threshold for general use. Rather, this scaling approach can put the project-generated GHG emissions in the appropriate statewide context so that the magnitude of the Project-related emissions is understood and its relative significance may be determined.

Although a 6,000 MTCO2e/year threshold could be used to assess Project GHG impacts, Compass also consulted the County's recently certified Cache Creek Area Plan ("CCAP") Update Final EIR to consider other potential thresholds that could be applied to the Project analysis. The CCAP Update Final EIR conservatively considered *any net increase* in GHG emissions occurring a result of the CCAP to constitute a significant impact. Under this conservative approach, if the Project would result in a net increase in GHG emissions as compared to the baseline conditions, then the Project would be considered to result in a significant impact. The County has applied this approach to other mining projects, including the Teichert Shifler Mining and Reclamation Project (2021) and previously the Granite Esparto Mining and Reclamation Project (2010).

To be consistent with the CCAP Update FEIR, Compass will assume that any net increase in Project GHG emissions would be potentially significant.

[2] Overview of Greenhouse Gases (US EPA): https://www.epa.gov/ghgemissions/overview-greenhouse-gases

5.0 RESULTS AND RECOMMENDED MITIGATION

5.1 Criteria Pollutant Evaluation

Project activity would include ongoing mining (and associated stripping and grading operations), transport of mined materials by a combination of truck and conveyor, processing plant operations, and on-road passenger vehicle and truck trips. Table 4 presents the Project's criteria air pollutants and ozone precursor emissions analysis in comparison to YSAQMD's mass emissions thresholds, which support compliance with the CAAQS and NAAQS. The modeling results indicate that all Project criteria pollutant emissions are well below applicable YSAQMD thresholds of significance for CEQA. Therefore, the Project's criteria pollutant impacts and related cumulative impacts would be less-than-significant.

A more complete summary of Project emissions is found in **Appendix A**, Daily and Annual Emissions Summary. A complete report of emissions and modeling inputs is included in **Appendix B**, Baseline Models and Inputs, and **Appendix C**, Project Models and Inputs.

TABLE 3
CRITERIA AIR POLLUTANTS EMISSIONS ANALYSIS

Emissions Category	ROG (tons/year)	NO_X (tons/year)	PM_{10} (lbs/day)
Baseline			
Mining	0.41	4.90	102.98
Dredge and Aggregate Plant	0.91	8.37	94.96
Ready-Mix Plant	0.03	0.28	15.32
Recycle Plant	0.03	0.23	60.28
On-Road Mobile Sources	0.14	6.02	1.02
Total:	**1.52**	**19.8**	**274.56**
Proposed Project			
Mining	0.49	6.07	110.92
Dredge and Aggregate Plant	0.91	8.38	108.70
Ready-Mix Plant	0.03	0.28	19.41
Recycle Plant	0.02	0.15	59.41
On-Road Mobile Sources	0.13	6.57	0.74
Total:	**1.58**	**21.45**	**299.18**
Net Change (Project - Baseline)	**+0.06**	**+1.65**	**+24.62**
Threshold	10	10	80
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**

1. YSAQMD thresholds from Table 2, above.
2. Minor differences in totals due to rounding. See Appendix A for additional details.

5.2 Carbon Monoxide (CO) Hotspots

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuel. The largest source of CO is vehicle engines, and the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Consequently, violations of the CO standard are generally limited to major intersections during peak-hour traffic conditions. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal. However, high concentrations are not expected as a result of the Project.

YSAQMD's preliminary screening approach indicates that a project would result in a potentially significant impact to localized CO concentrations if either of the following screening criteria are met:

- *A traffic study for the project indicates that the peak-hour Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to an unacceptable LOS (typically LOS E or F); or*
- *A traffic study indicates that the project will substantially worsen an already existing peak-hour LOS F on one or more streets or at one or more intersections in the project vicinity. "Substantially worsen" includes situations where delay would increase by 10 seconds or more when project-generated traffic is included.*

As previously noted, a Project traffic study was not available for review at the time of this Study. Therefore, Compass was not able to rule out a potential CO impact solely on the basis of the screening methodology. However, if a traffic study is completed by the County (or its consultants) then it is anticipated that the screening criteria alone could be used to rule out a potentially significant CO impact without the need for further analysis.

Most equipment used in the mining process and truck transport is diesel-powered and produces lower CO emissions than gasoline combustion engines. Diesel engines are compression ignition engines that usually operate at a higher compression ratio than spark-ignited gasoline engines. Deisel engines usually operate at a higher compression ratio than gasoline engines because fuel is not present during compression; hence there is no danger of premature auto-ignition. Since engine thermal efficiency rises with increasing pressure ratio (and pressure ratio varies directly with compression ratio), diesel engines are more efficient than gasoline engines. (EPA AP-42, Chapter 3.3).

Compass' modeling results summarized in **Appendix A** indicate that Project net CO emissions would *decrease* by approximately 72.85 pounds per day or 1.56 tons per year. The Project's CO impact would be less-than-significant based on a decrease in CO emissions relative to the existing 10-year historic baseline. However, these values represent mass emissions estimates and not an emissions concentration, which is the metric used in the NAAQS and CAAQS. Therefore, these emission estimates need to be put into proper context.

While a Project specific CO concentration has not been determined, CO concentrations in YSAQMD's jurisdiction and the Sacramento Valley Air Basin as a whole currently meet all NAAQS and CAAQS for CO.[3] The State standards, which have been adopted as part of YSAQMD's operational thresholds of significance, are more restrictive than the NAAQS at 9 parts per million (ppm) for the maximum 8-hour concentration and 20 ppm for the maximum 1-hour concentration. As further discussed below, there is no reason to believe that the Project, which is a continuation of an existing mining operation, would cause a significant impact that would jeopardize compliance with these standards.

To provide additional evidence in support of this conclusion, CO measurements taken at the Sacramento-Bercut Drive air monitoring station adjacent to I-5 for the full calendar year 2020 indicate a *maximum* daily CO concentration of 1.6 ppm occurring on only three days in September and October 2020.[4] The daily maximum CO concentration is well below the lowest applicable CAAQS of 9 ppm. To put these concentrations into further perspective, Caltrans reports that I-5 at Richards Blvd. next to the Sacramento-Bercut Drive air monitoring station generated 176,000 AADT while I-505 at Hwy. 16 next to the Project site generated only 16,900 AADT based on 2020 traffic counts.[5] Traffic counts next to the Project site are a full order of magnitude lower than the traffic counts adjacent to the air monitoring station. CO concentrations would therefore be markedly lower at I-505 adjacent to the Project site, especially given the general lack of congestion along this reach of I-505. In addition, the Project would generate up to approximately 308 average daily one-way truck trips (at full 1,000,000 tons per year sold production), plus approximately 56 average daily one-way employee and maintenance visit trips, which total of 356 trips (including existing baseline trips) amounts to only 0.2% of the traffic volume at the air monitoring station.

The proposed Project's impacts relating to CO would be less-than-significant based on modeling results, the nature of the Project and Sacramento-Bercut Drive air monitoring station data.

5.3 Greenhouse Gas Emissions

As described in Section 4.2 above, Compass will assume that any net increase in Project GHG emissions would be potentially significant. However, to put the Project into statewide context, GHG emissions are also presented in relation to an operational threshold of 6,000 MTCO2e/year, based on a linear scaling reduction of BAAQMD's bright-line operational threshold to account for the SB-32 reduction target of 40 percent below 1990 GHG emissions levels.

The modeling results indicate that Project GHG emissions would be well below an operational threshold of 6,000 MTCO2e/year. However, the Project's would still result in a net increase in

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[3] A summary of Air Basin attainment status published by YSAQMD is available here: http://www.ysaqmd.org/wp-content/uploads/Graphics/Attainment_Status.png

[4] The Sacramento-Bercut Drive air monitoring station (ID 06-067-0015) is located at approximate GPS coordinates 38.593322, -121.503795, at 100 Bercut Drive, Sacramento, CA 95811, adjacent to Interstate 5 near the Richard Blvd. exit. Station data is available here: https://www.epa.gov/outdoor-air-quality-data/download-daily-data

[5] Source: Caltrans Traffic Census Program, https://dot.ca.gov/programs/traffic-operations/census.

GHG emissions relative to existing baseline conditions. Therefore, the Project's GHG impacts are considered potentially significant. Table 4 presents the GHG emissions analysis.

A more complete summary of Project emissions is found in **Appendix A**. A complete report of emissions and modeling inputs is included in **Appendix B** and **Appendix C**.

TABLE 4
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)[2]

Emissions Category	CO_2e
Baseline Emissions	5,668
Project Emissions	6,706
Project Net Change	**+1,038**
BAAQMD-Based Threshold (for context only)[2]	6,000
CEQA Significance Threshold[3]	0
Exceeds Threshold (Yes/No)?	**Yes**

Notes:
1. MT= metric tons. CO_2e = carbon dioxide equivalent.
2. BAAQMD's operational threshold for GHG emissions is 10,000 MTCO2e/year. This threshold could be interpolated to 6,000 MTCO2e/year to achieve the 40% reduction target of SB-32.
3. Per County guidance, Compass has assumed that any net increase in Project GHG emissions would be potentially significant.

The following mitigation measure is recommended to reduce the Project's GHG emissions to less-than-significant:

1. Prior to the August 11, 2027 (i.e., the original date of expiration of the Existing Entitlements), the Applicant shall submit for review and approval, a Greenhouse Gas Reduction Plan (GHGRP) to the Yolo County Department of Community Services. In order to demonstrate the implementation of the proposed project would not result in a net increase in GHG emissions from baseline conditions, the GHGRP shall demonstrate how operational emissions of the proposed project would be reduced by at least 1,038 MTCO2e/year. Strategies to achieve emissions reductions may include, but are not limited to, the following:
   a. Replacement of existing fossil fueled equipment with hybrid or electrically powered equipment;
   b. Purchase of an increased proportion of electricity from renewable sources;
   c. Installation of on-site renewable energy systems;
   d. Use of a blend of renewable diesel and biodiesel (80/20 mix) to power mobile equipment. CARB and the U.S. Department of Energy recognize a greater than

50% reduction in GHG/CO2e emissions from use of the 80/20 blend as compared to petroleum based diesel.[6]

e. Purchase of verified carbon credits. Credits purchased as part of this mitigation option shall be real, quantifiable, permanent, verifiable, enforceable, and consistent with the standards set forth in Health and Safety Code section 38562, subdivisions (d)(1) and (d)(2). Such credits shall be based on protocols that are consistent with the criteria set forth in subdivision (a) of Section 95972 of Title 17 of the California Code of Regulations, and shall not allow the use of offset projects originating outside of California, except to the extent that the quality of the offsets, and their sufficiency under the standards set forth herein, can be verified by the County and/or the YSAQMD. The credits must be purchased through one of the following: 1) a CARB-approved registry, such as the Climate Action Reserve, the American Carbon Registry, and the Verified Carbon Standard; 2) any registry approved by CARB to act as a registry under the California Cap and Trade Program; or 3) through the CAPCOA GHG Reduction Exchange.

With implementation of this mitigation measure, the Project's GHG emissions would be *less-than-significant*.

5.4 Odors

Project activities are not expected to introduce significant sources of odors. The Project does not involve odor-generating sources aside from direct exhaust emissions associated with operation of construction, off-road and mobile equipment that generally dissipate rapidly into the atmosphere as distance increases from the source. The Project is not located near a substantial number of existing sensitive receptors or places where people are expected to congregate, and does not propose any residential or other land uses that would introduce sensitive receptors to the existing facility.

The YSAQMD CEQA Handbook presents a list of common types of facilities that are known to produce odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. While Vulcan Materials operates an existing asphalt concrete plant on the CEMEX property, the asphalt plant operation is separately permitted and not subject to any modifications proposed by the Project. Therefore, the Project activities do not propose or fall under any of the land use categories for which odors would typically be a concern. Further, the YSAQMD Handbook states that for projects locating near a source of odors where there is currently no nearby development and for odor sources locating near existing receptors, the determination of significance should be based on whether odor complaints from the public have occurred in the vicinity of a similar facility at a similar distance. YSAQMD has recorded zero odor complaints for CEMEX's or Vulcan's existing Cache Creek facilities.

[6] See *Life Cycle Analysis completed by Argonne National Laboratory*, at Figure 5-6 and 5-7, available here: https://afdc.energy.gov/vehicles/diesels_emissions.html

The Project's potential odor impacts would be less-than-significant based on the nature of the Project (i.e., the continuation of a fully permitted mining and processing facility), YSAQMD's odor screening criteria, and YSAQMD's record of zero odor complaints for the existing facilities.

5.5 Energy

CEMEX's existing facility consumes energy in the forms of fossil fuels and electricity as part of the ongoing mining and construction materials processing operations. These operations include off-road heavy equipment use, conveyor transport, truck transport, aggregate processing, and ready-mix concrete processing operations. The main sources of energy consumption are electricity and diesel fuel, as well as gasoline fuel for worker and other passenger vehicle trips.

Under existing baseline conditions, CEMEX's operations consume an estimated 3,543 megawatts of electricity, 537,084 gallons of diesel fuel, and 20,033 gallons of gasoline per year. In order to meet its existing demands for electricity, CEMEX partnered with Foundation Windpower to install a wind turbine on the property, which is fully operational. CEMEX was the first aggregate producer in Yolo County to do so. Foundation Windpower owns and operates the wind turbine and the electricity generated by the turbine is fed into the grid to off-set a portion of the electricity used by existing operations.

The Project would increase electricity, diesel, and gasoline consumption relative to the existing baseline conditions in order to achieve the currently permitted levels of mining and aggregate thruput production. This comparison is done pursuant to the analytical requirements of CEQA, but does not mean that the Project would result in the wasteful, inefficient or unnecessary consumption of energy resources. The Project does not propose any energy consumption beyond what is typical for this type of operation. Consumption of energy represents an ongoing cost to CEMEX, which creates an incentive for CEMEX to minimize the use of energy on-site through efficient means and operations. Further, while a comparison of Project to baseline conditions reflects a net increase in energy consumption, CEMEX's Existing Entitlements already allow for the consumption of energy as necessary to achieve the currently permitted 1,000,000 tons per year sold limit of aggregate production at the facility.

Table 5 summarizes the estimated energy consumption of the Project relative to the existing conditions baseline. A complete report of baseline and Project energy consumption can be found in **Appendix B-8** and **Appendix C-7**, respectively. The Project would increase diesel fuel consumption by 19%, decrease gasoline consumption by 2%, and increase electricity consumption by 47% relative to the CEQA baseline, consistent with the modeled increase in production levels up to the currently permitted limits for the facility as applicable.

TABLE 5
ENERGY CONSUMPTION SUMMARY

Energy Type	Energy Consumption	Units
Baseline		
Electricity	3,543,082	kWh / year
Diesel	537,084	Gal / year
Gasoline	20,033	Gal / year
Proposed Project		
Electricity	5,224,579	kWh / year
Diesel	638,729	Gal / year
Gasoline	19,687	Gal / year
Net Change		
Electricity	+1,681,497	kWh / year
Diesel	+101,645	Gal / year
Gasoline	-346	Gal / year

Notes:
1. kWh/year = kilowatt-hours per year; gal/year = gallons per year
2. Baseline electricity use for dredge and aggregate processing operations is based on 2021 PG&E electricity consumption data provided by CEMEX.
3. See Appendices B-8 and C-7 for calculation assumptions and details.

The Project's gasoline and diesel consumption would also be subject to State and federal regulations regarding fuel efficiency standards for on-road vehicles and off-road equipment. For example, the off-road equipment operated as part of the Project would be subject to the In-Use Off-Road Diesel Vehicle Regulations, which require strict emissions reductions into the future. Emissions reductions are often achieved through engine retrofits to a higher tier, which emit fewer emissions, partially through increased fuel efficiency. Accordingly, operational energy demand would decrease into the future as off-road equipment is upgraded to meet increasingly stringent emissions standards. The modeling performed for this Study has not taken credit for these future reductions beyond the year 2022.

Based on the foregoing, the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. The Project's energy impacts would be less-than-significant.

Appendix A:
Daily and Annual Emissions Summary

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

Table 1. Daily Emissions Summary (lbs/day)

Activity	ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
BASELINE							
Mining Operations[4]							
Stripping and Mining Emissions (App. B-2 - *CalEEMod*)	4.65	45.34	87.32	10.67	104.61	0.22	--
Conveyor Transport from Pit-to-Plant (App. B-3)	--	--	1.61	0.46	--	--	--
Truck Transport to Conveyor (App. B-3)	--	--	14.05	1.40	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. B-3)[3]	--	--	--	--	--	--	--
Subtotal	4.65	45.34	102.98	12.53	104.61	0.22	--
Dredge and Aggregate Plant Operations (App. B-4)							
Processing and Wind Erosion	--	--	43.51	23.74	--	--	--
On-Site Vehicle Traffic	--	--	48.57	4.86	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]	--	--	--	--	--	--	--
Off-Road Heavy Equipment	6.95	64.26	2.89	2.85	33.05	0.41	--
Vehicle Idling	0.01	0.13	0.00	0.00	0.12	--	--
Subtotal	6.96	64.39	94.96	31.44	33.17	0.41	--
Ready-Mix Plant Operations (App. B-5)							
Concrete Batching	--	--	13.41	2.22	--	--	--
On-Site Vehicle Traffic	--	--	1.22	0.30	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]	--	--	--	--	--	--	--
Off-Road Heavy Equipment	1.67	14.62	0.68	0.68	7.91	0.08	--
Vehicle Idling	0.00	0.03	0.00	0.00	0.03	--	--
Subtotal	1.67	14.65	15.32	3.20	7.94	0.08	--

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. B-6)								
Processing and Wind Erosion		--	--	9.66	3.44	--	--	--
On-Site Vehicle Traffic		--	--	48.60	4.86	--	--	--
Portable Processing Plant Engines[3]		4.01	31.99	1.52	1.52	16.38	0.05	--
Off-Road Heavy Equipment		1.13	14.77	0.50	0.46	5.80	0.02	--
	Subtotal	5.13	46.76	60.28	10.28	22.17	0.07	--
On-Road Mobile Source Emissions (App. B-7)		3.94	169.79	1.02	0.96	22.96	--	--
	Subtotal	3.94	169.79	1.02	0.96	22.96	--	--
Baseline Totals (lbs/day)		**22.36**	**340.94**	**274.56**	**58.41**	**190.85**	**0.79**	**--**
PROPOSED PROJECT								
Mining Operations[4]								
Stripping and Mining Emissions (App. C-1 - *CalEEMod*)		5.39	55.48	87.58	10.92	117.66	0.23	--
Conveyor Transport from Pit-to-Plant (App. C-2)		--	--	2.56	0.72	--	--	--
Truck Transport to Conveyor (App. C-2)		--	--	20.78	2.08	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. C-2)[3]		--	--	--	--	--	--	--
	Subtotal	5.39	55.48	110.92	13.72	117.66	0.23	--
Dredge and Aggregate Plant Operations (App. C-3)								
Processing and Wind Erosion		--	--	43.51	23.74	--	--	--
On-Site Vehicle Traffic		--	--	62.31	6.23	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
Off-Road Heavy Equipment		6.95	64.26	2.89	2.85	33.05	0.41	--
Vehicle Idling		0.01	0.16	0.00	0.00	0.17	--	--
	Subtotal	6.97	64.43	108.70	32.82	33.21	0.41	--
Ready-Mix Plant Operations (App. C-4)								
Concrete Batching		--	--	17.17	2.84	--	--	--
On-Site Vehicle Traffic		--	--	1.57	0.38	--	--	--
GHG Emissions from Electricity Use (Indirect)[3]		--	--	--	--	--	--	--
Off-Road Heavy Equipment		1.67	14.62	0.68	0.68	7.91	0.08	--
Vehicle Idling		0.00	0.04	0.00	0.00	0.04	--	--
	Subtotal	1.67	14.66	19.41	3.90	7.95	0.08	--

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. C-5)								
Processing and Wind Erosion		--	--	9.66	3.44	--	--	--
On-Site Vehicle Traffic		--	--	48.60	4.86	--	--	--
Portable Processing Plant Engines[3]		2.89	18.10	0.78	0.78	15.64	0.05	--
Off-Road Heavy Equipment		0.90	10.99	0.37	0.33	5.14	0.04	--
	Subtotal	3.80	29.09	59.41	9.41	20.77	0.09	--
On-Road Mobile Source Emissions (App. C-6)		3.02	159.71	0.74	0.67	20.24	--	--
	Subtotal	3.02	159.71	0.74	0.67	20.24	--	--
Proposed Project Totals (lbs/day)		**20.84**	**323.36**	**299.19**	**60.52**	**199.84**	**0.81**	**--**
Project Net Change (lbs/day)		**-1.51**	**-17.58**	**24.63**	**2.11**	**8.98**	**0.03**	**--**
YSAQMD CEQA Significance Thresholds								
Threshold (lbs/day)		N/A[7]	N/A[7]	80[5]	N/A[7]	CAAQS[6]	N/A[7]	N/A[7]
Exceeds Threshold?		**N/A**	**N/A**	**No**	**N/A**	**N/A**	**N/A**	**N/A**

Notes:

1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are only reported as annual emissions in Metric Tons per year. See Table 2, Annual Summary.
4. Mining operations emissions sourced from CalEEMod Model Runs 1 and 2, Stripping and Mining Emissions. Emissions total is reported as the higher of the Winter or Summer mitigated (on-model) modeling results. Excludes the dredge which is accounted for in processing plant emissions.
5. PM10 threshold applies to both construction and operational impacts.
6. CO threshold is violation of a state ambient air quality standard for CO, which is 9.0 ppm (8-hour average), 20.00 ppm (1-hour average). This is a concentration-based threshold that is not directly comparable to a lb/day emission estimate.
7. Yolo-Solano AQMD has no published daily CEQA thresholds for daily ROG, NOx, PM2.5, SOx, or CO_2 emissions.

APPENDIX A: DAILY AND ANNUAL EMISSIONS SUMMARY

Table 2. Annual Emissions Summary (tons/year)

Activity	ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
BASELINE							
Mining Operations[4]							
Stripping and Mining Emissions (App. B-2 - *CalEEMod*)	0.41	4.90	6.13	0.83	7.16	0.01	1,224.73
Conveyor Transport from Pit-to-Plant (App. B-3)	--	--	0.21	0.06	--	--	--
Truck Transport to Conveyor (App. B-3)	--	--	1.83	0.18	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. B-3)	--	--	--	--	--	--	1.00
Subtotal	0.41	4.90	8.17	1.07	7.16	0.01	1,225.73
Dredge and Aggregate Plant Operations (App. B-4)							
Processing and Wind Erosion	--	--	5.41	4.13	--	--	--
On-Site Vehicle Traffic	--	--	6.31	0.63	--	--	--
GHG Emissions from Electricity Use (Indirect)	--	--	--	--	--	--	6.81
Off-Road Heavy Equipment	0.90	8.35	0.38	0.37	4.30	0.05	585.43
Vehicle Idling	0.00	0.02	0.00	0.00	0.02	--	2.97
Subtotal	0.91	8.37	12.10	5.13	4.31	0.05	595.21
Ready-Mix Plant Operations (App. B-5)							
Concrete Batching	--	--	0.25	0.04	--	--	--
On-Site Vehicle Traffic	--	--	0.02	0.01	--	--	--
GHG Emissions from Electricity Use (Indirect)	--	--	--	--	--	--	0.21
Off-Road Heavy Equipment	0.03	0.28	0.01	0.01	0.15	0.00	16.39
Vehicle Idling	0.00	0.00	0.00	0.00	0.00	--	0.11
Subtotal	0.03	0.28	0.29	0.06	0.15	0.00	16.70

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. B-6)								
Processing and Wind Erosion		--	--	0.50	0.47	--	--	--
On-Site Vehicle Traffic		--	--	0.24	0.02	--	--	--
Portable Processing Plant Engines		0.02	0.16	0.01	0.01	0.08	0.00	24.50
Off-Road Heavy Equipment		0.01	0.07	0.00	0.00	0.03	0.00	8.58
	Subtotal	0.03	0.23	0.75	0.50	0.11	0.00	33.08
On-Road Mobile Source Emissions (App. B-7)		0.14	6.02	0.04	0.03	1.27	--	3,796.82
	Subtotal	0.14	6.02	0.04	0.03	1.27	--	3,796.82
Baseline Totals (tons/year)		**1.52**	**19.80**	**21.35**	**6.80**	**13.00**	**0.07**	**5667.54**
PROPOSED PROJECT								
Mining Operations[4]								
Stripping and Mining Emissions (App. C-1 - *CalEEMod*)		0.49	6.07	6.14	0.86	8.69	0.02	1,369.04
Conveyor Transport from Pit-to-Plant (App. C-2)		--	--	0.33	0.09	--	--	--
Truck Transport to Conveyor (App. C-2)		--	--	2.70	0.27	--	--	--
GHG Emissions from Conveyor Electricity Use (Indirect) (App. C-2)		--	--	--	--	--	--	1.48
	Subtotal	0.49	6.07	9.17	1.22	8.69	0.02	1,370.52
Dredge and Aggregate Plant Operations (App. C-3)								
Processing and Wind Erosion		--	--	6.09	4.19	--	--	--
On-Site Vehicle Traffic		--	--	8.10	0.81	--	--	--
GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	10.08
Off-Road Heavy Equipment		0.90	8.35	0.38	0.37	4.30	0.05	585.43
Vehicle Idling		0.00	0.02	0.00	0.00	0.02	--	3.81
	Subtotal	0.91	8.38	14.56	5.37	4.32	0.05	599.32
Ready-Mix Plant Operations (App. C-4)								
Concrete Batching		--	--	0.33	0.05	--	--	--
On-Site Vehicle Traffic		--	--	0.03	0.01	--	--	--
GHG Emissions from Electricity Use (Indirect)		--	--	--	--	--	--	0.27
Off-Road Heavy Equipment		0.03	0.28	0.01	0.01	0.15	0.00	16.39
Vehicle Idling		0.00	0.00	0.00	0.00	0.00	--	0.14
	Subtotal	0.03	0.28	0.37	0.07	0.15	0.00	16.79

Activity		ROG[1]	NOx	PM10[2]	PM2.5[2]	CO	SOx	CO_2e[3]
Recycle Plant Operations (App. C-5)								
Processing and Wind Erosion		--	--	0.50	0.47	--	--	--
On-Site Vehicle Traffic		--	--	0.24	0.02	--	--	--
Portable Processing Plant Engines		0.01	0.09	0.00	0.00	0.08	0.00	24.49
Off-Road Heavy Equipment		0.00	0.05	0.00	0.00	0.03	0.00	8.31
	Subtotal	0.02	0.15	0.75	0.50	0.10	0.00	32.80
On-Road Mobile Source Emissions (App. C-6)		0.13	6.57	0.03	0.03	1.22	--	4,686.67
	Subtotal	0.13	6.57	0.03	0.03	1.22	--	4,686.67
Proposed Project Totals (tons/year)		**1.58**	**21.44**	**24.89**	**7.20**	**14.49**	**0.08**	**6706.11**
Project Net Change (tons/year)		**0.06**	**1.65**	**3.54**	**0.39**	**1.48**	**0.01**	**1038.57**
YSAQMD CEQA Significance Thresholds								
Threshold (tons/year)		10	10	N/A[5]	N/A[5]	N/A[5]	N/A[5]	0[5,6]
Exceeds Threshold?		**No**	**No**	**N/A**	**N/A**	**N/A**	**N/A**	**Yes**

Notes:

1. VOC results reported as ROG for summary table where applicable.
2. PM emissions represent controlled (or abated) emissions, where applicable.
3. Greenhouse gas (CO2e) emissions are reported as annual emissions in Metric Tons per year.
4. Mining operations emissions sourced from CalEEMod Model Runs 1 and 2, Stripping and Mining Emissions. Excludes the dredge which is accounted for in processing plant emissions.
5. YSAQMD has no published annual CEQA threshold for PM, CO, SOx, or CO_2 emissions.
6. YSAQMD has not adopted a significance threshold for GHG emissions. To be consistent with the CCAP Update FEIR, Compass will assume that any net increase in Project GHG emissions would be potentially significant.

Appendix B:
Baseline Models and Inputs

Appendix B-1: Baseline Production Levels

APPENDIX B: BASELINE MODELS AND INPUTS

B-1. Baseline Production Levels

Description:

Compass consulted with the County to determine appropriate baseline production information to be used in this analysis. For the aggregate plant, Compass utilized the 2021 actual production rate with the applicable 2021 emissions factors to provide a representative estimate of baseline emissions during the NOP year. Based on a review of historical trends, the 2021 production rate is consistent with the 10-year average production rate, within 1.5%. Compass also determined averages for both plant raw feed tons (to account for all particulate matter emissions associated with the production process) and for tons sold (to account for mobile source emissions associated with truck hauling).

For the ready-mix concrete plant and recycle plant, Compass first reviewed each plant's production for the 10-year period between 2012 and 2021. Unlike for the aggregate plant, the production years 2021 for ready-mix concrete and 2021 and 2019 for recycling had either zero or atypically low production levels compared to the 10-year average. The ten-years of tonnage data for each (ready-mix concrete and recycling) show that 2021 was not representative of typical production levels at either plant. Conversely, the ten-year average is a representative range and therefore better representative of actual conditions. No recycling occurred in 2021 and 2019 because CEMEX was not able to source concrete and asphalt rubble as other recycle locations were closer to the jobs that generated the source materials. Ready-mix production was minimal in 2021 due to the location of customer's jobs in relation to the CEMEX and other ready-mix sites. CEMEX only operated the plant a few times when the volume for a particular job warranted opening the plant for production. In general, CEMEX has indicated that it does not make economic sense to operate the plant when the quantities requested by customers are low. Overall, the 10-year averaging period represents a baseline that captures economic changes resulting from fluctuating market demand.

Annual production figures are considered proprietary; therefore, the period average is reported below for each plant. Year-by-year production figures can be confidentially supplied to the County and/or AQMD reviewers upon request.

Aggregate Plant:	814,418	tons plant raw feed (2021)
	779,432	tons sold (2021)
Readymix Plant:	9,101	cubic yards per year average sold (2012-2021)
Recycle Plant:	30,003	tons per year average sold (2012-2021)

Appendix B-2:
CalEEMod Modeling Results for Stripping and Mining

Cache Creek Project
Mobile Equipment Input Assumptions
Existing Conditions

Equipment	Model	Year (if known)	HP	Tier (if known)	Hours per day
Stripping Phase					
Compactor	Cat 825	2015	402	4	8
Loader	Cat 980	2013	355	4	8
Scraper	Cat 657	2016	630	4	8
Scraper	Cat 657	2016	630	4	8
Scraper	Cat 657	2017	630	4	8
Scraper	Cat 657	2017	630	4	8
Water Truck - 4,000 Gal	Peterbilt 348	2017		On highway	5
Mining Phase					
Dozer	Cat D10T	2006	580	3	0.13
Dozer	Cat D8R	1997	305	1	8
Excavator	Cat 374FL	2016	472	4F	8
Haul Truck	Volvo A40	2013	465	4I	8
Haul Truck	Volvo A40	2013	469	4I	8
Haul Truck	Cat 740B	2008	489	3	8
Motor Grader	Cat 140G	1989	150	0	0.2
Water Truck - 4,000 Gal	Peterbilt 348	2017		On highway	5

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2021	10.5884	111.9549	70.3783	0.2166	87.7979	4.1032	91.9011	10.1861	3.7750	13.9611	0.0000	20,986.1165	20,986.1165	6.6623	0.0102	21,155.6968
Maximum	**10.5884**	**111.9549**	**70.3783**	**0.2166**	**87.7979**	**4.1032**	**91.9011**	**10.1861**	**3.7750**	**13.9611**	**0.0000**	**20,986.1165**	**20,986.1165**	**6.6623**	**0.0102**	**21,155.6968**

Mitigated 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					
2021	4.6459	45.3150	104.6148	0.2166	85.8638	1.4513	87.3151	9.2458	1.4206	10.6664	0.0000	20,986.1165	20,986.1165	6.6623	0.0102	21,155.6967
Maximum	**4.6459**	**45.3150**	**104.6148**	**0.2166**	**85.8638**	**1.4513**	**87.3151**	**9.2458**	**1.4206**	**10.6664**	**0.0000**	**20,986.1165**	**20,986.1165**	**6.6623**	**0.0102**	**21,155.6967**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	56.12	59.52	-48.65	0.00	2.20	64.63	4.99	9.23	62.37	23.60	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	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					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

Mitigated Operational

	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					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48

Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2021

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					3.0923	0.0000	3.0923	1.6639	0.0000	1.6639			0.0000			0.0000
Off-Road	3.7836	36.7163	23.4458	0.0778		1.3482	1.3482		1.2404	1.2404		7,527.171 4	7,527.171 4	2.4344		7,588.032 4
Total	**3.7836**	**36.7163**	**23.4458**	**0.0778**	**3.0923**	**1.3482**	**4.4405**	**1.6639**	**1.2404**	**2.9043**		**7,527.171 4**	**7,527.171 4**	**2.4344**		**7,588.032 4**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0895	0.0538	0.8025	2.1800e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		220.5625	220.5625	5.5100e-003	5.3400e-003	222.2916
Total	**0.0895**	**0.0538**	**0.8025**	**2.1800e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**220.5625**	**220.5625**	**5.5100e-003**	**5.3400e-003**	**222.2916**

3.2 Mining - 2021

Mitigated 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					1.3915	0.0000	1.3915	0.7488	0.0000	0.7488			0.0000			0.0000
Off-Road	2.6917	35.6319	42.4993	0.0778		1.1360	1.1360		1.1083	1.1083	0.0000	7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**2.6917**	**35.6319**	**42.4993**	**0.0778**	**1.3915**	**1.1360**	**2.5275**	**0.7488**	**1.1083**	**1.8570**	**0.0000**	**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0895	0.0538	0.8025	2.1800e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		220.5625	220.5625	5.5100e-003	5.3400e-003	222.2916
Total	**0.0895**	**0.0538**	**0.8025**	**2.1800e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**220.5625**	**220.5625**	**5.5100e-003**	**5.3400e-003**	**222.2916**

3.3 Stripping - 2021

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					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.6348	75.1363	45.4078	0.1347		2.7528	2.7528		2.5326	2.5326		13,039.8764	13,039.8764	4.2174		13,145.3104
Total	**6.6348**	**75.1363**	**45.4078**	**0.1347**	**0.4242**	**2.7528**	**3.1770**	**0.0458**	**2.5326**	**2.5784**		**13,039.8764**	**13,039.8764**	**4.2174**		**13,145.3104**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0805	0.0484	0.7222	1.9600e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		198.5063	198.5063	4.9600e-003	4.8100e-003	200.0624
Total	**0.0805**	**0.0484**	**0.7222**	**1.9600e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**198.5063**	**198.5063**	**4.9600e-003**	**4.8100e-003**	**200.0624**

3.3 Stripping - 2021

Mitigated 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					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.7842	9.5808	60.5908	0.1347		0.3131	0.3131		0.3102	0.3102	0.0000	13,039.8763	13,039.8763	4.2174		13,145.3103
Total	**1.7842**	**9.5808**	**60.5908**	**0.1347**	**0.1909**	**0.3131**	**0.5040**	**0.0206**	**0.3102**	**0.3309**	**0.0000**	**13,039.8763**	**13,039.8763**	**4.2174**		**13,145.3103**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0805	0.0484	0.7222	1.9600e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		198.5063	198.5063	4.9600e-003	4.8100e-003	200.0624
Total	**0.0805**	**0.0484**	**0.7222**	**1.9600e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**198.5063**	**198.5063**	**4.9600e-003**	**4.8100e-003**	**200.0624**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Unmitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2021	10.5775	111.9797	70.1487	0.2161	87.7979	4.1032	91.9011	10.1861	3.7750	13.9611	0.0000	20,940.9619	20,940.9619	6.6633	0.0117	21,111.0385
Maximum	**10.5775**	**111.9797**	**70.1487**	**0.2161**	**87.7979**	**4.1032**	**91.9011**	**10.1861**	**3.7750**	**13.9611**	**0.0000**	**20,940.9619**	**20,940.9619**	**6.6633**	**0.0117**	**21,111.0385**

Mitigated 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					
2021	4.6349	45.3398	104.3851	0.2161	85.8638	1.4513	87.3151	9.2458	1.4206	10.6664	0.0000	20,940.9619	20,940.9619	6.6633	0.0117	21,111.0385
Maximum	**4.6349**	**45.3398**	**104.3851**	**0.2161**	**85.8638**	**1.4513**	**87.3151**	**9.2458**	**1.4206**	**10.6664**	**0.0000**	**20,940.9619**	**20,940.9619**	**6.6633**	**0.0117**	**21,111.0385**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	56.18	59.51	-48.81	0.00	2.20	64.63	4.99	9.23	62.37	23.60	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	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					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

Mitigated Operational

	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					
Area	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**	**0.0000**	**0.1131**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48

Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2021

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					3.0923	0.0000	3.0923	1.6639	0.0000	1.6639			0.0000			0.0000
Off-Road	3.7836	36.7163	23.4458	0.0778		1.3482	1.3482		1.2404	1.2404		7,527.171 4	7,527.171 4	2.4344		7,588.032 4
Total	**3.7836**	**36.7163**	**23.4458**	**0.0778**	**3.0923**	**1.3482**	**4.4405**	**1.6639**	**1.2404**	**2.9043**		**7,527.171 4**	**7,527.171 4**	**2.4344**		**7,588.032 4**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0837	0.0669	0.6816	1.9400e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		196.7969	196.7969	6.0500e-003	6.1700e-003	198.7873
Total	**0.0837**	**0.0669**	**0.6816**	**1.9400e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**196.7969**	**196.7969**	**6.0500e-003**	**6.1700e-003**	**198.7873**

3.2 Mining - 2021

Mitigated 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					1.3915	0.0000	1.3915	0.7488	0.0000	0.7488			0.0000			0.0000
Off-Road	2.6917	35.6319	42.4993	0.0778		1.1360	1.1360		1.1083	1.1083	0.0000	7,527.1714	7,527.1714	2.4344		7,588.0324
Total	**2.6917**	**35.6319**	**42.4993**	**0.0778**	**1.3915**	**1.1360**	**2.5275**	**0.7488**	**1.1083**	**1.8570**	**0.0000**	**7,527.1714**	**7,527.1714**	**2.4344**		**7,588.0324**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0837	0.0669	0.6816	1.9400e-003	44.3586	1.1700e-003	44.3598	4.4613	1.0800e-003	4.4624		196.7969	196.7969	6.0500e-003	6.1700e-003	198.7873
Total	**0.0837**	**0.0669**	**0.6816**	**1.9400e-003**	**44.3586**	**1.1700e-003**	**44.3598**	**4.4613**	**1.0800e-003**	**4.4624**		**196.7969**	**196.7969**	**6.0500e-003**	**6.1700e-003**	**198.7873**

3.3 Stripping - 2021

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					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.6348	75.1363	45.4078	0.1347		2.7528	2.7528		2.5326	2.5326		13,039.8764	13,039.8764	4.2174		13,145.3104
Total	**6.6348**	**75.1363**	**45.4078**	**0.1347**	**0.4242**	**2.7528**	**3.1770**	**0.0458**	**2.5326**	**2.5784**		**13,039.8764**	**13,039.8764**	**4.2174**		**13,145.3104**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0602	0.6134	1.7500e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		177.1172	177.1172	5.4500e-003	5.5500e-003	178.9085
Total	**0.0753**	**0.0602**	**0.6134**	**1.7500e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**177.1172**	**177.1172**	**5.4500e-003**	**5.5500e-003**	**178.9085**

3.3 Stripping - 2021

Mitigated 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					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.7842	9.5808	60.5908	0.1347		0.3131	0.3131		0.3102	0.3102	0.0000	13,039.8763	13,039.8763	4.2174		13,145.3103
Total	**1.7842**	**9.5808**	**60.5908**	**0.1347**	**0.1909**	**0.3131**	**0.5040**	**0.0206**	**0.3102**	**0.3309**	**0.0000**	**13,039.8763**	**13,039.8763**	**4.2174**		**13,145.3103**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0602	0.6134	1.7500e-003	39.9228	1.0500e-003	39.9238	4.0152	9.7000e-004	4.0161		177.1172	177.1172	5.4500e-003	5.5500e-003	178.9085
Total	**0.0753**	**0.0602**	**0.6134**	**1.7500e-003**	**39.9228**	**1.0500e-003**	**39.9238**	**4.0152**	**9.7000e-004**	**4.0161**		**177.1172**	**177.1172**	**5.4500e-003**	**5.5500e-003**	**178.9085**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Unmitigated	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5900e-003	4.5000e-004	0.0495	0.0000		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004		0.1061	0.1061	2.8000e-004		0.1131
Total	**4.5900e-003**	**4.5000e-004**	**0.0495**	**0.0000**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**		**0.1061**	**0.1061**	**2.8000e-004**		**0.1131**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Baseline Stripping and Mining Emissions

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Baseline equipment and utilization per CEMEX.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for full year of operation to determine maximum daily and annual emissions for CEQA analysis. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	NumDays	775.00	261.00
tblConstructionPhase	PhaseEndDate	11/10/2027	12/31/2021
tblConstructionPhase	PhaseStartDate	11/21/2024	1/1/2021
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2021	0.6717	6.6790	4.2986	0.0138	6.2006	0.2449	6.4456	0.8009	0.2254	1.0262	0.0000	1,214.8759	1,214.8759	0.3846	7.9000e-004	1,224.7274
Maximum	**0.6717**	**6.6790**	**4.2986**	**0.0138**	**6.2006**	**0.2449**	**6.4456**	**0.8009**	**0.2254**	**1.0262**	**0.0000**	**1,214.8759**	**1,214.8759**	**0.3846**	**7.9000e-004**	**1,224.7274**

Mitigated 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					
2021	0.4079	4.8986	7.1647	0.0138	5.9729	0.1563	6.1291	0.6808	0.1526	0.8334	0.0000	1,214.8745	1,214.8745	0.3846	7.9000e-004	1,224.7260
Maximum	**0.4079**	**4.8986**	**7.1647**	**0.0138**	**5.9729**	**0.1563**	**6.1291**	**0.6808**	**0.1526**	**0.8334**	**0.0000**	**1,214.8745**	**1,214.8745**	**0.3846**	**7.9000e-004**	**1,224.7260**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	**39.27**	**26.66**	**-66.67**	**0.00**	**3.67**	**36.21**	**4.91**	**14.99**	**32.31**	**18.79**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	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					
Area	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

2.2 Overall Operational

Mitigated Operational

	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					
Area	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

	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**	**N20**	**CO2e**
Percent Reduction	**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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2021	12/31/2021	5	261	Sand and gravel excavation
2	Stripping	Grading	5/3/2021	7/9/2021	5	50	Topsoil and overburden removal

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Graders	1	1.00	150	0.41
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Scrapers	0	0.00	367	0.48
Mining	Excavators	1	8.00	472	0.38
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37
Mining	Rubber Tired Dozers	1	1.00	305	0.40
Mining	Rubber Tired Dozers	1	3.00	580	0.40
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	5.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Off-Highway Trucks	1	5.00	300	0.38

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2021

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					0.4036	0.0000	0.4036	0.2171	0.0000	0.2171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4938	4.7915	3.0597	0.0102		0.1759	0.1759		0.1619	0.1619	0.0000	891.1238	891.1238	0.2882	0.0000	898.3290
Total	**0.4938**	**4.7915**	**3.0597**	**0.0102**	**0.4036**	**0.1759**	**0.5795**	**0.2171**	**0.1619**	**0.3790**	**0.0000**	**891.1238**	**891.1238**	**0.2882**	**0.0000**	**898.3290**

3.2 Mining - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.7500e-003	0.0885	2.6000e-004	4.9355	1.5000e-004	4.9357	0.4969	1.4000e-004	0.4971	0.0000	23.8932	23.8932	6.7000e-004	6.7000e-004	24.1108
Total	**0.0103**	**7.7500e-003**	**0.0885**	**2.6000e-004**	**4.9355**	**1.5000e-004**	**4.9357**	**0.4969**	**1.4000e-004**	**0.4971**	**0.0000**	**23.8932**	**23.8932**	**6.7000e-004**	**6.7000e-004**	**24.1108**

Mitigated 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					0.1816	0.0000	0.1816	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3513	4.6500	5.5462	0.0102		0.1482	0.1482		0.1446	0.1446	0.0000	891.1228	891.1228	0.2882	0.0000	898.3279
Total	**0.3513**	**4.6500**	**5.5462**	**0.0102**	**0.1816**	**0.1482**	**0.3298**	**0.0977**	**0.1446**	**0.2423**	**0.0000**	**891.1228**	**891.1228**	**0.2882**	**0.0000**	**898.3279**

3.2 Mining - 2021

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.7500e-003	0.0885	2.6000e-004	4.9355	1.5000e-004	4.9357	0.4969	1.4000e-004	0.4971	0.0000	23.8932	23.8932	6.7000e-004	6.7000e-004	24.1108
Total	**0.0103**	**7.7500e-003**	**0.0885**	**2.6000e-004**	**4.9355**	**1.5000e-004**	**4.9357**	**0.4969**	**1.4000e-004**	**0.4971**	**0.0000**	**23.8932**	**23.8932**	**6.7000e-004**	**6.7000e-004**	**24.1108**

3.3 Stripping - 2021

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					0.0106	0.0000	0.0106	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1659	1.8784	1.1352	3.3700e-003		0.0688	0.0688		0.0633	0.0633	0.0000	295.7394	295.7394	0.0957	0.0000	298.1306
Total	**0.1659**	**1.8784**	**1.1352**	**3.3700e-003**	**0.0106**	**0.0688**	**0.0794**	**1.1500e-003**	**0.0633**	**0.0645**	**0.0000**	**295.7394**	**295.7394**	**0.0957**	**0.0000**	**298.1306**

3.3 Stripping - 2021

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.3400e-003	0.0153	4.0000e-005	0.8510	3.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.1195	4.1195	1.1000e-004	1.2000e-004	4.1570
Total	**1.7700e-003**	**1.3400e-003**	**0.0153**	**4.0000e-005**	**0.8510**	**3.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.1195**	**4.1195**	**1.1000e-004**	**1.2000e-004**	**4.1570**

Mitigated 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					4.7700e-003	0.0000	4.7700e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0446	0.2395	1.5148	3.3700e-003		7.8300e-003	7.8300e-003		7.7600e-003	7.7600e-003	0.0000	295.7391	295.7391	0.0957	0.0000	298.1303
Total	**0.0446**	**0.2395**	**1.5148**	**3.3700e-003**	**4.7700e-003**	**7.8300e-003**	**0.0126**	**5.2000e-004**	**7.7600e-003**	**8.2800e-003**	**0.0000**	**295.7391**	**295.7391**	**0.0957**	**0.0000**	**298.1303**

3.3 Stripping - 2021

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.3400e-003	0.0153	4.0000e-005	0.8510	3.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.1195	4.1195	1.1000e-004	1.2000e-004	4.1570
Total	**1.7700e-003**	**1.3400e-003**	**0.0153**	**4.0000e-005**	**0.8510**	**3.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.1195**	**4.1195**	**1.1000e-004**	**1.2000e-004**	**4.1570**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Unmitigated	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2300e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B-3:
Pit-to-Plant Material Transport Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-3. Pit-to-Plant Material Transport Emissions

1. MINING OPERATIONS - PM EMISSIONS FROM CONVEYOR TRANSPORT FROM PIT-TO-PLANT

Description:

Fugitive dust from conveyor transport of raw materials from pit-to-plant. The controlled emission factor for PM is taken from AP-42, Table 11.19.2-2. The controlled emission factor is appropriate based on the typical moisture content of the material. From the dredge, mined materials are transferred to the aggregate processing plant via 13 conveyor transfers, comprising 6 floating conveyors (i.e., FC-1 thru FC-6), 1 floating water to land conveyor transfer, 1 jump conveyor, and 6 overland conveyor transfers (i.e., PC-1 thru PC-6).

Production Assumptions:

Annual production:	814,418	tons mined (2021)	Qty. of Conveyor Transfers:	14	from mining area to plant (existing)
% of Material Transport by Conveyor:	80%				
% of Material Transport by Truck to Conveyor:	20%		Production Days per Year:	260	days (52 weeks per year)
Tons Transported by Conveyor:	651,534	tons	Conveyed Tons per Day:	2,506	tons (average)
Tons Transported by Truck and Conveyor:	162,884	tons	Conveyed Tons per Hour:	313	tons (based on 8 hours of operation)

Conveyor PM Emissions Calculations:

Pollutant	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
PM10	4.60E-05	0.20	1.61	419.59	0.21
PM2.5	1.30E-05	0.06	0.46	118.58	0.06

2. MINING OPERATIONS - PM EMISSIONS FROM TRUCK TRANSPORT TO CONVEYOR

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% is used for water suppression.

Estimating Assumptions:

Tons per day:	626	tons per day (average)
Tons per year:	162,884	tons
Tons per truck:	40	tons
Average distance traveled onsite:	5,000	feet (round-trip to feed hopper)
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	98.0	tons (based on avg of 78 tons empty, 118 tons loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	3.16	0.32

VMT Estimates:

	Daily	Annual
Haul Trucks	15	3,856

PM Emissions Estimate from Haul Truck Transport:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	46.82	12,174.4	6.1	4.68	1,217.44	0.61
Abated	14.05	3,652.31	1.83	1.40	365.23	0.18

APPENDIX B: BASELINE MODELS AND INPUTS
B-3. Pit-to-Plant Material Transport Emissions

3. MINING OPERATIONS - GREENHOUSE GAS EMISSIONS FROM CONVEYOR ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use of the existing conveyor between mining area and plant. Electricity consumption estimate per ton per CEMEX based on historical energy use. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average kWh per ton:	0.68	kWh per ton
Average annual kWh:	443,043	kWh per year

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	MWh/year	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
443,043	443	2.68	0.033	0.004	0.54	0.007	0.001	1.00

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:
Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix B-4:
Aggregate Plant Emissions

CEMEX Construction Materials Pacific, LLC.
Cache Creek Mining Permit and Reclamation Plan Amendment Project
Air and Greenhouse Gas Emissions Study

COMPASS LAND GROUP

APPENDIX B: BASELINE MODELS AND INPUTS
B-4. Aggregate Plant Emissions

1. DREDGE AND AGGREGATE PLANTS - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:

The dredge's on-vessel processing equipment list (Plant 1) per CEMEX. The aggregate plant equipment list (Plant 2) is also per CEMEX AggFlow and generally matches the YSAQMD Permit to Operate P-26-92(a3), valid thru 7/22/2022. All conveyed material passes thru scalping screen S-1 to plant surge pile at 600 tph. Plant surge tunnel feeds primary screen S-2 at 700 tph. From screen S-2, plant thruput distributed approximately 315 tph (45%) to concrete sands and wash loss to silt ponds, 280 tph (40%) to secondary screen S-4 to coarse natural aggregates, and 105 tph (15%) via crusher CR-1 and secondary screen S-3 to crushed products. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	814,418	tons
% of Annual Production: Plant 1 (Dredge Plant):	80%	
% of Annual Production: Plant 2 (Aggregate Plant):	100%	
Annual Production: Plant 1 (Dredge Plant):	651,534	tons
Annual Production: Plant 2 (Aggregate Plant):	814,418	tons

Stockpile Area (acres):	43	acres (estimated per aerial photographs)

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - SP 1	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	7.40E-04	0.44	4.44	482.14	0.24
Dewatering Screens - SP 2	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	7.40E-04	0.44	4.44	482.14	0.24
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	814,418	0.0087	5.22	52.20	7,085.44	3.54	7.40E-04	0.44	4.44	602.67	0.30
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	814,418	0.0087	6.09	48.72	7,085.44	3.54	7.40E-04	0.52	4.14	602.67	0.30
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	122,163	0.0024	0.25	2.02	293.19	0.15	0.00054	0.0567	0.4536	65.97	0.03
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	122,163	0.0087	0.91	7.31	1,062.82	0.53	7.40E-04	0.08	0.62	90.40	0.05
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	325,767	0.0087	2.44	19.49	2,834.17	1.42	7.40E-04	0.21	1.66	241.07	0.12
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	814,418	0.0011	0.77	6.16	895.86	0.45	4.60E-05	0.03	0.26	37.46	0.02
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	325,767	0.0011	0.92	7.39	1,075.03	0.54	4.60E-05	0.04	0.31	44.96	0.02
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	366,488	0.0011	0.35	2.77	403.14	0.20	4.60E-05	0.01	0.12	16.86	0.01
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	366,488	0.0011	0.35	2.78	1,612.55	0.81	4.60E-05	0.01	0.12	67.43	0.03
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	122,163	0.0011	1.73	13.86	2,015.69	1.01	4.60E-05	0.07	0.58	84.29	0.04
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8,004.45	4.00
						TOTALS:		**32.52**	**340.20**	**62,381.51**	**31.19**		**3.28**	**43.51**	**10,822.50**	**5.41**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX B: BASELINE MODELS AND INPUTS

B-4. Aggregate Plant Emissions

PM2.5 EMISSIONS																		
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - Set 1	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	0.00005	0.03	0.30	32.58	0.02
Dewatering Screens - Set 2	Screening	2	50%	300	3,000	325,767	0.0087	5.22	52.20	5,668.35	2.83	0.00005	0.03	0.30	32.58	0.02
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	814,418	0.0087	5.22	52.20	7,085.44	3.54	0.00005	0.03	0.30	40.72	0.02
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	814,418	0.0087	6.09	48.72	7,085.44	3.54	0.00005	0.04	0.28	40.72	0.02
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	122,163	0.0024	0.25	2.02	293.19	0.15	0.0001	0.01	0.08	12.22	0.01
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	122,163	0.0087	0.91	7.31	1,062.82	0.53	0.00005	0.01	0.04	6.11	0.00
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	325,767	0.0087	2.44	19.49	2,834.17	1.42	0.00005	0.01	0.11	16.29	0.01
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	814,418	0.0011	0.77	6.16	895.86	0.45	1.30E-05	0.01	0.07	10.59	0.01
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	325,767	0.0011	0.92	7.39	1,075.03	0.54	1.30E-05	0.01	0.09	12.70	0.01
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	366,488	0.0011	0.35	2.77	403.14	0.20	1.30E-05	0.00	0.03	4.76	0.00
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	366,488	0.0011	0.35	2.78	1,612.55	0.81	1.30E-05	0.00	0.03	19.06	0.01
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	122,163	0.0011	1.73	13.86	2,015.69	1.01	1.30E-05	0.02	0.16	23.82	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8004.45	4.00
						TOTALS:		**32.52**	**340.20**	**62,381.51**	**31.19**		**1.12**	**23.74**	**8,256.59**	**4.13**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX B: BASELINE MODELS AND INPUTS

B-4. Aggregate Plant Emissions

2. AGGREGATE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression.

Estimating Assumptions:

Tons per day:	2,998	tons per day (average)
Tons per year:	779,432	tons sold
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	23,619

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	161.89	42,092.50	21.05	16.19	4,209.25	2.10
Abated	48.57	12,627.75	6.31	4.86	1,262.77	0.63

APPENDIX B: BASELINE MODELS AND INPUTS
B-4. Aggregate Plant Emissions

3. DREDGE AND AGGREGATE PLANTS - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at the dredge and aggregate plant. Electricity consumption per CEMEX based on PG&E records for 2021. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:
Average annual kWh: 3,006,196 kWh per year (2021)

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
3,006,196	3,006	2.68	0.033	0.004	3.65	0.04	0.01	6.81

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:
Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix B-5: Ready-Mix Concrete Plant Emissions

COMPASS LAND GROUP

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

1. RMC PLANT - PM EMISSIONS FROM CONCRETE BATCHING

Description:

PM emissions from ready-mix concrete plant. The ready-mix plant assumptions are per CEMEX. Plant operates approximately 38 days per year. Maximum hourly thruput of approximately 150 CY/hr; however, plant rarely operates at max production capacity. Emission factors and material composition from AP-42, Table 11.12-2 and BAAQMD Permit Handbook (2021).

Production Assumptions:

Cubic yards per hour:	30	cubic yards (avg. based on 8-hour day)
Cubic yards per day:	240	cubic yards (based on 38 days per year)
Cubic yards per year:	9,101	cubic yards (baseline 10-year avg.)
Tons per hour:	60	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	482	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	18,311	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	-	acres (no stockpiling independent of agg plant)

Material Composition:

Coarse Aggregate Percentage:	1,865	lbs per cy =	46.35%	percent
Sand Percentage:	1,428	lbs per cy =	35.49%	percent
Cement Percentage:	491	lbs per cy =	12.20%	percent
Cement Supplement Percentage:	73	lbs per cy =	1.81%	percent
Water Percentage:	167	lbs based on 20 gal. =	4.15%	percent
Total:	**4,024**		100.00%	percent

Source: AP-42, Table 11.12-2, end note "a".

PM10 EMISSIONS													
	Process Rate			**Uncontrolled PM10**					**Controlled PM10**				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	28	223	8,487	0.0033	0.09	0.74	28.01	0.01	0.00099	0.03	0.22	8.40	0.00
Sand Transfer	21	171	6,498	0.00099	0.02	0.17	6.43	0.00	0.000297	0.01	0.05	1.93	0.00
Cement Unloading	7	59	2,234	0.47	3.45	27.63	1,050.12	0.53	0.00034	0.00	0.02	0.76	0.00
Cement Supplement Unloading	1	9	332	1.1	1.20	9.62	365.41	0.18	0.0049	0.01	0.04	1.63	0.00
Weigh Hopper Loading	60	482	18,311	0.0028	0.17	1.35	51.27	0.03	0.00084	0.05	0.40	15.38	0.01
Mixer Loading (Truck Mix)	60	482	18,311	0.31	18.67	149.38	5,676.48	2.84	0.0263	1.58	12.67	481.58	0.24
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**23.61**	**188.89**	**7,177.71**	**3.59**		**1.68**	**13.41**	**509.69**	**0.25**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied (BAAQMD Permit Handbook, 2021, at p. 197).

2. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

PM2.5 EMISSIONS													
	Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	28	223	8,487	0.0005	0.01	0.11	4.24	0.00	0.0005	0.01	0.11	4.24	0.00
Sand Transfer	21	171	6,498	0.00015	0.00	0.03	0.97	0.00	0.00015	0.00	0.03	0.97	0.00
Cement Unloading	7	59	2,234	0.07	0.51	4.12	156.40	0.08	0.00005	0.00	0.00	0.11	0.00
Cement Supplement Unloading	1	9	332	0.17	0.19	1.49	56.47	0.03	0.0007	0.00	0.01	0.23	0.00
Weigh Hopper Loading	60	482	18,311	0.0004	0.02	0.19	7.32	0.00	0.0004	0.02	0.19	7.32	0.00
Mixer Loading (Truck Mix)	60	482	18,311	0.047	2.83	22.65	860.63	0.43	0.0039	0.23	1.88	71.41	0.04
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**3.57**	**28.58**	**1,086.04**	**0.54**		**0.28**	**2.22**	**84.30**	**0.04**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, AP-42 and BAAQMD do not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

3. Emission factors obtained by referencing speciation profile in PM3431 which states PM2.5 = 15% of PM10 (BAAQMD Permit Handbook, 2021, at p. 197).

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

2. RMC PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	482	tons
Tons per year:	18,311	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,500	feet
Active days per year:	38	days per CEMEX
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	8	287

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	4.08	155.09	0.08	1.00	38.07	0.02
Abated	1.22	46.53	0.02	0.30	11.42	0.01

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's ready mix concrete plant. Electricity use for the existing plant provided by CEMEX (2012-2021). Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
93,843	94	2.68	0.033	0.004	0.11	0.00	0.00	0.21

Notes:

Emission factors from CalEEMod User Guide, Appendix D, Table 1.2, Electrical Utility Emissions Factors of Greenhous Gases, for Pacific Gas & Electric.

kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and feed bin cleanup. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	1	Cat 988G	2001	475	0.37	4
Skid-steer loader (bobcat)	1	Cat 262D	2001	72	0.37	2

Notes:
1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.96	8.77	0.38	0.38	4.80	0.05	568.30	0.09
Skid-steer loader (bobcat)	1.58	9.03	0.78	0.78	4.16	0.06	568.30	0.14
		TOTALS:						

Notes:
1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2: 1
CH4: 34
N_20: 298
CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*
** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	1.48	13.56	0.59	0.59	7.42	0.08	878.93	0.14
Skid-steer loader (bobcat)	0.19	1.06	0.09	0.09	0.49	0.01	66.61	0.02
TOTALS:	**1.67**	**14.62**	**0.68**	**0.68**	**7.91**	**0.08**	**945.55**	**0.16**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.03	0.26	0.01	0.01	0.14	0.00	15.15	0.00	15.23
Skid-steer loader (bobcat)	0.00	0.02	0.00	0.00	0.01	0.00	1.15	0.00	1.16
TOTALS:	**0.03**	**0.28**	**0.01**	**0.01**	**0.15**	**0.00**	**16.29**	**0.00**	**16.39**

APPENDIX B: BASELINE MODELS AND INPUTS
B-5. Ready-Mix Concrete Plant Emissions

5. RMC PLANT - VEHICLE IDLING

Description:
On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for idling emission rates

Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	T7 Tractor	Aggregated	Aggregated	DSL	3.393	45.099	46.093	0.082	8717.290	0.157	0.023	0.022	1.373

Notes:
LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	482	tons
Annual Operating Days:	38	days

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*
** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-5. Ready-Mix Concrete Plant Emissions

Annual Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	$N_2$0 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Mixer trucks (finish product)	T7 Tractor	27	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.10
		TOTALS:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.10**	**0.00**	**0.00**	**0.11**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	27	0.00	0.03	0.03	0.00	0.00
		TOTALS:	**0.00**	**0.03**	**0.03**	**0.00**	**0.00**

Appendix B-6: Recycle Plant Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

1. RECYCLE PLANT - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:
The recycle plant equipment list is based on a typical 375 ton per hour portable plant capacity. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	30,003	tons	Stockpile Area (acres):	5	acres
% of Annual Production: Plant 1 (Recycle Plant):	100%		Annual production days:	10	days at 3,000 tons per day
Annual Production: Plant 1 (Recycle Plant):	30,003	tons			

PM10 EMISSIONS

				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.00054	0.05076	0.405	4.05	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	0.000046	0.02	0.14	1.38	0.00
Primary Screen	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	4.60E-05	0.02	0.14	1.38	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.00054	0.16	1.30	12.96	0.01
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	4.60E-05	0.05	0.41	4.14	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	4.60E-05	0.03	0.28	2.76	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**1.00**	**9.66**	**1,001.83**	**0.50**

Notes:
1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment.
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

B-6. Recycle Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.0001	0.01	0.08	0.75	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.3E-05	0.00	0.04	0.39	0.00
Primary Screens	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.30E-05	0.00	0.04	0.39	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.0001	0.03	0.24	2.40	0.00
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	1.30E-05	0.01	0.12	1.17	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	1.30E-05	0.01	0.08	0.78	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**0.22**	**3.44**	**939.63**	**0.47**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

2. RECYLE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic to support recycle operations. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,000	tons per day (average)
Tons per year:	30,003	tons
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	10	days
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	909

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	162.01	1,620.28	0.81	16.20	162.03	0.08
Abated	48.60	486.09	0.24	4.86	48.61	0.02

3. RECYCLE PLANT - EMISSIONS FROM PORTABLE PROCESSING PLANT ENGINES

Description:

Criteria pollutant and GHG emissions from track-mounted portable processing plant engines. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.
Engine model year 2016 used as average for 10-year baseline period (2012-2021).

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Feeder / Screen	1	Metso LT ST4.8 (75 kW)	2016	100	0.78	8
Crusher	1	Metso LT220D (310 kW)	2016	540	0.78	8
Stacker Conveyor	1	Metso LT CT3.2 (36 kW)	2016	51	0.78	8

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Feeder / Screen	0.72	4.63	0.38	0.38	3.82	0.01	568.30	0.07
Crusher	0.34	3.02	0.10	0.10	1.14	0.01	568.30	0.03
Stacker Conveyor	0.72	4.63	0.38	0.38	3.82	0.01	568.30	0.07

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
$N_2$0:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Feeder / Screen	0.99	6.36	0.52	0.52	5.25	0.01	780.16	0.09
Crusher	2.51	22.40	0.73	0.73	8.45	0.04	4212.87	0.22
Stacker Conveyor	0.50	3.24	0.27	0.27	2.68	0.00	397.88	0.05
TOTALS:	**4.01**	**31.99**	**1.52**	**1.52**	**16.38**	**0.05**	**5390.91**	**0.36**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Feeder / Screen	0.00	0.03	0.00	0.00	0.03	0.00	3.54	0.00	3.55
Crusher	0.01	0.11	0.00	0.00	0.04	0.00	19.11	0.00	19.14
Stacker Conveyor	0.00	0.02	0.00	0.00	0.01	0.00	1.80	0.00	1.81
TOTALS:	**0.02**	**0.16**	**0.01**	**0.01**	**0.08**	**0.00**	**24.45**	**0.00**	**24.50**

APPENDIX B: BASELINE MODELS AND INPUTS
B-6. Recycle Plant Emissions

4. RECYCLE PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria pollutant emissions from heavy equipment operation, including raw materials feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4. Engine model year 2016 used as average for 10-year baseline period (2012-2021).

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Loader	1	Cat 980	2016	380	0.36	4
Excavator	1	Cat 330	2016	250	0.38	8
Excavator - Rock Breaker	1	Cat 330	2016	250	0.38	4

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Loader	0.39	4.63	0.17	0.16	2.16	0.01	500.43	0.15
Excavator	0.26	3.67	0.12	0.11	1.28	0.01	506.54	0.15
Excavator - Rock Breaker	0.26	3.67	0.12	0.11	1.28	0.01	506.54	0.15

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX B: BASELINE MODELS AND INPUTS

B-6. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Loader	0.47	5.57	0.21	0.19	2.59	0.01	602.44	0.18
Excavator	0.44	6.13	0.19	0.18	2.14	0.01	846.94	0.26
Excavator - Rock Breaker	0.22	3.07	0.10	0.09	1.07	0.00	423.47	0.13
TOTALS:	**1.13**	**14.77**	**0.50**	**0.46**	**5.80**	**0.02**	**1872.85**	**0.57**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Loader	0.00	0.03	0.00	0.00	0.01	0.00	2.73	0.00	2.76
Excavator	0.00	0.03	0.00	0.00	0.01	0.00	3.84	0.00	3.88
Excavator - Rock Breaker	0.00	0.02	0.00	0.00	0.01	0.00	1.92	0.00	1.94
TOTALS:	**0.01**	**0.07**	**0.00**	**0.00**	**0.03**	**0.00**	**8.49**	**0.00**	**8.58**

Appendix B-7:
On-Road Mobile Source Emissions

APPENDIX B: BASELINE MODELS AND INPUTS
B-7. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:

On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions and average customer and employee trip distances from CEMEX. Cement and fly ash supplied by CEMEX West Sacramento terminal. Aggregates used in ready-mix production are fed directly into plant feed bins by front-end loader (with no off-site imports).

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	2021	LDA	Aggregated	45	GAS	44.7	0.009	0.919	0.054	0.002	270.154	0.002	0.001	0.001	0.005
Yolo	2021	LDT1	Aggregated	45	GAS	44.7	0.032	1.900	0.164	0.003	318.412	0.007	0.001	0.001	0.011
Yolo	2021	LDA/LDT1	Average	45	GAS	44.7	0.015	1.164	0.082	0.002	282.219	0.003	0.001	0.001	0.007
Yolo	2021	MDV	Aggregated	35	DSL	9.7	0.014	0.225	0.064	0.003	400.220	0.001	0.006	0.006	0.063
Yolo	2021	T7 Tractor	Aggregated	35	DSL	31.2	0.057	0.250	2.500	0.015	1607.753	0.002	0.015	0.014	0.253

Notes:
LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck
Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for customer deliveries per CEMEX.

APPENDIX B: BASELINE MODELS AND INPUTS
B-7. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - Agg Plant:	779,432	tons sold	Tons per truck - haul trucks:	25	tons
Annual Production - RMC Plant:	18,311	tons (based on ~2 tons per CY)	Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Annual Production - Recycle Plant:	30,003	tons	Maintenance / service visits:	2	per day per plant average
Annual Operating Days - Agg Plant:	260	days (52 weeks per year)			
Annual Operating Days - RMC Plant:	38	days			
Annual Operating Days - Recycle Plant:	7	days			

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

										Greenhouse Gases			
On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	N_2O (MT/yr)	C02e (MT/yr)
Aggregate Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		22	511,368	0.01	0.05	0.66	0.00	0.00	144.29	0.00	0.00	145.34
Haul trucks (finish product)	T7 Tractor			1,945,462	0.12	5.36	0.54	0.03	0.03	3,127.19	0.00	0.49	3,273.97
Maintenance / service vehicle	MDV			10,088	0.00	0.00	0.00	0.00	0.00	4.04	0.00	0.00	4.23
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	6,794	0.00	0.00	0.01	0.00	0.00	1.92	0.00	0.00	1.93
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		63,479	0.00	0.17	0.02	0.00	0.00	102.04	0.00	0.02	106.83
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		6,768	0.00	0.02	0.00	0.00	0.00	10.88	0.00	0.00	11.39
Maintenance / service vehicle	MDV			1,474	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.62
Recycle Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	1,252	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
Haul trucks (import recycle feed)	T7 Tractor			74,887	0.00	0.21	0.02	0.00	0.00	120.38	0.00	0.02	126.03
Haul trucks (finish product)	T7 Tractor			74,887	0.00	0.21	0.02	0.00	0.00	120.38	0.00	0.02	126.03
Maintenance / service vehicle	MDV			272	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.11
			TOTALS:	**2,696,732**	**0.14**	**6.02**	**1.27**	**0.04**	**0.03**	**3,632.15**	**0.01**	**0.55**	**3,796.82**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.
Employee estimates per CEMEX.

APPENDIX B: BASELINE MODELS AND INPUTS

B-7. On-Road Mobile Source Emissions

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lbs/day)	NOX (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Aggregate Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		22	1,967	0.06	0.35	5.05	0.00	0.00
Haul trucks (finish product)	T7 Tractor			7,483	0.94	41.24	4.12	0.25	0.23
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.46	0.00	0.00
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		1,670	0.21	9.21	0.92	0.06	0.05
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		178	0.02	0.98	0.10	0.01	0.01
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
Recycle Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.46	0.00	0.00
Haul trucks (import recycle feed)	T7 Tractor			10,698	1.34	58.96	5.90	0.35	0.33
Haul trucks (finish product)	T7 Tractor			10,698	1.34	58.96	5.90	0.35	0.33
Maintenance / service vehicle	MDV			39	0.00	0.01	0.02	0.00	0.00
			TOTALS:	**33,168**	**3.94**	**169.79**	**22.96**	**1.02**	**0.96**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.

Employee estimates per CEMEX.

Appendix B-8: Energy Use Calculations

APPENDIX B: BASELINE MODELS AND INPUTS
B-8. Energy Use Calculations

Emission Factors per Fuel Unit

Gasoline	8.78	kg CO2/gal
Diesel (Distallate No. 2)	10.21	kg CO2/gal

Source: 2021 Default Emission Factors, Table 1.1. The Climate Registry (May 2021).

Mobile Source Equipment:	Fuel	MTCO2e	kg CO2	Est. Fuel Gallons
Mining Operations				
Off-Road (App. B-2)	Diesel	1196.46	1,196,460.00	117,185.11
On-Road Worker Trips (App. B-2)	Gasoline	28.27	28,270.00	3,219.82
Dredge and Aggregate Plant Operations				
Off-Road Equipment (App. B-4)	Diesel	585.43	585,431.16	57,339.00
Vehicle Idling (App. B-4)	Diesel	2.97	2,965.07	290.41
Ready-Mix Plant Operations				
Off-Road Equipment (App. B-5)	Diesel	16.39	16,385.78	1,604.88
Vehicle Idling (App. B-5)	Diesel	0.11	106.50	10.43
Recycle Plant Operations				
Portable Processing Plant Engines (App. B-6)	Diesel	24.50	24,502.85	2,399.89
Off-Road Equipment (App. B-6)	Diesel	8.58	8,580.58	840.41
On-Road Mobile Source Emissions				
On-Road (App. B-7)	Gasoline	147.62	147,621.79	16,813.42
On-Road (App. B-7)	Diesel	3,649.19	3,649,193.53	357,413.67
TOTALS:	**Diesel**	**5,483.63**	**5,483,625.46**	**537,083.79**
TOTALS:	**Gasoline**	**175.89**	**175,891.79**	**20,033.23**

Plant and Conveyor Equipment	Power Source	kWh/year
Conveyor (App B-3)	Electricity	443,043
Dredge and Aggregate Plant (App B-4)	Electricity	3,006,196
Ready-mix Plant (App B-5)	Electricity	93,843
TOTALS:		**3,543,082**

Appendix C:
Project Models and Inputs

Appendix C-1: CalEEMod Modeling Results for Stripping and Mining

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2022	10.6493	106.2872	73.4763	0.2323	87.8098	3.9577	91.7675	10.1925	3.6411	13.8336	0.0000	22,504.5433	22,504.5433	7.1559	9.3100e-003	22,686.2167
Maximum	**10.6493**	**106.2872**	**73.4763**	**0.2323**	**87.8098**	**3.9577**	**91.7675**	**10.1925**	**3.6411**	**13.8336**	**0.0000**	**22,504.5433**	**22,504.5433**	**7.1559**	**9.3100e-003**	**22,686.2167**

Mitigated 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					
2022	5.3924	55.4629	117.6550	0.2323	85.8692	1.7093	87.5785	9.2487	1.6757	10.9244	0.0000	22,504.5432	22,504.5432	7.1559	9.3100e-003	22,686.2167
Maximum	**5.3924**	**55.4629**	**117.6550**	**0.2323**	**85.8692**	**1.7093**	**87.5785**	**9.2487**	**1.6757**	**10.9244**	**0.0000**	**22,504.5432**	**22,504.5432**	**7.1559**	**9.3100e-003**	**22,686.2167**

	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**	**N20**	**CO2e**
Percent Reduction	**49.36**	**47.82**	**-60.13**	**0.00**	**2.21**	**56.81**	**4.56**	**9.26**	**53.98**	**21.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

<u>Unmitigated Operational</u>

	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					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

<u>Mitigated Operational</u>

	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					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40

Mining	Scrapers		0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes		0	0.00	97	0.37
Stripping	Excavators		0	0.00	158	0.38
Stripping	Graders		0	0.00	187	0.41
Stripping	Off-Highway Trucks		1	8.00	300	0.38
Stripping	Rollers		1	8.00	402	0.38
Stripping	Rubber Tired Dozers		0	0.00	247	0.40
Stripping	Scrapers		4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes		1	8.00	355	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2022

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					3.1042	0.0000	3.1042	1.6703	0.0000	1.6703			0.0000			0.0000
Off-Road	4.3602	40.4280	29.1707	0.0900		1.5434	1.5434		1.4200	1.4200		8,710.6787	8,710.6787	2.8172		8,781.1089
Total	**4.3602**	**40.4280**	**29.1707**	**0.0900**	**3.1042**	**1.5434**	**4.6476**	**1.6703**	**1.4200**	**3.0902**		**8,710.6787**	**8,710.6787**	**2.8172**		**8,781.1089**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0826	0.0471	0.7324	2.1100e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		214.5839	214.5839	4.9200e-003	4.9000e-003	216.1677
Total	**0.0826**	**0.0471**	**0.7324**	**2.1100e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**214.5839**	**214.5839**	**4.9200e-003**	**4.9000e-003**	**216.1677**

3.2 Mining - 2022

Mitigated 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					1.3969	0.0000	1.3969	0.7516	0.0000	0.7516			0.0000			0.0000
Off-Road	3.3522	44.5270	54.1664	0.0900		1.3468	1.3468		1.3168	1.3168	0.0000	8,710.678 7	8,710.678 7	2.8172		8,781.108 9
Total	**3.3522**	**44.5270**	**54.1664**	**0.0900**	**1.3969**	**1.3468**	**2.7436**	**0.7516**	**1.3168**	**2.0684**	**0.0000**	**8,710.678 7**	**8,710.678 7**	**2.8172**		**8,781.108 9**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0826	0.0471	0.7324	2.1100e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		214.5839	214.5839	4.9200e-003	4.9000e-003	216.1677
Total	**0.0826**	**0.0471**	**0.7324**	**2.1100e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**214.5839**	**214.5839**	**4.9200e-003**	**4.9000e-003**	**216.1677**

3.3 Stripping - 2022

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					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.1322	65.7698	42.9141	0.1383		2.4122	2.4122		2.2192	2.2192		13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**6.1322**	**65.7698**	**42.9141**	**0.1383**	**0.4242**	**2.4122**	**2.8364**	**0.0458**	**2.2192**	**2.2650**		**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0744	0.0424	0.6591	1.9000e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		193.1255	193.1255	4.4300e-003	4.4100e-003	194.5510
Total	**0.0744**	**0.0424**	**0.6591**	**1.9000e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**193.1255**	**193.1255**	**4.4300e-003**	**4.4100e-003**	**194.5510**

3.3 Stripping - 2022

Mitigated 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					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.8832	10.8465	62.0971	0.1383		0.3605	0.3605		0.3570	0.3570	0.0000	13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**1.8832**	**10.8465**	**62.0971**	**0.1383**	**0.1909**	**0.3605**	**0.5514**	**0.0206**	**0.3570**	**0.3776**	**0.0000**	**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0744	0.0424	0.6591	1.9000e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		193.1255	193.1255	4.4300e-003	4.4100e-003	194.5510
Total	**0.0744**	**0.0424**	**0.6591**	**1.9000e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**193.1255**	**193.1255**	**4.4300e-003**	**4.4100e-003**	**194.5510**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Unmitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130

CEMEX Cache Creek Project Stripping and Mining Emissions - Yolo County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2022	10.6398	106.3088	73.2718	0.2318	87.8098	3.9577	91.7675	10.1925	3.6411	13.8336	0.0000	22,460.7325	22,460.7325	7.1569	0.0108	22,642.8599
Maximum	**10.6398**	**106.3088**	**73.2718**	**0.2318**	**87.8098**	**3.9577**	**91.7675**	**10.1925**	**3.6411**	**13.8336**	**0.0000**	**22,460.7325**	**22,460.7325**	**7.1569**	**0.0108**	**22,642.8599**

Mitigated 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					
2022	5.3828	55.4845	117.4505	0.2318	85.8692	1.7093	87.5785	9.2487	1.6757	10.9244	0.0000	22,460.7324	22,460.7324	7.1569	0.0108	22,642.8598
Maximum	**5.3828**	**55.4845**	**117.4505**	**0.2318**	**85.8692**	**1.7093**	**87.5785**	**9.2487**	**1.6757**	**10.9244**	**0.0000**	**22,460.7324**	**22,460.7324**	**7.1569**	**0.0108**	**22,642.8598**

	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**	**N20**	**CO2e**
Percent Reduction	**49.41**	**47.81**	**-60.29**	**0.00**	**2.21**	**56.81**	**4.56**	**9.26**	**53.98**	**21.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	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					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

Mitigated Operational

	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					
Area	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**	**0.0000**	**0.1130**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40

Mining	Scrapers	0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Off-Highway Trucks	1	8.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2022

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					3.1042	0.0000	3.1042	1.6703	0.0000	1.6703			0.0000			0.0000
Off-Road	4.3602	40.4280	29.1707	0.0900		1.5434	1.5434		1.4200	1.4200		8,710.678 7	8,710.678 7	2.8172		8,781.108 9
Total	**4.3602**	**40.4280**	**29.1707**	**0.0900**	**3.1042**	**1.5434**	**4.6476**	**1.6703**	**1.4200**	**3.0902**		**8,710.678 7**	**8,710.678 7**	**2.8172**		**8,781.108 9**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0776	0.0584	0.6248	1.8800e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		191.5256	191.5256	5.4400e-003	5.6600e-003	193.3484
Total	**0.0776**	**0.0584**	**0.6248**	**1.8800e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**191.5256**	**191.5256**	**5.4400e-003**	**5.6600e-003**	**193.3484**

3.2 Mining - 2022

Mitigated 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					1.3969	0.0000	1.3969	0.7516	0.0000	0.7516			0.0000			0.0000
Off-Road	3.3522	44.5270	54.1664	0.0900		1.3468	1.3468		1.3168	1.3168	0.0000	8,710.678 7	8,710.678 7	2.8172		8,781.108 9
Total	**3.3522**	**44.5270**	**54.1664**	**0.0900**	**1.3969**	**1.3468**	**2.7436**	**0.7516**	**1.3168**	**2.0684**	**0.0000**	**8,710.678 7**	**8,710.678 7**	**2.8172**		**8,781.108 9**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0776	0.0584	0.6248	1.8800e-003	44.3586	1.1000e-003	44.3597	4.4613	1.0200e-003	4.4623		191.5256	191.5256	5.4400e-003	5.6600e-003	193.3484
Total	**0.0776**	**0.0584**	**0.6248**	**1.8800e-003**	**44.3586**	**1.1000e-003**	**44.3597**	**4.4613**	**1.0200e-003**	**4.4623**		**191.5256**	**191.5256**	**5.4400e-003**	**5.6600e-003**	**193.3484**

3.3 Stripping - 2022

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					0.4242	0.0000	0.4242	0.0458	0.0000	0.0458			0.0000			0.0000
Off-Road	6.1322	65.7698	42.9141	0.1383		2.4122	2.4122		2.2192	2.2192		13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**6.1322**	**65.7698**	**42.9141**	**0.1383**	**0.4242**	**2.4122**	**2.8364**	**0.0458**	**2.2192**	**2.2650**		**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0698	0.0526	0.5623	1.6900e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		172.3730	172.3730	4.8900e-003	5.0900e-003	174.0135
Total	**0.0698**	**0.0526**	**0.5623**	**1.6900e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**172.3730**	**172.3730**	**4.8900e-003**	**5.0900e-003**	**174.0135**

3.3 Stripping - 2022

Mitigated 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					0.1909	0.0000	0.1909	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.8832	10.8465	62.0971	0.1383		0.3605	0.3605		0.3570	0.3570	0.0000	13,386.1552	13,386.1552	4.3294		13,494.3890
Total	**1.8832**	**10.8465**	**62.0971**	**0.1383**	**0.1909**	**0.3605**	**0.5514**	**0.0206**	**0.3570**	**0.3776**	**0.0000**	**13,386.1552**	**13,386.1552**	**4.3294**		**13,494.3890**

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0698	0.0526	0.5623	1.6900e-003	39.9228	9.9000e-004	39.9238	4.0152	9.2000e-004	4.0161		172.3730	172.3730	4.8900e-003	5.0900e-003	174.0135
Total	**0.0698**	**0.0526**	**0.5623**	**1.6900e-003**	**39.9228**	**9.9000e-004**	**39.9238**	**4.0152**	**9.2000e-004**	**4.0161**		**172.3730**	**172.3730**	**4.8900e-003**	**5.0900e-003**	**174.0135**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Unmitigated	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-003	4.4000e-004	0.0492	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004		0.1061	0.1061	2.7000e-004		0.1130
Total	**4.5000e-003**	**4.4000e-004**	**0.0492**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**		**0.1061**	**0.1061**	**2.7000e-004**		**0.1130**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

CEMEX Cache Creek Project Stripping and Mining Emissions

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	485.00	User Defined Unit	485.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2050
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Equipment and utilization per CEMEX, consistent with existing conditions baseline.

Land Use - Surface mining on approximately 485 acres of 837 acre Revised Reclamation Plan boundary.

Construction Phase - Stripping and mining modeled for first full year of operation to determine maximum daily and annual emissions for CEQA analysis. Emissions will improve over time. Stripping for approximately 10 weeks per year (50 days total).

Off-road Equipment - Equipment assumptions per CEMEX. Excavator: Cat 374; Grader: Cat 140G; Dozers: Cat D10 and Cat D8; Haul Trucks: Volvo A40s and Cat 740; Water Truck: Peterbilt 4k (300 hp).

Off-road Equipment - Equipment assumptions per CEMEX. Scrapers: Cat 657; Loader: Cat 980; Roller Compactor: Cat 825; Water Truck: Peterbilt 4k (300 hp).

Trips and VMT - Model defaults used.

On-road Fugitive Dust - Percent paved travel adjusted to 90% for workers to account for limited on-site off-road travel.

Grading - Per CEMEX avg. yield is 71,000 tons mined per acre. Based on avg. yield, up to 20 acres can be mined each year to reach single-year permit max of 1.45 million tons mined (1.2 million tons sold).

Construction Off-road Equipment Mitigation - Mitigated equipment tiers per CEMEX for existing fleet. Equipment fleet emissions will improve over time. Water truck used to water exposed areas at least 2x daily.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 1
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	775.00	260.00
tblConstructionPhase	NumDays	775.00	50.00
tblConstructionPhase	PhaseEndDate	12/20/2024	12/30/2022
tblConstructionPhase	PhaseEndDate	12/10/2027	7/8/2022
tblConstructionPhase	PhaseStartDate	12/21/2024	5/1/2022
tblGrading	AcresOfGrading	81.56	20.00
tblGrading	AcresOfGrading	200.00	20.00
tblLandUse	LotAcreage	0.00	485.00
tblOffRoadEquipment	HorsePower	158.00	472.00
tblOffRoadEquipment	HorsePower	187.00	150.00
tblOffRoadEquipment	HorsePower	247.00	580.00
tblOffRoadEquipment	HorsePower	247.00	305.00
tblOffRoadEquipment	HorsePower	367.00	630.00
tblOffRoadEquipment	HorsePower	97.00	355.00

tblOffRoadEquipment	HorsePower	402.00	465.00
tblOffRoadEquipment	HorsePower	402.00	469.00
tblOffRoadEquipment	HorsePower	402.00	489.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	402.00	300.00
tblOffRoadEquipment	HorsePower	80.00	402.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Mining
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	PhaseName		Stripping
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblOnRoadDust	WorkerPercentPave	100.00	90.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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					
2022	0.7312	6.9078	4.9597	0.0155	6.1817	0.2611	6.4429	0.7990	0.2402	1.0392	0.0000	1,358.0497	1,358.0497	0.4311	7.2000e-004	1,369.0434
Maximum	**0.7312**	**6.9078**	**4.9597**	**0.0155**	**6.1817**	**0.2611**	**6.4429**	**0.7990**	**0.2402**	**1.0392**	**0.0000**	**1,358.0497**	**1,358.0497**	**0.4311**	**7.2000e-004**	**1,369.0434**

Mitigated 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					
2022	0.4940	6.0676	8.6887	0.0155	5.9540	0.1843	6.1382	0.6789	0.1803	0.8592	0.0000	1,358.0481	1,358.0481	0.4311	7.2000e-004	1,369.0418
Maximum	**0.4940**	**6.0676**	**8.6887**	**0.0155**	**5.9540**	**0.1843**	**6.1382**	**0.6789**	**0.1803**	**0.8592**	**0.0000**	**1,358.0481**	**1,358.0481**	**0.4311**	**7.2000e-004**	**1,369.0418**

	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	N20	CO2e
Percent Reduction	**32.45**	**12.16**	**-75.19**	**0.00**	**3.68**	**29.43**	**4.73**	**15.03**	**24.96**	**17.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2022**	**3-31-2022**	1.4440	1.5433
2	**4-1-2022**	**6-30-2022**	3.0288	1.8402
3	**7-1-2022**	**9-30-2022**	1.6816	1.6141
		Highest	3.0288	1.8402

2.2 Overall Operational

Unmitigated Operational

	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					
Area	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

2.2 Overall Operational

Mitigated Operational

	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					
Area	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

	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**	**N20**	**CO2e**
Percent Reduction	**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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mining	Grading	1/1/2022	12/30/2022	5	260	Sand and gravel excavation
2	Stripping	Grading	5/1/2022	7/8/2022	5	50	Topsoil and overburden removal

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mining	Concrete/Industrial Saws	0	0.00	81	0.73
Mining	Excavators	1	8.00	472	0.38
Mining	Graders	1	4.00	150	0.41
Mining	Off-Highway Trucks	1	8.00	465	0.38
Mining	Off-Highway Trucks	1	8.00	469	0.38
Mining	Off-Highway Trucks	1	8.00	489	0.38
Mining	Off-Highway Trucks	1	8.00	300	0.38
Mining	Rubber Tired Dozers	1	4.00	580	0.40
Mining	Rubber Tired Dozers	1	4.00	305	0.40
Mining	Scrapers	0	0.00	367	0.48
Mining	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Stripping	Excavators	0	0.00	158	0.38
Stripping	Graders	0	0.00	187	0.41
Stripping	Off-Highway Trucks	1	8.00	300	0.38
Stripping	Rollers	1	8.00	402	0.38
Stripping	Rubber Tired Dozers	0	0.00	247	0.40
Stripping	Scrapers	4	8.00	630	0.48
Stripping	Tractors/Loaders/Backhoes	1	8.00	355	0.37

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mining	8	20.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT
Stripping	7	18.00	0.00	0.00	15.00	9.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Mining - 2022

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					0.4036	0.0000	0.4036	0.2171	0.0000	0.2171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5668	5.2556	3.7922	0.0117		0.2006	0.2006		0.1846	0.1846	0.0000	1,027.2853	1,027.2853	0.3322	0.0000	1,035.5914
Total	**0.5668**	**5.2556**	**3.7922**	**0.0117**	**0.4036**	**0.2006**	**0.6042**	**0.2171**	**0.1846**	**0.4017**	**0.0000**	**1,027.2853**	**1,027.2853**	**0.3322**	**0.0000**	**1,035.5914**

3.2 Mining - 2022

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4600e-003	6.7500e-003	0.0807	2.5000e-004	4.9166	1.4000e-004	4.9168	0.4950	1.3000e-004	0.4952	0.0000	23.1626	23.1626	5.9000e-004	6.2000e-004	23.3611
Total	**9.4600e-003**	**6.7500e-003**	**0.0807**	**2.5000e-004**	**4.9166**	**1.4000e-004**	**4.9168**	**0.4950**	**1.3000e-004**	**0.4952**	**0.0000**	**23.1626**	**23.1626**	**5.9000e-004**	**6.2000e-004**	**23.3611**

Mitigated 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					0.1816	0.0000	0.1816	0.0977	0.0000	0.0977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4358	5.7885	7.0416	0.0117		0.1751	0.1751		0.1712	0.1712	0.0000	1,027.2841	1,027.2841	0.3322	0.0000	1,035.5902
Total	**0.4358**	**5.7885**	**7.0416**	**0.0117**	**0.1816**	**0.1751**	**0.3567**	**0.0977**	**0.1712**	**0.2689**	**0.0000**	**1,027.2841**	**1,027.2841**	**0.3322**	**0.0000**	**1,035.5902**

3.2 Mining - 2022

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.4600e-003	6.7500e-003	0.0807	2.5000e-004	4.9166	1.4000e-004	4.9168	0.4950	1.3000e-004	0.4952	0.0000	23.1626	23.1626	5.9000e-004	6.2000e-004	23.3611
Total	**9.4600e-003**	**6.7500e-003**	**0.0807**	**2.5000e-004**	**4.9166**	**1.4000e-004**	**4.9168**	**0.4950**	**1.3000e-004**	**0.4952**	**0.0000**	**23.1626**	**23.1626**	**5.9000e-004**	**6.2000e-004**	**23.3611**

3.3 Stripping - 2022

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					0.0106	0.0000	0.0106	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1533	1.6443	1.0729	3.4600e-003		0.0603	0.0603		0.0555	0.0555	0.0000	303.5929	303.5929	0.0982	0.0000	306.0476
Total	**0.1533**	**1.6443**	**1.0729**	**3.4600e-003**	**0.0106**	**0.0603**	**0.0709**	**1.1500e-003**	**0.0555**	**0.0566**	**0.0000**	**303.5929**	**303.5929**	**0.0982**	**0.0000**	**306.0476**

3.3 Stripping - 2022

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.1700e-003	0.0140	4.0000e-005	0.8510	2.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.0089	4.0089	1.0000e-004	1.1000e-004	4.0433
Total	**1.6400e-003**	**1.1700e-003**	**0.0140**	**4.0000e-005**	**0.8510**	**2.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.0089**	**4.0089**	**1.0000e-004**	**1.1000e-004**	**4.0433**

Mitigated 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					4.7700e-003	0.0000	4.7700e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0471	0.2712	1.5524	3.4600e-003		9.0100e-003	9.0100e-003		8.9200e-003	8.9200e-003	0.0000	303.5925	303.5925	0.0982	0.0000	306.0472
Total	**0.0471**	**0.2712**	**1.5524**	**3.4600e-003**	**4.7700e-003**	**9.0100e-003**	**0.0138**	**5.2000e-004**	**8.9200e-003**	**9.4400e-003**	**0.0000**	**303.5925**	**303.5925**	**0.0982**	**0.0000**	**306.0472**

3.3 Stripping - 2022

Mitigated 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6400e-003	1.1700e-003	0.0140	4.0000e-005	0.8510	2.0000e-005	0.8510	0.0857	2.0000e-005	0.0857	0.0000	4.0089	4.0089	1.0000e-004	1.1000e-004	4.0433
Total	**1.6400e-003**	**1.1700e-003**	**0.0140**	**4.0000e-005**	**0.8510**	**2.0000e-005**	**0.8510**	**0.0857**	**2.0000e-005**	**0.0857**	**0.0000**	**4.0089**	**4.0089**	**1.0000e-004**	**1.1000e-004**	**4.0433**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	15.00	8.00	9.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487936	0.058646	0.184439	0.150133	0.035429	0.007262	0.027508	0.012857	0.000623	0.000842	0.030390	0.000700	0.003235

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Unmitigated	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.1000e-004	4.0000e-005	4.4300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.6700e-003	8.6700e-003	2.0000e-005	0.0000	9.2200e-003
Total	**4.1000e-004**	**4.0000e-005**	**4.4300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**2.0000e-005**	**0.0000**	**9.2200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C-2:
Pit-to-Plant Material Transport Emissions

APPENDIX C: PROJECT MODELS AND INPUTS

C-2. Pit-to-Plant Material Transport Emissions

1. MINING OPERATIONS - PM EMISSIONS FROM CONVEYOR TRANSPORT FROM PIT-TO-PLANT

Description:

Fugitive dust from conveyor transport of raw materials from pit-to-plant. The controlled emission factor for PM is taken from AP-42, Table 11.19.2-2. The controlled emission factor is appropriate based on the typical moisture content of the material. From the dredge, mined materials are transferred to the aggregate processing plant via 13 conveyor transfers, comprising 6 floating conveyors (i.e., FC-1 thru FC-6), 1 floating water to land conveyor transfer, 1 jump conveyor, and 6 overland conveyor transfers (i.e., PC-1 thru PC-6). One additional overland conveyor transfer may be needed for future mining.

Production Assumptions:

Annual production:	1,204,819	tons mined (max)	Qty. of Conveyor Transfers:	15	from mining area to plant (existing plus one)
% of Material Transport by Conveyor:	80%				
% of Material Transport by Truck to Conveyor:	20%		Production Days per Year:	260	days (52 weeks per year)
Tons Transported by Conveyor:	963,855	tons	Conveyed Tons per Day:	3,707	tons (average)
Tons Transported by Truck and Conveyor:	240,964	tons	Conveyed Tons per Hour:	463	tons (based on 8 hours of operation)

Conveyor PM Emissions Calculations:

Pollutant	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
PM10	4.60E-05	0.32	2.56	665.06	0.33
PM2.5	1.30E-05	0.09	0.72	187.95	0.09

APPENDIX C: PROJECT MODELS AND INPUTS
C-2. Pit-to-Plant Material Transport Emissions

2. MINING OPERATIONS - PM EMISSIONS FROM TRUCK TRANSPORT TO CONVEYOR

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% is used for water suppression.

Estimating Assumptions:

Tons per day:	927	tons per day
Tons per year:	240,964	tons
Tons per truck:	40	tons
Average distance traveled onsite:	5,000	feet (round-trip to feed hopper)
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	98.0	tons (based on avg of 78 tons empty, 118 tons loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	3.16	0.32

VMT Estimates:

	Daily	Annual
Haul Trucks	22	5,705

PM Emissions Estimate from Haul Truck Transport:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	69.27	18,010.3	9.0	6.93	1,801.03	0.90
Abated	20.78	5,403.09	2.70	2.08	540.31	0.27

APPENDIX C: PROJECT MODELS AND INPUTS
C-2. Pit-to-Plant Material Transport Emissions

3. MINING OPERATIONS - GREENHOUSE GAS EMISSIONS FROM CONVEYOR ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use of the existing conveyor between mining area and plant. Electricity consumption estimate per ton per CEMEX based on historical energy use. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average kWh per ton:	0.68	kWh per ton
Average annual kWh:	655,421	kWh per year

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
655,421	655	2.68	0.033	0.004	0.80	0.010	0.001	1.48

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:

Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix C-3: Aggregate Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

1. DREDGE AND AGGREGATE PLANTS - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:

The dredge's on-vessel processing equipment list (Plant 1) per CEMEX. The aggregate plant equipment list (Plant 2) is also per CEMEX AggFlow and generally matches the YSAQMD Permit to Operate P-26-92(a3), valid thru 7/22/2022. All conveyed material passes thru scalping screen S-1 to plant surge pile at 600 tph. Plant surge tunnel feeds primary screen S-2 at 700 tph. From screen S-2, plant thruput distributed approximately 315 tph (45%) to concrete sands and wash loss to silt ponds, 280 tph (40%) to secondary screen S-4 to coarse natural aggregates, and 105 tph (15%) via crusher CR-1 and secondary screen S-3 to crushed products. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	1,204,819	tons
% of Annual Production: Plant 1 (Dredge Plant):	80%	
% of Annual Production: Plant 2 (Aggregate Plant):	100%	
Annual Production: Plant 1 (Dredge Plant):	963,855	tons
Annual Production: Plant 2 (Aggregate Plant):	1,204,819	tons

Stockpile Area (acres): 43 acres (estimated per aerial photographs)

PM10 EMISSIONS

				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - SP 1	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	7.40E-04	0.44	4.44	713.25	0.36
Dewatering Screens - SP 2	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	7.40E-04	0.44	4.44	713.25	0.36
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	1,204,819	0.0087	5.22	52.20	10,481.93	5.24	7.40E-04	0.44	4.44	891.57	0.45
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	1,204,819	0.0087	6.09	48.72	10,481.93	5.24	7.40E-04	0.52	4.14	891.57	0.45
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	180,723	0.0024	0.25	2.02	433.74	0.22	0.00054	0.0567	0.4536	97.59	0.05
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	180,723	0.0087	0.91	7.31	1,572.29	0.79	7.40E-04	0.08	0.62	133.74	0.07
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	481,928	0.0087	2.44	19.49	4,192.77	2.10	7.40E-04	0.21	1.66	356.63	0.18
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	1,204,819	0.0011	0.77	6.16	1,325.30	0.66	4.60E-05	0.03	0.26	55.42	0.03
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	481,928	0.0011	0.92	7.39	1,590.36	0.80	4.60E-05	0.04	0.31	66.51	0.03
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	542,169	0.0011	0.35	2.77	596.39	0.30	4.60E-05	0.01	0.12	24.94	0.01
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	542,169	0.0011	0.35	2.78	2,385.54	1.19	4.60E-05	0.01	0.12	99.76	0.05
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	180,723	0.0011	1.73	13.86	2,981.93	1.49	4.60E-05	0.07	0.58	124.70	0.06
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8,004.45	4.00
						TOTALS:		**32.52**	**340.20**	**79,494.77**	**39.75**		**3.28**	**43.51**	**12,173.37**	**6.09**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-3. Aggregate Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Dredge On-Board Screening Plant																
Dewatering Screens - Set 1	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	0.00005	0.03	0.30	48.19	0.02
Dewatering Screens - Set 2	Screening	2	50%	300	3,000	481,928	0.0087	5.22	52.20	8,385.55	4.19	0.00005	0.03	0.30	48.19	0.02
Plant 2: Aggregate Plant																
Screen S-1 - Scalping Screen	Screening	1	100%	600	6,000	1,204,819	0.0087	5.22	52.20	10,481.93	5.24	0.00005	0.03	0.30	60.24	0.03
Screen S-2 - Primary Screen	Screening	1	100%	700	5,600	1,204,819	0.0087	6.09	48.72	10,481.93	5.24	0.00005	0.04	0.28	60.24	0.03
Crusher CR-1 - Cone Crusher	Primary crushing[1]	1	15%	105	840	180,723	0.0024	0.25	2.02	433.74	0.22	0.0001	0.01	0.08	18.07	0.01
Screen S-3 - Secondary Screen	Screening	1	15%	105	840	180,723	0.0087	0.91	7.31	1,572.29	0.79	0.00005	0.01	0.04	9.04	0.00
Screen S-4 - Secondary Screen	Screening	1	40%	280	2,240	481,928	0.0087	2.44	19.49	4,192.77	2.10	0.00005	0.01	0.11	24.10	0.01
Conveyor Surge to S-2	Conveyor transfers	1	100%	700	5,600	1,204,819	0.0011	0.77	6.16	1,325.30	0.66	1.30E-05	0.01	0.07	15.66	0.01
Process / Product Conveyors Set 1	Conveyor transfers	3	40%	280	2,240	481,928	0.0011	0.92	7.39	1,590.36	0.80	1.30E-05	0.01	0.09	18.80	0.01
Conveyor S-2 to S-4	Conveyor transfers	1	45%	315	2,520	542,169	0.0011	0.35	2.77	596.39	0.30	1.30E-05	0.00	0.03	7.05	0.00
Process / Product Conveyors Set 2	Conveyor transfers	4	45%	79	632	542,169	0.0011	0.35	2.78	2,385.54	1.19	1.30E-05	0.00	0.03	28.19	0.01
Process / Product Conveyors Set 3	Conveyor transfers	15	15%	105	840	180,723	0.0011	1.73	13.86	2,981.93	1.49	1.30E-05	0.02	0.16	35.24	0.02
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	3.05	73.10	26,681.50	13.34	5.10E-01	0.91	21.93	8004.45	4.00
						TOTALS:		**32.52**	**340.20**	**79,494.77**	**39.75**		**1.12**	**23.74**	**8,377.46**	**4.19**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment. Dredge operates 10 hours per day. Aggregate plant operates 8 hours per day (starting at Screen S-2).
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

2. AGGREGATE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,846	tons per day (average)
Tons per year:	1,000,000	tons sold
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	260	days (52 weeks per year)
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	117	30,303

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	207.71	54,004.07	27.00	20.77	5,400.41	2.70
Abated	62.31	16,201.22	8.10	6.23	1,620.12	0.81

APPENDIX C: PROJECT MODELS AND INPUTS
C-3. Aggregate Plant Emissions

3. DREDGE AND AGGREGATE PLANTS - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at dredge and aggregate plant. Electricity consumption assumptions per CEMEX based on PG&E records. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

Electricity Use:

Average annual kWh: 4,449,170 kWh per year x 1.48**

Aggregate Plant Electricity Use (2021): 1297831 kWh   Max Tons: 1,204,819   Scaling factor: 1.48
Dredge Electricity Use (2021): 1708365 kWh

** Project kWh estimated to be up to 60% higher than 2021 baseline based on project max production assumptions

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
4,449,170	4,449	2.68	0.033	0.004	5.41	0.07	0.01	10.08

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Notes:
Emission factor for CO2 from 2021 The Climate Registry, Table 3.8, for Pacific Gas & Electric (2019), as corroborated by PG&E 2021 climate change sustainability report.
Emission factors for CH_4 and N_20 from 2021 The Climate Registry, Tables 3.1 (for eGRID subregion for California), for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Appendix C-4:
Ready-Mix Concrete Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-4. Ready-Mix Concrete Plant Emissions

1. RMC PLANT - PM EMISSIONS FROM CONCRETE BATCHING

Description:

PM emissions from ready-mix concrete plant. The ready-mix plant assumptions are per CEMEX. Plant operates approximately 38 days per year. Maximum hourly thruput of approximately 150 CY/hr; however, plant rarely operates at max production capacity. Annual production for project model is scaled up by 28% based on comparison of project to baseline aggregate plant production (tons sold). Emission factors and material composition from AP-42, Table 11.12-2 and BAAQMD Permit Handbook (2021).

Production Assumptions:

Cubic yards per hour:	38	cubic yards
Cubic yards per day:	307	cubic yards (based on 38 days per year)
Cubic yards per year:	11,649	cubic yards (based on 38 days per year)
Tons per hour:	77	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per day:	617	tons (at 4,024 lbs per cubic yard per AP-42)
Tons per year:	23,438	tons (at 4,024 lbs per cubic yard per AP-42)
Stockpile Area (acres):	-	acres (no stockpiling independent of agg plant)

Material Composition:

Coarse Aggregate Percentage:	1,865	lbs per cy =	46.35%	percent
Sand Percentage:	1,428	lbs per cy =	35.49%	percent
Cement Percentage:	491	lbs per cy =	12.20%	percent
Cement Supplement Percentage:	73	lbs per cy =	1.81%	percent
Water Percentage:	167	lbs based on 20 gal. =	4.15%	percent
Total:	**4,024**		100.00%	percent

Source: AP-42, Table 11.12-2, end note "a".

PM10 EMISSIONS													
	Process Rate			**Uncontrolled PM10**					**Controlled PM10**				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	36	286	10,863	0.0033	0.12	0.94	35.85	0.02	0.00099	0.04	0.28	10.75	0.01
Sand Transfer	27	219	8,318	0.00099	0.03	0.22	8.23	0.00	0.000297	0.01	0.07	2.47	0.00
Cement Unloading	9	75	2,860	0.47	4.42	35.37	1,344.15	0.67	0.00034	0.00	0.03	0.97	0.00
Cement Supplement Unloading	1	11	425	1.1	1.54	12.31	467.72	0.23	0.0049	0.01	0.05	2.08	0.00
Weigh Hopper Loading	77	617	23,438	0.0028	0.22	1.73	65.63	0.03	0.00084	0.06	0.52	19.69	0.01
Mixer Loading (Truck Mix)	77	617	23,438	0.31	23.90	191.21	7,265.89	3.63	0.0263	2.03	16.22	616.43	0.31
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.7	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**30.22**	**241.78**	**9,187.47**	**4.59**		**2.15**	**17.17**	**652.40**	**0.33**

Notes:

1. For PM-10 controlled, watering is used for dust control therefore a 70% abatement efficiency is applied (BAAQMD Permit Handbook, 2021, at p. 197).

2. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

PM2.5 EMISSIONS													
	Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
AP-42 Source Description	Tons per hour	Tons per day	Tons per year	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Aggregate Transfer	36	286	10,863	0.0005	0.02	0.14	5.43	0.00	0.0005	0.02	0.14	5.43	0.00
Sand Transfer	27	219	8,318	0.00015	0.00	0.03	1.25	0.00	0.00015	0.00	0.03	1.25	0.00
Cement Unloading	9	75	2,860	0.07	0.66	5.27	200.19	0.10	0.00005	0.00	0.00	0.14	0.00
Cement Supplement Unloading	1	11	425	0.17	0.24	1.90	72.28	0.04	0.0007	0.00	0.01	0.30	0.00
Weigh Hopper Loading	77	617	23,438	0.0004	0.03	0.25	9.38	0.00	0.0004	0.03	0.25	9.38	0.00
Mixer Loading (Truck Mix)	77	617	23,438	0.047	3.62	28.99	1,101.60	0.55	0.0039	0.30	2.41	91.41	0.05
Wind Erosion (Aggregate/Sand Piles)[2]	N/A	N/A	N/A	1.70	-	-	-	-	0.51	-	-	-	-
			TOTALS:		**4.57**	**36.58**	**1,390.13**	**0.70**		**0.35**	**2.84**	**107.90**	**0.05**

Notes:

1. For PM-2.5, where BAAQMD Permit Handbook (derived from AP-42) indicates No Data (ND) the corresponding uncontrolled PM-2.5 emission factor is used.

2a. Wind erosion factors from AP-42, Section 13.2.5, Industrial Wind Erosion. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, a maximum abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

2b. For wind erosion, AP-42 and BAAQMD do not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, BAAQMD's PM10 factor is applied.

3. Emission factors obtained by referencing speciation profile in PM3431 which states PM2.5 = 15% of PM10 (BAAQMD Permit Handbook, 2021, at p. 197).

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

2. RMC PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic. The equation for the PM10 emission factor for fugitive dust from vehicle travel on a dry paved road is equation 1 from AP-42, Chapter 13.2.1.3. A PM10 control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport). Vehicle traffic conservatively assumed to consist of heavy trucks for caclulating emissions factor.

Estimating Assumptions:

Tons per day:	617	tons
Tons per year:	23,438	tons
Tons per truck:	18.1	tons (at 9 cubic yards per truck and 4,024 lbs per cubic yard per AP-42)
Average distance traveled onsite:	1,500	feet
Active days per year:	38	days per CEMEX
Particle Size Multiplier - PM10 (k):	0.0022	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.00054	lb/VMT (based on the average PM2.5:PM10 ratio of test runs in AP-42 Reference 30)
Road Surface Silt Loading (sL):	12	g/m^2 (silt loading for concrete batching)
Average Weight of Vehicles (W):	24.0	tons (conservatively based on avg. of 15 ton empty, 33 ton loaded)
PM_{10} control efficiency:	70%	percent

Emission Factor:

E=k(sL)^0.91x(W)^1.02

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	0.54	0.13

VMT Estimates:

	Daily	Annual
RMC Mixer (Haul) Trucks	10	368

Emissions Estimate from Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	5.22	198.52	0.10	1.28	48.73	0.02
Abated	1.57	59.56	0.03	0.38	14.62	0.01

3. RMC PLANT - GREENHOUSE GAS EMISSIONS FROM ELECTRICITY USE (INDIRECT)

Description:

Greenhouse gas emissions estimate for electricity use at CEMEX's ready mix concrete plant. Electricity use for the existing plant provided by CEMEX (2012-2021). Electricity use estimated at 10.3 kWh/year/CY avg. based on baseline power consumption. Emission factors per 2021 The Climate Registry for PG&E (2019) for CO2 and CalEEMod Appendix D, Default Data Tables, June 2021, Table 1.2 for CH4 and N20.

		Emission Factors (lb/MWh)			Emissions (MT/year)			
kWh/year	**MWh/year**	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
119,988	120	2.68	0.033	0.004	0.15	0.00	0.00	0.27

Notes:

Emission factors from CalEEMod User Guide, Appendix D, Table 1.2, Electrical Utility Emissions Factors of Greenhous Gases, for Pacific Gas & Electric.
kWh = kilowatt-hour; MWh = megawatt-hour; MT = metric tons
CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Conversion Factor (lbs to metric tons)

1 MT =	2204.62	lb

Global Warming Potential (to calculate CO_2e)

CO_2 =	1
CH_4 =	34
N_2O =	298

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

4. RMC PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria and GHG pollutant emissions from heavy equipment operation, including aggregate feed and feed bin cleanup. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Front-end loader	1	Cat 988G	2001	475	0.37	4
Skid-steer loader (bobcat)	1	Cat 262D	2001	72	0.37	2

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Front-end loader	0.96	8.77	0.38	0.38	4.80	0.05	568.30	0.09
Skid-steer loader (bobcat)	1.58	9.03	0.78	0.78	4.16	0.06	568.30	0.14
		TOTALS:						

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2: 1

CH4: 34

$N_2$0: 298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Front-end loader	1.48	13.56	0.59	0.59	7.42	0.08	878.93	0.14
Skid-steer loader (bobcat)	0.19	1.06	0.09	0.09	0.49	0.01	66.61	0.02
TOTALS:	**1.67**	**14.62**	**0.68**	**0.68**	**7.91**	**0.08**	**945.55**	**0.16**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Front-end loader	0.03	0.26	0.01	0.01	0.14	0.00	15.15	0.00	15.23
Skid-steer loader (bobcat)	0.00	0.02	0.00	0.00	0.01	0.00	1.15	0.00	1.16
TOTALS:	**0.03**	**0.28**	**0.01**	**0.01**	**0.15**	**0.00**	**16.29**	**0.00**	**16.39**

5. RMC PLANT - VEHICLE IDLING

Description:

On-road vehicle emissions associated with vehicle idling, assuming idling times of up to 5 minutes per vehicle (truck). Emission factors from EMFAC 2021. Production assumptions from CEMEX.

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):

Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/vehicle/day for idling emission rates

Region	Vehicle Category	Model Year	Speed	Fuel	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	T7 Tractor	Aggregated	Aggregated	DSL	3.454	46.942	45.569	0.082	8738.535	0.160	0.018	0.018	1.376

Notes:

T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck

Production Assumptions:

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Daily Max Production - RMC Plant:	617	tons
Annual Operating Days:	38	days

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907
5-min per 8-hr day	0.010

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-4. Ready-Mix Concrete Plant Emissions

Annual Emissions Calculation:

								Greenhouse Gases			
On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	N_20 (MT/yr)	C02e (MT/yr)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Mixer trucks (finish product)	T7 Tractor	34	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.12
		TOTALS:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.13**	**0.00**	**0.00**	**0.14**

Daily Emissions Calculation:

On-road Mobile Source (Idling)	Class	Vehicles/ Day	ROG (lb/day)	NOX (lb/day)	CO (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Haul trucks (agg import) - @0%	T7 Tractor	0	-	-	-	-	-
Haul trucks (cement / fly ash) - @14%	T7 Tractor	3	0.00	0.00	0.00	0.00	0.00
Mixer trucks (finish product)	T7 Tractor	34	0.00	0.04	0.04	0.00	0.00
		TOTALS:	**0.00**	**0.04**	**0.04**	**0.00**	**0.00**

Appendix C-5: Recycle Plant Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

1. RECYCLE PLANT - PM EMISSIONS FROM PROCESSING AND WIND EROSION

Description:
The recycle plant equipment list is based on a typical 375 ton per hour portable plant capacity. Emission factors from AP-42, Table 11.19.2-2.

Production Assumptions:

Annual production:	30,003	tons	Stockpile Area (acres):	5	acres
% of Annual Production: Plant 1 (Recycle Plant):	100%		Annual production days:	10	days at 3,000 tons per day
Annual Production: Plant 1 (Recycle Plant):	30,003	tons			

PM10 EMISSIONS																
				Process Rate			Uncontrolled PM10					Controlled PM10				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.00054	0.05076	0.405	4.05	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	0.000046	0.02	0.14	1.38	0.00
Primary Screen	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	4.60E-05	0.02	0.14	1.38	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.00054	0.16	1.30	12.96	0.01
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	4.60E-05	0.05	0.41	4.14	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	4.60E-05	0.03	0.28	2.76	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	7.40E-04	0.28	2.22	22.20	0.01
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**1.00**	**9.66**	**1,001.83**	**0.50**

Notes:
1. Per AP-42, no data available for primary or secondary crushing, but emission factors for PM-10 for tertiary crushers can be used as an upper limit.
2. Tons per hour per unit of equipment.
3. Tons per day per unit of equipment.
4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.
5. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

PM2.5 EMISSIONS																
				Process Rate			Uncontrolled PM2.5					Controlled PM2.5				
Equipment	AP-42 Source Description	Qty	Total Assumed Throughput Allocation	Tons per hour[2]	Tons per day[3]	Tons per year[4]	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)	AP-42 Emission Factors (lb/ton)	Emissions (lb/hr)	Emissions (lb/day)	Emissions (lbs/yr)	Emissions (tons/yr)
Plant 1: Recycle Plant																
Jaw Crusher	Primary crushing[1]	1	25%	94	750	7,501	0.0024	0.23	1.80	18.00	0.01	0.0001	0.01	0.08	0.75	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.3E-05	0.00	0.04	0.39	0.00
Primary Screens	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Process / Product Conveyors	Conveyor transfers	1	100%	375	3,000	30,003	0.0011	0.41	3.30	33.00	0.02	1.30E-05	0.00	0.04	0.39	0.00
Cone Crusher	Secondary crushing[1]	1	80%	300	2,400	24,002	0.0024	0.72	5.76	57.60	0.03	0.0001	0.03	0.24	2.40	0.00
Process Conveyors	Conveyor transfers	3	100%	375	3,000	30,003	0.0011	1.24	9.90	99.01	0.05	1.30E-05	0.01	0.12	1.17	0.00
Process / Product Conveyors	Conveyor transfers	4	50%	190	1,500	15,002	0.0011	0.84	6.60	66.01	0.03	1.30E-05	0.01	0.08	0.78	0.00
Feeder / Grizzly	Screening	1	100%	375	3,000	30,003	0.0087	3.26	26.10	261.03	0.13	0.00005	0.02	0.15	1.50	0.00
Stockpile Wind Erosion																
	Wind Erosion[5]	N/A	N/A	N/A	N/A	N/A	1.7	0.35	8.50	3,102.50	1.55	5.10E-01	0.11	2.55	930.75	0.47
						TOTALS:		**10.72**	**91.36**	**3,931.18**	**1.97**		**0.22**	**3.44**	**939.63**	**0.47**

Notes:

1. Per AP-42, no data available for primary or secondary crushing, but PM10 emission factors for tertiary crushers can be used. For PM-2.5, where AP-42 indicates No Data (ND), the PM-10 emission factor is used.

2. Tons per hour per unit of equipment.

3. Tons per day per unit of equipment.

4. Tons per year is calculated by the average estimated percentage feed to each plant, assigned to individual pieces of equipment per CEMEX.

5a. Wind erosion factors per AP-42, Fourth Edition, Section 8.19, Table 8.19.1-1. Factor of 1.7 lb/acre/day PM10 can be used. If watering is used to suppress dust, an abatement efficiency of 70% may be used, reducing the factor to 0.51 lb/acre/day PM10.

5b. For wind erosion, AP-42 does not provide a separate suggested emission factor for PM2.5. Therefore, to be conservative, the PM10 factor is applied.

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

2. RECYLE PLANT - PM EMISSIONS FROM ON-SITE VEHICLE TRAFFIC

Description:

Fugitive dust from truck traffic to support recycle operations. The equation for the PM emission factor for fugitive dust from truck traffic on unpaved roads is equation 1a from AP-42, Chapter 13.2.2. A PM control efficiency of 70% will be used for water suppression. Production assumed to equal sales (truck transport).

Estimating Assumptions:

Tons per day:	3,000	tons per day (average)
Tons per year:	30,003	tons
Tons per truck:	25	tons
Average distance traveled onsite:	4,000	feet
Active days per year:	10	days
Particle Size Multiplier - PM10 (k):	1.5	lb/VMT
Particle Size Multiplier - PM2.5 (k):	0.15	lb/VMT
Surface Material Silt Content (s):	4.8	percent
Empirical constant a (a):	0.9	per table 13.2.2-2
Empirical constant b (b):	0.45	per table 13.2.2-2
Mean vehicle weight (W):	27.5	tons (based on avg of 15 ton empty, 40 ton loaded)
PM control efficiency:	70%	percent

Emission Factor:

E=k(s/12)^a(W/3)^b

	PM10	PM2.5
E=	lbs/VMT	lbs/VMT
	1.78	0.18

VMT Estimates:

	Daily	Annual
Aggregate Haul Trucks	91	909

PM Emissions Estimate from On-Site Vehicle Traffic:

	PM10			PM2.5		
	lbs/day	lbs/year	tons/year	lbs/day	lbs/year	tons/year
Unabated	162.01	1,620.28	0.81	16.20	162.03	0.08
Abated	48.60	486.09	0.24	4.86	48.61	0.02

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

3. RECYCLE PLANT - EMISSIONS FROM PORTABLE PROCESSING PLANT ENGINES

Description:

Criteria pollutant and GHG emissions from track-mounted portable processing plant engines. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.
Engine model year 2021 assumed for future operation.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Feeder / Screen	1	Metso LT ST4.8 (75 kW)	2021	100	0.78	8
Crusher	1	Metso LT220D (310 kW)	2021	540	0.78	8
Stacker Conveyor	1	Metso LT CT3.2 (36 kW)	2021	51	0.78	8

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Feeder / Screen	0.44	2.99	0.18	0.18	3.71	0.01	568.30	0.04
Crusher	0.27	1.61	0.06	0.06	1.07	0.01	568.30	0.02
Stacker Conveyor	0.44	2.99	0.18	0.18	3.71	0.01	568.30	0.04

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
$N_2$0:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Feeder / Screen	0.60	4.10	0.24	0.24	5.09	0.01	780.16	0.05
Crusher	1.99	11.91	0.41	0.41	7.95	0.04	4212.87	0.18
Stacker Conveyor	0.31	2.09	0.12	0.12	2.60	0.00	397.88	0.03
TOTALS:	**2.89**	**18.10**	**0.78**	**0.78**	**15.64**	**0.05**	**5390.91**	**0.26**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Feeder / Screen	0.00	0.02	0.00	0.00	0.03	0.00	3.54	0.00	3.55
Crusher	0.01	0.06	0.00	0.00	0.04	0.00	19.11	0.00	19.13
Stacker Conveyor	0.00	0.01	0.00	0.00	0.01	0.00	1.80	0.00	1.81
TOTALS:	**0.01**	**0.09**	**0.00**	**0.00**	**0.08**	**0.00**	**24.45**	**0.00**	**24.49**

APPENDIX C: PROJECT MODELS AND INPUTS
C-5. Recycle Plant Emissions

4. RECYCLE PLANT - EMISSIONS FROM OFF-ROAD HEAVY EQUIPMENT

Description:

Criteria pollutant emissions from heavy equipment operation, including raw materials feed and stockpile management. Emission factors and load factors per CalEEMod Appendix D, Default Data Tables, June 2021, Tables 3.3 and 3.4.

Equipment	Qty	Model	Model Year	HP	Load Factor	Hrs/Day
Loader	1	Cat 980	2018	380	0.36	4
Excavator	1	Cat 330	2018	250	0.38	8
Excavator - Rock Breaker	1	Cat 330	2018	250	0.38	4

Notes:

1. Load factors per CalEEMod Appendix D, Table 3.3, based on the weighted average horsepower (by equipment population) and load factors for the mode of the engine groupings in OFFROAD2011.

	Emissions Factors (g/bhp-hr)							
Equipment	ROG	NOx	PM10	PM2.5	CO	SO2	CO2	CH4
Loader	0.33	3.73	0.14	0.13	1.87	0.01	484.57	0.15
Excavator	0.20	2.59	0.08	0.07	1.15	0.01	490.26	0.15
Excavator - Rock Breaker	0.20	2.59	0.08	0.07	1.15	0.01	490.26	0.15

Notes:

1. Emissions factors per CalEEMod Appendix D, Table 3.4, Offroad Equipment Emission Factors.

Conversion Factors:

1 g =	0.0022	lb
MT / ton =	0.907	

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

CO2e = *1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

APPENDIX C: PROJECT MODELS AND INPUTS

C-5. Recycle Plant Emissions

Daily Emissions Calculation:

Equipment	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO (lb/day)	SO2 (lb/day)	CO2 (lb/day)	CH4 (lb/day)
Loader	0.40	4.49	0.17	0.16	2.25	0.01	583.34	0.18
Excavator	0.33	4.33	0.13	0.12	1.92	0.02	819.71	0.25
Excavator - Rock Breaker	0.17	2.17	0.07	0.06	0.96	0.01	409.86	0.13
TOTALS:	**0.90**	**10.99**	**0.37**	**0.33**	**5.14**	**0.04**	**1812.92**	**0.56**

Annual Emissions Calculation:

							Greenhouse Gases		
Equipment	ROG (tons/yr)	NOx (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	CO2 (MT/yr)	CH4 (MT/yr)	CO2e (MT/yr)
Loader	0.00	0.02	0.00	0.00	0.01	0.00	2.65	0.00	2.67
Excavator	0.00	0.02	0.00	0.00	0.01	0.00	3.72	0.00	3.76
Excavator - Rock Breaker	0.00	0.01	0.00	0.00	0.00	0.00	1.86	0.00	1.88
TOTALS:	**0.00**	**0.05**	**0.00**	**0.00**	**0.03**	**0.00**	**8.22**	**0.00**	**8.31**

Appendix C-6:
On-Road Mobile Source Emissions

APPENDIX C: PROJECT MODELS AND INPUTS
C-6. On-Road Mobile Source Emissions

1. ON-ROAD MOBILE SOURCE EMISSIONS

Description:

On-road vehicle emissions associated with vehicle travel. Emission factors from EMFAC 2021. Production assumptions and average customer and employee trip distances from CEMEX. Cement and fly ash supplied by CEMEX West Sacramento terminal. Aggregates used in ready-mix production are fed directly into plant feed bins by front-end loader (with no off-site imports).

EMFAC2021 (v1.0.2) Emission Rates (Yolo County):
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: g/mile for emission rates; miles for trip distance
Speed Selections: Average speed of 45 mph assumed for light-duty vehicle trips (gas) and 35 mph for truck trips (diesel).

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Trip Distance (one-way)	ROG	CO	NOx	SOx	CO2	CH4	PM10	PM2.5	N20
Yolo	2022	LDA	Aggregated	45	GAS	44.7	0.009	0.856	0.048	0.003	265.796	0.002	0.001	0.001	0.005
Yolo	2022	LDT1	Aggregated	45	GAS	44.7	0.029	1.761	0.150	0.003	314.820	0.006	0.002	0.002	0.011
Yolo	2022	LDA/LDT1	Average	45	GAS	44.7	0.014	1.082	0.074	0.003	278.052	0.003	0.001	0.001	0.007
Yolo	2022	MDV	Aggregated	35	DSL	9.0	0.014	0.231	0.062	0.004	398.067	0.001	0.007	0.006	0.063
Yolo	2022	T7 Tractor	Aggregated	35	DSL	31.2	0.040	0.199	2.166	0.015	1584.085	0.002	0.010	0.009	0.250

Notes:
LDA/LDT1 average represents the weighted average factor assuming 75% LDA and 25% LDT1 for passenger vehicle travel.
LDA = Passenger cars
LDT1 = Light-Duty Trucks (GVWR <6000 lbs. and ETW <= 3750 lbs)
MDV = Medium-Duty Trucks (GVWR 6000-8500 lbs)
T7 Tractor = Heavy-Heavy Duty Diesel Tractor Truck
Trip distance based on EMFAC reported VMT divided by trips, except for T7 Tractor trip distances adjusted for customer deliveries per CEMEX.

APPENDIX C: PROJECT MODELS AND INPUTS
C-6. On-Road Mobile Source Emissions

Production Assumptions:

Annual Production - Agg Plant:	1,000,000	tons sold
Annual Production - RMC Plant:	23,438	tons (based on ~2 tons per CY)
Annual Production - Recycle Plant:	30,003	tons
Annual Operating Days - Agg Plant:	260	days (52 weeks per year)
Annual Operating Days - RMC Plant:	38	days
Annual Operating Days - Recycle Plant:	7	days

Tons per truck - haul trucks:	25	tons
Tons per truck - mixer trucks:	18	tons (9 CY at ~2 tons per CY)
Maintenance / service visits:	2	per day per plant average

Conversion factors:

grams/lb:	453.592
grams/ton:	907,184
MT/ton:	0.907

Global warming potential (to calculate CO2e):

CO2:	1
CH4:	34
N_2O:	298

*CO2e = 1 * CO2 + 34 * CH4 + 298 * N20*

** Per Table 3-1 of the Final 2017 Clean Air Plan (BAAQMD April 19, 2017).*
GWP values in Table 3-1 are based on IPCC climate carbon feedback values from the IPCC 5th Assessment Report (AR5).

Annual Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/yr	ROG (tons/yr)	NOX (tons/yr)	CO (tons/yr)	PM10 (tons/yr)	PM2.5 (tons/yr)	Greenhouse Gases CO2 (MT/yr)	CH4 (MT/yr)	N_2O (MT/yr)	C02e (MT/yr)
Aggregate Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		22	511,368	0.01	0.04	0.61	0.00	0.00	142.16	0.00	0.00	143.20
Haul trucks (finish product)	T7 Tractor			2,496,000	0.11	5.96	0.55	0.03	0.02	3,953.07	0.00	0.62	4,139.16
Maintenance / service vehicle	MDV			9,360	0.00	0.00	0.00	0.00	0.00	3.73	0.00	0.00	3.90
Ready Mix Concrete Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	6,794	0.00	0.00	0.01	0.00	0.00	1.89	0.00	0.00	1.90
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		81,253	0.00	0.19	0.02	0.00	0.00	128.69	0.00	0.02	134.74
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		8,663	0.00	0.02	0.00	0.00	0.00	13.72	0.00	0.00	14.37
Maintenance / service vehicle	MDV			1,368	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.57
Recycle Plant													
Employee Commute	LDA (75%) and LDT1 (25%)		2	1,252	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.35
Haul trucks (import recycle feed)	T7 Tractor			74,887	0.00	0.18	0.02	0.00	0.00	118.60	0.00	0.02	124.19
Haul trucks (finish product)	T7 Tractor			74,887	0.00	0.18	0.02	0.00	0.00	118.60	0.00	0.02	124.19
Maintenance / service vehicle	MDV			252	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.11
			TOTALS:	**3,266,085**	**0.13**	**6.57**	**1.22**	**0.03**	**0.03**	**4,481.45**	**0.01**	**0.69**	**4,686.67**

Notes:
Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.
Employee estimates per CEMEX.

APPENDIX C: PROJECT MODELS AND INPUTS
C-6. On-Road Mobile Source Emissions

Daily Emissions Calculation:

On-road Mobile Source	EMFAC Source	T7 Tractor VMT/Trip	Employees	VMT/day	ROG (lbs/day)	NOX (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Aggregate Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		22	1,967	0.06	0.32	4.69	0.01	0.01
Haul trucks (finish product)	T7 Tractor			9,600	0.85	45.84	4.21	0.21	0.19
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
Ready Mix Concrete Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.43	0.00	0.00
Haul trucks (agg import) - @0%	T7 Tractor	0		-	-	-	-	-	-
Mixer trucks (finish product)	T7 Tractor	31.2		2,138	0.19	10.21	0.94	0.05	0.04
Haul trucks (cement / fly ash) - @14%	T7 Tractor	33.0		228	0.02	1.09	0.10	0.01	0.00
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
Recycle Plant									
Employee Commute	LDA (75%) and LDT1 (25%)		2	179	0.01	0.03	0.43	0.00	0.00
Haul trucks (import recycle feed)	T7 Tractor			10,698	0.94	51.09	4.69	0.24	0.21
Haul trucks (finish product)	T7 Tractor			10,698	0.94	51.09	4.69	0.24	0.21
Maintenance / service vehicle	MDV			36	0.00	0.00	0.02	0.00	0.00
			TOTALS:	**35,795**	**3.02**	**159.71**	**20.24**	**0.74**	**0.67**

Notes:

Cement and fly ash supplement accounts for approximately 14% of ready-mix concrete.

Employee estimates per CEMEX.

Appendix C-7:
Energy Use Calculations

APPENDIX C: PROJECT MODELS AND INPUTS

C-7. Energy Use Calculations

Emission Factors per Fuel Unit

Gasoline	8.78	kg CO2/gal
Diesel (Distallate No. 2)	10.21	kg CO2/gal

Source: 2021 Default Emission Factors, Table 1.1. The Climate Registry (May 2021).

Mobile Source Equipment:	Fuel	MTCO2e	kg CO2	Est. Fuel Gallons
Mining Operations				
Off-Road (App. C-1)	Diesel	1341.64	1,341,640.00	131,404.51
On-Road Worker Trips (App. C-1)	Gasoline	27.40	27,400.00	3,120.73
Dredge and Aggregate Plant Operations				
Off-Road Equipment (App. C-3)	Diesel	585.43	585,431.16	57,339.00
Vehicle Idling (App. C-3)	Diesel	3.81	3,813.40	373.50
Ready-Mix Plant Operations				
Off-Road Equipment (App. C-4)	Diesel	16.39	16,385.78	1,604.88
Vehicle Idling (App. C-4)	Diesel	0.14	136.65	13.38
Recycle Plant Operations				
Portable Processing Plant Engines (App. C-5)	Diesel	24.49	24,487.68	2,398.40
Off-Road Equipment (App. C-5)	Diesel	8.31	8,307.43	813.66
On-Road Mobile Source Emissions				
On-Road (App. C-6)	Gasoline	145.45	145,453.68	16,566.48
On-Road (App. C-6)	Diesel	4,541.22	4,541,217.68	444,781.36
TOTALS:	**Diesel**	**6,521.42**	**6,521,419.79**	**638,728.68**
TOTALS:	**Gasoline**	**172.85**	**172,853.68**	**19,687.21**

Plant and Conveyor Equipment	Power Source	kWh/year
Conveyor (App C-2)	Electricity	655,421
Dredge and Aggregate Plants (App C-3)	Electricity	4,449,170
Ready-mix Plant (App C-4)	Electricity	119,988
TOTALS:		**5,224,579**

APPENDIX H

BIOLOGICAL RESOURCES UPDATE

CEMEX CACHE CREEK MINE

Biological Resources Update

Project
1076 CMX

Zentner Planning and Ecology

120A Linden Street
Oakland, CA 94607

Prepared for:
CEMEX

Date Issued:
February 22, 2018

CEMEX Cache Creek Mine

Biological Resources Update

I. INTRODUCTION

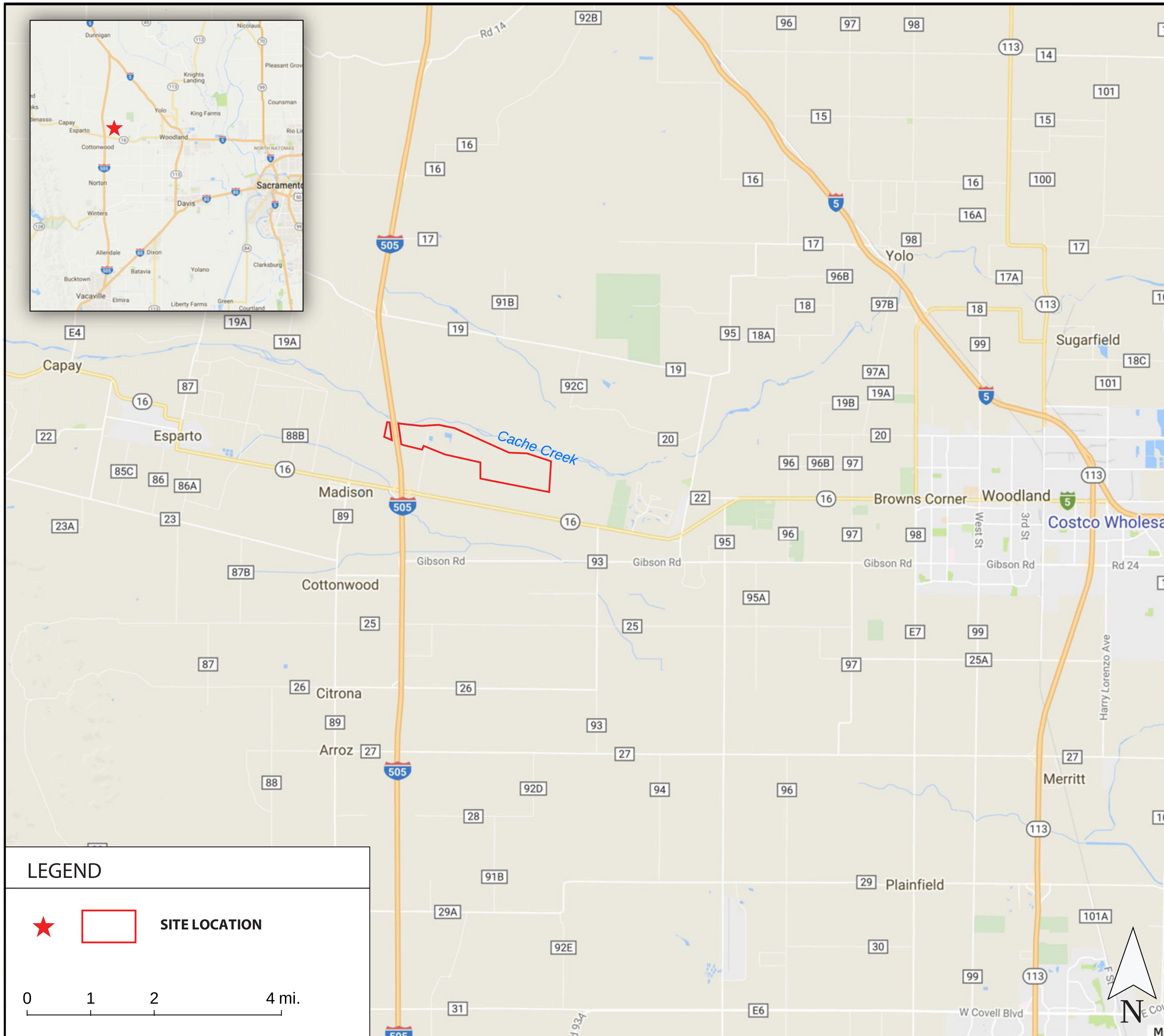
A. Purpose

Zentner Planning and Ecology completed this Biological Resources Update in support of the CEMEX Construction Materials Pacific, LLC. (CEMEX) Cache Creek Mining Permit and Reclamation Plan Amendment Project (Project). Specifically, CEMEX proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20-year time extension.

The biological resources update was completed to assess the site for the presence of, and the potential habitat for, wildlife and special status species. Where appropriate, species protection measures are recommended. In addition to a recent site survey in conjunction with this review, Zentner Planning and Ecology has been completing monitoring surveys annually for the last 20 years.

B. Location and Site Description

The CEMEX Cache Creek Mine (sometimes referred to as the Madison Quarry or Madison Plant) is an active sand and gravel mining operation on ±586 acres between Highway 16 and Cache Creek (**Figure 1**). Interstate 505 marks the sites western boundary, with the exception of a small amount of site (i.e., Phase 7) lying west of the Interstate. Just east of the existing aggregate processing plant is a former mined pit that has already been reclaimed to agricultural production. Further to the east are active mine pits, some of which are open water as a result of permitted excavation into groundwater. The southern bank of Cache Creek is buffered from the active pits by at least a 200-foot buffer.



LEGEND

★ SITE LOCATION

0 1 2 4 mi.

ZENTNER
Planning & Ecology

120A Linden Street, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 1
SITE
LOCATION

CEMEX
CACHE CREEK MINE
Madison, California

BY: **CJL**

PROJECT: **1076**

BASE MAP:
GOOGLE MAPS 2017

FILE:
D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1076 Cache Creek\Adobe\1076 site location 17-11-09

DATE: **12/13/2017, 03:45 pm**

C. Site Conditions

The site consists primarily of mining and agricultural land that is in various stages of mining, farming, and reclamation. Agricultural production on and around the site are mainly row crops. Riparian vegetation forms a relatively narrow band on the southern bank of Cache Creek (north side of the mine), which drops about 35 feet below the agricultural plain where mining is taking place. Remnant sections of riparian habitat lay in depressions within the 200-foot buffer between the Creek and the mining pits. Annual grassland with sections of ruderal vegetation is found around the perimeter of the agricultural and actively mined areas as well as in much of the 200-foot buffer.

Photo 1: View of an active mine pit with ponded water. October 2017

II. REGULATORY FRAMEWORK

A. Federal Endangered Species Act

The Federal Endangered Species Act (FESA) forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

- ♦ Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.
- ♦ Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.
- ♦ Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.
- ♦ Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The U.S. Fish and Wildlife Service (USFWS) enforces all other cases.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' occupied habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3).

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain an incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. The Section 7 consultation process applies only to actions taken by federal agencies, or actions by private parties that require federal agency permits, approval, or funding (for example, a private landowner applying to the U.S. Army Corps of Engineers (Corps) for a permit). Section 7's consultation process is triggered by a determination of the "action agency" (i.e., the federal agency that is carrying out, funding, or approving a project) that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation with the USFWS is required.

B. California Endangered Species Act

In 1984, the State enacted the California Endangered Species Act (CESA) (California Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats.

If proposed projects would result in impacts to a State listed species, an "incidental take" permit pursuant to §2081 of CDFG Code would be necessary (versus a Federal incidental take permit for Federal listed species). For species listed under both state and federal ESA, the CDFW can instead issue a Consistency Determination with the federal permit. No §2081 permit may authorize the take of a fully protected species for which the Legislature has imposed strict prohibitions on all forms of "take."

C. Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 703-711) makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill, attempt to transport (import or export) any migratory bird including any part, nest, or egg of any such bird. Essentially, the law includes all species of birds, not just those typically considered migratory. Rock doves, a.k.a. "pigeons" (*Columba livia*) and European starlings (*Sturnus vulgaris*) are the only birds that are exceptions to this law.

III. RESULTS AND CONCLUSION

A. Methodology

The biological resources in the project area and region were identified through a site assessment and a literature review, completed by Zentner Planning and Ecology in October 2017.

1. Site Analyses

Zentner Planning and Ecology has conducted yearly monitoring and analysis of the site over the last 20 years. We most recently completed a site assessment on October 12, 2017. The site review and survey were conducted to document existing site conditions and assess the site's potential to support special status habitats, plants and wildlife.

2. Literature Review

The literature review provided information on general biological resources, rare or otherwise special habitats, and on the distribution and habitat requirements of plant and animal species ("taxa") that have been reported from or are suspected to occur in the project vicinity. Information was gathered from Zentner Planning and Ecology files and the California Natural Diversity Database (CNDDB) that compiles records of species occurrences from CDFW (California Department of Fish and Wildlife). Other information included the CNPS's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2017) and other sources reflecting the taxa noted above to define a list of special status species that could potentially occur on the project site or in the region. **Figure 2** shows the CNDDB results for special status animal and plant species respectively. See **Appendix A** for more information.

B. Results

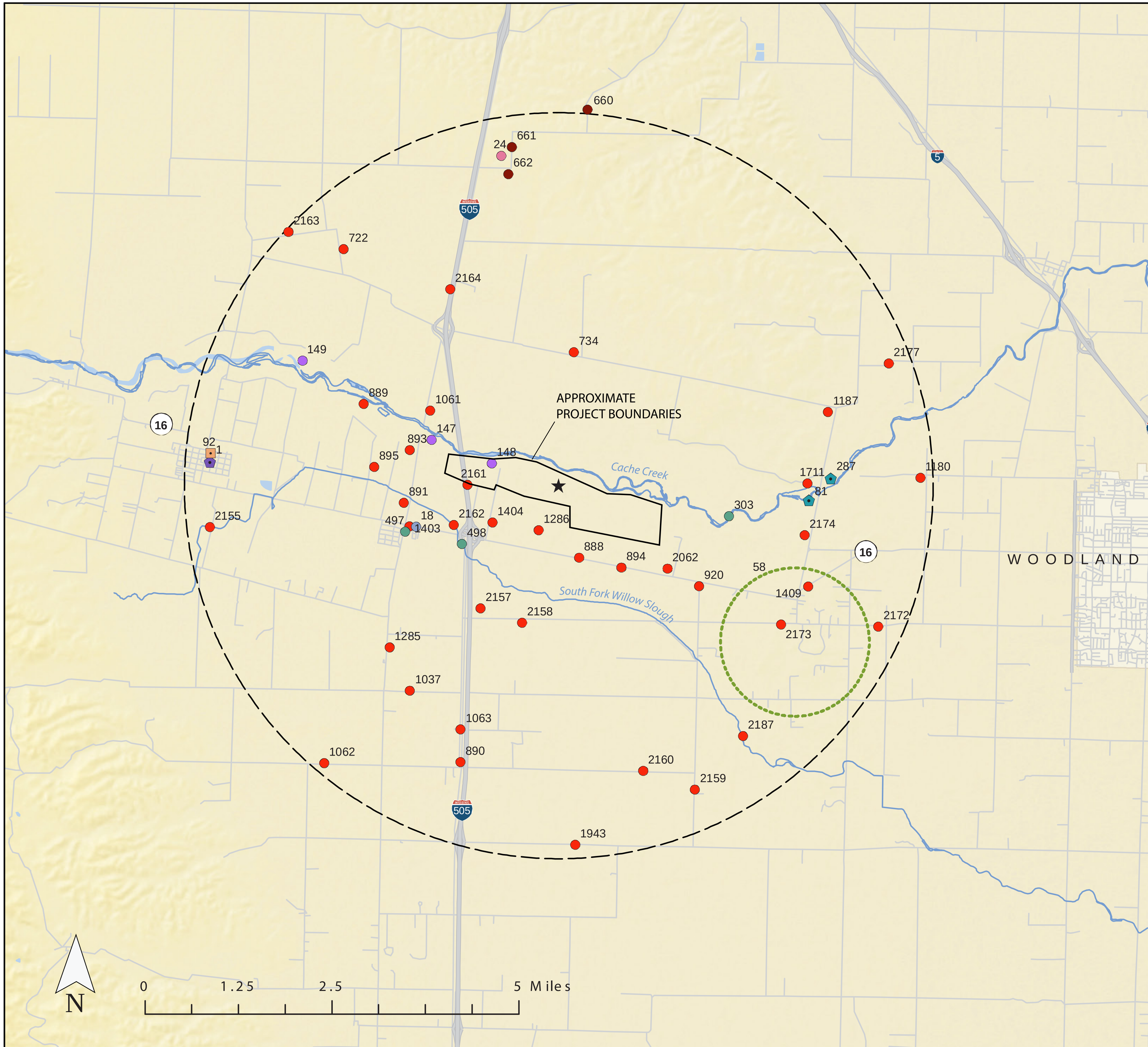
1. Biological Communities

A brief description of the biological communities that are present on the site is provided below. A list of all plant species observed on the site is provided in **Appendix B**.

FIGURE 2
CNDDB Special Status Species Occurrences

ZENTNER Planning & Ecology
120A Linden Street, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

CEMEX CACHE CREEK MINE
Madison, California



LEGEND:

- PROJECT LOCATION
- 5-mile buffer
- black-crowned night heron, *Nycticorax nycticorax*, 18
- Swainson's hawk, *Buteo swainsoni*, 722, 734, 888, 889, 890, 891, 893, 894, 895, 920, 1037, 1061, 1062, 1063, 1180, 1187, 1285, 1286, 1403, 1404, 1409, 1711, 1943, 2062, 2155, 2157, 2158, 2159, 2160, 2161, 2162, 2164, 2172, 2173, 2174, 2177, 2187
- mountain plover, *Charadrius montanus*, 24
- burrowing owl, *Athene cunicularia*, 660, 661, 662
- bank swallow, *Riparia riparia*, 147, 148, 149
- tricolored blackbird, *Agelaius tricolor*, 303, 497, 498, 830
- western red bat, *Lasiurus blossevillii*, 92
- valley elderberry longhorn beetle, *Desmocerus californicus dimorphus*, 81, 284, 287
- Blennosperma vernal pool andrenid bee, *Dandrena blennospermatis*, 1
- California alkali grass, *Puccinellia simplex*, 58

BY: CJL	DATE: 12/13/2017, 03:47 pm
PROJECT: 1076 Cache Creek	
FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1076 Cache Creek\Adobe\1076 CNDDB map 17-10-11	
SOURCE: CNDDB shapefiles October 2017	

a. Perennial Marsh

Perennial marsh is restricted to the periphery of the deeper pools found within Cache Creek. These pools usually are formed within eroded cuts near the toe of the creek banks or within beaver dams that are common throughout the channel. These marshes support deep-rooted perennials such as bulrush (*Schoenoplectus acutus*), cattail (*Typha sp.)* and rushes (*Juncus sp.)*.

b. Riparian

The riparian vegetation on site is primarily located near the toe of the creek banks along Cache Creek. It is also found in old carved out creek meanders on both the north and south banks, with some of the old meanders relatively high in elevation compared to the existing channel bed. A few of these old meanders are located within the project site within a distance of approximately 150 feet of the channel bed. These riparian areas are dominated by various species of willows (*Salix sp.),* Fremont cottonwood (*Populus fremontii*) and mulefat (*Baccharis salicifolia*).

c. Oak Savanna

The oak savanna runs along a relatively narrow band near the top of the southern bank of Cache Creek. This habitat, which is dominated by valley oak (*Quercus lobata*) with an understory of annual grassland, likely covered much of the region in proximity to Cache Creek prior to human disturbance.

d. Annual Grassland

Perennial grassland habitat, along with oak savanna, likely once co-dominated the entire site from the banks of Cache Creek to the southern edge of the property along Highway 16. The existing grassland is dominated by non-native, annual grasses such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut (*Bromus diandrus*), and rye (*Festuca perennis*). It is found along the upper banks of Cache Creek and on the terrace between the creek and the active mining areas and agricultural areas. A more ruderal form of the annual grassland is found along the margins of these mined areas and the agricultural parcels.

e. Ruderal

A portion the annual grassland habitat is dominated by ruderal (weedy) vegetation. These areas are generally located near the CEMEX operating plant or in disturbed areas adjacent to mining or agricultural fields. Habitat in these areas are dominated by thistles (milk thistle, *Silybum marianum*; bull thistle, *Cirsium vulgare*), starthistle (*Centaurea solstitialis*) and other weedy species.

f. Agriculture

The majority of the site consists of agricultural land that is currently being mined or will be mined in the future. Recently the site was in wheat and oat hay crop production. In prior years crops have included corn, sunflowers, and tomatoes.

Photo 2: View of an existing, on-site agricultural field. October 2017

2. Observed Plant and Wildlife Occurrences

The site is primarily agricultural and as such, is dominated by relatively common native species. The site also contains some areas of native species and invasive, non-native species. The complete list of vegetation observed on the site is detailed in **Appendix B**. A relatively small amount of wildlife was observed on the site. This included a Swainson's hawk flying over the site and a number of relatively common bird species, fish, reptiles, and mammal sign that were observed. The complete list of vertebrates is detailed in **Appendix C**.

3. Critical Habitats

No designated critical habitats occur on the site.

4. Special Status Species

A total of nine special status wildlife and one special status plant species are found within five miles of the project site according to CNDDB observations. There is no habitat or nesting habitat on site for four of these ten wildlife and plant species including tricolored blackbird (*Agelaius tricolor*), mountain plover (*Charadrius montanus*), Blennosperma vernal pool andrenid bee (*Andrena blennospermatis*), and California alkali grass (*Puccinellia simplex*). Two other additional species are unlikely to be found on the site including western burrowing owl *(Athene cunicularia)* and black-crowned night heron *(Nycticorax nycticorax; nesting colony)*. While these species are known from the region, there is limited habitat on-site and would likely have been observed in the over 20 years of monitoring the site. In the case of the burrowing owl, few ground squirrels or rodent burrows have ever been identified on the site. In addition, the ongoing site disturbance further reduces their likelihood to occur on the site. In the case of black crowned night heron, habitat is relatively limited and none have been observed, though their colonies are easy to observe and often remain in the same rookeries over many years. Therefore, these species are unlikely to occur on-site.

Four species are either known from the site or there is habitat on the site for which the species depends. These species include bank swallows, Swainson's hawk, valley elderberry longhorn beetle (VELB) and western red bat, which are described in more detail below.

Bank swallow (nesting) *(Riparia riparia)* (ST; BLM:S, IUCN:LC)[1]

Bank swallow nesting in the sheer face of the active mining portion of the Hutson parcel (proposed Project Phase 1) was observed in 1991-1993. Bank swallows were also observed during site monitoring in 2009. They were resting on cables in the east-most active pit on the site, some were actively foraging over the pit, and they were continuing to use nesting holes on the older mine banks in the west and northwest ends of this pit.

Inactive bank swallow nesting holes were also observed on the creek bank within an area slated for bank stabilization in 2010. This work to stabilize the bank was conducted outside of the bank swallow nesting season and with a biological monitor present. This work has since been completed and bank swallows or swallow holes have not been re-observed in the area. However, flood events continue to reshape the slope banks of

[1] The abbreviations used here and throughout this section are defined at Appendix D, pp. D-9 through D-11.

Cache Creek and it is likely that bank swallows will continue to use the sheer faces of the Creek bank that contain appropriate habitat.

Swainson's Hawk *(Buteo swinsoni)* (ST, BLM:S, IUCN:LC; USFWS: BCC)

Swainson's hawks have been routinely observed foraging or flying over the site including each of the last three years. However, there is relatively limited tree nesting habitat for Swainson's hawks on-site. Suitable trees exist within the cottonwoods along the Interstate 505 screen; however, disturbance there and the abundance of other nearby habitat makes nesting relatively unlikely. Suitable trees also occur within the habitat depressions on-site and along the banks of Cache Creek, which both contain relatively tall riparian trees. Though no nesting Swainson's hawks or other nesting raptors have ever been observed on the site, these and other trees within the site contain potential nesting habitat for raptor and other migratory birds.

The Project will not impact any new Swainson's hawk foraging habitats that were not previously analyzed and mitigated for in the 1996 Solano EIR and Existing Entitlements.

Valley Elderberry Longhorn beetle *(Desmocerus californicus dimorphus)* (FT)

The Valley elderberry longhorn beetle (VELB) is entirely dependent on its host plant, blue elderberry (*Sambucus mexicana*), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Elderberries are most abundant on riparian high terraces with recent alluvial substrates elevated slightly above cottonwood and willow-dominated floodplain forests (Barr 1991).

Elderberry plants are known to be present with in the banks of Cache Creek and have the potential to occur within the Wildlife Habitat areas. Because VELB are known from the region, elderberries occurring on site have the potential to host VELB. No elderberries are slated for removal as part of the Project, however and no VELB have been observed on the site.

Western red bat (*Lasiurus blossevillii*) (WBWG:H; DFW:SSC; IUCN:LC)

The western red bat roosts in trees and shrubs adjacent to streams and open fields and in the Central Valley have been noted in agricultural trees (Shump and Shump 1982). They are associated with mature stands of cottonwoods and sycamores in riparian habitats (Pierson et al 2006). Limited potential habitat occurs within the habitat depressions and along the banks of Cache Creek. No trees are scheduled to be removed in these areas.

5. Fisheries

Two federally threatened species, Delta Smelt (*Hypomesus transpacificus*), which is also state threatened, and Central Valley Distinct population segment (DPS) Steelhead (*Oncorhynchus mykiss irideus*) are known from the region. In addition, fall-run Chinook salmon (*Oncorhynchus tshawytscha*), which are a CDFW species of special concern are know from the region as well. All of these species are unlikely to occur in Cache Creek, primarily due to a number of barriers relating to farming, bypasses, and culverts, which block passage upstream. In the case of Delta smelt, Cache Creek also lacks suitable habitat for this species. For the anadromous steelhead and salmon, temperatures and stream flow also discourage use by these species. There is some anecdotal evidence, however, that suggests that during high flooding events when flows in the Yolo Bypass and other areas are very high, a small number of salmon may reach Lower Cache Creek in the vicinity of the project. Ultimately though, the project does not propose mining or reclamation activity in Cache Creek and as such impacts to fisheries are not expected.

C. Species Protection Measures

1. Swainson's Hawk and Other Nesting Bird Protection Measures

Raptors and other protected migratory birds have the potential to nest within the project site. Should active nests be present, tree and shrub removal could result in loss or abandonment of the nest and thereby result in an impact to these species. Therefore, the following measures shall be adopted to reduce the potential impacts.

If trees are to be removed anytime during the raptor and migratory bird nesting/breeding (typically February through August in the project region), a qualified biologist shall conduct a preconstruction survey of the project vicinity for nesting/breeding birds at least 14 days prior to the start of construction activities. The intent of the survey shall be to determine if active raptor nests or other species protected by the Migratory Bird Treaty Act are present within the tree removal zone. The survey area shall include all trees and shrubs within that zone that have the potential to support nesting birds.

If active nests are found in areas that could be directly affected, a no-disturbance buffer zone shall be created around active nests (typically 250 feet for raptors and 50 feet for migratory birds) during the breeding season or until a qualified biologist determines that all young have fledged. Once the young have fledged, tree removal and other construction activities may commence.

2. Bat Protection Measures

Riparian tree removal, if necessary, should occur during the season when bats are generally absent from maternity and winter roosting sites (August 15 through October 15). If activities cannot be conducted during this time frame, then a pre-construction survey of the specific trees to be impacted should be conducted. The survey will determine if the trees support suitable roosting habitat and to determine occupancy of those trees that contain suitable habitat. If bats are found to be present, a plan for removal or exclusion should be developed by a qualified biologist and approved by the CDFW.

3. VELB Protection Measures

The Project is not anticipated to impact elderberry shrubs; however, the following measures are suggested to minimize the potential for any future impacts:

1. A preconstruction survey for elderberry shrubs shall be performed by a qualified biologist prior to the initiation of each phase of mining.

2. If evidence of VELB are found during a preconstruction survey, then, avoidance and minimization measures shall be employed until such time as consultation with USFWS has occurred.

3. Avoided elderberries should be flagged and a protective buffer should be erected around each with orange construction or similar highly visible material. Temporary protective fencing shall ensure a minimum buffer of at least 20 feet from the driplines of the elderberry shrubs during construction.

4. Following consultation with USFWS, the operator shall either maintain avoidance of any occupied elderberry shrubs, or comply with mitigation measures and conditions required by USFWS.

5. Personnel involved with excavation and ground disturbance activities, and on-site supervision of same, will receive environmental awareness training regarding the elderberry shrubs, the status of the beetle, its host plant and habitat.

4. Bank Swallow Protection Measures

Bank swallow surveys should be conducted annually within 14 days of March 1 to ensure that active nesting birds are not present on the site in areas that will be disturbed between March 1 and July 31. In addition, the project will restore, to the extent necessary, the bluffs above the easterly riparian depression as agreed to as part of the Existing Entitlements. This riparian depression was found to be suitable habitat for bank swallows with near-vertical bluffs. Bank swallows were noted as having recently begun nesting in these bluffs as of approximately 1997.

D. Summary Conclusion

The site contains habitat for four special status species. The species protection measures identified in this report detail preconstruction surveys and other measures to ensure adequate species protection.

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APPENDIX A

CNDDB RESULTS

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: BIOS selection

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
ABNGA11010	***Nycticorax nycticorax*** black-crowned night heron	None	None	G5	S4	
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNNB03100	***Charadrius montanus*** mountain plover	None	None	G3	S2S3	SSC
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABPAU08010	***Riparia riparia*** bank swallow	None	Threatened	G5	S2	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Candidate Endangered	G2G3	S1S2	SSC
AMACC05060	***Lasiurus blossevillii*** western red bat	None	None	G5	S3	SSC
IICOL48011	***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle	Threatened	None	G3T2	S2	
IIHYM35030	***Andrena blennospermatis*** Blennosperma vernal pool andrenid bee	None	None	G2	S2	
PMPOA53110	***Puccinellia simplex*** California alkali grass	None	None	G3	S2	1B.2

Record Count: 10

APPENDIX B

PLANT SPECIES OBSERVED

Scientific Name	Common Name	Habitats
Achillea millefolium *	yarrow	g, r
*Asclepias fascicularis**	narrlowleaf milkweed	g
Artemesia douglasiana *	mugwort	r
Arundo donax	giant reed grass	r
Avena fatua	wild oat	r, w, g
*Baccharis pilularis**	coyote bush	g, s
Baccharis salicifolia *	mulefat	r, p
Brassica nigra	black mustard	w, g, r
Bromus diandrus	ripgut grass	w, r, g, s
Bromus hordeaceus	soft chess	w, r, g, s
Bromus madritensis	compact brome	w, r, g, s
Carduus pycnocephalus	Italian thistle	w, r, g, s
Centaurea solstitialis	yellow starthistle	w, r, g, s
Chenopodium album	lamb's quarters	r
Cirsium vulgare	bull thistle	w
Conium maculatum	poison hemlock	r
Conyza canadensis *	horse weed	r, g
Croton setigerus *	dove weed	r, g
Crypsis schoenoides	water timothy	r, p
*Cyperus eragrostis**	tall flat sedge	r, p
Datura sp. *	jimsonweed	g, s
Dittrichia graveolens	stinkwort	w, r, g, s
Elymus glaucus *	blue wild-rye	g, s, r
Elymus triticoides *	creeping wildrye	g, r, s
Eschscholzia californica *	California poppy	g, s
Erodium botrys	broad-leaved storksbill	w, g
Festuca microstachys *	6-weeks fescue	g, r
Festuca myuros	rattail fescue	g, w
Festuca bromoides	brome fescue	g, w
Festuca perennis	ryegrass	r, g, w
Geranium dissectum	cut-leaved geranium	g
Grindelia camporum *	gumplant	g
Heliotropium sp. *	Heliotrope	g, s
Helminthotheca echiodes	prickly ox tongue	r, g, w
Hirschfeldia incana	shortpod mustard	r, g, w

Hordeum brachyantherum *	meadow barley	r, g
Hordeum leporinum	hare barley	g, w
Juglans hindsii *	California walnut	s
Juncus sp. *	rush	r, p
Lepidium latifolium	perennial pepperweed	r, s, w, g
Lythrum hyssopifolia	hyssop loosestrife	p
Marrubium vulgare	white horehound	r
Medicago polymorpha	bur clover	g
Nicotiana glauca	tree tobacco	r, s
Polypogon monspelliensis	rabbitsfoot grass	r, p
Populus fremontii *	Fremont cottonwood	r
Quercus lobata *	valley oak	s
Raphanus sativus	wild radish	w, g
Rumex crispus	curly dock	r, g
Saccarum ravennae	ravennagrass	r
*Salix exigua**	grey willow	r
*Salix lasiolepis**	arroyo willow	r
*Salix laevigata**	red willow	r
Salix gooddingii *	black willow	r
Salsola tragus	Russian thistle	w
*Sambucus nigra**	blue elderberry	r, s
*Schoenoplectus acutus**	bulrush	p
Silybum marianum	milk thistle	w
*Solidago californica**	goldenrod	r
Sonchus spp.	sow thistle	w
Stipa miliacea var. miliacea	smilo grass	r
*Stipa pulchra**	purple needlegrass	g, s
Tamarix sp.	tamarisk	r
Trifolium hirtum	rose clover	g
*Typha sp.**	cattail	r
*Xanthium strumarium**	cocklebur	r
Xanthium spinosum	prickly cocklebur	r

* = native

Habitat notations:

g = annual grassland
a = agriculture
w = weedy (ruderal)
s = oak savanna
p = perennial marsh
r = riparian (cache creek, depressions)

APPENDIX C

VERTEBRATES RECORDED

FISH

bass (largemouth or smallmouth; *Micropterus sp.*) (found in deep pools within Cache Creek)

AMPHIBIANS

N/A

REPTILES

western fence lizard (*Sceloporus occidentalis*)

BIRDS

Swainson's hawk (*Buteo swainsonii*)	(flying over site)
wild turkey (*Meleagris gallopavo*)	
turkey vulture (*Cathartes aura*)	(flying over site)
red-tailed hawk (*Buteo jaaicensis*)	(flying over site)
American crow (*Corvus brachyrhynchos*)	
blackbird (*Agelaius sp.*)	
sparrow (*Zonotrichia sp.*)	
European starling (*Sturnus vulgaris*)	
house finch (*Carpodacus mexicanus*)	
pigeon *(Columba livia)*	
mourning dove (*Zenaida macroura)*	
American kestrel (*Falco sparverius)*	
black phoebe (*Sayornis nigricans)*	
great egret (*Ardea alba*)	
scrub jay (*Aphelocoma californica*)	

MAMMALS

California ground squirrel (*Spermophilus beecheyi*)	(burrows)
jackrabbit (*Lepus californicus)*	*(tracks)*
gopher (*Thomomys sp.*)	(mounds)
blacktail deer (*Odocoileus hemionus columbianus)*	(tracks)
beaver (*Castor canadensis)*	(dams)
coyote (*Canis latrans*)	(scat)
racoon (*Procyon lotor*)	(tracks)

APPENDIX D

SPECIAL STATUS SPECIES DEFINITIONS

DEFINITIONS FOR SPECIAL STATUS SPECIES DESIGNATIONS

Federal Endangered Species Act

The following are the standard definitions for the status designations under the federal Endangered Species Act (ESA), implementing regulations and relevant notices (as published in the Federal Register). The ESA is administered by the U.S. Fish and Wildlife Service (USFWS).

Endangered – A species that is in danger of extinction throughout all or a significant portion of its range.

Threatened – A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Proposed for Listing – Taxa formally noticed as being under review to determine whether listing as threatened or endangered is warranted.

Candidate – Taxa for which USFWS has on file sufficient information on biological vulnerability and threat to support a proposed rule to list the species as endangered or threatened. Proposals to list have not yet been issued because this action is precluded by other listing activity. Species in this category are assigned a listing priority in order to assist the FWS in determining those species most in need of protection.

[Note: As of February 1996, the USFWS eliminated the differing categories of candidate species and now has only one category of candidate species as defined above.]

California Endangered Species Act

The following are the standard definitions for the status classifications under the California Endangered Species Act (CESA), administered by the California Department of Fish and Game (CDFG), now renamed the California Department of Fish and Wildlife (CDFW).

Endangered species – A native California bird, mammal, fish, amphibian, reptile or plant (species or subspecies) is endangered when it is in serious danger of becoming extinct throughout all, or a significant portion of, its range due to one or more causes, including loss of habitat, change of habitat, over-exploitation, predation, competition or disease (CDFW Code, Section 2062).

Threatened species – A native bird, mammal, fish, amphibian, reptile or plant (subspecies or species) is threatened when, although not presently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. Any animal listed as "rare" by the Commission on or before January 1, 1985, is a threatened species (CDFW Code, Section 2067).

Candidate species – A native California species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant is a candidate when the Fish and Wildlife Commission (Commission) has formally noticed it as being under review by the CDFW to determine whether listing as threatened or endangered is warranted, or when it is the subject of a proposed rulemaking by the Commission to list as threatened or endangered (CDFW Code, Section 2068).

California Department of Fish and Game

Fully Protected – Fully Protected species may not be taken or possessed without a permit from the Fish and Wildlife Commission. Information of Fully Protected species can be found in the CDFW Code, (birds at §3511, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515). Additional information on Fully Protected fish can be found in the California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and reptiles in Title 14 has been repealed.

Species of Special Concern – A California species of special concern is a plant or animal species or subspecies that is possibly declining or is vulnerable to extirpation and may be considered for listing or for special management and protection measures. These species, although not legally protected under the CESA, are monitored by the CDFW.

It is the goal and responsibility of the CDFW to maintain viable populations of all native species. To this end, the CDFW has designated certain species as "Species of Special Concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all "Species of Special Concern" have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a "Threatened" or "Endangered" species under the State and/ or Federal Endangered Species Acts.

California Native Plant Protection Act

The California Native Plant Protection Act (CNPPA), administered by the CDFW, protects "rare" plant species.

Rare – A native California plant (species, subspecies or variety) is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens (CDFW Code, Section 1901).

California Native Plant Society (CNPS) List of Rare, Threatened and Endangered Vascular Plants of California

The CNPS maintains a list of rare, threatened and endangered vascular plants of California which summarizes the distribution, rarity, endangerment, and ecology of these plants. CNPS updates this list approximately every four years. The most recent edition (8th ed.) was published in December 2010. The CNPS listing designations are as follows:

California Rare Plant Rank (CRPR) 1A – The plants Ranked as 1A are presumed extinct because they have not been seen or collected in the wild in California for many years. All of the List 1A plants meet the definitions of "rare", "endangered", or "threatened" contained in Fish and Game Code Section 1901 (Native Plant Protection Act), and Sections 2062 and 2067 (CESA).

CRPR 1B – The plants Ranked as 1B are rare throughout their range, and all but a few are endemic to California. List 1B plants are considered vulnerable under present circumstances or have a high potential for becoming so because of their limited or vulnerable habitat, low numbers of individuals per population, or their limited number of populations. As with List 1A plants, all of the 1B plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code.

CRPR 2 – Except for being common outside California, Rank 2 plants are defined similarly to List 1B plants.

CRPR 3 – Rank 3 contains plants about which more information is needed to assign them to one of the other lists or reject them. Some List 3 plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code.

CRPR 4 – The plants in Rank 4 are of limited distribution or infrequent throughout a broader area in California, and their susceptibility to threat appears low at this time. These plants are uncommon enough that their status should be monitored regularly. Very few List 4 plants meet the definitions of "rare", "endangered", or "threatened" contained in Sections 1901, 2062 and 2067 of the Fish and Game Code, and few, if any, are eligible for state listing.

CNPS Threat Code extensions and their meanings:

.1 – Seriously endangered in California

.2 – Fairly endangered in California

.3 – Not very endangered in California

CNPS Local Listings (Alameda and Contra Costa Counties)

***A1** or ***A2** – Species in Alameda and Contra Costa Counties listed as rare, threatened or endangered statewide by federal or state agencies or by the state level of CNPS.

A1x – Species previously known from Alameda or Contra Costa Counties, but now presumed extirpated here.

A1 – Species currently known from two or less regions in Alameda and Contra Costa Counties.

A2 – Species currently known from three to five regions in the two counties, or, if more, meeting other important criteria such as small populations, stressed or declining populations, small geographical range, limited or threatened habitat, etc.

A1? – Species with taxonomic or distribution problems that make it unclear if they actually occur here.

Special Animals

California Department of Fish and Wildlife (CDFW)

Special Animals – Special animals is a general term that refers to all of the taxa that the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species". The CDFW considers the taxa on this list to be those of greatest conservation need and were used in the development of California's Wildlife Action Plan (CDFG 2009). Special animals includes a broad list of agency designations.
For more information see: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf

Watch List – The Watch List consists of taxa that were previously Species of Special Concern (SSC's) but no longer merit SSC status or which do not meet SSC criteria but for which there is concern and a need for additional information to clarify status.

Other "Special Animal" Status Codes:

The status of species on the Special Animals List according to other conservation organizations is provided. Taxa on these lists are reviewed for inclusion in the CNDDB Special Animals List, but are not automatically included. For example, taxa that are regionally rare within a portion of California may not be included, because they may be of lesser conservation concern across their full range in California.

These species, which are also tracked regardless of their legal or protection status, are provided below.

U.S Fish and Wildlife Service (USFWS)

Birds of Conservation Concern – The goal of the Birds of Conservation Concern report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the US Fish and Wildlife Service's highest conservation priorities and draw attention to species in need of conservation action.

National Marine Fisheries Service (NMFS) also known as NOAA Fisheries

Species of Concern – NOAA Fisheries is responsible for the management, conservation, and protection of living marine resources within the United States Exclusive Economic Zone. Species of Concern are those species about which we have some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). Though NMFS wishes to draw proactive attention and conservation action to these species, "Species of concern" status does not carry any procedural or substantive protections under the ESA.

Bureau of Land Management

Sensitive – According to BLM Manual 6840, a Bureau Sensitive Species must meet the following criteria to be considered for sensitive species listing:

- They must be native species found on BLM-administrated lands for which BLM has the capability to significantly affect the conservation status of the species through management.
- Information is available that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range.

- The species depends on ecological refugia or specialized or unique habitats on BLM-administrated lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.
- All federally designated candidate species, proposed species, and delisted species in the 5 years following their delisting shall be conserved as Bureau Sensitive Species.

Once a species is declared sensitive by the BLM, it is their obligation to determine its distribution and manage the species' habitat.

California Dept. of Forestry & Fire Protection

CDF Sensitive – California Department of Forestry and Fire Protection classifies "sensitive species" as those species that warrant special protection during timber operations. The list of "sensitive species" is given in §895.1 (Definitions) of the California Forest Practice Rules.

International Union for Conservation of Nature (IUCN)

IUCN List – The IUCN assesses, on a global scale, the conservation status of species, subspecies, varieties and even selected subpopulations in order to highlight taxa threatened with extinction, and therefore promote their conservation. Detailed information on the IUCN and the Red List is available at: http://www.iucnredlist.org

Marine Mammal Commission

Species of Special Concern – Section 202 of the Marine Mammal Protection Act directs the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, to make recommendations to the Department of Commerce, the Department of the Interior, and other federal agencies on research and management actions needed to conserve species of marine mammals. To meet this charge, the Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants. Such species may include marine mammals listed as Endangered or Threatened under the Endangered Species Act or as depleted under the Marine Mammal Protection Act. In addition, the Commission often directs special attention to other species or populations of marine mammals not so listed whenever special conservation challenges arise that may affect them.

More information on the Marine Mammal Protection Act and the Marine Mammal Species of Special Concern list is available at: http://www.mmc.gov/species/welcome.shtml

U.S Forest Service

Sensitive – USDA Forest Service defines sensitive species as plant and animal species identified by a regional forester that are not listed or proposed for listing under the Federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Regional Foresters identify sensitive species occurring within each region. California is the Pacific Southwest Region (Region 5).
More information is available at: http://www.fs.usda.gov/main/r5/plants-animals and at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5435266.xlsx

North American Bird Conservation Initiative (NABCI)

North American Bird Conservation Initiative Watchlist – The North American Bird Conservation Initiative is a coalition of private organization and government agencies. They work to ensure the long-term health of North America's native bird populations and publish an annual State of the Birds report. The annual State of the Bird report includes a watch list of bird species in need of conservation help and classifies the birds as either Red Watch List or Yellow Watch List species. Species on the Red Watch List have extremely high vulnerability, and Yellow Watch List species are species that may be range restricted or may be widespread but with declines and high threats. More information is available at http://stateofthebirds.org.

American Fisheries Society (AFS)

AFS List – Designations for freshwater and diadromous species were taken from the paper: Jelks,.L., S.J. Walsh, N.M. Burkhead, S.Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J. J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. Fisheries 33(8):372-407. Available at:
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http://www.flmnh.ufl.edu/fish/sharks/sawfish/Reprint1390.pdf

Western Bat Working Group (WBWG)

WBWG List – The WBWG is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and provinces. The goals are (1) to facilitate communication among interested parties and reduce risks of species decline or extinction; (2) to provide a mechanism by which current information on bat ecology, distribution and research techniques can be readily accessed; and (3) to develop a forum to discuss conservation strategies, provide technical assistance and encourage education programs. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America. Because California includes multiple regions where a species may have different WBWG Priority ranks, the CNNDB includes categories for Medium-High, and Low-Medium Priority. The CNDDB tracks bat species that are at least Low-Medium Priority in California. More information is available at: http://www.wbwg.org

The Xerces Society

Red List – The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation. The Society advocates for invertebrates and their habitatsby working with scientists, land managers, educators, and citizens on conservation and education projects. Their core programs focus on endangered species, native pollinators, and watershed health. More information on the Red List is available at:
http://www.xerces.org

Special Status Species Abbreviations

Federal Endangered Species Act

FE	Federally-listed as endangered
FT	Federally-listed as threatened
FPE	Federally proposed for listing as endangered or threatened
FC	Federal candidate for listing as endangered or threatened

State Endangered Species Act

SE	State-listed as endangered
ST	State-listed as threatened
SC	State candidate for listing as endangered or threatened

California Department of Fish and Wildlife

CFP	Fully protected
CSC	California species of special concern

California Native Plant Protection Act

CNPPA: Rare	Rare plant

California Native Plant Society

CRPR	California Rare Plant Rank

SPECIAL ANIMALS (SA)

California Department of Fish and Wildlife

CDFW: WL	Watch list
CDFW: SA	Special Animal

US Fish and Wildlife Service

USFWS:BCC	Birds of Conservation Concern

NMFS (NOAA Fisheries)

NMFS: SC	Species of Concern

Bureau of Land Management

BLM:S	Sensitive

California Dept. of Forestry & Fire Protection

CDFS:S	Sensitive

International Union for Conservation of Nature

IUCN:CD	Conservation Dependent
IUCN:CR	Critically Endangered
IUCN:DD	Data Deficient
IUCN:EN	Endangered
IUCN:LC	Least Concern
IUCN:NT	Near Threatened
IUCN:VU	Vulnerable

Marine Mammal Commission

MMC:SSC	Species of Special Concern

National Marine Fisheries Service

NMFS:SC	Species of Special Concern

U.S Forest Service

USFS:S	Sensitive

Western Bat Working Group

WBWG: H	High priority
WBWG: LM	low-medium priority
WBWG: M	medium priority
WBWG: MH	medium-high priority

Xerces Society Red List

X: CI	Critically imperiled
X: DD	Data deficient
X: IM	Imperiled
X: VU	Vulnerable

North American Bird Conservation Initiative

NABCI: RWL	Red watch list
NABCI: YWL	Yellow watch list

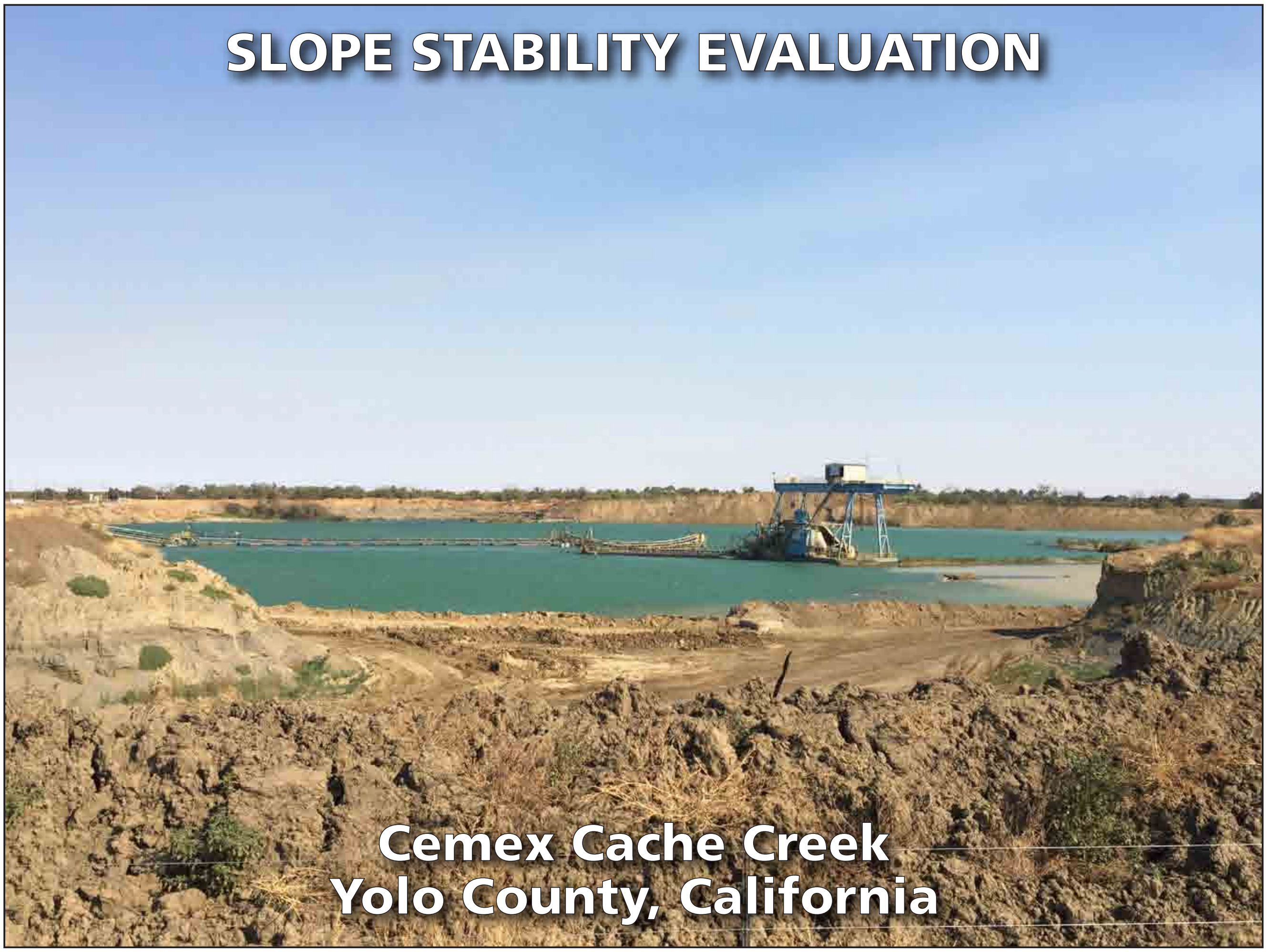
American Fisheries Society

AMS: E	Endangered
AMS: T	Threatened
AMS: V	Vulnerable

APPENDIX I

SLOPE STABILITY EVALUATION

SLOPE STABILITY EVALUATION



Cemex Cache Creek
Yolo County, California

PREPARED FOR:

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC
2365 IRON POINT ROAD, SUITE 120
FOLSOM, CALIFORNIA 95630

PREPARED BY:

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742

GEOCON PROJECT NO. S1294-05-01 **FEBRUARY 2018**

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S1294-05-01
February 22, 2018

VIA ELECTRONIC MAIL

Debbie Haldeman
Regional Natural Resources Manager, Northern California/Nevada
Cemex Construction Materials Pacific, LLC
2365 Iron Point Road, Suite 120
Folsom, California 95630
deborahg.haldeman@cemex.com

Subject: SLOPE STABILITY EVALUATION
CEMEX CACHE CREEK MINE
MINING PERMIT AND RECLAMATION PLAN AMENDMENT PROJECT
YOLO COUNTY, CALIFORNIA

Dear Ms. Haldeman:

In accordance with your authorization of our proposal (Geocon proposal No. S1294-05-01P, dated September 27, 2017), we have performed a geotechnical evaluation of the slopes associated with the Cemex Cache Creek Mine in Yolo County, California. Our study will be used to support the *Mining Permit* and *Reclamation Plan Amendment* Project.

The accompanying report presents our findings, conclusions, and recommendations regarding geotechnical aspects of mining and reclamation slope configurations as presently proposed. Based on the results of our study, the proposed perimeter mining and reclamation slopes are anticipated to meet the performance standards set forth in the *Yolo County Off-Channel Surface Mining Ordinance, Yolo County Surface Mining Reclamation Ordinance* and the California *Surface Mining and Reclamation Act*. In our opinion, the proposed project is feasible from a geotechnical viewpoint provided the recommendations of this report are followed.

Please contact us if you have any questions regarding this report or if we may be of further service.

Sincerely,

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1.0 INTRODUCTION

Geocon Consultants, Inc. has prepared this slope stability evaluation in support of the CEMEX Construction Materials Pacific, LLC. (CEMEX) Cache Creek Mining Permit and Reclamation Plan Amendment Project (Project). Specifically, CEMEX proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20 year time extension. This report presents results of our geotechnical investigation for evaluation of slopes associated with the Cemex Cache Creek Mine (Mine) in Yolo County, California. The approximate site location is shown on the Vicinity Map, Figure 1.

The following geotechnical report was previously prepared for the site: *Slope Stability Analysis, Solano Concrete Madison Plant, Highway 505 and Highway 16, Yolo County, California*, prepared by Kleinfelder, Inc. (File No. 40-2695-01), dated August 1, 1994. The Kleinfelder report was based on 13 exploratory borings performed throughout the site to depths ranging from approximately 45 to 90 feet. The Kleinfelder study also included laboratory testing and numerical slope stability analyses for the proposed mining and reclamation slopes. As part of our study, we have reviewed and incorporated pertinent subsurface and laboratory testing information from the 1994 Kleinfelder report.

The purpose of our study was to further evaluate subsurface conditions, determine pertinent geotechnical parameters, and evaluate slope stability for proposed mining and reclamation slopes under static and dynamic (seismic) conditions with respect to the performance standards outlined in the Yolo County *Off-Channel Surface Mining Ordinance* (OCSMO), Yolo County *Surface Mining Reclamation Ordinance* (SMRO) and California *Surface Mining and Reclamation Act* (SMARA).

To prepare this report, we performed the following scope of services:

- Reviewed published geologic maps, geotechnical reports, and other literature pertaining to the site. A list of referenced material is included in Section 11.0 of this report.
- Reviewed available plans for the project to select areas of exploration.
- Performed a site reconnaissance to review project limits, determine access and mark out exploratory excavation locations for subsequent utility clearance.
- Paid required fees and obtained a soil boring permit from Yolo County Environmental Health Department (YCEHD).
- Notified subscribing utility companies via Underground Service Alert (USA) a minimum of 2 business days prior to performing exploratory excavations at the site.
- Retained the services of a California C57-licensed drilling subcontractor to perform exploratory borings using truck-mounted drilling equipment.
- Performed four exploratory borings (B1 through B4) using a truck-mounted drill rig equipped with hollow-stem auger drilling equipment to depths ranging from approximately 5 to 86 feet.
- Logged the borings in accordance with the Unified Soil Classification System (USCS).

- Obtained soil samples from the borings.
- Performed laboratory tests on selected soil samples to evaluate pertinent geotechnical parameters.
- Performed slope stability and seepage analyses for the proposed mining and reclamation slopes considering both static and seismic conditions.
- Prepared this report summarizing our findings, conclusions and recommendations regarding the geotechnical aspects of the proposed project.

Approximate locations of current and previous subsurface explorations are shown on the Site Plan, Figure 2. Details of our field exploration program including exploratory boring logs (current and previous) are presented in Appendix A. Details of our laboratory testing program and test results are summarized in Appendix B. Details of our slope stability and seepage analyses are summarized in Appendix C. Details of our liquefaction analyses are summarized in Appendix D.

2.0 SITE AND PROJECT INFORMATION

The CEMEX property occupies approximately 1,900 acres south of Cache Creek, and north of State Route 16 both on the west and east sides of Interstate 505 (I-505).

2.1 Existing Entitlements

Under Existing Entitlements, mining is allowed on ±586 acres in seven phases. Mining is currently taking place in Phases 3 and 4, while Phase 1 is in various stages of reclamation. Dewatering for mining purposes is not currently permitted, but may be permitted in the future subject to compliance with OCSMO requirements. The site is currently mined dry and “wet-mined” using a dredge (Photo 1). A typical undisturbed portion of the site (currently used for agriculture) is shown in Photo 2.

Existing Entitlements and the supporting 1994 Kleinfelder Report generally conform to the following plans:

1. *Off-Channel Mining Plans, Madison Plant, Yolo County, California* (21 Sheets) prepared by Cunningham Engineering, dated November 1995.
2. *Off-Channel Reclamation Plans, Madison Plant, Yolo County, California* (22 Sheets) prepared by Cunningham Engineering, dated November 1995.

The 1995 mining plans (Ref. 1) generally show that excavated mining slopes are to be inclined at 1.5H:1V (horizontal to vertical) 5 feet below the Average Low Groundwater (ALG) level and 2H:1V above this level. The 1995 reclamation plans (Ref. 2) show the various pit backfill (reclamation) surfaces within each pit, including “alluvial separators” (or berms) between pits.

We understand that mining activities at the site have differed from the 1995 mining plans in limited areas and that the Project will address these deviations through a set of revised mining and reclamation plans. More specifically, one or more of the intended alluvial separators has been removed by mining.

2.2 Proposed Project

The Project proposes to continue to mine on 489± acres in seven phases and reclamation is proposed to occur on 838± acres of the 1,902± acre property. The maximum mining depth is 70 feet. Reclamation will consist of returning the mined areas to agriculture, permanent lakes and wildlife habitat as detailed in a *Revised Reclamation Plan* prepared by Compass Land Group. The Project includes revised mining plans and a reclamation plan that will include a "constructed" alluvial separator between Phases 3 and 4 and the development of a "natural" alluvial separator between an existing and future mining pit (i.e., between Phases 4 and 5). The "constructed" alluvial separator will be comprised of cobble and gravel mixed with clay (Photos 3 and 4) and the "natural" alluvial separator will consist undisturbed, natural ground between existing and future mining pits. The purpose of the constructed alluvial separator is to re-purpose proposed Phase 3 as a silt pond (to accept and settle process wash fines). The purpose of the future developed natural alluvial separator between proposed Phases 4 and 5 is to facilitate backfilling of Phase 4 for a return to agriculture while maintaining a stable separation for the future open water lake in future Phase 5.

Based on the preliminary revised mining plans (Cunningham Engineering, January 2018), the Project includes seven phases as described in Table 2.2.

TABLE 2.2
MINING DETAILS

Phase	Proposed Mining Areas (acres)	Maximum Pit Depth (feet)	Groundwater Elevation (feet MSL)	
			Avg. High	Avg. Low
Phase 1	*Reclaimed Agricultural Land in Progress – No Additional Mining*			
Phase 2	*No Additional Mining – Area to be used for product stockpiling*			
Phase 3	67	70	114	107
Phase 4	137	70	112	107
Phase 5	135	70	111	105
Phase 6	135	70	108	100
Phase 7	15	35	121	116

Under existing conditions, Phases 1, 3 and 4 encompass the area of the current and previous mining pits, immediate south of Cache Creek. Phase 2 was partially mined (pursuant to allowances under Existing Entitlements) and currently supports existing aggregate product stockpiles. Phases 3 and 4 are in various stages of mining and reclamation. Phases 5, 6, and 7 have not been mined.

Under the proposed Project, no further mining is planned in proposed Phases 1 and 2. The revised mining plan focuses primarily on future mining in Phases 3 through 7. The proposed site configuration and phasing are shown on the Site Plan, Figure 2.

Similar to Existing Entitlements, the proposed Project's mining will create slopes of varying height and inclinations. Some of these mining and reclamation slopes will intercept the groundwater potentiometric surface. The OCSMO Section 10-4.431 stipulates that:

> "Except where benches are used, all banks above groundwater level shall be sloped no steeper than 2:1 (horizontal:vertical). Proposed steeper slopes shall be evaluated by a slope stability study, prepared by a Registered Civil Engineer. Slopes below the groundwater level shall be no steeper than 1:1 (horizontal:vertical). Slopes located five (5) feet or less below the summer low groundwater level shall not be steeper than 2:1 (horizontal:vertical)."

The slope inclinations stipulated by the SMRO Section 10-5.530 are generally consistent with these requirements. However, the SMRO Section 10-5.530 also stipulates that:

> "…the minimum factor of safety for all design reclamation slopes located adjacent to levees or below existing structures shall not be less than 1.5 for static and 1.1 for pseudostatic (seismic) conditions. Other reclamation slopes shall meet a minimum factor of safety that is consistent with the post-reclamation use proposed for the mining area."

Consistent with the OCSMO and SMRO, the Project proposes typical slope mining configurations of 2H:1V to 5 feet below the ALG level and up to 1:1 below this level. Typical mining slope configurations are shown on Figures 3-1 through 3-4.

As mining is completed in each phase, reclamation will generally include filling Phase 3 with mostly pond fines (silt) resultant from onsite aggregate processing as well and filling Phase 4 with excavated/stockpiled overburden and topsoil. In general, Phases 1 through 4 will be reclaimed to agriculture whereas Phases 5 and 6 will be reclaimed as "lakes." Phase 7 will also be reclaimed to agriculture. Phases 1 and 2 are generally already at their finish reclamation design elevation. Phases 3 and 4 are planned to be filled to at least 5 feet above the *Average High Groundwater* (AHG) level.

Reclamation will occur in phases and will require the "constructed" alluvial separator between Phases 3 and 4. The "constructed" alluvial separator will be comprised of cobble (generally 3½ to 7 inches) and gravel mixed with clay (Photos 3 and 4) with side slopes of 4H:1V or flatter. Per Cemex, this material will be placed by dumping and pushing out/contouring using a dozer. A typical "constructed" alluvial separator detail is shown on Figure 3-4. No backfill will be required for the developed natural alluvial separator between Phases 4 and 5. Phase 7 will also be reclaimed to an elevation at least 5 feet above the AHG level.

3.0 SOIL AND GEOLOGIC CONDITIONS

We identified soil and geologic conditions by performing exploratory borings, reviewing the boring logs contained in the 1994 Kleinfelder report, and reviewing the referenced geologic literature (Section 11.0). Soil descriptions provided below include the USCS symbol where applicable.

Based on the *Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills* (Helley and Harwood, 1985), the site is underlain by Holocene-aged stream channel deposits. These depositional and erosional deposits are associated with open, active stream channels and generally consist of unweathered gravel, sand, silt, and clay.

The overburden soil at the site consists of an approximate 5- to 15-foot-thick layer of interbedded silty sand (SM), silt (ML), silty clay (CL-ML), sandy clay (CL), clay (CL), and clayey sand (SC). The gravelly soil below the overburden generally consists of loose to very dense poorly graded sand (SP), poorly graded sand with gravel (SP), poorly graded gravel with sand (GP), and silty gravel with sand (GM), with thin (up to 5 feet) interbedded layers of clay (CL) and poorly graded sand with silt (SP-SM) and scattered small cobbles up to 4 inches. The gravel and cobbles include slightly weathered to fresh metavolcanic and metasedimentary rock with some quartz and chert. The strata proposed for mining overlays a very stiff to hard clay layer.

Based on the available subsurface information, top and bottom elevations of the soil layers are relatively consistent suggesting relatively flat stratigraphy with no significant dip, which is consistent with the erosional/depositional geology of the area. The general subsurface profile at the site is shown on Figures 3-1 through 3-4.

Subsurface conditions described in the previous paragraphs are generalized. The boring logs included in Appendix A contain soil type, color, moisture, consistency/relative density, and USCS classification of the materials encountered at specific locations and elevations.

4.0 GROUNDWATER

We encountered groundwater in Borings B1 and B2 at depths of 25 and 35 feet, respectively, on October 12 and 13, 2017. These depths correspond to approximate groundwater elevations of 105 and 108 feet, which are near the predicted AHG near the boring locations.

Table 4.0 presents the estimated AHG and ALG levels at the site (Luhdorff and Scalmanini, April 2017):

TABLE 4.0
ESTIMATED AVERAGE HIGH AND LOW GROUNDWATER ELEVATIONS

Groundwater Condition	Groundwater Elevation (Feet, MSL)	
	West	East
Average High	113	105
Average Low	108	100

5.0 SEISMICITY AND GEOLOGIC HAZARDS

5.1 Mapped Geologic Hazard Zones

The site is not located in any currently established official geologic hazard zones (e.g. liquefaction, active faulting, landslides) established by the California Geologic Survey (CGS) or the local agency specific plan element.

5.2 Surface Fault Rupture

The numerous faults in Northern California include active, potentially active, and inactive faults. The criteria for these major groups were developed by the CGS for the Alquist-Priolo Earthquake Fault Zone (APEFZ) Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within the last 11,000 years. A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known movement within the past 11,000 years. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not located within a currently established APEFZ. Based on our reconnaissance, evidence obtained in exploratory borings, and our review of geologic maps and reports, no active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site is considered low. The site, however, is located in a seismically active area and could be subjected to ground shaking in the event of an earthquake on one of the many active Northern California faults.

5.3 Seismicity

In order to evaluate the distance of closest known active faults to the site, we reviewed geologic maps and used the computer program *EQFAULT*, (Version 3, Blake, 2000). Principal references used within *EQFAULT* are Jennings (1975), Anderson (1984) and Wesnousky (1986). The results of the query indicate the Great Valley Fault System and a segment of the Dunnigan Hills Fault, located approximately 6 miles to the west and northwest, respectively, are the closest known active faults to the site.

We used the United States Geological Survey (USGS) *Unified Hazard Tool* (https://earthquake.usgs.gov/hazards/interactive/) to determine the deaggregated seismic source parameters including controlling magnitude and fault distance. The USGS estimated modal magnitude is 6.5, the estimated Peak Ground Acceleration (PGA) for the Maximum Considered Earthquake (MCE) with a 2,475-year return period is 0.53g, and the modal distance is 15 km.

We used the online USGS application *Seismic Design Maps* to evaluate the site class modified, design-level Peak Ground Acceleration (PGA_M) for the site, for use in liquefaction and seismic slope stability analysis. The PGA_M for the site is 0.49g.

While listing PGA is useful for comparison of potential effects of fault activity in a region, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the site. The site could be subjected to ground shaking in the event of a major earthquake along the faults mentioned above or other area faults. However, the seismic risk at the site is not considered to be significantly greater than that of other sites in the area.

5.4 Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary loss of shear strength due to pore pressure buildup under the cyclic shear stresses associated with earthquakes. Primary factors that trigger liquefaction are: strong ground shaking (seismic source), relatively clean, loose granular soils (primarily poorly graded sands and silty sands), and saturated soil conditions.

The site is not located in a currently established State of California Seismic Hazard Zone for liquefaction. In addition, we are not aware of any reported historical instances of liquefaction in the project area. However, soil and groundwater conditions exist at the site that may be susceptible to seismic-induced liquefaction.

We evaluated potential for liquefaction in sandy layers located below groundwater using the Standard Penetration Test (SPT)-based approach following the methodology of Youd et al (2001) as outlined in CGS Special Publication 117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California* (CGS, 2008). We used a site class modified Peak Ground Acceleration, PGA_M of 0.49g, an earthquake moment magnitude (Mw) of 6.5, and the AHG groundwater depth of 30 feet (for Boring B1) and 25 feet (for Boring B2).

Our evaluation indicates that sandy soil below groundwater is sufficiently dense to yield a factor of safety against liquefaction greater than 1.3, which is considered to be sufficient resistance against liquefaction per CGS SP117A. Therefore, no special design measures with respect to liquefaction are necessary for the project. Details of our liquefaction analysis are presented in Appendix D.

6.0 SLOPE STABILITY AND SEEPAGE ANALYSIS

Slope stability analyses evaluate the ratio of the resisting forces (predominantly soil shear strength) to the driving forces that would cause a slope failure (predominantly gravity, soil unit weight, slope/strata geometry). The ratio of the summation of driving forces divided by the summation of resisting forces is termed Factor of Safety (FS). A FS of 1.0 indicates that the driving and resisting forces are equal and the slope is a state of impending failure/movement. A FS greater than 1.0 indicates the presence of reserve strength; however, does not guarantee that failure will not occur. Rather, the probability of failure generally decreases as the FS increases. The minimum required FS for slope stability analyses used in this study, consistent with the requirements of the OCSMO and SMRO, are summarized in Table 6.0.

TABLE 6.0
MINIMUM REQUIRED FACTORS OF SAFETY – SLOPE STABILITY ANALYSES

Analysis Condition	Minimum FS[1]
Mining/Temporary Conditions[1]	1.0
Permanent (Reclamation) Conditions - Static	1.5
Permanent (Reclamation) Conditions - Seismic	1.1

Notes:
1. Minimum FS based on OCSMO Section 10-4.431 and SMRO Section 10-5.530.

6.1 Stability Analysis Sections

We evaluated slope stability at four locations considered representative of the anticipated mining and reclamation slope conditions for the project. Details of the analytical sections are summarized in Table 6.1.

TABLE 6.1
STABILITY ANALYSIS SECTIONS

Section ID[1]	Description
S-1	Typical Slope Adjacent to Cache Creek (Phase 4)
S-2	Typical “Natural” Alluvial Separator (Between Phases 4 and 5)
S-3	Typical “Natural” Alluvial Separator at PG&E Easement (Between Phases 5 and 6)
S-4	Typical “Constructed” Alluvial Separator (Between Phases 3 and 4)

Notes:
1. The approximate Section locations are shown on the Site Plan, Figure 2.

6.2 Stability Analysis Material Parameters

To select appropriate material parameters for our slope stability analysis, we used the results of current and previous exploratory borings, laboratory testing, published correlations, engineering judgment, and experience with similar soil conditions on nearby sites. The material parameters used in our analyses are summarized in Table 6.2.

TABLE 6.2
SOIL PARAMETERS FOR SLOPE STABILITY AND SEEPAGE ANALYSIS

Material Type	Total Unit Weight (pcf)	Cohesion, C (psf)	Friction Angle, ϕ (degrees)	Hydraulic Conductivity (ft/sec)	
				Vertical	Horizontal
Overburden Soil	120	250	28	1.5×10^{-7}	1.5×10^{-6}
Gravel	130	50	38	5.2×10^{-4}	5.2×10^{-3}
Clay	120	500	15	1.5×10^{-7}	1.5×10^{-6}
Reclamation Fill – Silt/Fines	120	250	10	n/a	n/a
“Constructed” Alluvial Separator	120	500	15	n/a	n/a

Discussion of the derivation of the parameters shown in Table 6.2 is presented hereinafter.

Overburden Soil. Shear strength parameters for overburden soil were estimated from published correlations based on soil type and our experience with similar soils in the project area. Based on sensitivity analysis, overburden soil parameters (total unit weight, C, ϕ) have a negligible effect on slope stability for this project. Hydraulic conductivity of the overburden soil was estimated using published correlations and laboratory permeability test results previously performed by Geocon on similar soil types.

Gravel. Shear strength parameters for the gravelly soil deposits are based on laboratory direct shear testing and sampling penetration resistance values measured in current and previous borings at the site. The shear strength parameters derived from direct shear test results are considered to be conservative since the materials tested did not include the gravel portion of the samples. To evaluate the appropriate hydraulic conductivity value of the gravelly soil deposits, we compared the hydraulic conductivity values used by Luhdorff and Scalmanini (L&S) in their hydraulic modeling of the site and values based on correlations developed by Alyamani and Sen, *Determination of Hydraulic Conductivity from Complete Grain-Size Distribution Curves*, Groundwater Journal, July-August 1993. Based on the comparison, the L&S hydraulic conductivity values are approximately 2 to 3 times faster than the values estimated using the Alyamani and Sen grain-size correlation method. In a seepage analysis, faster hydraulic conductivity is more likely to result in adverse seepage conditions (e.g. seepage daylighting on a slope above the level of groundwater). Therefore, for consistency with the L&S hydraulic analysis and as a conservative measure, we have used the L&S hydraulic conductivity values for the gravels in our seepage analysis.

Clay. Total and effective shear strength parameters and permeability of the clay are based on the results of our exploratory borings, laboratory triaxial shear strength testing, published index property correlations, comparisons with local data, engineering judgment, and experience. Hydraulic conductivity of the clay soil was estimated using published correlations and laboratory permeability test results previously performed by Geocon on similar soil types.

Reclamation Fill (Silt/Fines). Unit weight of the reclamation fill/pond fines are based on laboratory unit weight and moisture content tests performed on intact samples of these materials located in the Phase 1 area of the site (Boring B4).

"Constructed" Alluvial Separator. Shear strength parameters for the constructed alluvial separator are based on the results of laboratory triaxial shear strength testing on remolded samples of the proposed material provided by Cemex. Given the proposed placement process, we assumed an average relative compaction of approximately 85%.

For the soil layering/stratigraphy, we assumed a generally flat soil layer stratigraphy consistent with the depositional and erosional geology of the site.

6.3 Groundwater/Surface Water Conditions

In limit-equilibrium slope stability analysis, ponded water against a slope tends to increase global slope stability due to the buttressing effect of the mass of water against the slope. As a conservative measure in our analyses of mining slopes, we modeled groundwater conditions using the ALG levels established for the site. For reclamation conditions, we used the AHG levels established for the site. In our seepage analysis of Section 1 (adjacent to Cache Creek), we used the AHG in conjunction with the 200-year water level in Cache Creek. A summary of the groundwater and surface water levels used is presented in Table 6.3.

TABLE 6.3
GROUNDWATER/SURFACE WATER ELEVATIONS FOR ANALYSIS

Section ID	Location	Average High Groundwater Elevation (Feet, MSL)	Average Low Groundwater Elevation (Feet, MSL)	100-Year Water Level in Cache Creek (Feet, MSL)
S-1	Between Phase 4 and Cache Creek	110	104	126.5
S-2	Between Phases 4 and 5	111	105	---
S-3	Between Phases 5 and 6	108	100	---
S-4	Between Phases 3 and 4	111	108	---

6.4 Seismic Forces for Dynamic (Seismic) Slope Stability Analysis

We analyzed dynamic (seismic) slope stability using a pseudo-static approach in which the earthquake load is simulated by an "equivalent" static horizontal acceleration acting on the mass of the slope. This methodology is generally considered to be conservative and is most often used in current practice.

We calculated the seismic coefficient using the procedures presented in *Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California* (CGS 2008). In this procedure, the seismic coefficient is equal to a portion of the design-level PGA_M without the risk coefficient

(PGA_M/1.5). Assuming a 15-cm displacement threshold, a PGA_M of 0.49g (PGA_M/1.5 = 0.33), a modal distance of 15 km, and a modal magnitude of 6.5, the calculated seismic coefficient is 0.1.

6.5 High-Voltage Power Transmission Line Towers

The project site is traversed by a high-voltage power transmission line between Phase 5 and 6 (Site Plan, Figure 2). The current mining and reclamation plans show a minimum 25-foot setback from the towers to the mining slopes. Specific information related to the tower structures and/or foundations was not available for our review. The towers consist of typical lattice tower structures and are likely supported on conventional cast-in-drilled-hole (CIDH) concrete foundations. Based on our experience on similar projects, in our stability analyses, we assumed maximum vertical and horizontal foundation reaction loads of 150 kips and 25 kips, respectively.

6.6 Slope Stability Analysis and Results

We analyzed slope stability using the computer program SLOPE/W, Version 7.22 (Geo-Slope International) for static and seismic conditions using the Morgenstern-Price method of limit-equilibrium analysis considering circular and block failure modes. For the mining and reclamation conditions, we analyzed for “global”, deep-seated failure surfaces that would extend significantly into the dedicated setback areas. We did not evaluate FS for “surficial” or shallow failure surfaces, generally considered to not impact the dedicated setback areas.

Tabulated results of our slope stability analysis (FS against failure) for each slope configuration under the conditions of analysis are summarized in Table 6.6. Graphical representations of the potential critical failure surfaces and parameters used for each stability analysis are presented on Figures C2 through C17 in Appendix C. Results are summarized in Table 6.6.

TABLE 6.6
SLOPE STABILITY ANALYSIS RESULTS

Profile	Slope Details	Operational Condition	Calculated FS	
			Static	Seismic
Section S-1	• Natural Ground/Alluvial Separator • 2H:1V slope to 5 feet below ALG • 1H:1V slope below ALG • Maximum slope height = 70 feet • See Figure 3-1 for slope details • See Figures C2 through C7 for stability analysis details	Mining – Average Low Groundwater, Low Water Level in Cache Creek	1.5	1.1
		Mining – Average High Groundwater/100-Year Water Level in Cache Creek	1.5	1.2
		Reclamation – Average High Groundwater/100-Year Water Level in Cache Creek	2.7	2.0
Section S-2	• Natural Ground/Alluvial Separator • 2H:1V slope to 5 feet below ALG • 1H:1V slope below ALG • Maximum slope height = 70 feet • See Figure 3-2 for slope details • See Figures C8 through C11 for stability analysis details	Mining – Low Groundwater	1.5	1.1
		Reclamation – High Groundwater	2.6	2.0
Section S-3	• Natural Ground/Alluvial Separator • 2H:1V slope to 5 feet below ALG • 1H:1V slope below ALG • Maximum slope height = 70 feet • See Figure 3-3 for slope details • See Figures C12 through C15 for stability analysis details	Mining – Low Groundwater – No Tower Present	1.5	1.1
		Mining – Low Groundwater – Tower with 25-foot setback	1.5	1.1
Section S-4	• Constructed Alluvial Separator • 4H:1V slope • Maximum slope height = 70 feet • See Figure 3-4 for slope details • See Figures C16 and C17 for stability analysis details	"Constructed" Alluvial Separator – Low Groundwater – Backfilled One Side	2.9	1.6

6.7 Seepage Analysis and Results

The proposed north mining/reclamation slopes will be separated (set back) from Cache Creek by a minimum of 200 feet. To model seepage conditions in the north mining/reclamation slopes under influence of a potential 100-year flood event in Cache Creek, we used the computer program SEEP/W, Version 7 (Geo-Slope International) using the geometry at Section S-1, the AHG level (Table 6.3), and the soil hydraulic conductivity values listed in Table 6.2. For stratified soil deposits, the horizontal hydraulic conductivity is greater than the vertical hydraulic conductivity. The typical ratio of vertical to horizontal permeability (Ky/kx) may range from 0.5 (2-times) to 0.1 (10-times) or more. For our analyses, we used a Ky/kx ratio of 0.1 (10-times), which is considered conservative. The purpose of our analysis was to determine if the seepage front would daylight on the slope above the AHG, which could adversely impact slope stability due to increased seepage forces in the slope.

We modeled the transient 100-year water surface elevation (126.5 feet MSL, per Cunningham Engineering, 2016) in Cache Creek for steady-state seepage conditions. The results of our analyses indicate that the seepage front does not intercept the proposed north mining slope at an elevation higher than the AHG level, even when sustained indefinitely. Our seepage analysis results are presented graphically on Figure C1 in Appendix C.

7.0 CONCLUSIONS

7.1 Slope Stability

Based on the results of our study, the proposed mining and reclamation slopes are anticipated to meet the performance standards set forth in the Yolo County *Surface Mining and Reclamation Ordinances* and SMARA.

For the temporary mining slope conditions, static FS against failure ranges from 1.5 to 2.9, which is greater than the minimum required FS of 1.0. For the permanent reclamation slope conditions, static FS against failure ranges from 2.6 to 2.7, which is greater than the minimum required FS of 1.5. Seismic FS for both the mining and reclamation conditions ranges from 1.1 to 2.0, which equals or exceeds the minimum required FS of 1.1.

These results indicate that the project slopes should be globally stable under static and seismic conditions for both temporary mining and permanent reclamation slopes.

7.2 Seepage

Seepage analyses indicates that the seepage front does not intercept the proposed north mining slope at an elevation higher than the average seasonal high groundwater condition, even when sustained indefinitely (steady state conditions). Therefore, anticipated subsurface seepage conditions at the proposed north mining slope under a 100-year Cache Creek flood event are not expected to adversely impact slope stability.

7.3 Pit Capture Potential

Cache Creek floodwaters, when present, do not appear to overtop the south bank of the creek adjacent to the site. Hydrologic and hydraulic models developed by the County and summarized by Cunningham Engineering (2016) indicate that floodwaters are below the top of bank elevations on the south side of the creek. These conditions, combined with the 200-foot setback and the lack of adverse seepage and slope stability conditions based on our analyses suggest that the potential for pit capture is low.

8.0 RECOMMENDATIONS

During mining, exposed gravel slopes are subject to erosion and deterioration and shallow surficial failures should be expected. Such surficial failures should be repaired as soon as practicable prior to additional mining in the immediate area. At a minimum, slope conditions should be observed by an engineering professional at least annually.

In addition, the following measures should be considered:

- Reclamation should occur shortly after mining is complete. Slopes exposed to rain and surface runoff are susceptible to erosion and surficial degradation. Appropriate erosion control measures and best management practice (BMP) devices should be installed to reduce long-term slope degradation.
- Cemex should train onsite workers regarding seismic safety issues, including appropriate actions to be taken during a seismic event.
- During mining operations, Cemex should have sufficient materials and equipment available to repair slopes due to surficial sloughing and/or erosion.

9.0 FURTHER GEOTECHNICAL SERVICES

9.1 Plan Review

We should review the final mining and reclamation plans prior to implementation to ensure that our recommendations have been properly incorporated. If changes are made to the plan during the permitting process or at time of permit approval, then geotechnical re-evaluation may be warranted.

9.2 Future Services

If, during the course of mining and reclamation, sloughing or rills greater than 12 inches deep develop, Geocon should be consulted for mitigation recommendations, as appropriate.

10.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during mining and reclamation, or if the proposed mining and reclamation will differ from that anticipated herein, we should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials or environmental contamination was not part of our scope of services.

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering and engineering geology principles and practices used in the site area at this time. No warranty is provided, express or implied. This report is subject to review and should not be relied upon after a period of three years.

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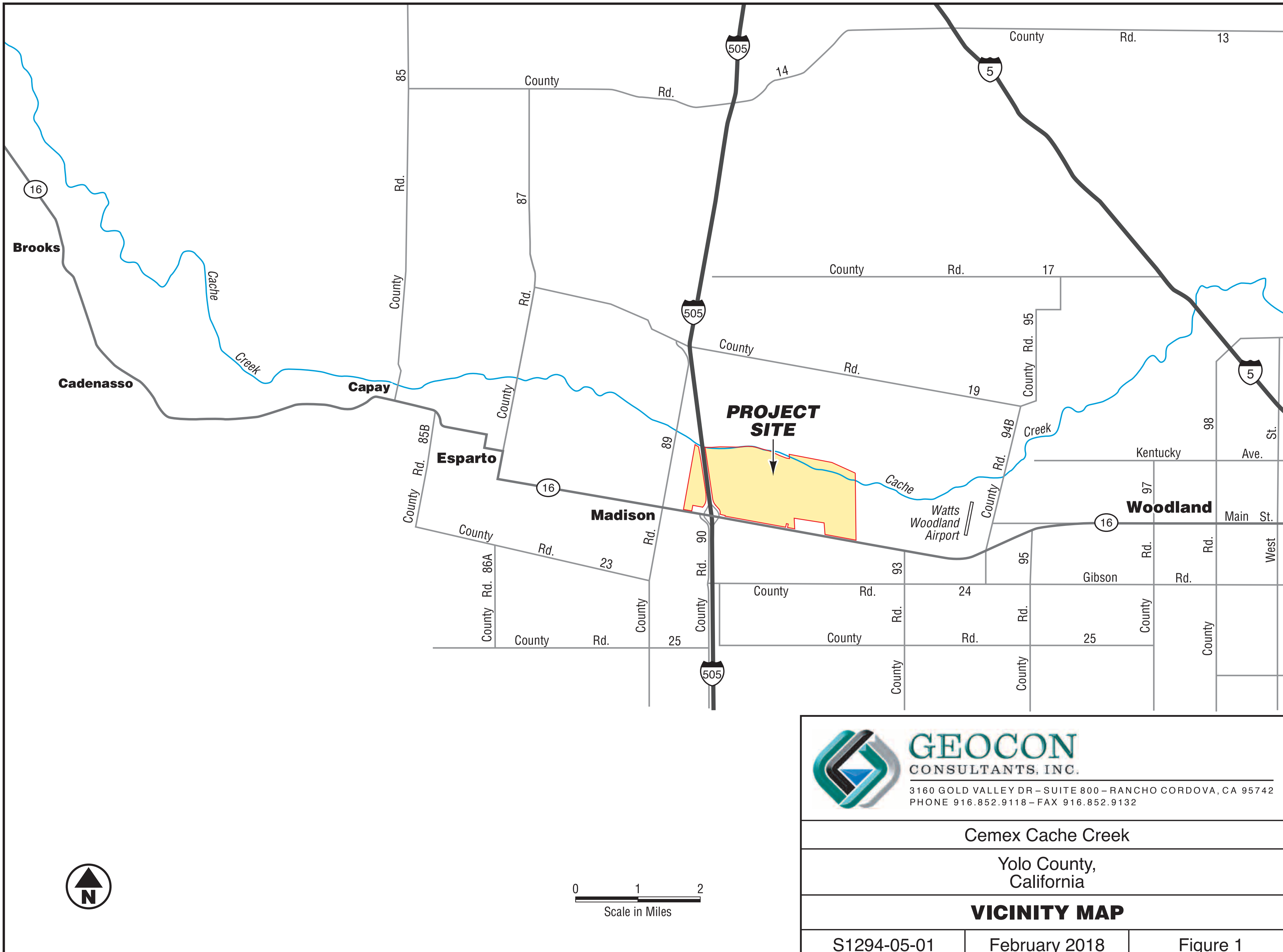

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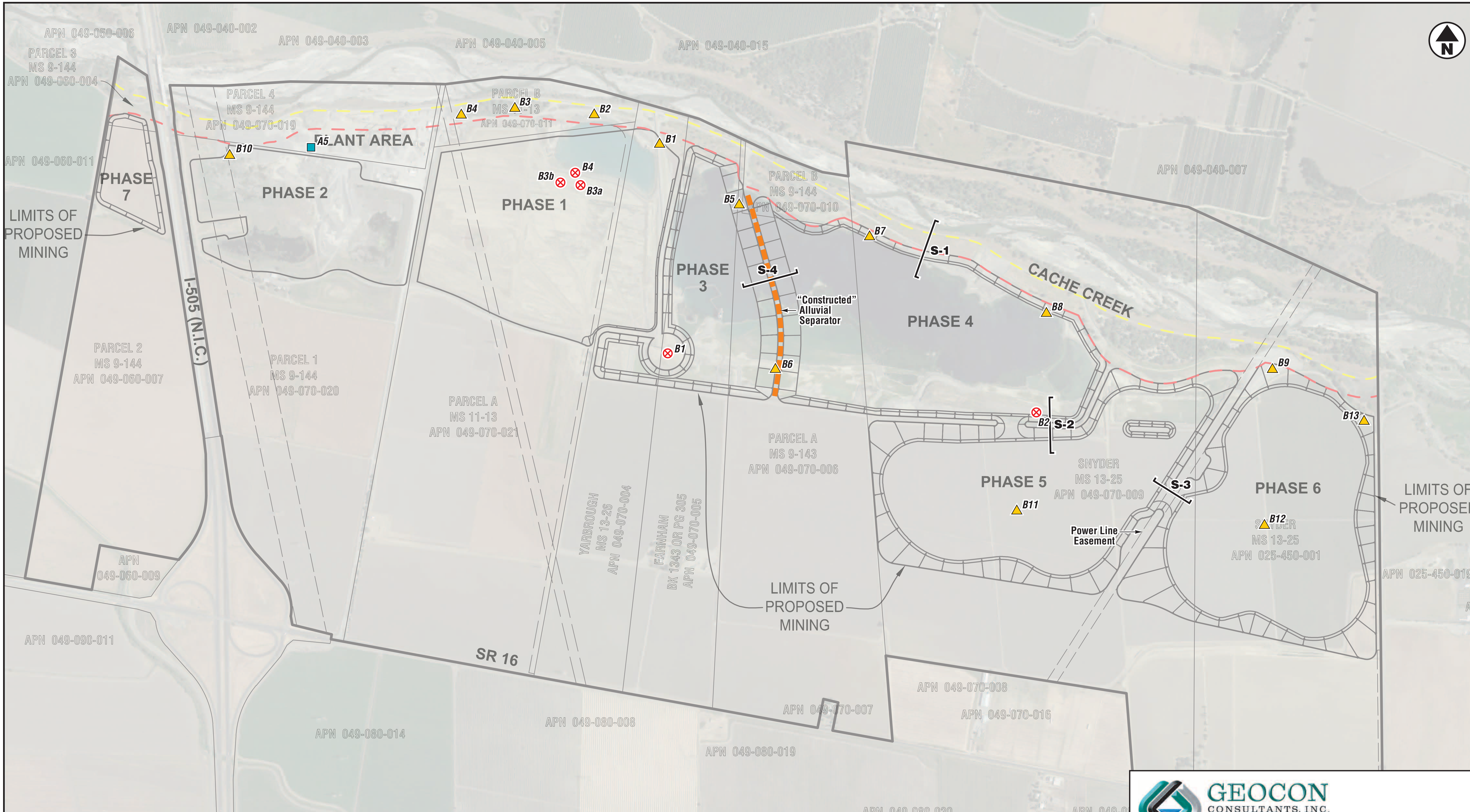
Cemex Cache Creek

Yolo County, California

VICINITY MAP

S1294-05-01	February 2018	Figure 1



Ref: *Off-Channel Mining Plan for Cemex Cache Creek, Yolo County, California, October 2017, Sheet M-01*, Cunningham Engineering, 01/17/2018

LEGEND:

- B4 ⊗ Approximate Boring Location (Geocon, 2017)
- B13 △ Approximate Boring Location (Kleinfelder, 1994)
- A5 ■ Approximate Bulk "Alluvial Separator" Material Sample
- Constructed Alluvial Separator
- S-1 Stability Analysis Sections (Figs. 3-1 through 3-4)

0 1000
Scale in Feet

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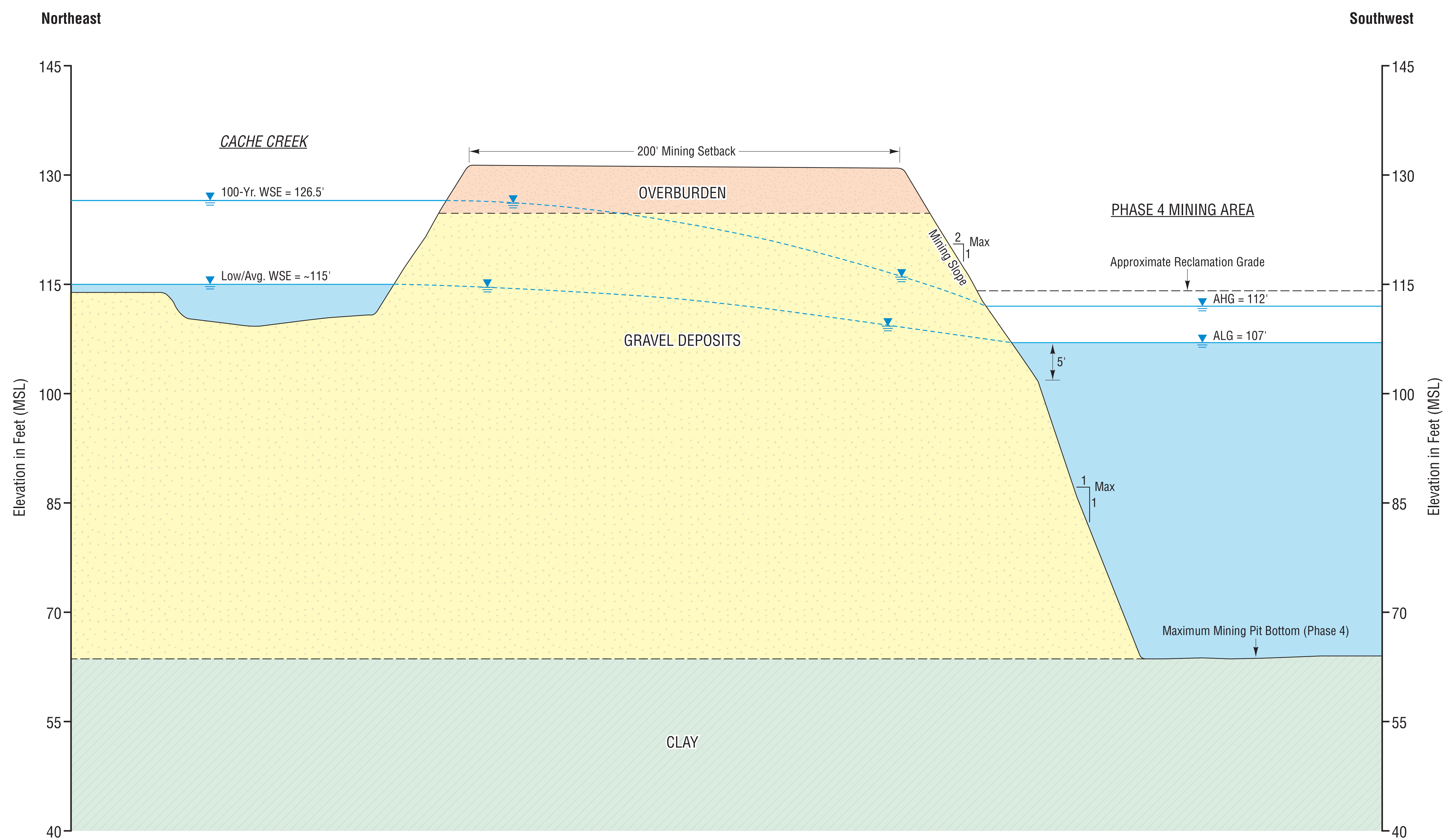
Cemex Cache Creek		
Yolo County, California		
SITE PLAN		
S1294-05-01	February 2018	Figure 2



OVERBURDEN

GRAVEL DEPOSITS

CLAY

AHG = Average High Groundwater Elevation

ALG = Average Low Groundwater Elevation

WSE = Water Surface Elevation

Vertical Scale in Feet: 0 – 15

Horizontal Scale in Feet: 0 – 50

Note: 3.33X Vertical Exaggeration

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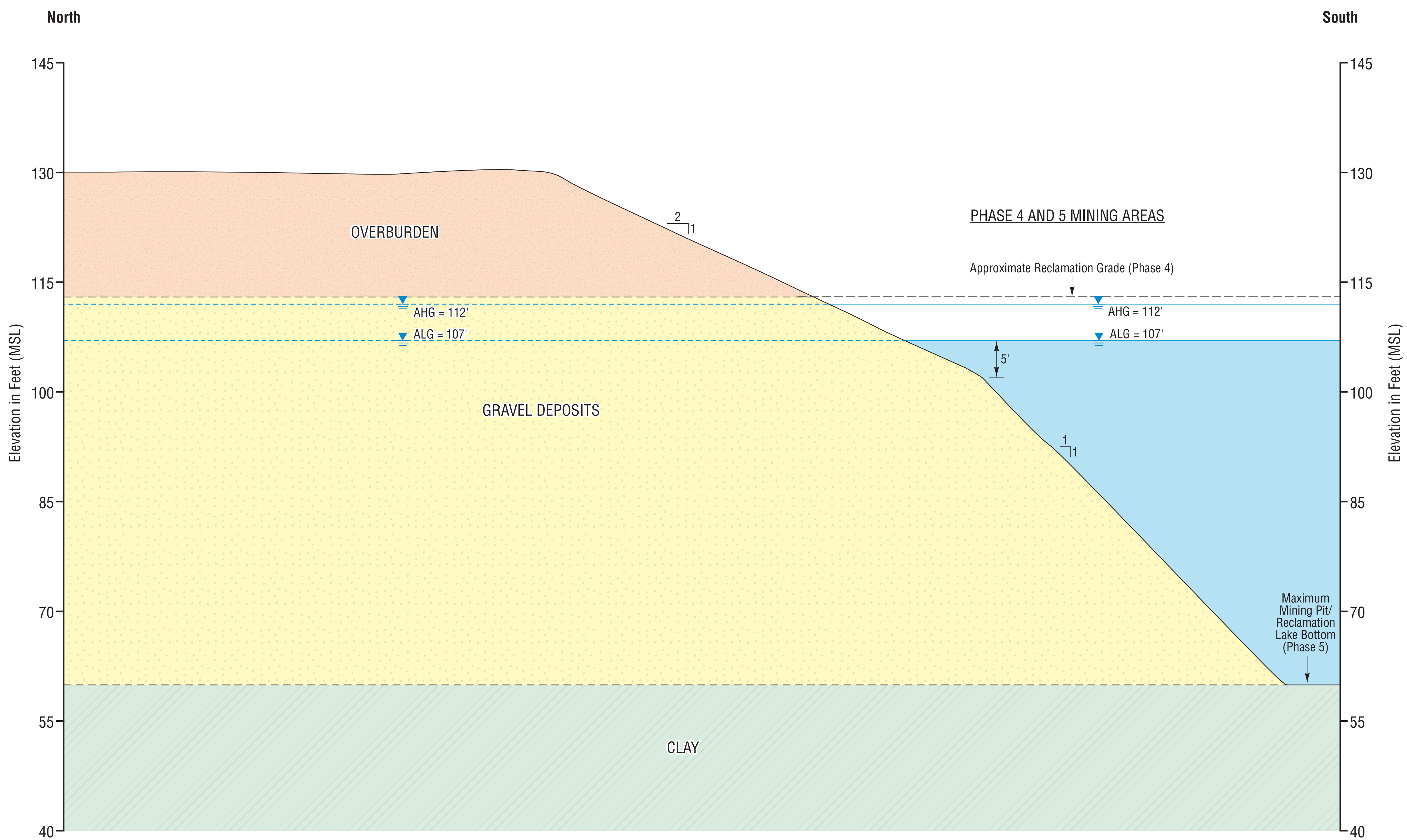
Cemex Cache Creek

Yolo County, California

Stability Analysis Section 1

S1294-05-01 | February 2018 | Figure 3-1



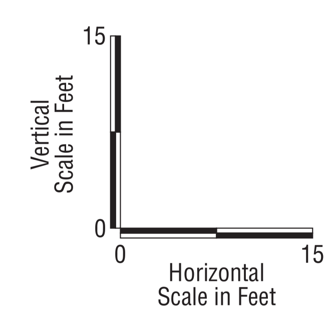
OVERBURDEN

GRAVEL DEPOSITS

CLAY

AHG = Average High Groundwater Elevation

ALG = Average Low Groundwater Elevation



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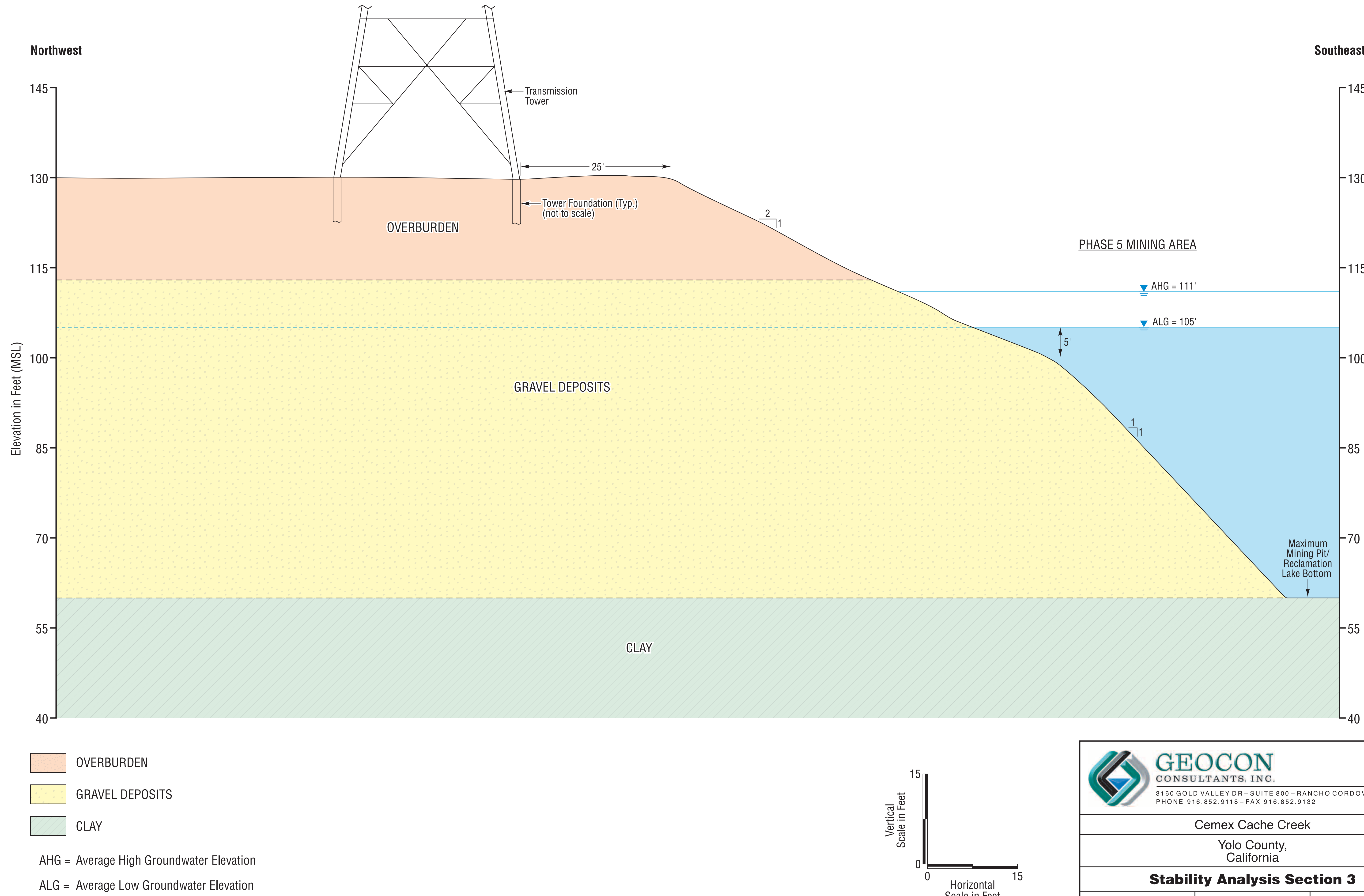
Cemex Cache Creek

Yolo County, California

Stability Analysis Section 2

S1294-05-01	February 2018	Figure 3-2



OVERBURDEN

GRAVEL DEPOSITS

CLAY

AHG = Average High Groundwater Elevation

ALG = Average Low Groundwater Elevation

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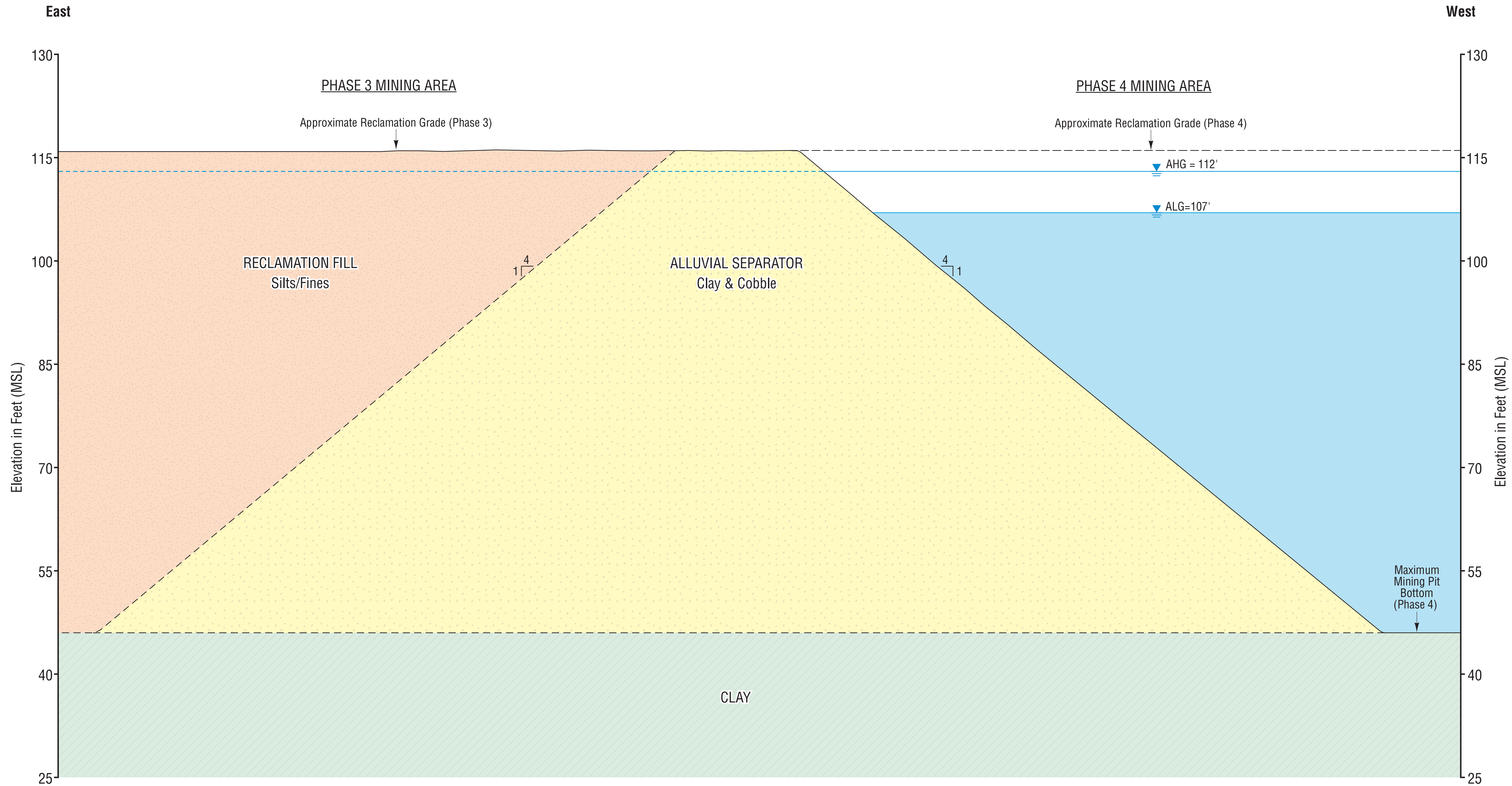
Cemex Cache Creek

Yolo County, California

Stability Analysis Section 3

S1294-05-01 | February 2018 | Figure 3-3



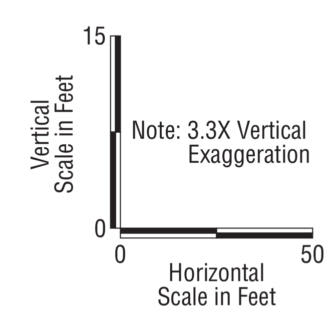
RECLAMATION FILL

"CONSTRUCTED" ALLUVIAL SEPARATOR

CLAY

AHG = Average High Groundwater Elevation

ALG = Average Low Groundwater Elevation



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Yolo County, California

Stability Analysis Section 4

S1294-05-01	February 2018	Figure 3-4

Photo No. 1 Active Mining Pit

Photo No. 2 High Voltage Transmission Line Easement (between Phases 5 and 6)

PHOTOS NO. 1 & 2

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Cemex Cache Creek	
Yolo County, California	
GEOCON Project No. S1294-05-01	February 2018

Photo No. 3 Proposed “Alluvial Separator” Material

Photo No. 4 Proposed “Alluvial Separator” Material

PHOTOS NO. 3 & 4

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Cemex Cache Creek

Yolo County,
California

GEOCON Project No. S1294-05-01 | February 2018

APPENDIX A

APPENDIX A

FIELD EXPLORATION PROGRAM

Our field exploration program was performed on October 12 and 13, 2017, and consisted of drilling four exploratory borings (B1 through B4) at the approximate locations shown on the Site Plan, Figure 2.

Exploratory borings were performed using a truck-mounted, CME 75 drill rig equipped with 6-inch outside diameter (OD) hollow-stem augers. Soil sampling was accomplished using an automatic 140-pound hammer with a 30-inch drop. Samples were obtained with a 3.0-inch OD, split spoon (California Modified) sampler and a 2-inch OD Standard Penetration Test (SPT) sampler. The number of blows required to drive the samplers the last 12 inches (or portion thereof) of the 18-inch sampling interval were recorded on the boring logs.

Subsurface conditions encountered in the exploratory borings were visually examined, classified and logged in general accordance with the American Society for Testing and Materials (ASTM) Practice for Description and Identification of Soils (Visual-Manual Procedure D2488-90). This system uses the Unified Soil Classification System (USCS) for soil designations. The logs depict the soil and geologic conditions encountered and the depths at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, drill rig penetration rates, excavation characteristics and other factors. The transition between the materials may be abrupt or gradual. Where applicable, the field logs were revised based on subsequent laboratory testing. Logs of exploratory borings are presented herein.

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	**GRAVELS** MORE THAN HALF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	**SILTS AND CLAYS** LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
	HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

BORING/TRENCH LOG LEGEND

- No Recovery
- Shelby Tube Sample
- Bulk Sample
- SPT Sample
- Modified California Sample
- Groundwater Level (At Completion)
- Groundwater Level (Seepage)

PENETRATION RESISTANCE

SAND AND GRAVEL			SILT AND CLAY			
RELATIVE DENSITY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	CONSISTENCY	BLOWS PER FOOT (SPT)*	BLOWS PER FOOT (MOD-CAL)*	COMPRESSIVE STRENGTH (tsf)
VERY LOOSE	0 - 4	0 - 6	VERY SOFT	0 - 2	0 - 3	0 - 0.25
LOOSE	5 - 10	7 - 16	SOFT	3 - 4	4 - 6	0.25 - 0.50
MEDIUM DENSE	11 - 30	17 - 48	MEDIUM STIFF	5 - 8	7 - 13	0.50 - 1.0
DENSE	31 - 50	49 - 79	STIFF	9 - 15	14 - 24	1.0 - 2.0
VERY DENSE	OVER 50	OVER 79	VERY STIFF	16 - 30	25 - 48	2.0 - 4.0
			HARD	OVER 30	OVER 48	OVER 4.0

*NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE LAST 12 INCHES OF AN 18-INCH DRIVE

MOISTURE DESCRIPTIONS

FIELD TEST	APPROX. DEGREE OF SATURATION, S (%)	DESCRIPTION
NO INDICATION OF MOISTURE; DRY TO THE TOUCH	$S<25$	DRY
SLIGHT INDICATION OF MOISTURE	$25\leq S<50$	DAMP
INDICATION OF MOISTURE; NO VISIBLE WATER	$50\leq S<75$	MOIST
MINOR VISIBLE FREE WATER	$75\leq S<100$	WET
VISIBLE FREE WATER	100	SATURATED

QUANTITY DESCRIPTIONS

APPROX. ESTIMATED PERCENT	DESCRIPTION
<5%	TRACE
5 - 10%	FEW
11 - 25%	LITTLE
26 - 50%	SOME
>50%	MOSTLY

GRAVEL/COBBLE/BOULDER DESCRIPTIONS

CRITERIA	DESCRIPTION
PASS THROUGH A 3-INCH SIEVE AND BE RETAINED ON A NO. 4 SIEVE (#4 TO 3")	GRAVEL
PASS A 12-INCH SQUARE OPENING AND BE RETAINED ON A 3-INCH SIEVE (3"-12")	COBBLE
WILL NOT PASS A 12-INCH SQUARE OPENING (>12")	BOULDER

LABORATORY TEST KEY

- CP – COMPACTION CURVE (ASTM D1557)
- CR – CORROSION ANALYSIS (CTM 422, 643, 417)
- DS – DIRECT SHEAR (ASTM D3080)
- EI – EXPANSION INDEX (ASTM D4829)
- GSA – GRAIN SIZE ANALYSIS (ASTM D422)
- MC – MOISTURE CONTENT (ASTM D2216)
- PI – PLASTICITY INDEX (ASTM D4318)
- R – R-VALUE (CTM 301)
- SE – SAND EQUIVALENT (CTM 217)
- TXCU – CONSOLIDATED UNDRAINED TRIAXIAL (ASTM D4767)
- TXUU – UNCONSOLIDATED UNDRAINED TRIAXIAL (ASTM D2850)
- UC – UNCONFINED COMPRESSIVE STRENGTH (ASTM D2166)

BEDDING SPACING DESCRIPTIONS

THICKNESS/SPACING	DESCRIPTOR
GREATER THAN 10 FEET	MASSIVE
3 TO 10 FEET	VERY THICKLY BEDDED
1 TO 3 FEET	THICKLY BEDDED
3 5/8-INCH TO 1 FOOT	MODERATELY BEDDED
1 1/4-INCH TO 3 5/8-INCH	THINLY BEDDED
3/8-INCH TO 1 1/4-INCH	VERY THINLY BEDDED
LESS THAN 3/8-INCH	LAMINATED

STRUCTURE DESCRIPTIONS

CRITERIA	DESCRIPTION
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS AT LEAST 1/4-INCH THICK	STRATIFIED
ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS LESS THAN 1/4-INCH THICK	LAMINATED
BREAKS ALONG DEFINITE PLANES OF FRACTURE WITH LITTLE RESISTANCE TO FRACTURING	FISSURED
FRACTURE PLANES APPEAR POLISHED OR GLOSSY, SOMETIMES STRIATED	SLICKENSIDED
COHESIVE SOIL THAT CAN BE BROKEN DOWN INTO SMALLER ANGULAR LUMPS WHICH RESIST FURTHER BREAKDOWN	BLOCKY
INCLUSION OF SMALL POCKETS OF DIFFERENT SOIL, SUCH AS SMALL LENSES OF SAND SCATTERED THROUGH A MASS OF CLAY	LENSED
SAME COLOR AND MATERIAL THROUGHOUT	HOMOGENOUS

CEMENTATION/INDURATION DESCRIPTIONS

FIELD TEST	DESCRIPTION
CRUMBLES OR BREAKS WITH HANDLING OR LITTLE FINGER PRESSURE	WEAKLY CEMENTED/INDURATED
CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE	MODERATELY CEMENTED/INDURATED
WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE	STRONGLY CEMENTED/INDURATED

IGNEOUS/METAMORPHIC ROCK STRENGTH DESCRIPTIONS

FIELD TEST	DESCRIPTION
MATERIAL CRUMBLES WITH BARE HAND	WEAK
MATERIAL CRUMBLES UNDER BLOWS FROM GEOLOGY HAMMER	MODERATELY WEAK
1/8-INCH INDENTATIONS WITH SHARP END FROM GEOLOGY HAMMER	MODERATELY STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **ONE** BLOW FROM GEOLOGY HAMMER	STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **COUPLE** BLOWS FROM GEOLOGY HAMMER	VERY STRONG
HAND-HELD SPECIMEN CAN BE BROKEN WITH **MANY** BLOWS FROM GEOLOGY HAMMER	EXTREMELY STRONG

IGNEOUS/METAMORPHIC ROCK WEATHERING DESCRIPTIONS

DEGREE OF DECOMPOSITION	FIELD RECOGNITION	ENGINEERING PROPERTIES
SOIL	DISCOLORED, CHANGED TO SOIL, FABRIC DESTROYED	EASY TO DIG
COMPLETELY WEATHERED	DISCOLORED, CHANGED TO SOIL, FABRIC MAINLY PRESERVED	EXCAVATED BY HAND OR RIPPING (Saprolite)
HIGHLY WEATHERED	DISCOLORED, HIGHLY FRACTURED, FABRIC ALTERED AROUND FRACTURES	EXCAVATED BY HAND OR RIPPING, WITH SLIGHT DIFFICULTY
MODERATELY WEATHERED	DISCOLORED, FRACTURES, INTACT ROCK-NOTICEABLY WEAKER THAN FRESH ROCK	EXCAVATED WITH DIFFICULTY WITHOUT EXPLOSIVES
SLIGHTLY WEATHERED	MAY BE DISCOLORED, SOME FRACTURES, INTACT ROCK-NOT NOTICEABLY WEAKER THAN FRESH ROCK	REQUIRES EXPLOSIVES FOR EXCAVATION, WITH PERMEABLE JOINTS AND FRACTURES
FRESH	NO DISCOLORATION, OR LOSS OF STRENGTH	REQUIRES EXPLOSIVES

IGNEOUS/METAMORPHIC ROCK JOINT/FRACTURE DESCRIPTIONS

FIELD TEST	DESCRIPTION
NO OBSERVED FRACTURES	UNFRACTURED/UNJOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1 TO 3 FOOT INTERVALS	SLIGHTLY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 4-INCH TO 1 FOOT INTERVALS	MODERATELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT 1-INCH TO 4-INCH INTERVALS WITH SCATTERED FRAGMENTED INTERVALS	INTENSELY FRACTURED/JOINTED
MAJORITY OF JOINTS/FRACTURES SPACED AT LESS THAN 1-INCH INTERVALS; MOSTLY RECOVERED AS CHIPS AND FRAGMENTS	VERY INTENSELY FRACTURED/JOINTED

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KEY TO LOGS

Figure A1

PROJECT NO. **S1294-05-01** PROJECT NAME **Cemex Cache Creek**

BORING B1

ELEV. (MSL.) **143** DATE COMPLETED **10/12/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
0	B1-Bulk			CL	**ALLUVIUM** Medium stiff, damp, light yellow-brown, Lean CLAY, trace silt (Overburden)				
1									
2									
3	B1-3.5					12			
4									
5	B1-5.5					7			
6	B1-6.0						100.6	19.0	
7									
8	B1-8.0, B1-8.5				- white to tan mottling	8			
9									
10	B1-10.5, B1-11.0			CL-ML	Medium stiff, damp, light yellow-brown, Silty CLAY	9			
11									
12									
13				SP	Medium dense, damp to moist, black and gray-brown with red mottling, Poorly-graded SAND, few gravel of 2-inch maximum dimension				
14									
15	B1-15.5, B1-16.0					26			
16									
17									
18					- becomes gravelly and silty				
19									
20	B1-20.5, B1-21.0			SW-SM	Medium dense, moist, gray-brown with white and black, Well-graded SAND with silt and gravel, fine to medium-grained	34			
21									
22					- rig chatter, grinding				
23									
24									

Figure A2, Log of Boring, page 1 of 4

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SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

BORING B1

ELEV. (MSL.) **143** DATE COMPLETED **10/12/17**
ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**
EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
25	SPT1-25.0				- becomes silty	25			
26									
27					- rig chatter				
28									
29									
30									
31									
32									
33									
34				ML	Stiff, moist, yellow-brown with white to tan and black mottling, SILT with Clay, few gravel, trace fine sand				
35	SPT1-35.0		∇			10			
36									
37									
38									
39				GP	Very dense, wet, gray-brown with white, red, and black, Poorly-graded GRAVEL with fine to medium-grained sand, trace silt				
40	B1-40.5					75/11"			
41	B1-41.0								
42									
43									
44									
45									
46									
47									
48									
49									

Figure A3, Log of Boring, page 2 of 4

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

BORING B1

ELEV. (MSL.) **143** DATE COMPLETED **10/12/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
50	SPT-50.0				- no sample, soil heaving				
51									
52									
53									
54				SC-SM	Dense, wet, gray-brown with dark brown and reddish orange mottling, Silty clayey SAND with gravel, fine to medium-grained				
55	SPT-55.0					34			
56									
57									
58									
59				SM	Dense, wet, brown with white, gray, and black, fine to medium-grained Silty SAND				
60	SPT-60.0			GP	Dense, wet, gray-brown with white and black, Poorly-graded GRAVEL with fine to medium-grained sand, few to little silt	49			
61									
62									
63									
64									
65									
66									
67									
68									
69				SP	Dense, wet, yellowish gray-brown with white and red, Poorly-graded SAND with little gravel of 1-inch maximum dimension, few to little clay and silt				
70	SPT-70.0					40			
71									
72									
73									
74									

Figure A4, Log of Boring, page 3 of 4

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

BORING B1

ELEV. (MSL.) **143** DATE COMPLETED **10/12/17**
ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**
EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
75							
76							
77							
78							
79							
80	SPT-80.0			32			
81		SC	Dense, moist, yellow-brown with white and black and orange mottling, Clayey SAND				
82							
83							
84		CL	Hard, moist to wet, yellowish olive-brown with orange mottling, Lean CLAY				
85	B1-85.0			50/5"			

BORING TERMINATED AT 85.5 FEET
GROUNDWATER ENCOUNTERED AT 35 FEET
BACKFILLED WITH NEAT CEMENT GROUT

Figure A5, Log of Boring, page 4 of 4

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

BORING B2

ELEV. (MSL.) **130** DATE COMPLETED **10/13/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
0	B2-Bulk	CL	**ALLUVIUM** Medium stiff, damp, yellowish light brown with orange and tan mottling, CLAY with silt (Overburden)				
3	B2-3.0, B2-3.5			11			
5.5	B2-5.5, B2-6.0		- trace black mottling	9			
9			- weak cementations - micaceous, trace fine sand				
10.5	B2-10.5, B2-11.0		- becomes medium stiff	8		20.7	
15.5	B2-15.5, B2-16.0		- becomes yellowish bluish gray-brown with orange, dark brown, and black mottling, trace mica	8	87.7	33.6	
17		GW	Medium dense, damp to moist, gray-brown with white and black, Well-graded GRAVEL of 1.5-inch maximum dimension, few clay				
20.5	B2-20.5, B2-21.0			27			
21		SP	Medium dense, damp to moist, gray-brown, fine to medium-grained Poorly-graded SAND, trace silt, few gravel - becomes yellow-brown, fine				

Figure A6, Log of Boring, page 1 of 4

IN PROGRESS S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ 11/06/17

GEOCON

SAMPLE SYMBOLS ... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED) ... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **S1294-05-01** PROJECT NAME **Cemex Cache Creek**

BORING B2

ELEV. (MSL.) **130** DATE COMPLETED **10/13/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
25					- trace clay	31			
26	B2-25.5 B2-26.0				- becomes coarse, trace white and red gravel				
27					- rig chatter				
28					- few to little clay				
29									
30	SPT2-30.0			CL	Medium stiff, moist, yellow-brown with gray and reddish orange mottling, Lean to Fat CLAY, trace silt	6			
31									
32									
33									
34									
35						13			
36	B2-35.5 B2-36.0			ML	Medium stiff, moist to wet, yellow-brown with reddish orange and gray mottling, SILT with clay				
37									
38					- harder drilling, becomes stiffer				
39									
40									
41									
42				SP	Dense, moist to wet, gray-brown with white, red, and gray, Poorly-graded SAND, fine to coarse, some gravel				
43									
44									
45	SPT2-45.0					37			
46									
47				GP	Dense, wet, gray-brown with white and orange, Silty Clayey Poorly-graded GRAVEL				
48									
49									

Figure A7, Log of Boring, page 2 of 4

IN PROGRESS S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ 11/06/17

GEOCON

SAMPLE SYMBOLS ... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED) ... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR SEEPAGE

PROJECT NO. **S1294-05-01** PROJECT NAME **Cemex Cache Creek**

BORING B2

ELEV. (MSL.) 130 DATE COMPLETED 10/13/17

ENG./GEO. Victor Guardado DRILLER Taber Drilling

EQUIPMENT Truck-mounted D120 Diedrich w/6" HSA HAMMER TYPE 140 lb | Automatic

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
50									
51				SP	Dense, moist to wet, gray-brown with white, red, and gray, Poorly-graded SAND, fine to coarse, some gravel				
55	SPT-55.0					50			
56				GW	Dense, moist to wet, gray-brown with white and black, Silty Clayey Well-graded GRAVEL with sand				
59				SP	Very dense, moist to wet, gray-brown with white, red, and gray, Poorly-graded SAND, fine to coarse, some gravel				
60	SPT2-60.0			SW-SM	Very dense, moist to wet, gray-brown with white and black, Well-graded SAND with silt and gravel	53			
63					- rig chatter				
67				CH	Very stiff, moist, gray with reddish orange mottling, micaceous, Fat CLAY, trace silt				
70	B2-70.5 B2-71.0					41	97.1	26.1	
72					- hard drilling				
74									

Figure A8, Log of Boring, page 3 of 4

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

PROJECT NO. **S1294-05-01** PROJECT NAME **Cemex Cache Creek**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B2 ELEV. (MSL.) 130 DATE COMPLETED 10/13/17 ENG./GEO. Victor Guardado DRILLER Taber Drilling EQUIPMENT Truck-mounted D120 Diedrich w/6" HSA HAMMER TYPE 140 lb | Automatic	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
					MATERIAL DESCRIPTION				
75 76	B2-75.5 B2-76.0				- becomes bluish-gray with reddish orange mottling	38			
					BORING TERMINATED AT 76.5 FEET GROUNDWATER ENCOUNTERED AT 25 FEET BACKFILLED WITH NEAT CEMENT GROUT				

Figure A9, Log of Boring, page 4 of 4

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

BORING B3a

ELEV. (MSL.) **121** DATE COMPLETED **10/13/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
0				ML	**FILL (SILT/FINES)** Soft, dry, yellow-brown, gravelly SILT				
1									
2									
3	B3a-3.0				- becomes medium stiff to stiff				
4									

BORING TERMINATED AT 4.5 FEET
NO GROUNDWATER ENCOUNTERED
BACKFILLED WITH SOIL CUTTTINGS

Figure A10, Log of Boring, page 1 of 1

IN PROGRESS S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ 11/06/17

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. **S1294-05-01** PROJECT NAME **Cemex Cache Creek**

BORING B3b

ELEV. (MSL.) **121** DATE COMPLETED **10/13/17**

ENG./GEO. **Victor Guardado** DRILLER **Taber Drilling**

EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA** HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
0	B3b-Bulk			ML	**FILL (SILT/FINES)** Soft, dry, yellow-brown, gravelly SILT				
1									
2									
3					- few gravel, becomes medium stiff to stiff				
4	B3b-4.0								
5									
					BORING TERMINATED AT 5.5 FEET NO GROUNDWATER ENCOUNTERED BACKFILLED WITH SOIL CUTTTINGS				

Figure A11, Log of Boring, page 1 of 1

IN PROGRESS S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ 11/06/17

GEOCON

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

BORING B4

ELEV. (MSL.) **128**
DATE COMPLETED **10/13/17**
ENG./GEO. **Victor Guardado**
DRILLER **Taber Drilling**
EQUIPMENT **Truck-mounted D120 Diedrich w/6" HSA**
HAMMER TYPE **140 lb | Automatic**

DEPTH IN FEET	SAMPLE INTERVAL & RECOVERY	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)	ADDITIONAL TESTS
0	B4-Bulk			ML	**FILL (SILT/FINES)** Medium stiff, dry to damp, yellow-brown with orange mottling, SILT, trace gravel				
1									
2									
3									
4									
5	B4-5.5					18			
6	B4-6.0								
7									
8					- becomes damp to moist				
9									
10									
11									
12									
13									
14					- wood fragments and branches - becomes clayey				
15					BORING TERMINATED AT 15.0 FEET NO GROUNDWATER ENCOUNTERED BACKFILLED WITH SOIL CUTTINGS				

Figure A12, Log of Boring, page 1 of 1

IN PROGRESS S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ 11/06/17

GEOCON

SAMPLE SYMBOLS
... SAMPLING UNSUCCESSFUL
... DISTURBED OR BAG SAMPLE
... STANDARD PENETRATION TEST
... CHUNK SAMPLE
... DRIVE SAMPLE (UNDISTURBED)
... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		LTR	ID	DESCRIPTIONS	MAJOR DIVISIONS		LTR	ID	DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW		Well-graded gravels, or gravel sand mixture, little or no fines	FINE GRAINED SOILS	SILTS AND CLAYS LL < 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		GP		Poorly-graded gravels, or gravel sand mixture, little or no fines			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		GM		Silty gravels, gravel-sand-silt mixtures			OL		Organic silts and organic silt-clays of low plasticity
		GC		Clayey gravels, gravel-sand-clay mixtures		SILTS AND CLAYS LL > 50	MH		Inorganic silts, micaceous or diatomaceous fine or silty soils, elastic soils
	SAND AND SANDY SOILS	SW		Well-graded sands or gravelly sands, little or no fines			CH		Inorganic clays of high plasticity, fat clays
		SP		Poorly-graded sands or gravelly sands, little or no fines			OH		Organic clays of medium to high plasticity
		SM		Silty sands, sand and silt mixtures	HIGHLY ORGANIC SOILS		PT		Peat and other highly organic soils
		SC		Clayey sands and clay mixtures					

	Standard penetration split spoon sample	LL	Liquid limit
	Modified California sample: 2.5" O.D. 2.0" I.D.	PI	Plasticity index
	Shelby tube sample	%-#200	Percent of soil passing the #200 sieve
	Disturbed bag or bulk sample	R-Value	Resistance value
▽	Water level observed in boring (at time of drilling)	EI	Percent of swell as measured by UBC Standard No. 29-2
▼	Water level observed in boring (at given post-drilling time)	C	Soil cohesion in psf
		phi	Angle of internal friction

NOTES: Blow counts represent the number of blows of a 140-pound hammer falling 30 inches required to drive a sampler through the last 12 inches of an 18-inch penetration, unless otherwise noted.

The lines seperating strata on the logs represent approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of soil strata between borings. Logs represent the soil section observed at the boring location on the date of drilling only.

The equivalent SPT blow count values can be estimated by multiplying the Modified California Sample blows by 0.6.

KLEINFELDER	**BORING LEGEND** Solano Concrete Madison Plant	PLATE 3
PROJECT NO. 40-2695-01	Yolo County, California	

Date Completed: 6/7/94

Logged By: Danea Gemmell

Total Depth: 91.5 feet

Surface Conditions: Alfalfa Crop

Groundwater: Approximately 30' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION — Approximate Surface Elevation (ft): 133
0								SANDY SILT/SILTY SAND (ML-SM): brown to dark brown, very fine to fine, medium stiff, slightly moist
	■	21						
								SAND WITH SOME GRAVEL (SM): light brown, slightly silty, fine to coarse, medium dense, slightly moist
5	■	31						GRAVEL WITH SAND (GM): light gray to gray, slightly silty, fine to coarse sand, well rounded gravel to 3/4", medium dense, moist
10	■	26						very moist with 1/2" to 3/4" gravel
15	■	41						
20	■	42						very moist, grades siltier, occasional 2" gravel
25	■	25						SAND (SW): light brown to gray, medium dense, wet
30								

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		32						some gravel
35		37						SAND AND GRAVEL (SM): light brown, slight trace of silt, fine to coarse sand with 1/4" to 1/2" gravel, dense, wet
40		24						grades sandier, gravel to 1"
								SAND (SW): brown, medium dense, wet
45		22				c = 400 psf phi = 37°		some gravel
50		90						GRAVEL WITH SILTY SAND (GM): brown, well rounded gravel to 2" with silty sand, very dense, wet
55		53						SAND (SW): brown, fine to coarse, trace of pea gravel with interbedded sandy seams, dense, wet
60		50/ 3"						more gravel

KLEINFELDER

LOG OF BORING B-1
Solano Concrete Madison Plant

Yolo County, California

PROJECT NO. 40-2695-01

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65		26						some pea gravel and sand
								SANDY CLAY (CL-SC): yellow to light brown, fine to very fine, low plasticity, stiff, wet
70		26				c = 1100 psf		
75		10						SAND (SW): brown to gray, loose, wet
80		33						CLAY (CL): light brown, very stiff, low plasticity, wet
85		26				c = 500 psf		
90		50/ 4"						SILTY SAND (SM): brown, silty sand, very dense, wet
								Terminate boring at 91.5'
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-1
Solano Concrete Madison Plant

Yolo County, California

Date Completed: 6/8/94

Logged By: Danea Gemmell

Total Depth: 81.5 feet

Surface Conditions: Gravel Roadway

Groundwater: Approximately 25' during drilling

Approximate Surface Elevation (ft): 130

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
0								2" of GRAVEL
								SANDY SILTY/SILTY SAND (ML-SM): brown to dark brown, very fine to fine with 1/4" subangular gravel, stiff, slightly moist
	■	40						
5	■	26						medium stiff with 1/4" to 1/2" gravel
10	■	14						
15	■	50						SILTY SAND (SM): brown to dark brown, coarse, with 1/4" to 3/4" subangular and subrounded gravel, dense, slightly moist occasional 1" to 2" gravel
20	■	50/ 5"						light brown to brown, very dense, subrounded gravel to 2", moist
25	■	46	▽					grades siltier, wet
30								

KLEINFELDER

LOG OF BORING B-2
Solano Concrete Madison Plant
Yolo County, California

PLATE 1 of 3

5

PROJECT NO. 40-2695-01

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
		50						SAND (SW): gray, coarse, some subrounded gravel to 1/4", dense, wet
35		68						some occasional fines and pea sized gravel, very dense
40								no sample - heaving sands
45		41						
50		40						same as above
55		36						
60		19				c = 0.4 ksf phi = 34°		medium dense

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-2
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 3

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65								no sample - heaving sands
70	■	40						CLAY (CL): light olive with slight dark orange mottling, very stiff, low plasticity, wet
75	■	30				c = 0.7 ksf		
80	■	28						no mottling
								Terminate boring at 81.5'
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-2
Solano Concrete Madison Plant

Yolo County, California

Date Completed: 6/10/94

Logged By: Danea Gemmell

Total Depth: 81.5 feet

Surface Conditions: Gravel Roadway

Groundwater: Approximately 25' during drilling

Approximate Surface Elevation (ft): 132

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
0								2" of GRAVEL
								SANDY SILTY/SILTY SAND (ML-SM): brown to dark brown, very fine to fine with subangular and subrounded gravel to 1/2", stiff, slightly moist
	■	10						
5	■	20						
10	■	50/ 5"						grades sandier, gravel to 2"
15	■	50/ 5"						SILTY SAND (SM): brown to dark brown, coarse, with subangular and subrounded gravel to 1/2", very dense, slightly moist occasional 2" gravel
20	■	35						SAND (SW): brown to gray, coarse with subrounded and subangular gravel to 1/2", dense, very moist
25	■	58	▽					SILTY SAND (SM): light brown to brown, coarse sand with 1" subangular and subrounded gravel, dense, wet
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-3
Solano Concrete Madison Plant
Yolo County, California

Depth, ft	Sample (FIELD)	Blows/ft (FIELD)	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
	■	34						SAND (SW): brown to gray, coarse sand, with subrounded gravel to 1/2", dense, wet
35	■	54						trace of silty fines
40	■	72						No more fines, very dense
45	■	36						layered fine to coarse
50								no sample - heaving sands
55	■	37						same as above
60	■	25						CLAY (CL): light olive to brown, low to medium plasticity, very stiff, wet

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-3
Solano Concrete Madison Plant

Yolo County, California

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
65		41						
70		44						same as above
75		40						mottled orange and brown
80		31						
								Terminate boring at 81.5'
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-3
Solano Concrete Madison Plant

Yolo County, California

Date Completed: 6/10/94

Logged By: Steve Mahnke

Total Depth: 76.5 feet

Surface Conditions: Gravel Roadway

Groundwater: Approximately 25' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION — Approximate Surface Elevation (ft): 134
		58						SILTY/SANDY GRAVEL (GM): brown to gray, fine gravel, fine to coarse sand, medium dense, slightly moist
5		50/ 5"						very dense
10		14						SILTY SAND (SM): gray to brown, very fine, stiff, slightly moist
15		54/ 11"						SILTY/SANDY GRAVEL (GM): gray, with silt and trace of clay, fine to coarse, very dense, moist
20		27						SILTY SAND (SM): brown, fine to coarse, with subrounded and subangular gravel to 1/2", medium dense, very moist
25		36						SILTY GRAVEL (GM): gray, fine to coarse sand, subangular to subrounded gravel, with some silt, medium dense, wet
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-4

Solano Concrete Madison Plant

Yolo County, California

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		43						interbedded silty/sandy lenses with traces of fine gravel
35		30						SILTY SAND (SM): gray to brown, coarse sand, with fine subangular to subrounded gravel, medium dense, wet
40		22						
45		14						grades brown, loose, flowing sands
50		11						
55		32						medium dense, some clay
60		18						

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-4
Solano Concrete Madison Plant

Yolo County, California

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65	■	47						CLAY (CL): light brown, trace of fine sand, hard, wet
70	■	46						mottled light brown and orange
75	■	34						
								Terminate boring at 76.5'
80								
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-4
Solano Concrete Madison Plant

Yolo County, California

PLATE
3 of 3

Date Completed: 7/11/94

Logged By: Danea Gemmell

Total Depth: 70 feet

Surface Conditions: Dirt Road

Groundwater: Approximately 30' during drilling

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION (Approximate Surface Elevation (ft): 135)
		27						SANDY SILT/SILTY SAND (ML-SM): light brown, very fine to fine, some subrounded and subangular gravel 1/2" to 1", medium dense, dry
5		30						
								SAND WITH SOME GRAVEL (SW): light brown, medium to coarse, trace of fines, with 1/2" to 1" subrounded and subangular gravel, medium dense, dry
10		44						SAND AND GRAVEL WITH SILT (SW-SM): light brown to gray, medium to coarse, with subrounded gravel to 1 1/2", brown silty fines, dense, slightly moist
15		32						medium dense, moist
20		20						
25		27						SAND (SW): brown and gray, medium to coarse, medium dense, very moist
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-5
Solano Concrete Madison Plant

Yolo County, California

PLATE
1 of 3

8

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		61						SILTY GRAVEL AND SAND (GM): gray, medium to coarse sand, light brown silty, fines, fine to coarse, subrounded gravel, dense, wet
35		31						some gravel to 3"
40		50/ 5"						
45		13						SILTY CLAY (CL-ML): light brown to olive with orange mottling, very fine to fine, low plasticity, stiff, wet
50		34						CLAYEY SAND (SC): gray, fine to coarse, with subangular and subrounded gravel to 1", dense, wet
55								grades as clayey pea gravel, wet
60								no sample - flowing sands

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-5
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 3

8

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65		30						CLAYEY GRAVEL AND SAND (GM): gray pea gravel, medium to coarse sand, with clayey fines, dense, wet
70								Terminate boring at 70' clay present on drill tip
75								
80								
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-5
Solano Concrete Madison Plant

Yolo County, California

PLATE
3 of 3

Date Completed: 7/13/94

Logged By: Danea Gemmell

Total Depth: 76.5 feet

Surface Conditions: Dirt Road/Field

Groundwater: Approximately 40' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION — Approximate Surface Elevation (ft): 135
0								SANDY SILT/SILTY SAND (ML-SM): light brown, very fine to fine, loose, dry
2.5	■	11						
5	■	13						slightly moist
10	■	20						grades slightly sandier
15	■	20						SAND (SW): gray, fine to coarse, medium dense, moist
20	■	58						with well rounded gravel to 2"
25	■	32						CLAYEY GRAVELLY SAND (SC): light brown clay, gray, subangular and subrounded gravel to 1", medium to coarse sand, dense, very moist
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-6
Solano Concrete Madison Plant

Yolo County, California

PLATE
1 of 3

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		23						CLAY (CL): light brown to olive with dark gray mottling, very fine to fine, low to medium plasticity, very stiff, moist
35		64						no mottling, some cementation
40		14						slight cementation, wet
45		27						very wet, grades sandy
50		79						SILTY SAND (SM): gray, medium to coarse sand, with subangular and subrounded gravel to 3/4", light brown silty fines, very dense, wet
55		33						grades cleaner, with gravel to 1/2"
60								no sample - flowing sands

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-6
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 3

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65	■	52						occaisional gravel to 1 1/2", grades siltier
70								no sample - flowing liquid clay/silt out of auger
75	■	22						CLAY (CL): light brown, trace of gray mottling, medium plasticity, very stiff, wet
								Terminate boring at 76.5'
80								
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-6
Solano Concrete Madison Plant

Yolo County, California

PLATE
3 of 3

9

Date Completed: 7/14/94

Logged By: Danea Gemmell

Total Depth: 81.5 feet

Surface Conditions: Dirt Road

Groundwater: Approximately 30' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
								Approximate Surface Elevation (ft): 129
0	■	28						SANDY SILT/SILTY SAND (ML-SM): light brown to brown, very fine to fine, medium dense, dry
5	■	9						slightly moist
								SILTY CLAY/CLAYEY SILT (ML-CL): mottled gray and yellow, low plasticity, slightly moist
10	■	24						SILTY SAND (SM): gray to brown, fine to medium, medium dense, slightly moist
15	■	38						with subangular gravel to 3/4", grades cleaner
20	■	42						SILTY GRAVEL AND SAND (GM): gray subrounded and subangular gravel to 3/4", medium to coarse sand, dense, slightly moist
25	■	31						with gravel to 2", very moist
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-7
Solano Concrete Madison Plant

Yolo County, California

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
		60						wet
35		44						
40		71						grades siltier
45								no sample - flowing sand and gravel
50								
55								no sample - flowing sand and gravel
60								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-7
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 3

Depth, ft	Sample (FIELD)	Blows/ft (FIELD)	Dry Density pcf (LABORATORY)	Moisture Content % (LABORATORY)	Compress. Strength ksf (LABORATORY)	Other Tests (LABORATORY)	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65								no sample - flowing sand and gravel
70								
75	■	35				c = 560 psf		SILTY CLAY (CL): light olive to light brown, very fine to fine, low plasticity, very stiff, wet
80	■	40						
								Terminate boring at 81.5'
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-7
Solano Concrete Madison Plant

Yolo County, California

PLATE
3 of 3

10

Date Completed: 7/14/94

Logged By: Danea Gemmell

Total Depth: 61.5 feet

Surface Conditions: Dirt Road/Creek Levee

Groundwater: Approximately 25' during drilling

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION (Approximate Surface Elevation (ft): 126)
0	■	70						SILTY SAND/SANDY SILT (SM-ML): light brown, fine to medium silty sand, some subangular and subrounded gravel to 1", very dense, dry
5	■	41						SAND AND GRAVEL (SW): dark brown, fine to medium sand, subrounded and subangular gravel to 1", trace of silty fines, dense, slightly moist
10	■	40						sand grades coarser
15	■	36						SILTY SAND AND GRAVEL (SM): dark brown to gray, medium to coarse sand, light brown silty fines, subangular pea gravel to 3/4", occasional 2" gravel, slight cementation, very dense, moist
20	■	77						
25	■	40						wet, grades gravelly
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-8
Solano Concrete Madison Plant

Yolo County, California

PLATE
1 of 2

11

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
								no sample - flowing sands
35		44						CLAY (CL): light brown, trace of gray mottling, low to medium plasticity, hard, wet
40		42						grades sandy
45		40						no more sand, trace of orange mottling
50		49						
55		38						
60		41						grades olive gray with slight orange mottling
								Terminate boring at 61.5'

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-8
Solano Concrete Madison Plant

Yolo County, California

Date Completed: 7/15/94

Logged By: Danea Gemmell

Total Depth: 56.5 feet

Surface Conditions: Creek Levee

Groundwater: Approximately 20' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION (Approximate Surface Elevation (ft): 124)
0		69						SILTY SAND/SANDY SILT (ML-SM): light brown, fine to medium fine silty sand, with subangular and subrounded gravel to 1 1/2", very dense, dry
5		50/ 5"						SILTY SAND AND GRAVEL (SM): dark brown, fine to medium silty sand, subangular and subrounded gravel to 1 1/2", very dense, slightly moist
10		50/ 5"						
15		50/ 5"						SILTY GRAVEL AND SAND (GM): brown silty fines, dark brown to gray, fine to medium coarse sand, gray, subangular and subrounded gravel to 3", very dense, moist
20		19						wet
25		66						subrounded gravel grades to 1"
30								

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		46				c = 50 psf phi = 40.5°		silty fines and sand grades gray
35		38				c = 679 psf		CLAY (CL): blue-gray, slight orange mottling, strong cementation, hard, wet
40		47						CLAY (CL): gray-brown, low to moderate plasticity, hard, wet
45		50/ 5"						
50		55						same as above
55		59						
								Terminate boring at 56.5' Drill bit had clay on end
60								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-9
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 2

Date Completed: 7/18/94

Logged By: Danea Gemmell

Total Depth: 81.5 feet

Surface Conditions: Disked Field

Groundwater: Approximately 36' during drilling

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION — Approximate Surface Elevation (ft): 144
0	■	22						SANDY SILT/SILTY SAND (SM-ML): light brown, very fine to fine, medium dense, dry
5	■	28						SILTY SAND AND GRAVEL (SM): light brown to brown, fine to medium sand, gray subangular pea gravel, occasional 3/4", medium dense, slightly moist
10	■	32						more subrounded and subangular gravel, grades dense, moist
15	■	49						SILTY GRAVEL AND SAND (GM): brown to gray, fine to coarse sand, gray, subrounded gravel to 2", dense, moist
20	■	50/ 5"						occasional cobble
25	■	28						dark orange sand lenses
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-10
Solano Concrete Madison Plant

Yolo County, California

PLATE 1 of 3

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		45						SAND AND GRAVEL (SW): brown to gray, medium to coarse, dense, very moist
35		34						SILTY GRAVEL AND SAND (GM): brown fines, gray-brown, medium to coarse sand, subrounded gravel to 2", medium dense, wet
40		21						CLAY (CL): brown to olive, very fine, low plasticity, very stiff, wet
45		12				c = 502 psf		trace of yellow mottling, grades stiff
50		20						slight gray mottling
55		54						CLAYEY SAND AND GRAVEL (SC): olive-brown fines, gray, medium to coarse sand, gray pea gravel, dense, wet
60		20				c = 285 psf phi = 23° slightly disturbed		SAND AND GRAVEL (SW): dark brown, medium to coarse sand, trace of silty fines, medium dense, wet

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-10
Solano Concrete Madison Plant

Yolo County, California

PLATE
2 of 3

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
65	■	81						
70								no sample - flowing sands
75	■	50/ 5"						CLAYEY SAND (SC): olive clayey fines, brown to gray, medium to coarse sand, very dense, wet
								GRAVELLY CLAY (GC-CL): olive clay, gray pea gravel, very dense, wet
80	■	50/ 5"						Terminate boring at 81.5'
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-10
Solano Concrete Madison Plant

Yolo County, California

PLATE
3 of 3

Date Completed: 7/19/94

Logged By: Danea Gemmell

Total Depth: 86.5 feet

Surface Conditions: Farm Road

Groundwater: Approximately 35' during drilling

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION (Approximate Surface Elevation (ft): 130)
0		29						SANDY SILT/SILTY SAND (SM-ML): light brown, very fine to fine, very stiff, dry
5		8						slightly moist, trace of subangular pea gravel
10		58						SILTY GRAVEL/GRAVELLY SILT (GM-ML): dark brown, very fine to fine, gray subangular pea gravel, low plasticity, dense, moist more subrounded and subangular gravel, grades dense, moist
15		39						SAND AND GRAVEL (SW): dark brown to gray, medium to coarse sand, gray, subangular gravel to 3/4", dense, moist
20		50/ 5"						
25		41						GRAVEL AND SAND (GW): brown, medium to coarse sand, gray subrounded gravel to 1 1/2", occasional cobble, dense, moist
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-11
Solano Concrete Madison Plant

Yolo County, California

PLATE
1 of 3
14

Depth, ft	FIELD: Sample	FIELD: Blows/ft	LABORATORY: Dry Density pcf	LABORATORY: Moisture Content %	LABORATORY: Compress. Strength ksf	LABORATORY: Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
		28						SILTY GRAVEL AND SAND (GM): mottled olive and dark orange fines, gray, subangular and subrounded gravel to 2", fine to medium sand, medium dense, moist
35		45						very moist to wet
40		70						
45								
50		86						GRAVEL AND SAND (GW): brown, medium to coarse sand, gray, subrounded gravel to 1", very dense, wet
55		50/ 5"						grades gray
60								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-11
Solano Concrete Madison Plant

Yolo County, California

PLATE 2 of 3

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65		50/ 5"				c = 150 psf phi = 32° slightly disturbed		SAND (SW): gray, medium to coarse sand, trace of silty fines, very dense, wet
70								no sample - flowing sands
75		34						CLAY (CL): olive, trace of dark orange mottling, very fine, low plasticity, very stiff, wet
								CLAYEY SAND (SC): olive clayey fines, brown to gray, medium to coarse sand, very dense, wet
80		74						some dark orange mottling, grades silty
85		56						CLAY (CL): gray,very fine, low plasticity, hard, wet
								Terminate boring at 86.5'
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-11
Solano Concrete Madison Plant

Yolo County, California

PLATE 3 of 3

Date Completed: 7/20/94

Logged By: Danea Gemmell

Total Depth: 71.5 feet

Surface Conditions: Farm Field

Groundwater: Approximately 30' during drilling

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION — Approximate Surface Elevation (ft): 127
0	■	24						SANDY SILT/SILTY SAND (SM-ML): brown, very fine to fine, medium dense, dry
5	■	30						
10	■	23						SILTY GRAVEL AND SAND (GM): brown fines, brown to gray, fine to coarse sand, gray subrounded gravel to 1", medium dense, slightly moist
15	■	24						SAND (SW): brown to gray, medium to coarse, medium dense, slightly moist
20	■	40						grades with subangular and subrounded gravel to 1/2"
25	■	50/ 5"						moist, some cemented gravel
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-12
Solano Concrete Madison Plant

Yolo County, California

PLATE 1 of 3

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
		50/ 5"						SILTY GRAVEL AND SAND (GM): brown silty fines, brown to gray, fine to coarse sand, gray subangular and subrounded gravel to 1", very dense, wet
35		60						grades siltier, gravel to 1 1/2"
40		63				c = 50 psf phi = 46°		INTERBEDDED CLAY (CL)/SILTY SAND AND GRAVEL (SM): approximately 6" thick beds - olive clay with dark orange mottling, low plasticity, stiff, wet/brown silty fines, gray, medium to coarse sand, gray, subangular pea gravel, very dense, wet
45		43						
50		53				c = 665 psf		CLAY (CL): dark gray, low to moderate plasticity, hard, moist
55		74						grades dark gray-olive
60		85						grades olive, wet

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65		83						strong cementation
70		50/ 5"						grades silty, very fine to fine
								Terminate boring at 71.5'
75								
80								
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-12
Solano Concrete Madison Plant

Yolo County, California

PLATE 3 of 3

Date Completed: 7/21/94

Logged By: Danea Gemmell

Total Depth: 71.5 feet

Surface Conditions: Gravel Road

Groundwater: Approximately 30' during drilling

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION (Approximate Surface Elevation (ft): 127)
0	■	37						SILTY SANDY GRAVEL (GM): brown, very fine to medium sand, gray subangular and subrounded gravel to 1", dense, dry
5	■	6						CLAYEY SILT (ML): brown, very fine to fine, low plasticity, medium stiff, moist
10	■	20						SAND (SW): brown, fine to coarse, some subangular pea gravel, medium dense, moist
15	■	67						GRAVEL AND SAND (GW): gray pea gravel to 3/4", brown to gray, fine to coarse sand, trace of brown silt, very dense, moist
20	■	50/5"						grades with silt
25	■	64						SILTY GRAVEL AND SAND (GM): brown silty/sandy fines, fine to medium, gray subangular gravels to 3/4", very dense, very moist
30								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-13
Solano Concrete Madison Plant
Yolo County, California

PLATE 1 of 3

16

Depth, ft	Sample	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Tests	PID Reading ppm	DESCRIPTION (Continued from previous plate)
		39						fines grade to coarse, subrounded gravels, wet
35		50/ 5"						possible interbedded silt lenses and sand lenses
40		55				c = 340 psf phi = 21° totally remolded		SAND (SW): brown to gray, fine to coarse, dense, wet
45								no sample - flowing sand
50		51						CLAY (CL): yellow-brown, low plasticity, hard, wet
55		50/ 5"						
60		50/ 4"						grades olive-gray

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-13
Solano Concrete Madison Plant

Yolo County, California

PLATE 2 of 3

Depth, ft	FIELD Sample	FIELD Blows/ft	LABORATORY Dry Density pcf	LABORATORY Moisture Content %	LABORATORY Compress. Strength ksf	LABORATORY Other Tests	PID Reading ppm	DESCRIPTION
								(Continued from previous plate)
65	■	76						
70	■	50/ 5"						grades olive-brown
								Terminate boring at 71.5'
75								
80								
85								
90								
95								

KLEINFELDER

PROJECT NO. 40-2695-01

LOG OF BORING B-13
Solano Concrete Madison Plant

Yolo County, California

PLATE 3 of 3

APPENDIX B

APPENDIX B
LABORATORY TESTING PROGRAM

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected soil samples were tested for their grain size distribution, plasticity characteristics, maximum dry density/optimum moisture content, and shear strength parameters. Laboratory test results are presented on the following pages.

Sample ID	Depth (feet)	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Water Content (%)	Dry Density (pcf)
B1-Bulk (0-5')	0				---			
B1-6	6				---		19.0	100.6
SPT1-25.0	25				---	5.1		
SPT1-55.0	55				---	21.7		
B2-3	3	41	20	21	---			
B2-10.5	10.5				---		20.7	
B2-16	16				---		33.6	87.7
B2-25.5	25.5				---	1.5		
SPT2-60.0	60				---	6.2		
B2-70.5	70.5				---		26.1	97.1

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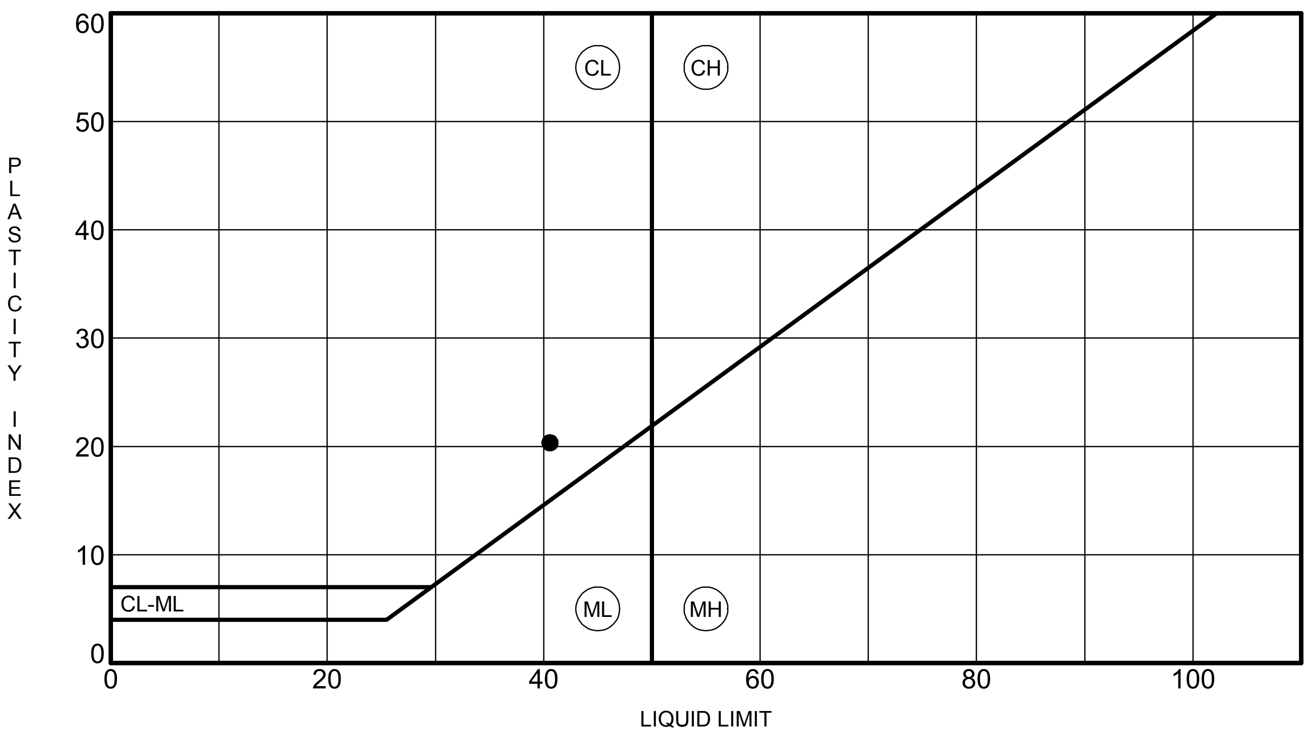
Summary of Laboratory Results

Project: Cemex Cache Creek
Location: Madison, California
Number: S1294-05-01
Figure: B1



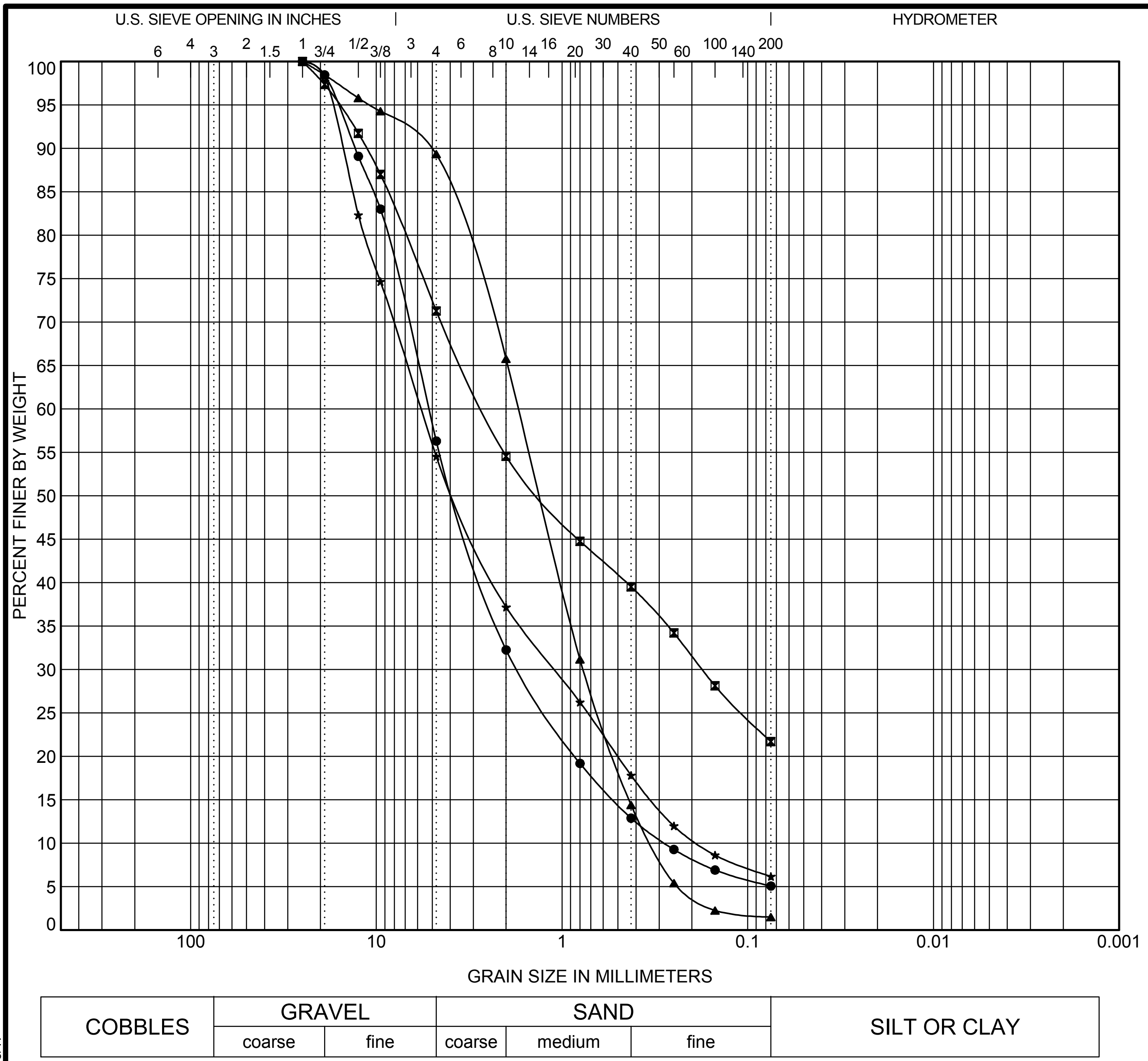
	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	% Pass #200 Sieve	Unified Soil Classification Description	Preparation Method
●	**B2-3**	**41**	**20**	**21**		**Lean CLAY (CL)**	**dry**

PI COPY 2 S1294-05-01 CEMEX CACHE CREEK PLANT.GPJ US LAB.GDT 11/6/17

GEOCON
Geocon Consultants
3160 Gold Valley Drive, Suite 800
Rancho Cordova, CA 95742
Telephone: 9168529118

ATTERBERG LIMITS (ASTM D4318)

Project: Cemex Cache Creek
Location: Madison, California
Number: S1294-05-01
Figure: B2



	Sample No.	Classification	LL	PL	PI	Cc	Cu
●	**SPT1-25.0**	**Well-graded SAND with silt and gravel (SW-SM)**				**2.01**	**18.8**
⊠	**SPT1-55.0**	**Silty, clayey SAND with gravel (SC-SM)**					
▲	**B2-25.5**	**Poorly-graded SAND (SP)**				**1.04**	**5.2**
★	**SPT2-60.0**	**Well-graded SAND with silt and gravel (SW-SM)**				**1.13**	**31.0**

	Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**SPT1-25.0**	**25**	**5.23**	**1.708**	**0.278**	**43.7**	**51.2**	**5.1**	
⊠	**SPT1-55.0**	**25**	**2.651**	**0.176**		**28.7**	**49.6**	**21.7**	
▲	**B2-25.5**	**25**	**1.718**	**0.766**	**0.328**	**10.7**	**87.8**	**1.5**	
★	**SPT2-60.0**	**25**	**5.735**	**1.097**	**0.185**	**45.5**	**48.4**	**6.2**	

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GRAIN SIZE DISTRIBUTION (ASTM D422, D6913)

Project: Cemex Cache Creek
Location: Madison, California
Number: S1294-05-01
Figure: B3

CURVE NO. 1

Source of Material: **B1-Bulk (0-5')**

Description of Material: **Brown Lean CLAY (CL)**

Test Method: **D1557A**

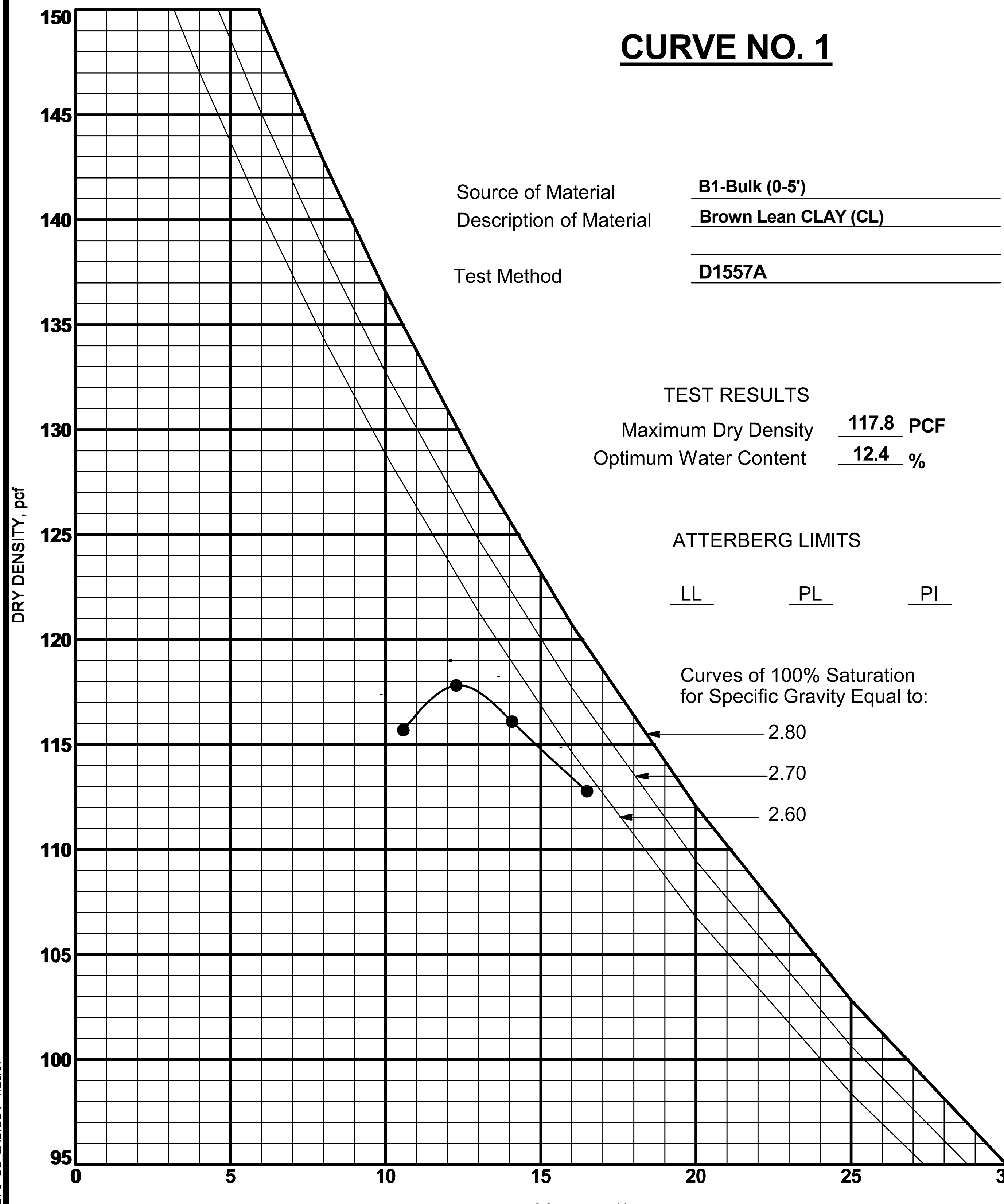
TEST RESULTS

Maximum Dry Density **117.8** **PCF**

Optimum Water Content **12.4** **%**

ATTERBERG LIMITS

LL	PL	PI



US COMPACTION COPY 2.GPJ US LAB.GDT 1/26/07

GEOCON

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Fax: (916) 852-9132

MOISTURE-DENSITY RELATIONSHIP

Project: Cemex Cache Creek

Location: Madison, California

Number: S1294-05-01

Figure: B4

GEOCON INCORPORATED

DIRECT SHEAR TEST REPORT

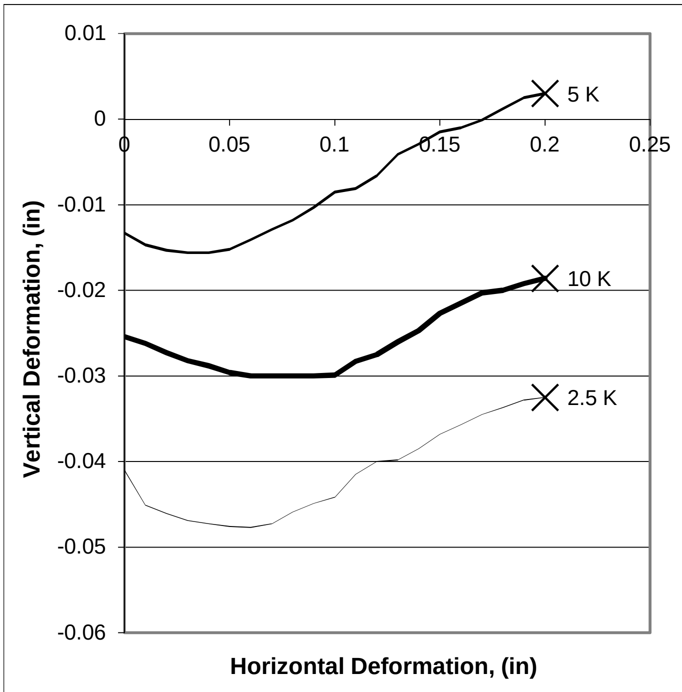
CEMEX CACHE CREEK PLANT

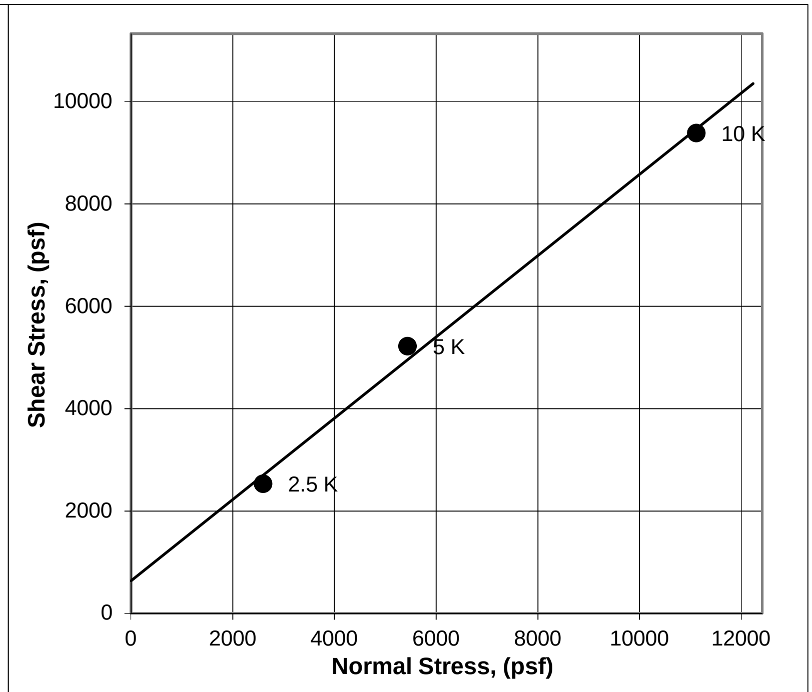
G1294-52-01 **Date:** Thursday, October 19, 2017 **By:** TG

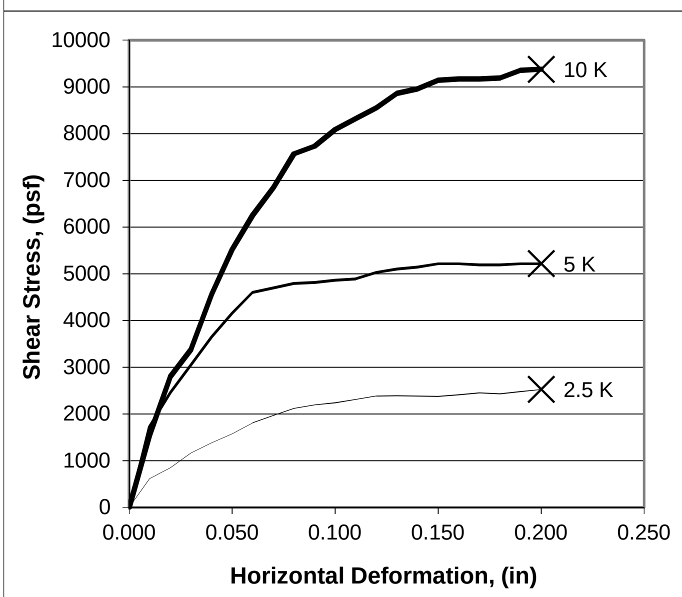
Sample No.: B1 @ 40.5 **Natural or Remold:** Natural

Description: SW-GRAY (F-C) SAND WITH A TRACE OF FINE

Remarks: GRAVEL AND SILT



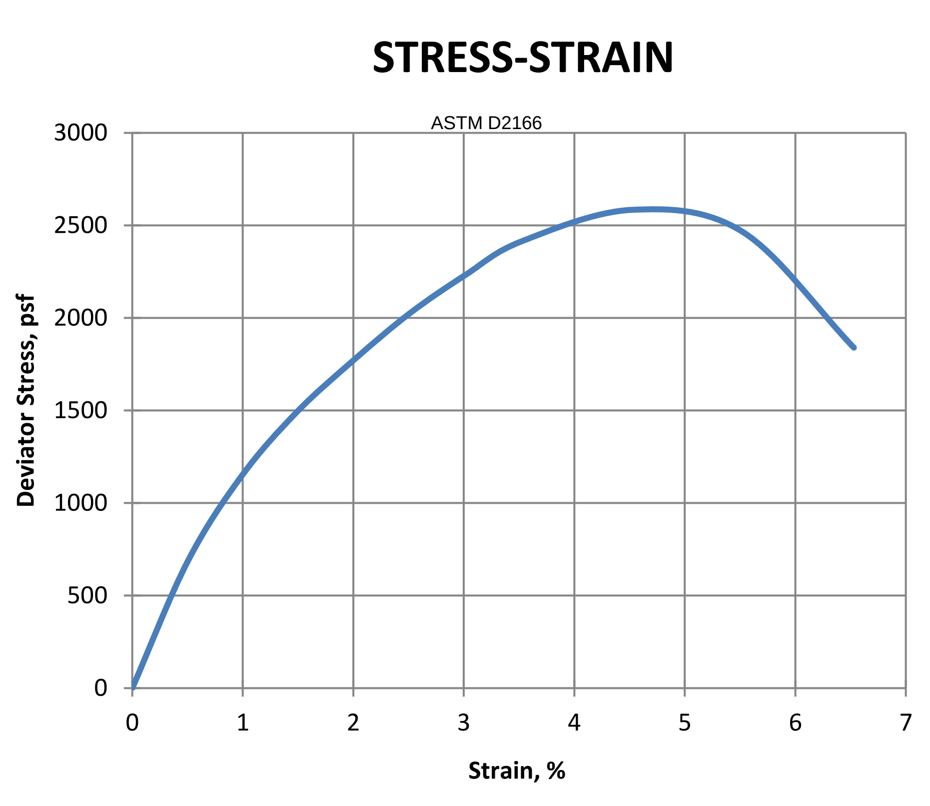




ϕ (Degrees)	**38.5**
c (psf)	**635**
Tan ϕ	**0.794**
Method	**Calc**

Load	2.5 K	5 K	10 K
INITIAL			
Water Content	12.4%	13.2%	10.4%
Dry Density (pcf)	108.3	107.6	105.0
Saturation*	62.4%	65.1%	48.1%
Height (inches)	1.00	1.00	1.00
AFTER TEST			
Water Content	15.6%	15.4%	13.6%
Dry Density (pcf)	111.9	107.3	107.0
FAILURE			
Normal Stress (psf)	2600	5440	11120
Failure Stress (psf)	2525	5216	9379
Failure Deffinition	User	User	User
Displacement (in)	0.20	0.20	0.20
Rate (in/min)	0.0100	0.0100	0.0100

* Degree of saturation calculated with a specific gravity of 2.65



Failure Photo

Sample Description	
Boring Number	B1
Sample Depth (feet)	10.00
Material Description	Dark Yellowish Brown Sandy lean CLAY
Initial Conditions at Start of Test	
Height (inch) average of 3	4.93
Diameter (inch) average of 3	2.37
Moisture Content (%)	19.9
Dry Density (pcf)	101.4
Estimated Specific Gravity	2.7
Saturation (%)	81.1
Shear Test Conditions	
Strain Rate (%/min)	1.0004
Major Principal Stress at Failure (psf)	2580
Strain at Failure (%)	4.5
Test Results	
Unconfined Compressive Strength (tons/ft^2)	1.3
Unconfined Compressive Strength (lbs/ft^2)	2584
Shear Strength (tons/ft^2)	0.6
Shear Strength (lbs/ft^2)	1292

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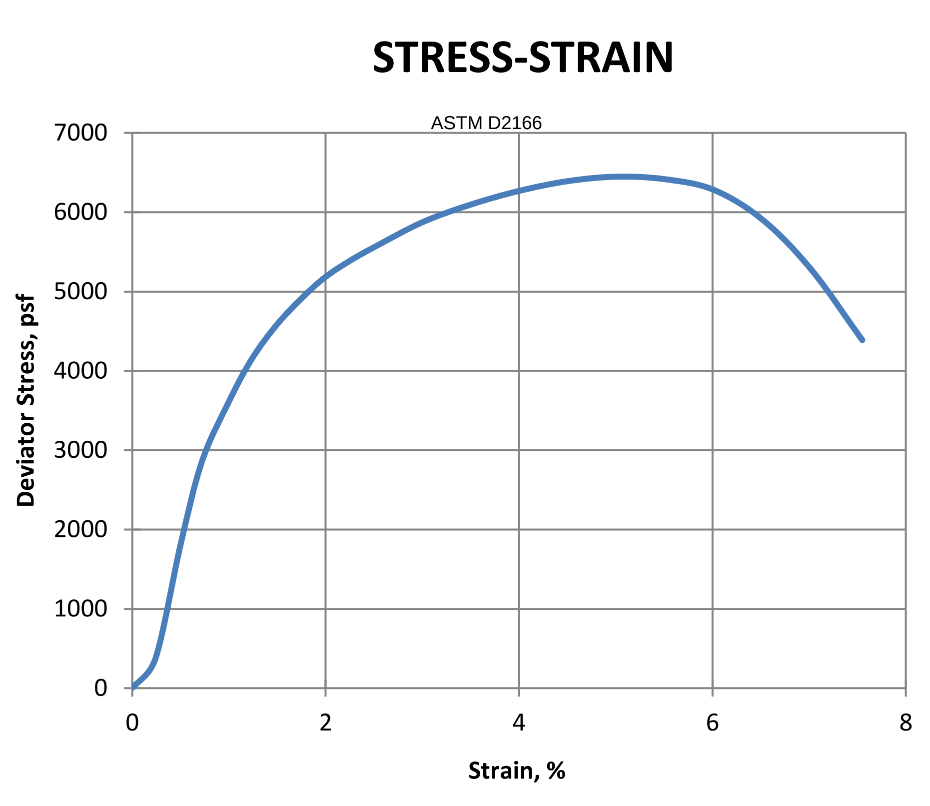
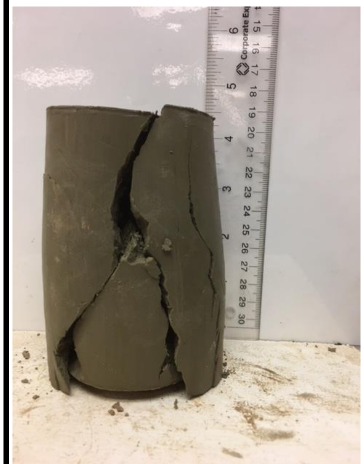
Rancho Cordova, California 95742
Telephone: (916) 852-9118
Fax: (916) 852-9132

Unconfined Compressive Strength (ASTM D2166)

Project: Cemex Cache Creek
Location: Yolo County, California
Number: S1294-05-01
Figure: B6



Failure Photo



Sample Description	
Boring Number	B1
Sample Depth (feet)	71.00
Material Description	Dark greenish gray lean CLAY
Initial Conditions at Start of Test	
Height (inch) average of 3	4.89
Diameter (inch) average of 3	2.40
Moisture Content (%)	27.6
Dry Density (pcf)	97.1
Estimated Specific Gravity	2.8
Saturation (%)	98.9
Shear Test Conditions	
Strain Rate (%/min)	0.9991
Major Principal Stress at Failure (psf)	6450
Strain at Failure (%)	5.0
Test Results	
Unconfined Compressive Strength (tons/ft^2)	3.2
Unconfined Compressive Strength (lbs/ft^2)	6448
Shear Strength (tons/ft^2)	1.6
Shear Strength (lbs/ft^2)	3224

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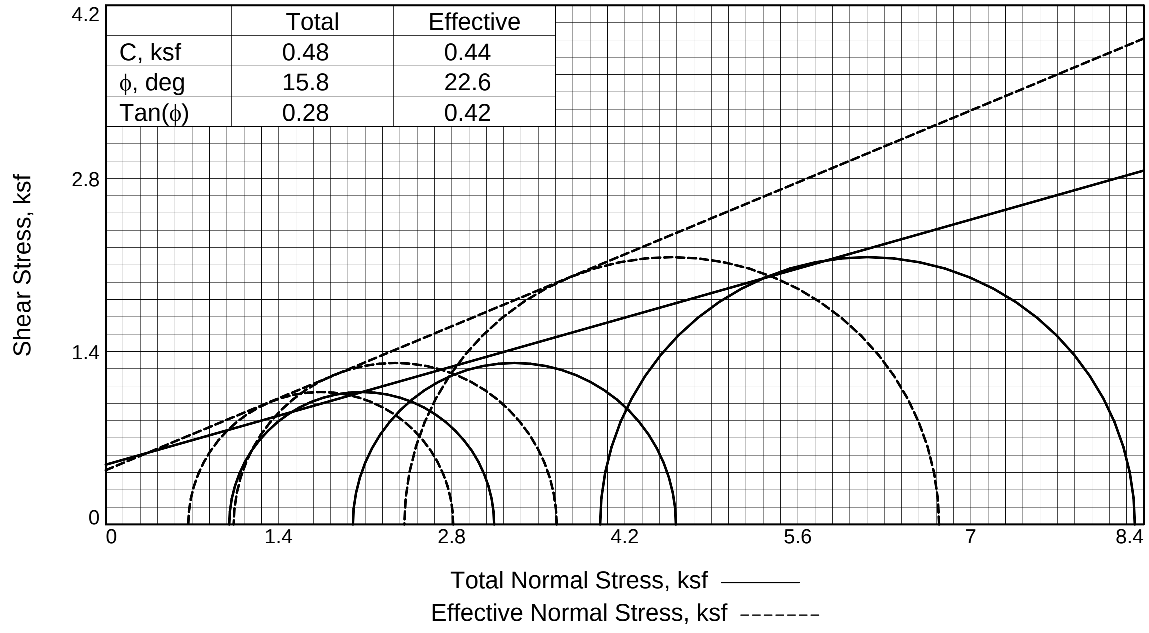
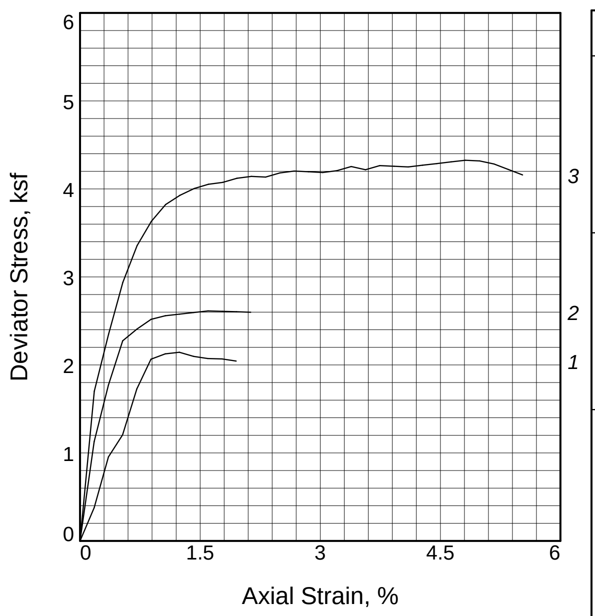
Unconfined Compressive Strength (ASTM D2166)

Project: Cemex Cache Creek
Location: Yolo County
Number: S1294-05-01
Figure: B7





Sample No.		1	2	3
Initial	Water Content, %	11.5	11.6	11.5
	Dry Density, pcf	109.9	109.8	109.9
	Saturation, %	58.1	58.4	58.1
	Void Ratio	0.5333	0.5345	0.5333
	Diameter, in.	2.81	2.81	2.81
	Height, in.	5.66	5.66	5.66
At Test	Water Content, %	19.8	19.8	19.7
	Dry Density, pcf	109.9	109.8	109.9
	Saturation, %	100.0	100.0	99.9
	Void Ratio	0.5333	0.5345	0.5333
	Diameter, in.	2.81	2.82	2.82
	Height, in.	5.64	5.63	5.61
Strain rate, in./min.		0.120	0.013	0.011
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		56.94	63.89	77.78
Fail. Stress, ksf		2.14	2.61	4.33
Total Pore Pr., ksf		7.53	8.16	8.78
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		2.81	3.65	6.74
$\bar{\sigma}_3$ Failure, ksf		0.67	1.04	2.42

Type of Test:
CU with Pore Pressures

Sample Type: Remold

Description:

Specific Gravity= 2.7

Remarks: Test specimen remolded to approximate 90% of an ASTM D1557 proctor at +2% over optimum moisture content.

Figure B8

Client: Geocon, Inc.

Project: CEMEX - Cache Creek Plant

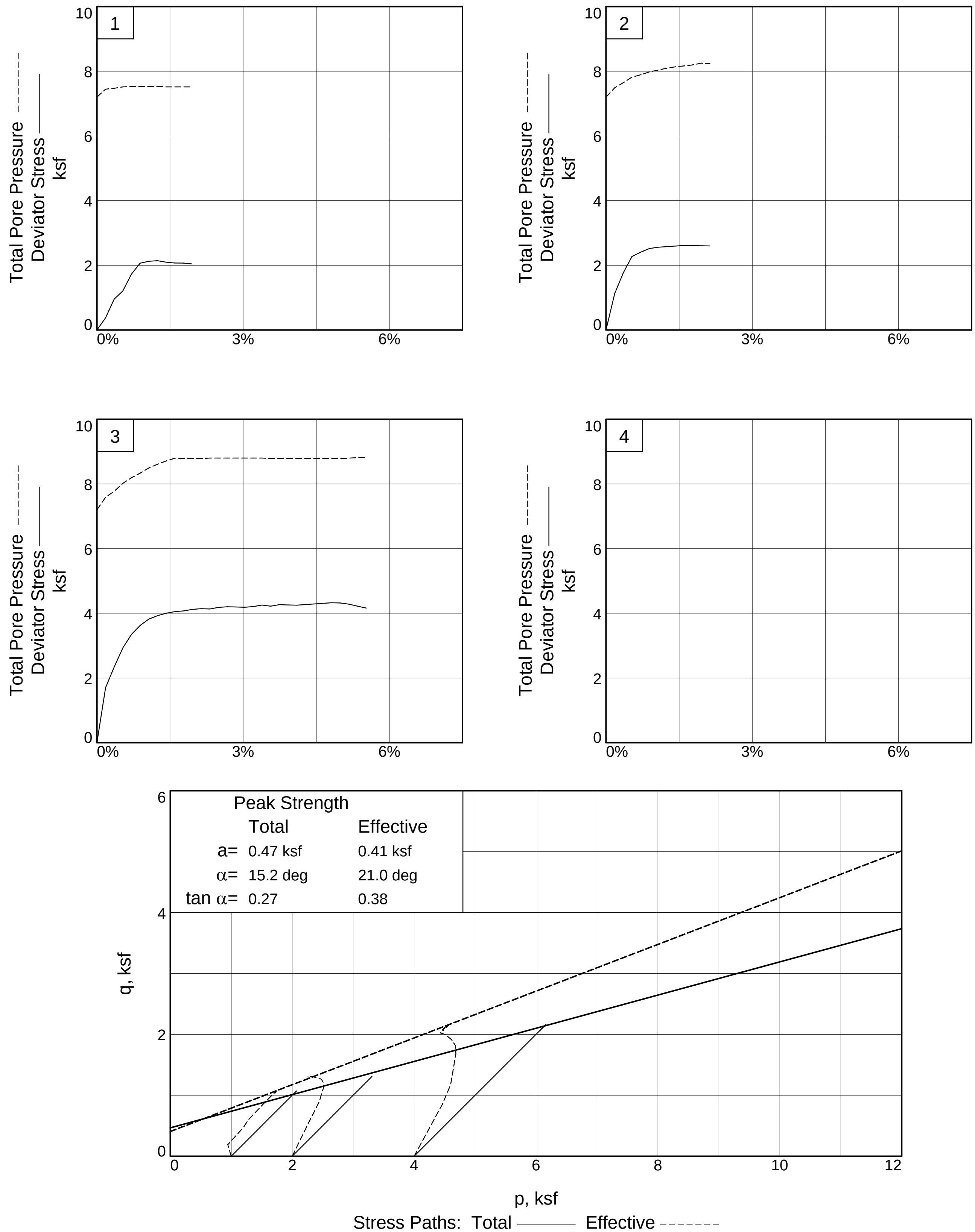
Location: B2-Bulk

Sample Number: 28093

Proj. No.: 17-250 **Date Sampled:** Rec. 10/31/17

GULF SHORE EXPLORATION AND TESTING

Tested By: MPW **Checked By:** CMW



Client: Geocon, Inc.

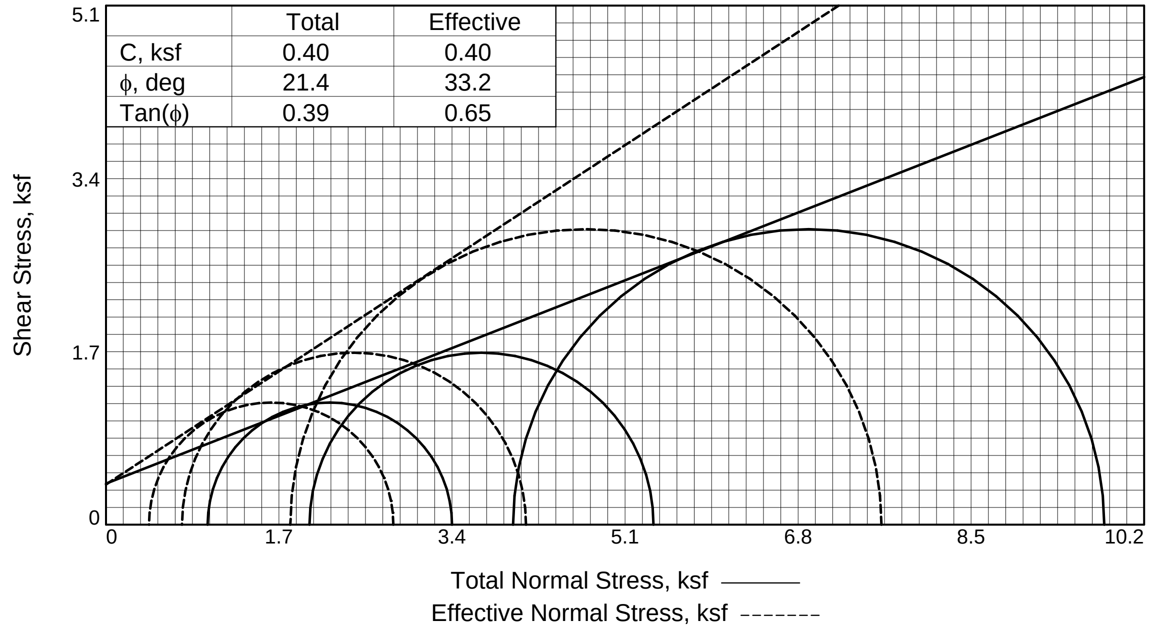
Project: CEMEX - Cache Creek Plant

Location: B2-Bulk **Sample Number:** 28093

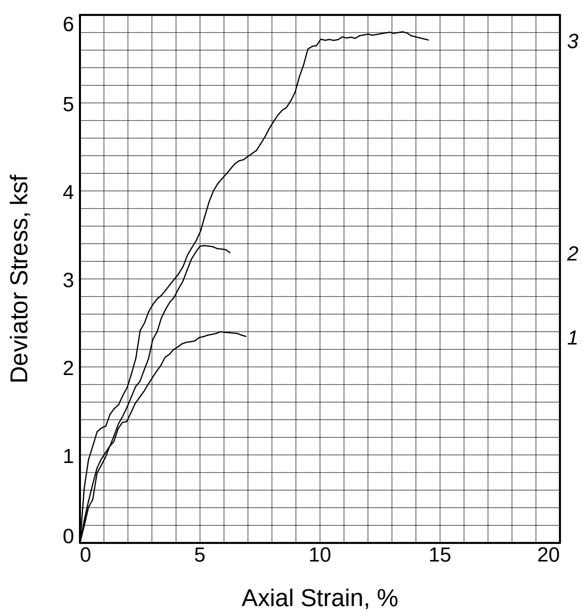
Project No.: 17-250 **Figure** B9

Gulf Shore Construction Services, LLC

Tested By: MPW **Checked By:** CMW



	Total	Effective
C, ksf	0.40	0.40
ϕ, deg	21.4	33.2
Tan(ϕ)	0.39	0.65



	Sample No.	1	2	3
Initial	Water Content, %	12.8	12.8	12.8
	Dry Density, pcf	112.9	112.9	112.9
	Saturation, %	70.1	70.1	70.1
	Void Ratio	0.4930	0.4930	0.4930
	Diameter, in.	2.81	2.81	2.81
	Height, in.	5.66	5.66	5.66
At Test	Water Content, %	18.3	17.7	17.7
	Dry Density, pcf	112.9	114.1	114.1
	Saturation, %	100.0	100.0	99.9
	Void Ratio	0.4930	0.4772	0.4772
	Diameter, in.	2.81	2.81	2.82
	Height, in.	5.64	5.60	5.58
	Strain rate, in./min.	0.012	0.013	0.120
	Back Pressure, psi	50.00	50.00	50.00
	Cell Pressure, psi	56.94	63.89	77.78
	Fail. Stress, ksf	2.40	3.38	5.81
	Total Pore Pr., ksf	7.78	8.45	9.39
	Ult. Stress, ksf			
	Total Pore Pr., ksf			
	$\bar{\sigma}_1$ Failure, ksf	2.82	4.13	7.62
	$\bar{\sigma}_3$ Failure, ksf	0.42	0.75	1.81

Type of Test:
CU with Pore Pressures

Sample Type: Remold

Description:

Specific Gravity= 2.7

Remarks: Test specimen remolded to approximate 90% of an ASTM D1557 proctor at +2% over optimum moisture content.

Figure B10

Client: Geocon, Inc.

Project: CEMEX - Cache Creek Plant

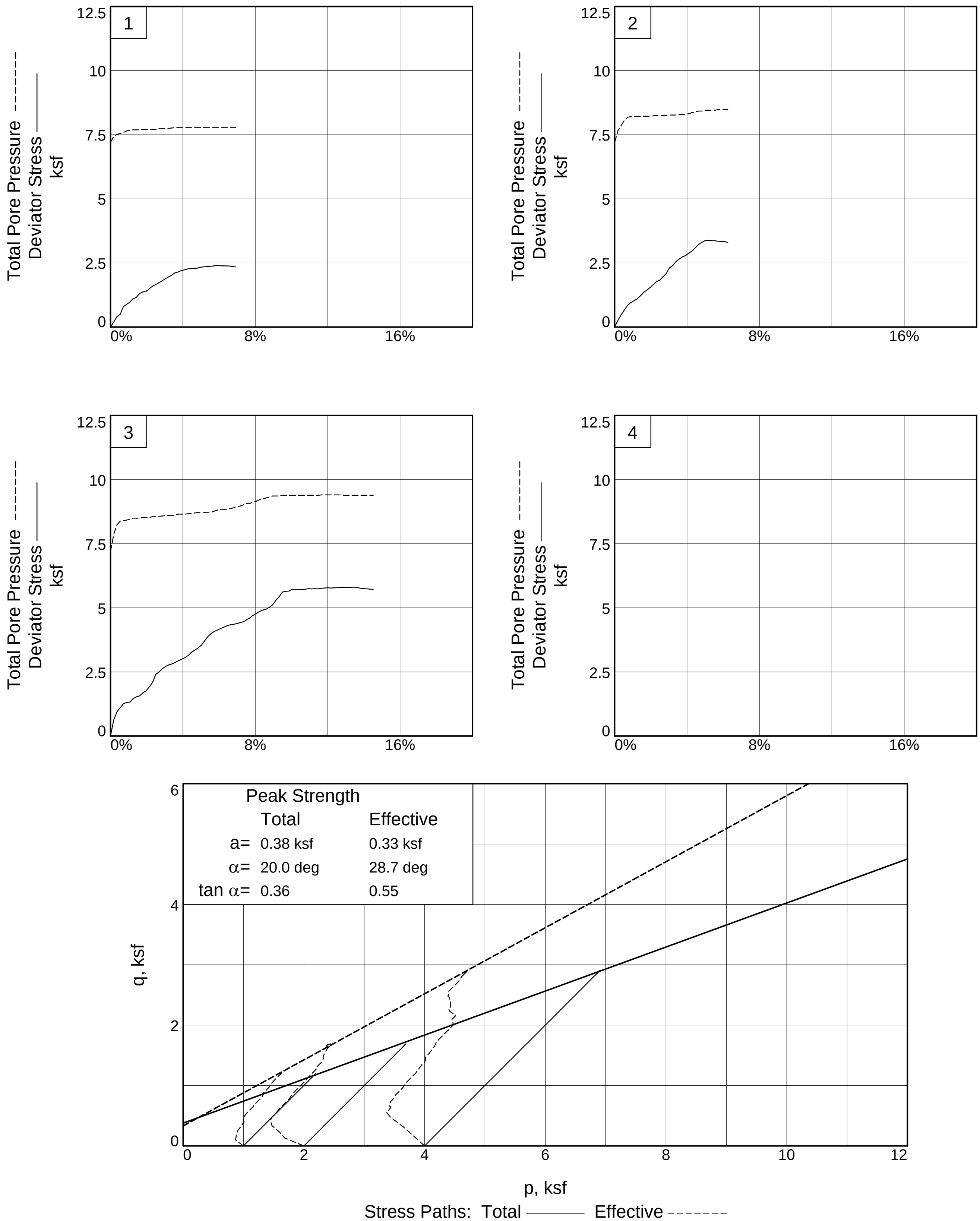
Location: A5-Bulk

Sample Number: 27920

Proj. No.: 17-250 **Date Sampled:** Rec. 10/25/17

GS GULF SHORE EXPLORATION AND TESTING

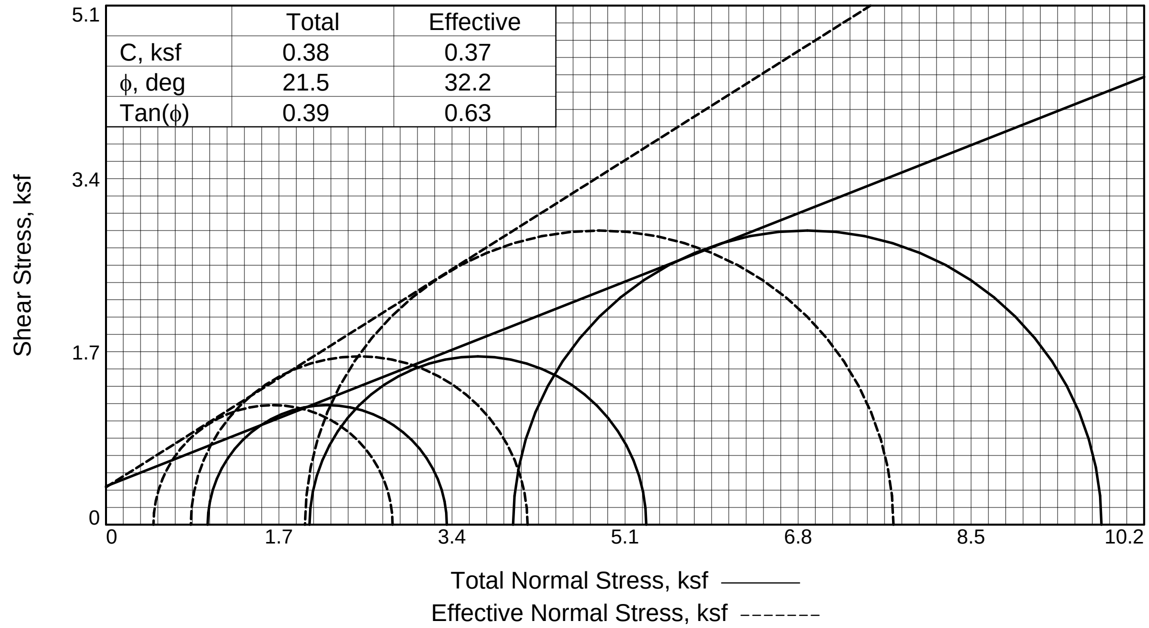
Tested By: MPW **Checked By:** CMW



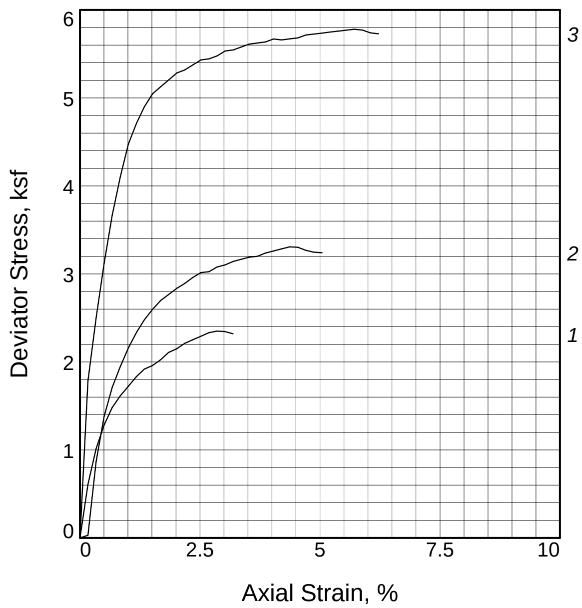
Client: Geocon, Inc.
Project: CEMEX - Cache Creek Plant
Location: A5-Bulk **Sample Number:** 27920
Project No.: 17-250 **Figure** B11

Gulf Shore Construction Services, LLC

Tested By: MPW **Checked By:** CMW



	Total	Effective
C, ksf	0.38	0.37
ϕ, deg	21.5	32.2
Tan(ϕ)	0.39	0.63



	Sample No.	1	2	3
Initial	Water Content, %	22.0	22.0	21.8
	Dry Density, pcf	95.7	95.7	96.2
	Saturation, %	77.9	78.1	78.3
	Void Ratio	0.7622	0.7620	0.7527
	Diameter, in.	2.86	2.86	2.86
	Height, in.	6.00	6.00	5.99
At Test	Water Content, %	27.2	27.6	27.5
	Dry Density, pcf	97.1	96.6	96.7
	Saturation, %	99.9	99.9	100.0
	Void Ratio	0.7358	0.7444	0.7440
	Diameter, in.	2.85	2.86	2.86
	Height, in.	5.96	5.95	5.95
	Strain rate, in./min.	0.012	0.013	0.011
	Back Pressure, psi	50.00	50.00	50.00
	Cell Pressure, psi	56.94	63.89	77.78
	Fail. Stress, ksf	2.35	3.31	5.78
	Total Pore Pr., ksf	7.73	8.37	9.24
	Ult. Stress, ksf			
	Total Pore Pr., ksf			
	$\bar{\sigma}_1$ Failure, ksf	2.82	4.14	7.74
	$\bar{\sigma}_3$ Failure, ksf	0.47	0.83	1.96

Type of Test:
CU with Pore Pressures

Sample Type: Liner

Description:

Specific Gravity= 2.7

Remarks:

Figure B12

Client: Geocon, Inc.

Project: CEMEX - Cache Creek Plant

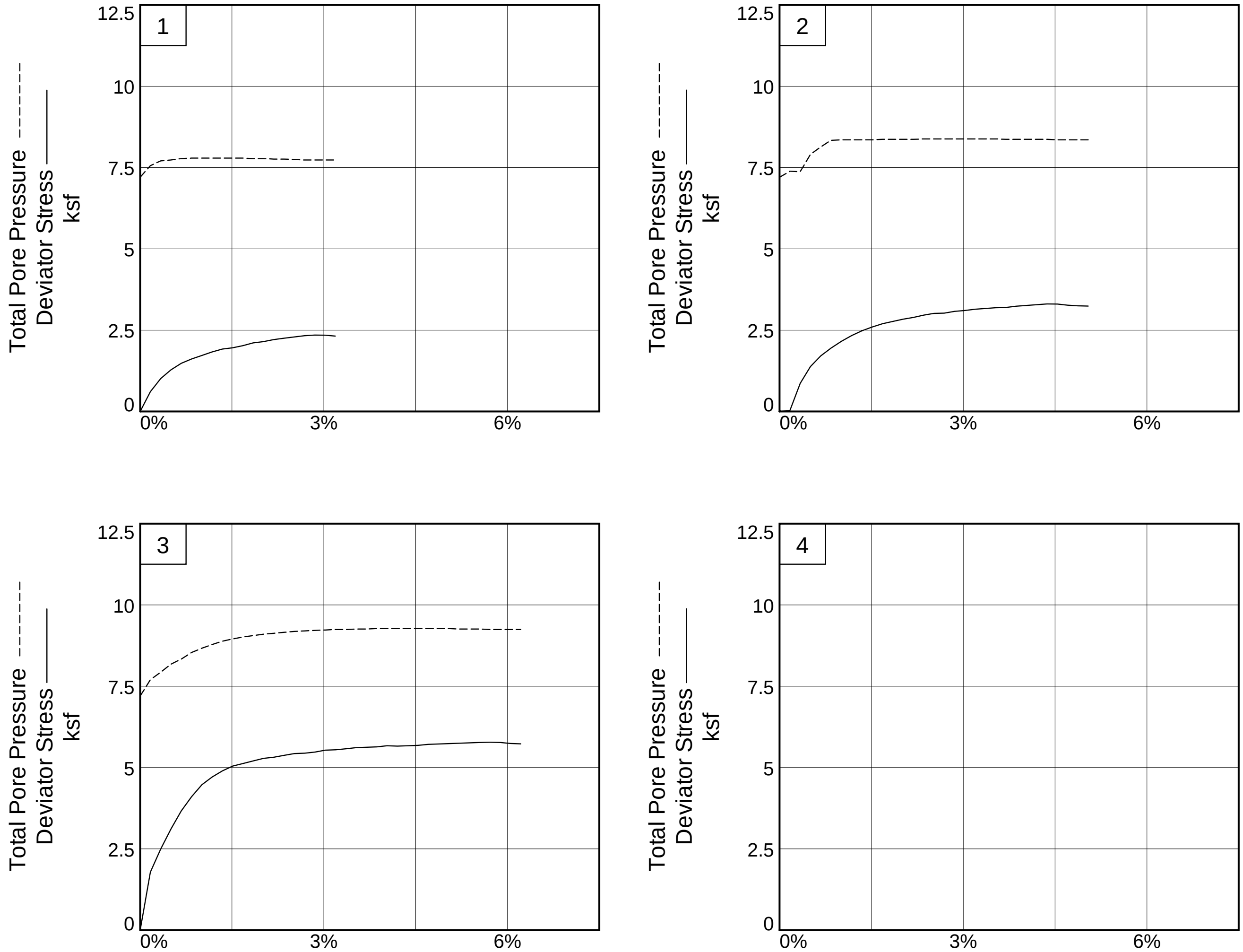
Location: B3b

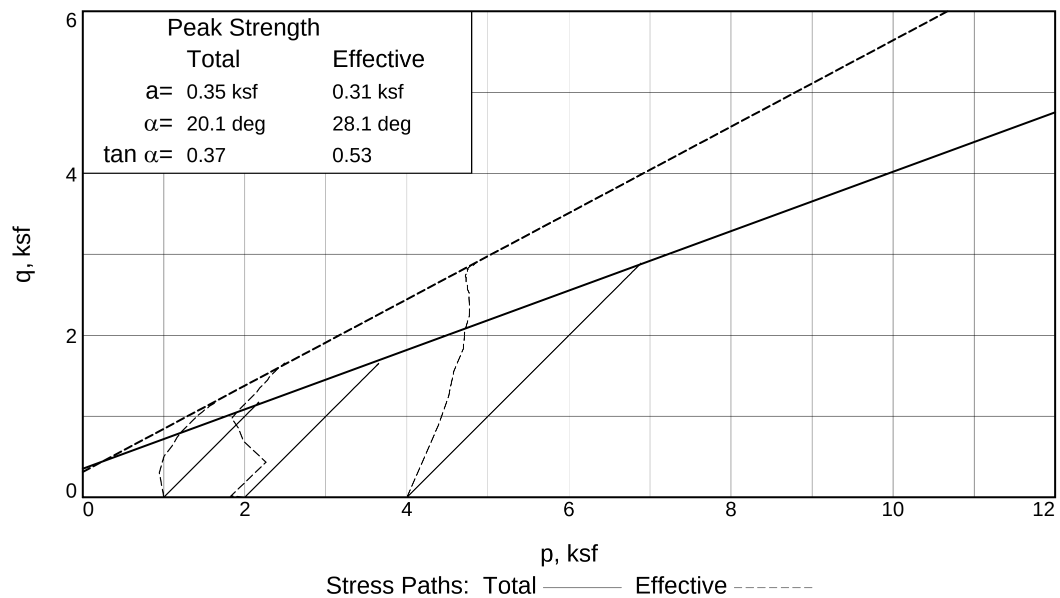
Sample Number: 28032 **Depth:** 4.0'-5.5'

Proj. No.: 17-250 **Date Sampled:** Rec. 10/31/17

GS GULF SHORE EXPLORATION AND TESTING

Tested By: MPW **Checked By:** CMW





Client: Geocon, Inc.

Project: CEMEX - Cache Creek Plant

Location: B3b **Depth:** 4.0'-5.5' **Sample Number:** 28032

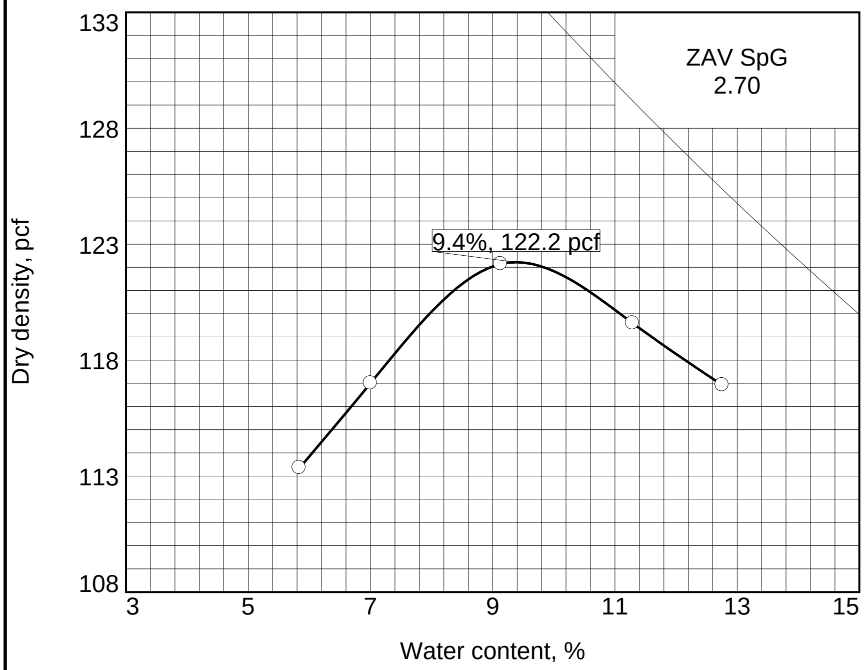
Project No.: 17-250 **Figure** B13

Gulf Shore Construction Services, LLC

Tested By: MPW **Checked By:** CMW

COMPACTION TEST REPORT

Curve No. 28093



Preparation Method	Moist
Rammer: Wt.	10 lb.
Drop	18 in.
Type	Manual
Layers: No.	five
Blows per	25
Mold Size	0.03333 cu. ft.
Test Performed on Material Passing	3/8 in. Sieve
%>3/8 in.	
%<No.200	
Atterberg (D 4318): LL	
PI	
NM (D 2216)	
Sp.G. (D 854)	2.70
USCS (D 2487)	
AASHTO (M 145)	
Date: Sampled	Rec. 10/31/17
Received	10/31/17
Tested	
Tested By	

COMPACTION TESTING DATA
ASTM D 1557-12 Method B Modified

	1	2	3	4	5	6
WM + WS	6180.3	6199.4	6202.5	6080.0	6001.0	
WM	4187.2	4187.2	4187.2	4187.2	4187.2	
WW + T #1	491.4	450.7	439.0	430.1	421.7	
WD + T #1	443.1	409.6	406.2	405.3	401.3	
TARE #1	64.5	45.6	47.1	51.1	52.0	
WW + T #2						
WD + T #2						
TARE #2						
MOIST.	12.8	11.3	9.1	7.0	5.8	
DRY DENS.	116.9	119.6	122.1	117.0	113.4	

SIEVE TEST RESULTS

Opening Size	% Passing	Specs.

TEST RESULTS

Maximum dry density = 122.2 pcf

Optimum moisture = 9.4 %

Project No. 17-250 **Client:** Geocon, Inc.

Project: CEMEX - Cache Creek Plant

Location: B2-Bulk **Sample Number:** 28093

GULF SHORE
EXPLORATION AND TESTING

Material Description

Remarks:

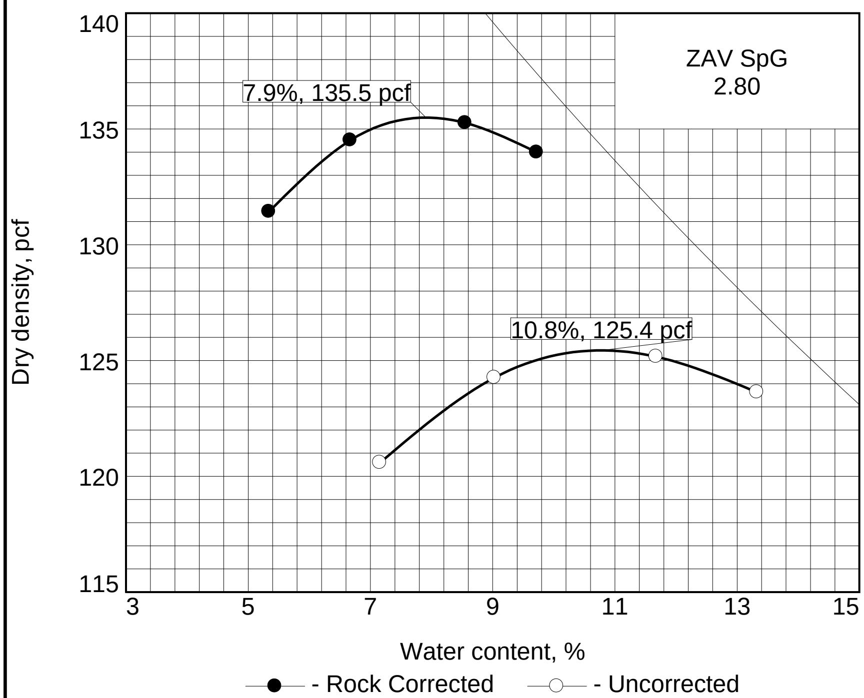
Checked by:

Title:

Figure B14

COMPACTION TEST REPORT

Curve No. 27920



Preparation Method	Moist
Rammer: Wt.	10 lb.
Drop	18 in.
Type	Manual
Layers: No.	five
Blows per	56
Mold Size	0.075 cu. ft.
Test Performed on Material Passing	3/4 in. Sieve
%>3/4 in.	29.0
%<No.200	
Atterberg (D 4318): LL	
PI	
NM (D 2216)	
Sp.G. (D 854)	
USCS (D 2487)	
AASHTO (M 145)	
Date: Sampled	Rec. 10/25/17
Received	10/25/17
Tested	11/2/17
Tested By	BM

COMPACTION TESTING DATA
ASTM D 1557-12 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

	1	2	3	4	5	6
WM + WS	7137.0	7350.1	7496.4	7507.5		
WM	2741.3	2741.3	2741.2	2741.2		
WW + T #1	308.0	431.9	481.5	477.1		
WD + T #1	290.4	399.8	436.0	427.0		
TARE #1	44.4	44.2	46.3	51.0		
WW + T #2						
WD + T #2						
TARE #2						
MOIST.	5.3	6.7	8.6	9.7		
DRY DENS.	131.4	134.5	135.3	134.0		

SIEVE TEST RESULTS

Opening Size	% Passing	Specs.

ROCK CORRECTED TEST RESULTS	UNCORRECTED
Maximum dry density = 135.5 pcf	125.4 pcf
Optimum moisture = 7.9 %	10.8 %

Material Description

Remarks:

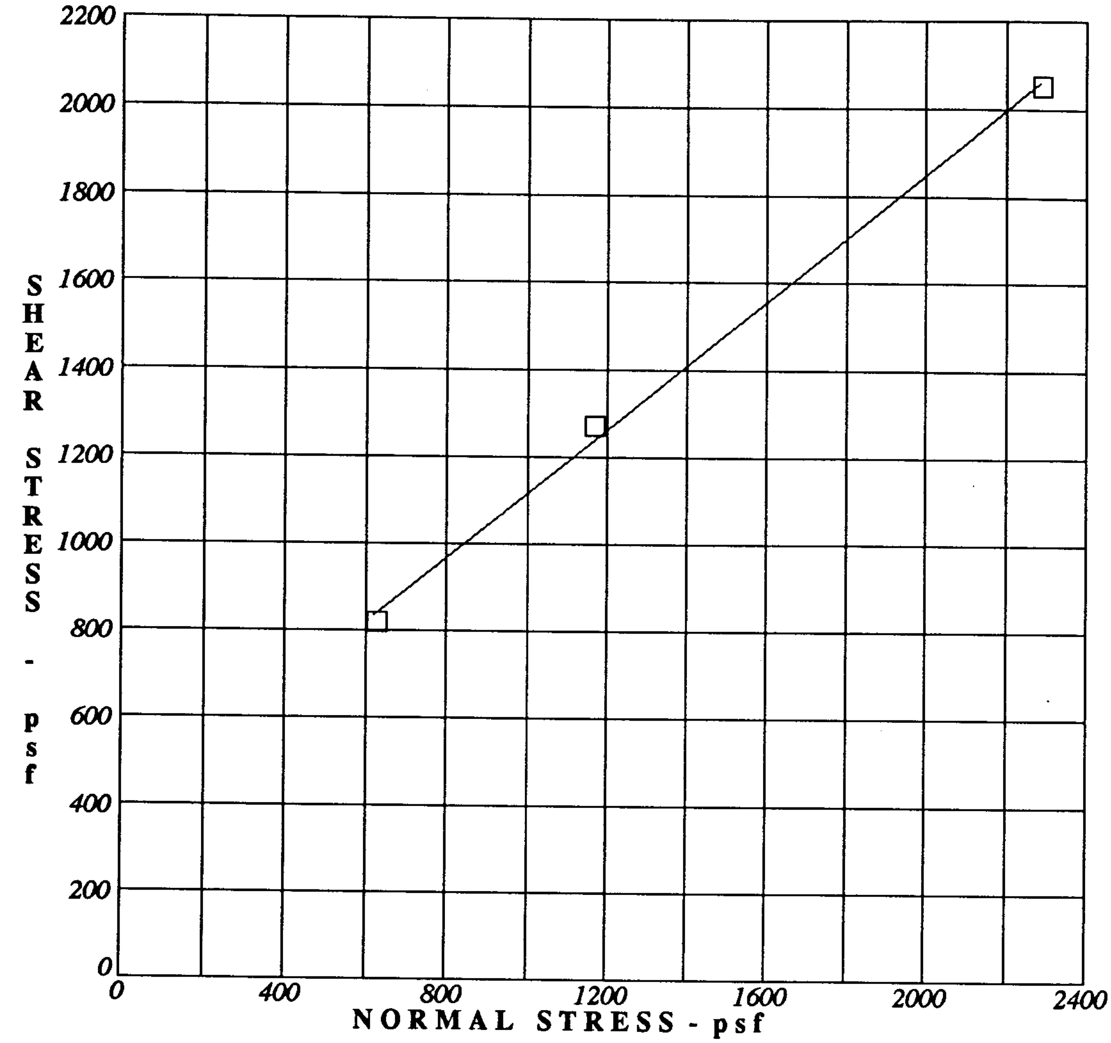
Project No. 17-250 **Client:** Geocon, Inc.
Project: CEMEX - Cache Creek Plant

○ **Location:** A5-Bulk **Sample Number:** 27920

GS GULF SHORE EXPLORATION AND TESTING

Checked by: CMW
Title: PM

Figure B15



TEST TYPE: CD/WET/STAGED
BORING NO: B-2
DEPTH: 45.0 ft.
SOIL DESCRIPTION: Clean Gray Sand

FRICTION ANGLE = 37 deg.
COHESION = 380.0 psf

DRY DENSITY - pcf	106.4		
WATER CONTENT - %	18.3		
NORMAL STRESS - psf	630	1170	2290
MAXIMUM SHEAR - psf	820	1270	2050

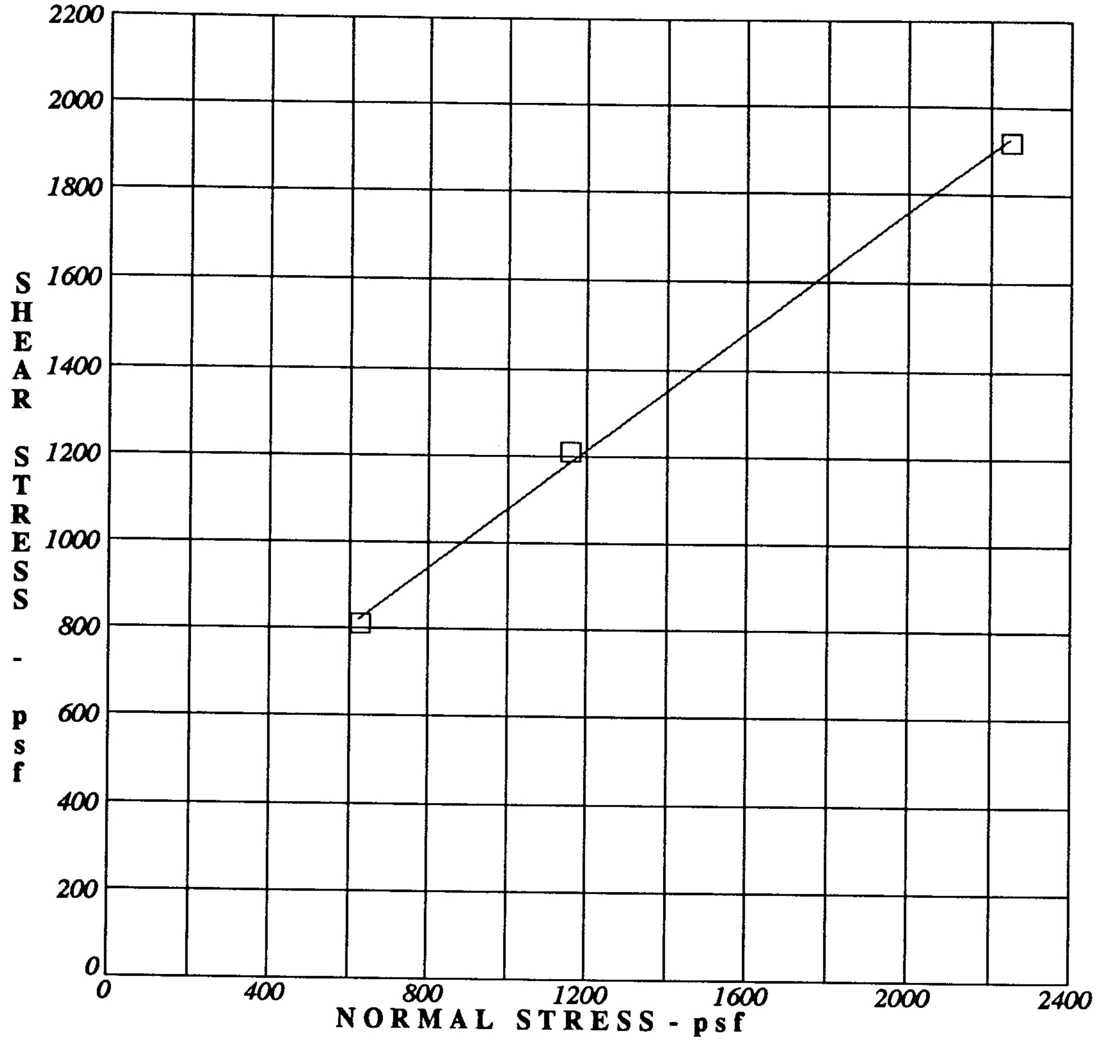
KLEINFELDER

PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE 17



TEST TYPE:	CD/WET/STAGED
BORING NO:	B-2
DEPTH:	60.0 ft.
SOIL DESCRIPTION:	Brown Silty Sand

FRICTION ANGLE = 34 deg.

COHESION = 400.0 psf

DRY DENSITY - pcf	98.7		
WATER CONTENT - %	22.3		
NORMAL STRESS - psf	630	1160	2250
MAXIMUM SHEAR - psf	810	1210	1920

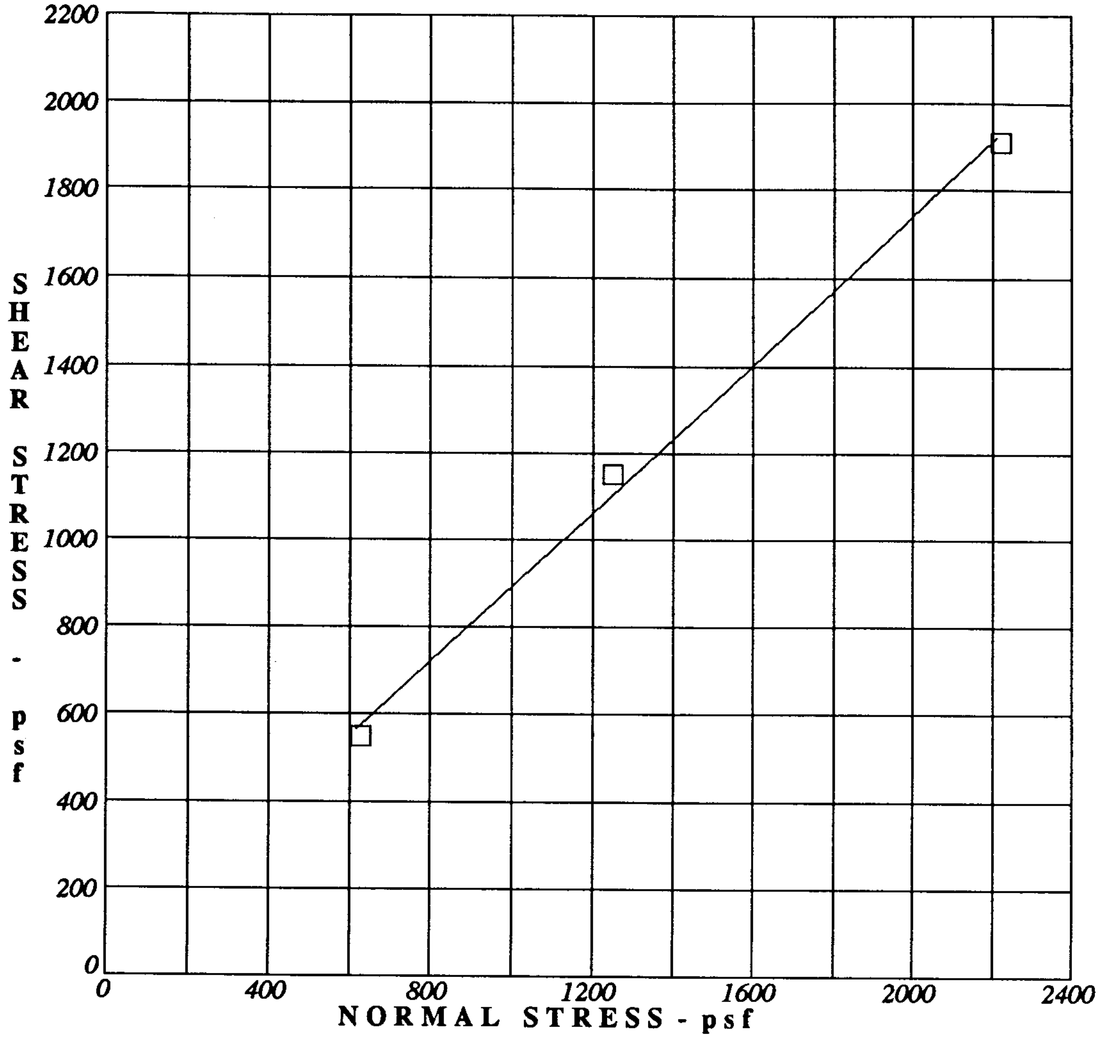
KLEINFELDER

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE **18**

PROJECT NO. 40-2695-01



TEST TYPE: CD/WET/STAGED
BORING NO: B-9
DEPTH: 30.0 ft.
SOIL DESCRIPTION: Dark Brown Silty Sand

FRICTION ANGLE = 41 deg.
COHESION = 50.0 psf

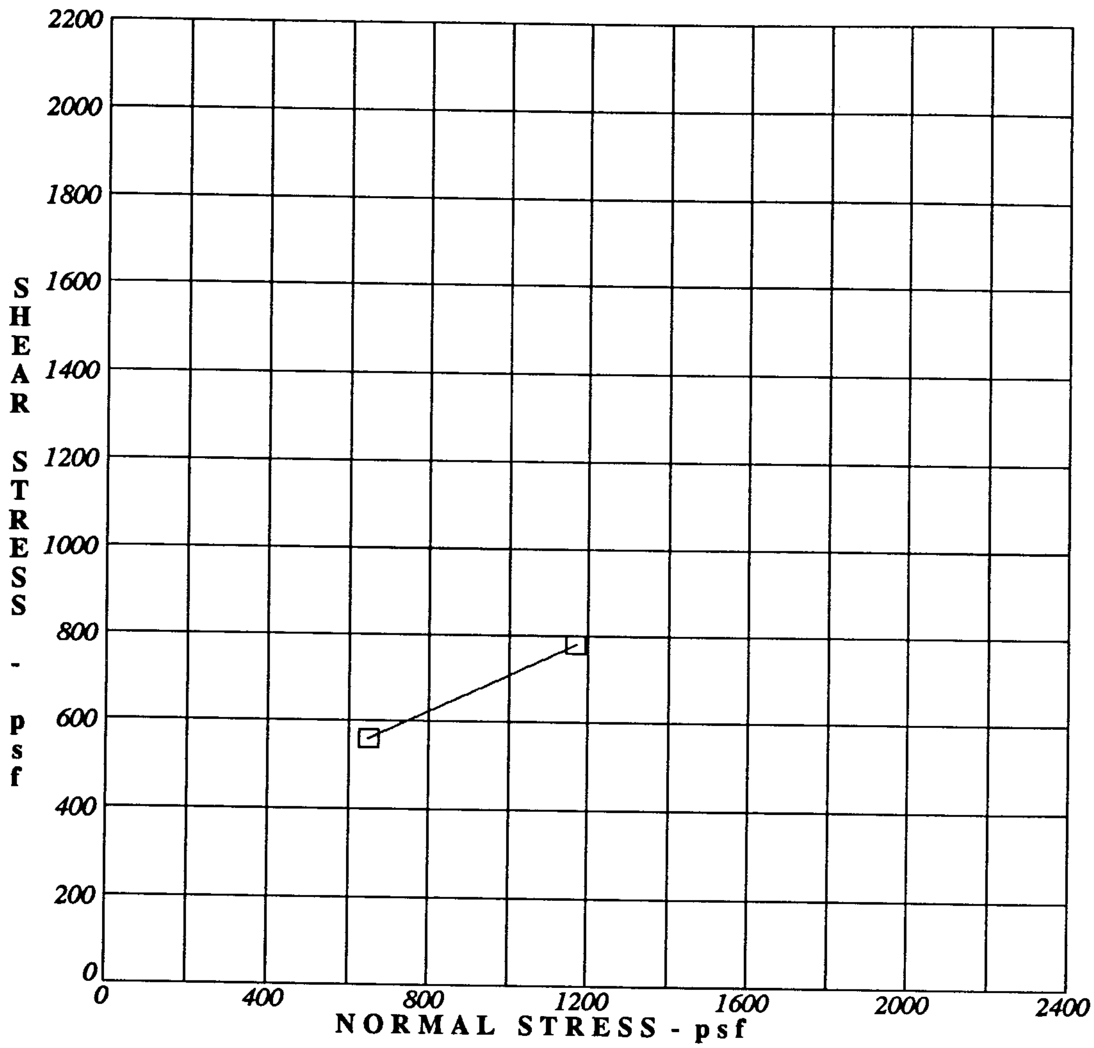
DRY DENSITY - pcf	90.3	89.7	96.1
WATER CONTENT - %	19.4	19.2	19.7
NORMAL STRESS - psf	630	1250	2220
MAXIMUM SHEAR - psf	550	1150	1910

KLEINFELDER

PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant
Yolo County, California

PLATE
19



TEST TYPE:	CD/WET/STAGED
BORING NO:	B-10
DEPTH:	60.0 ft.
SOIL DESCRIPTION:	Dark Brown Sand (slightly disturbed)

FRICTION ANGLE = 23 deg.

COHESION = 285.0 psf

DRY DENSITY - pcf	91.4	93.7	96.2
WATER CONTENT - %	22.9	22.0	23.3
NORMAL STRESS - psf	650	1170	2240
MAXIMUM SHEAR - psf	560	780	2000

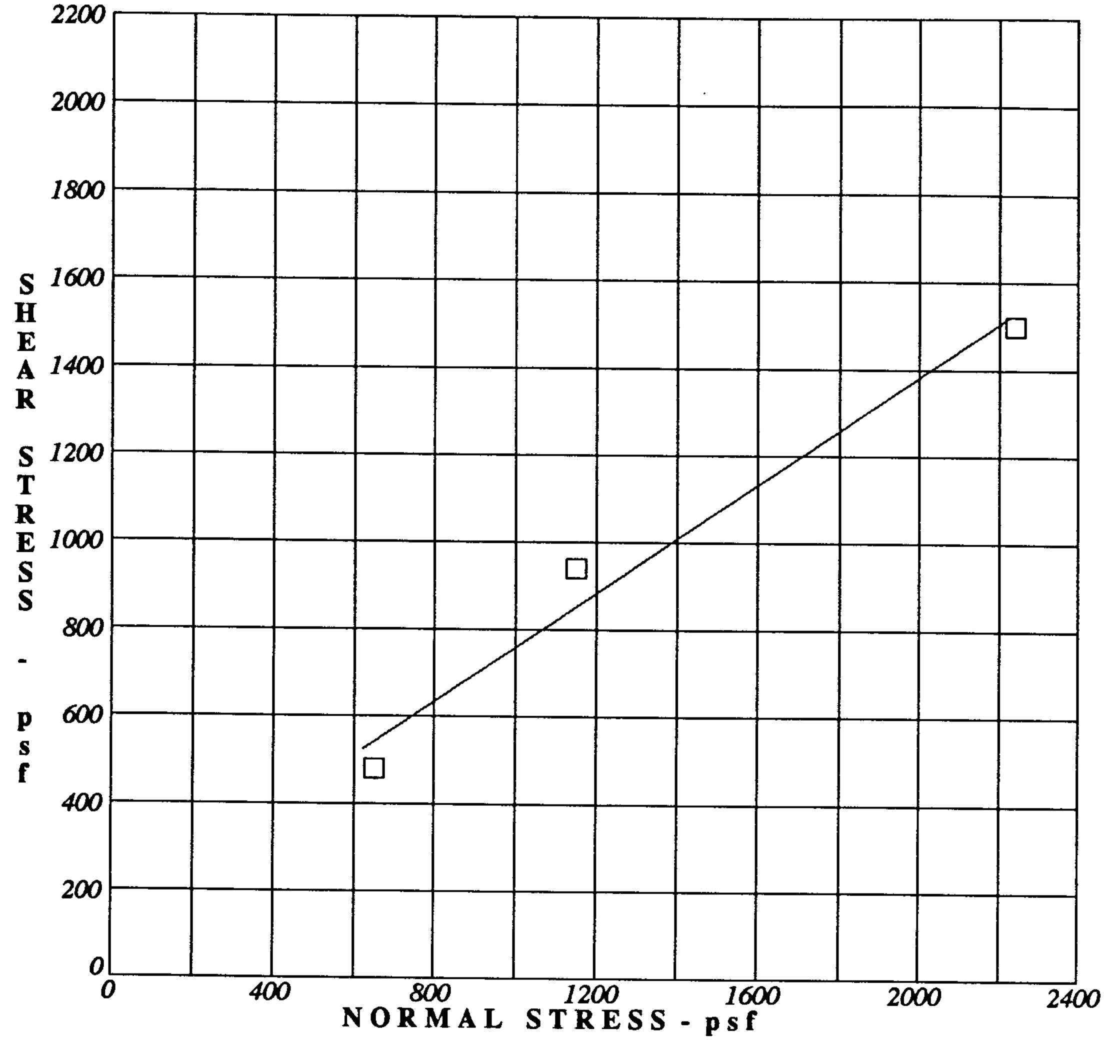
KLEINFELDER

PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE **20**



TEST TYPE: CD/WET/STAGED

BORING NO: B-11

DEPTH: 65.0 ft.

SOIL DESCRIPTION: Brown-Gray Silty Sand (Slightly Disturbed)

FRICTION ANGLE = 32 deg.

COHESION = 150.0 psf

DRY DENSITY - pcf	94	95.3	98.2
WATER CONTENT - %	17.3	17.1	17.3
NORMAL STRESS - psf	650	1150	2240
MAXIMUM SHEAR - psf	480	940	1500

KLEINFELDER

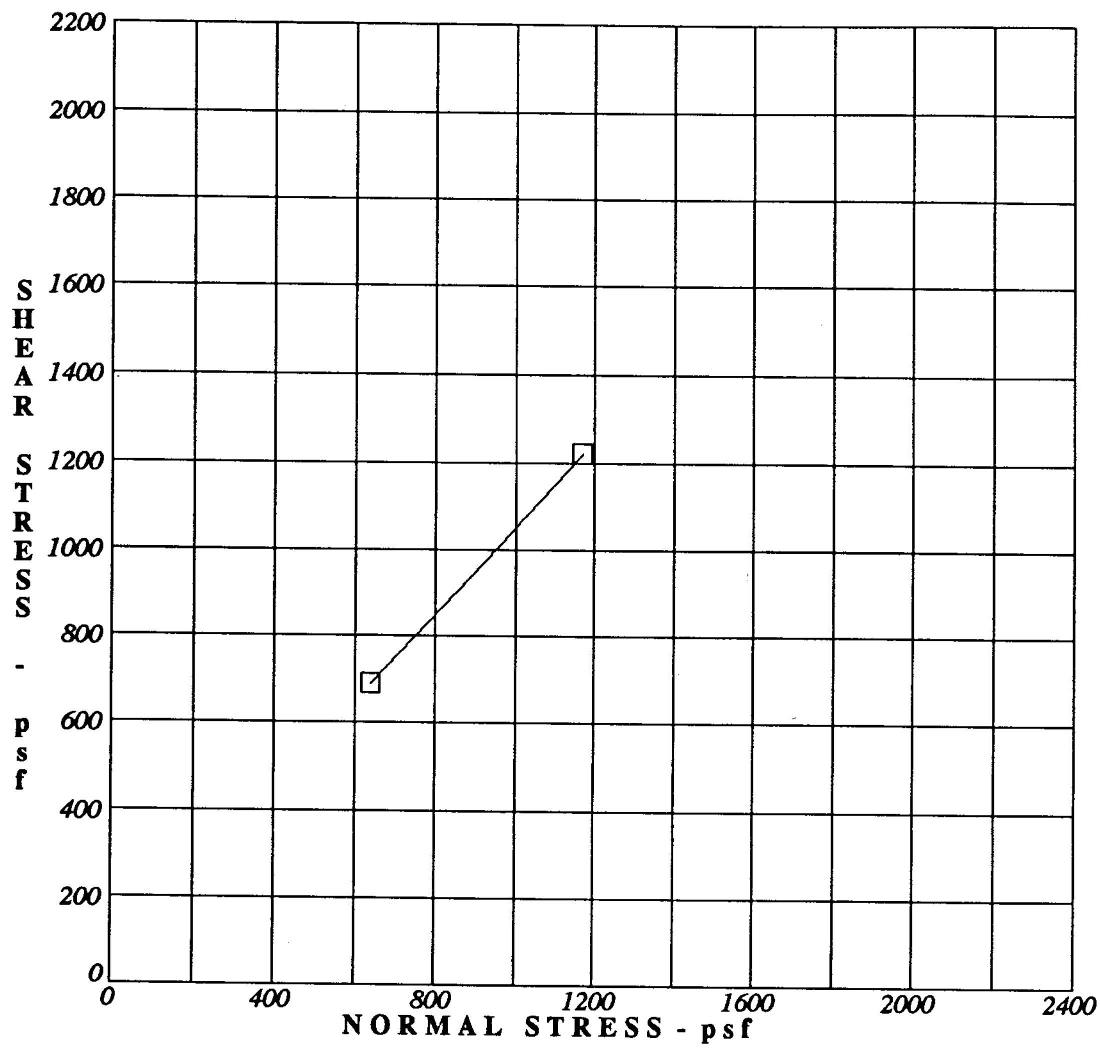
PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE

21



TEST TYPE: CD/WET/STAGED

BORING NO: B-12

DEPTH: 40.0 ft.

SOIL DESCRIPTION: Brown Silty Sand (some pebbles)

FRICTION ANGLE = 46 deg.

COHESION = 50.0 psf

DRY DENSITY - pcf	117.7	118.6	94.7
WATER CONTENT - %	13.5	13.8	27.2
NORMAL STRESS - psf	640	1170	2290
MAXIMUM SHEAR - psf	690	1220	4630

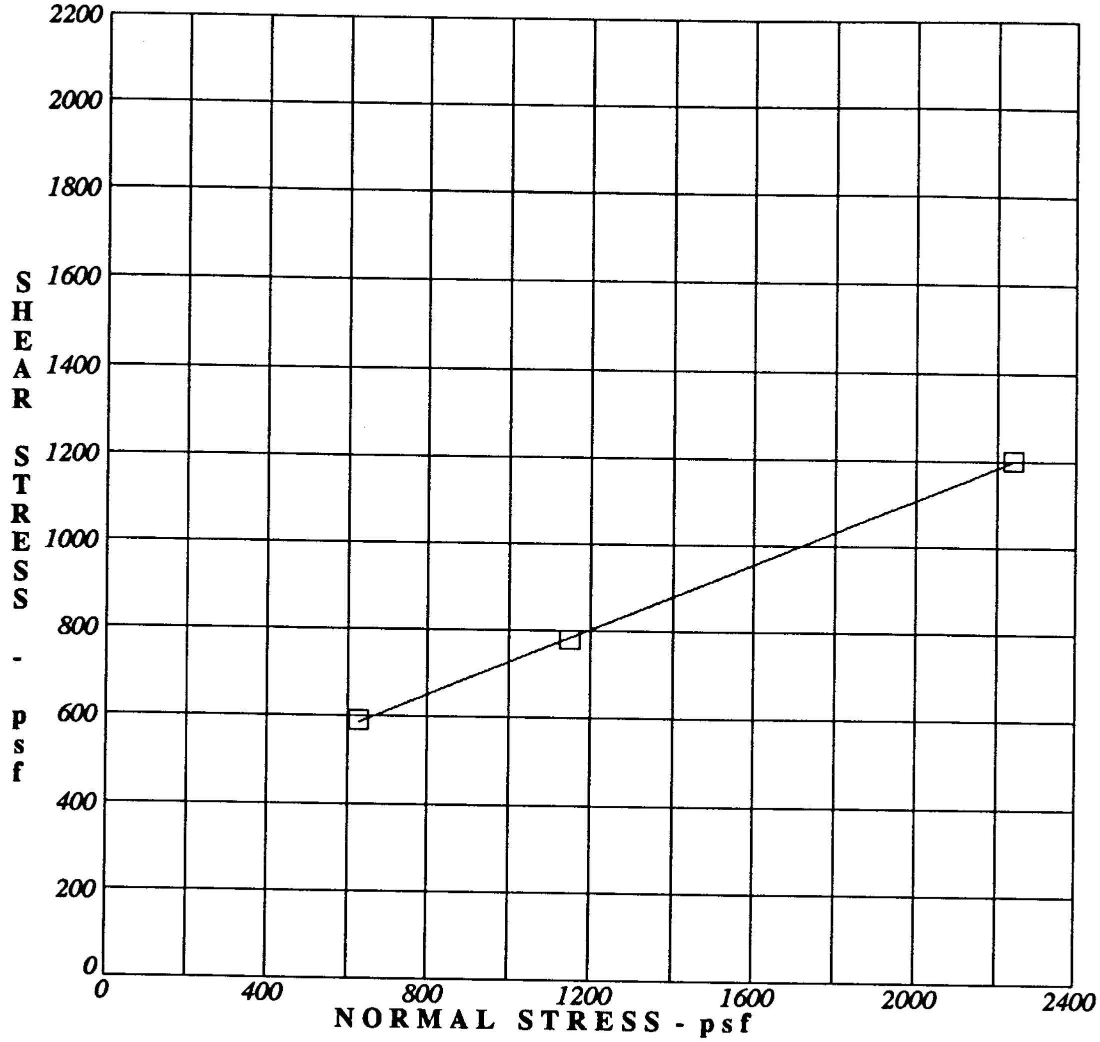
KLEINFELDER

PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE 22



TEST TYPE: CD/WET/STAGED

BORING NO: B-13

DEPTH: 40.0 ft.

SOIL DESCRIPTION: Brown Sand (totally remolded)

FRICTION ANGLE = 21 deg.

COHESION = 340.0 psf

DRY DENSITY - pcf	94.3	100.9	97.8
WATER CONTENT - %	18.1	16.0	15.8
NORMAL STRESS - psf	630	1150	2240
MAXIMUM SHEAR - psf	590	780	1200

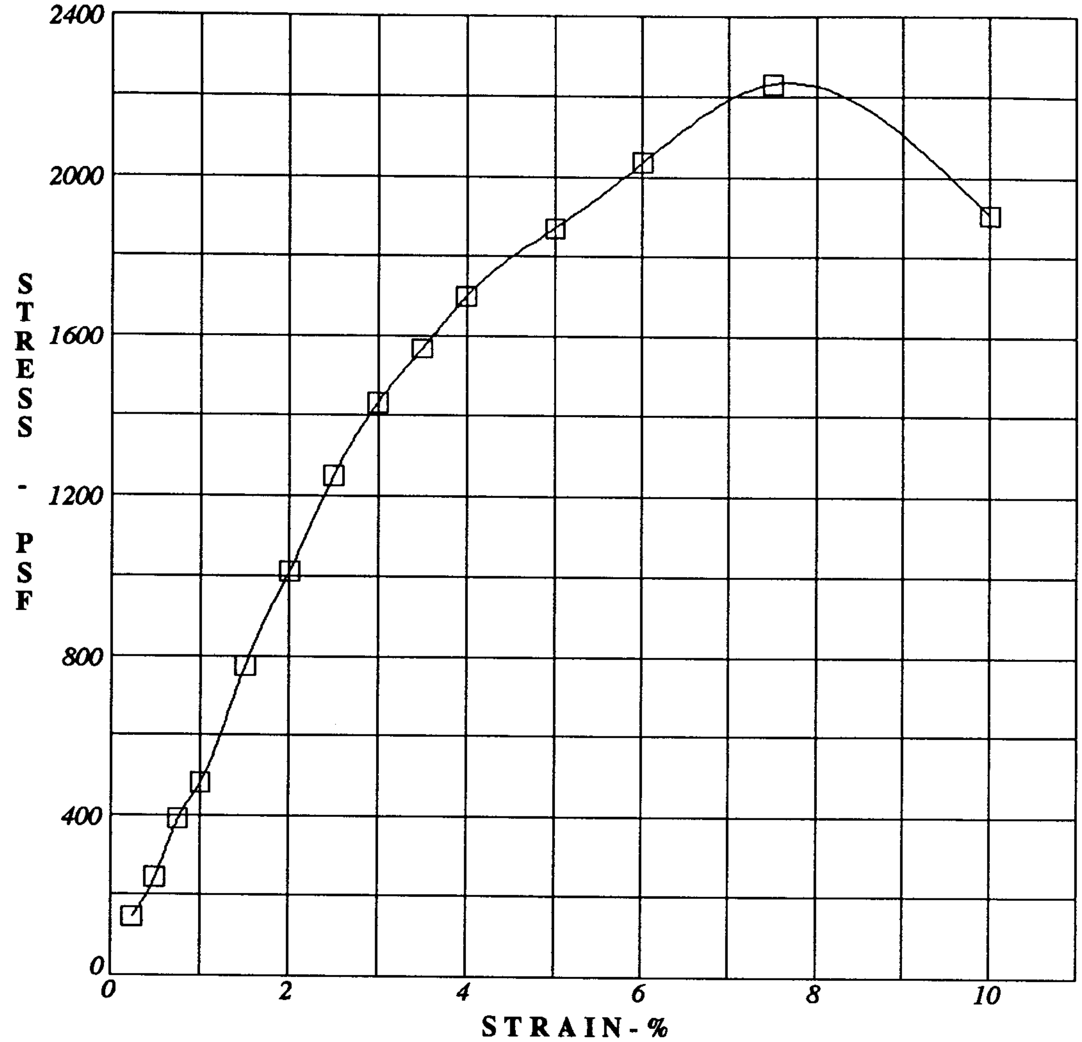
KLEINFELDER

PROJECT NO. 40-2695-01

DIRECT SHEAR TEST
Solano Concrete Madison Plant

Yolo County, California

PLATE 23



BORING NO: B-1

DEPTH: 70.0 ft

SOIL DESCRIPTION: Yellow Brown Silty Clay

DRY DENSITY: 74.50 pcf

WATER CONTENT: 46.38 %

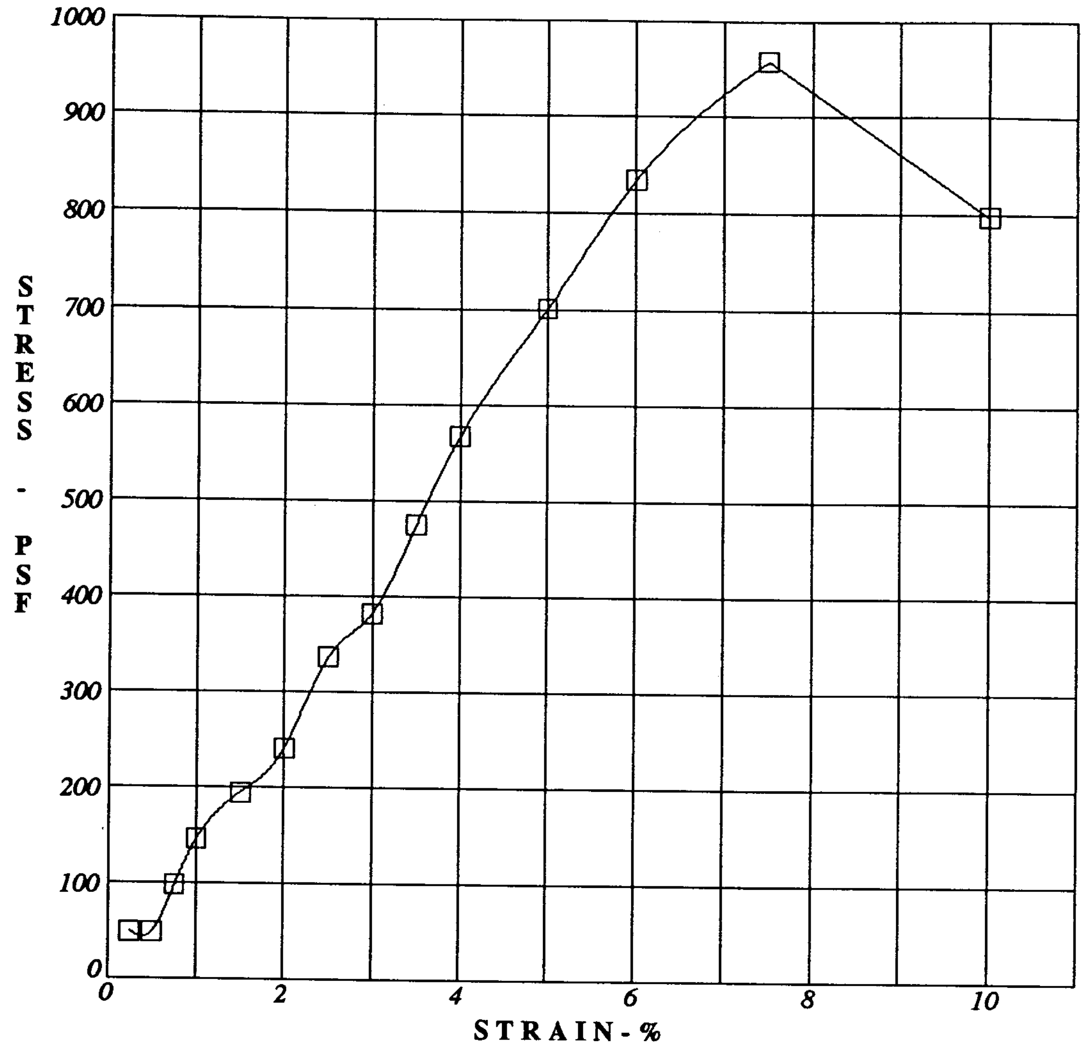
MAX. UC STRENGTH = 2232 psf AT 7.50% STRAIN

KLEINFELDER

PROJECT NO. 40-2695-01

UNCONFINED COMPRESSION
Solano Concrete Madison Plant
Yolo County, California

PLATE 24



BORING NO: B-1
DEPTH: 85.0 ft
SOIL DESCRIPTION: Olive Brown Silty Clay

DRY DENSITY: 78.90 pcf
WATER CONTENT: 38.22 %

MAX. UC STRENGTH = 957 psf AT 7.50% STRAIN

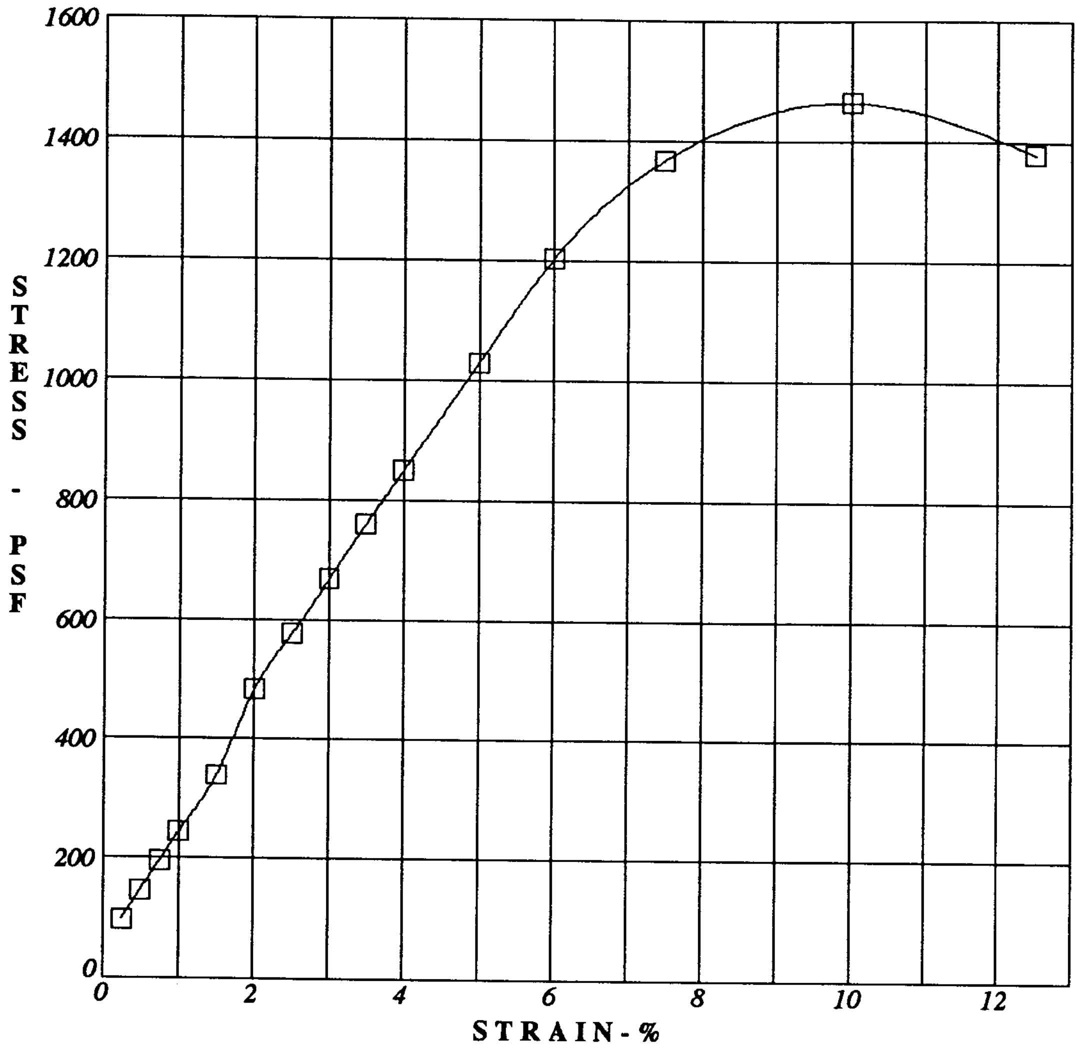
KLEINFELDER

PROJECT NO. 40-2695-01

UNCONFINED COMPRESSION
Solano Concrete Madison Plant

Yolo County, California

PLATE
25



BORING NO: B-2

DEPTH: 75.0 ft

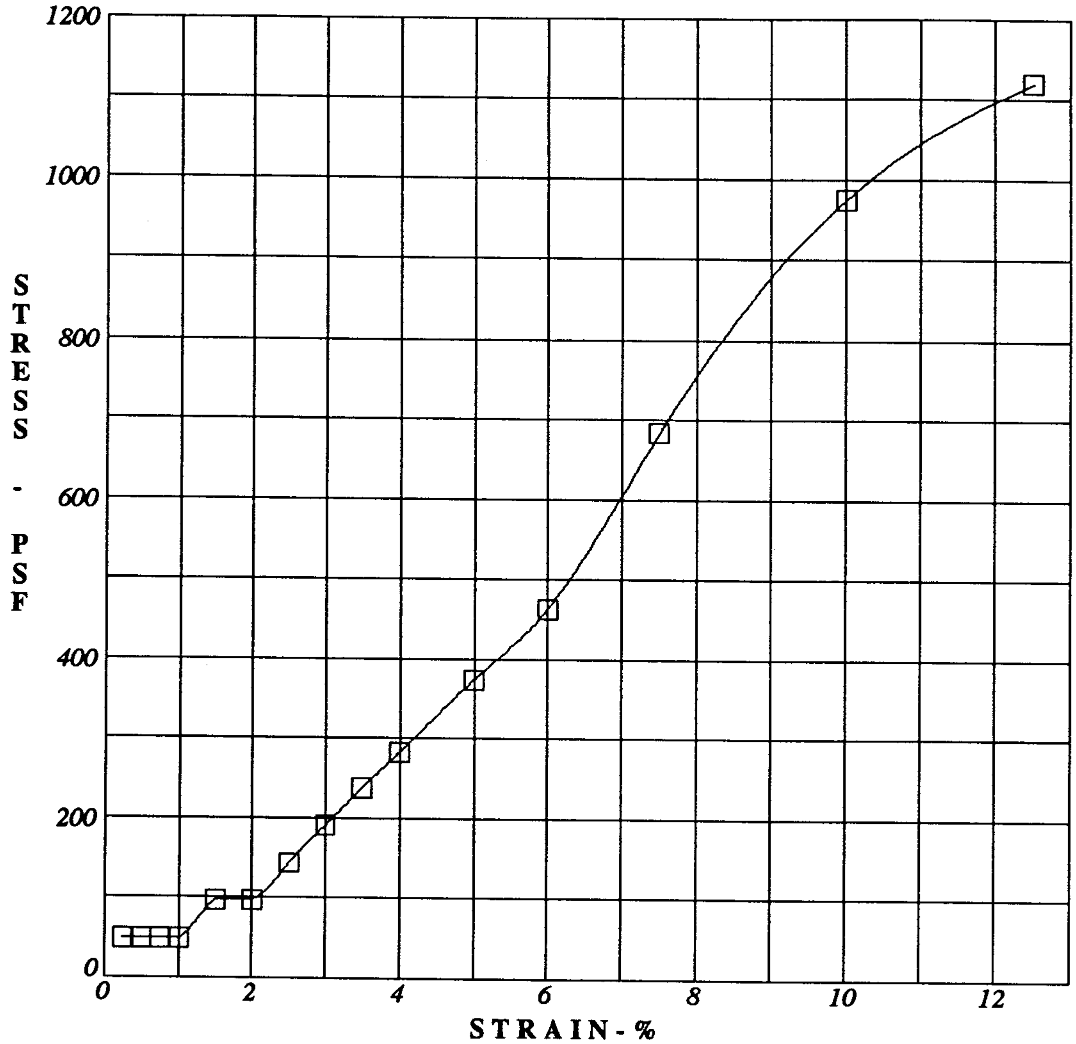
SOIL DESCRIPTION: Gray Brown Silty Clay

DRY DENSITY: 75.90 pcf

WATER CONTENT: 43.68 %

MAX. UC STRENGTH = 1463 psf AT 10.00% STRAIN

KLEINFELDER	UNCONFINED COMPRESSION Solano Concrete Madison Plant Yolo County, California	PLATE 26
PROJECT NO. 40-2695-01		



BORING NO: B-7

DEPTH: 75.0 ft

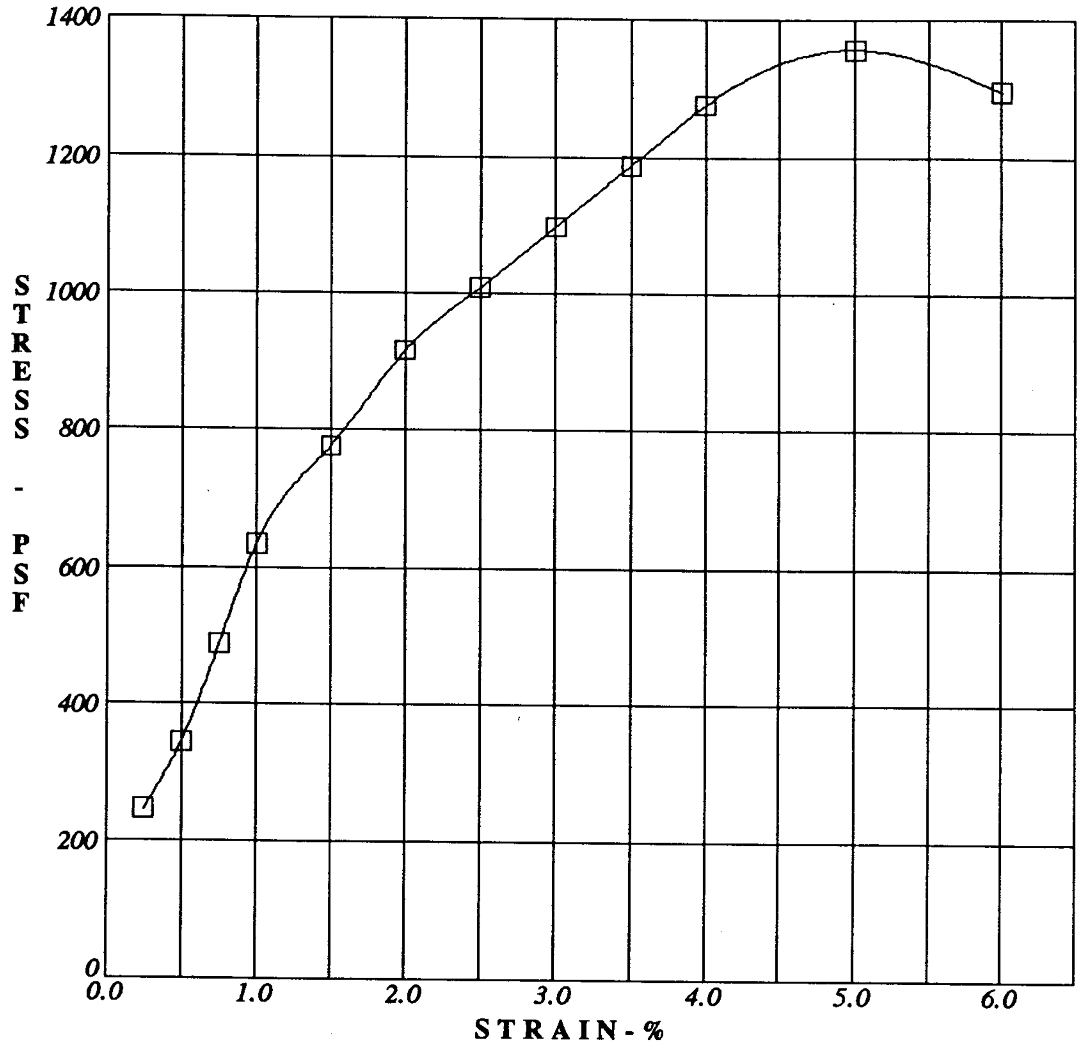
SOIL DESCRIPTION: Light Brown Silty Clay

DRY DENSITY: 78.40 pcf

WATER CONTENT: 39.10 %

MAX. UC STRENGTH = 1120 psf AT 12.50% STRAIN

KLEINFELDER	**UNCONFINED COMPRESSION** Solano Concrete Madison Plant	PLATE
PROJECT NO. 40-2695-01	Yolo County, California	27



BORING NO: B-9

DEPTH: 35.0 ft

SOIL DESCRIPTION: Blue-Gray Silty Clay

DRY DENSITY: 89.30 pcf

WATER CONTENT: 31.29 %

MAX. UC STRENGTH = 1356 psf AT 5.00% STRAIN

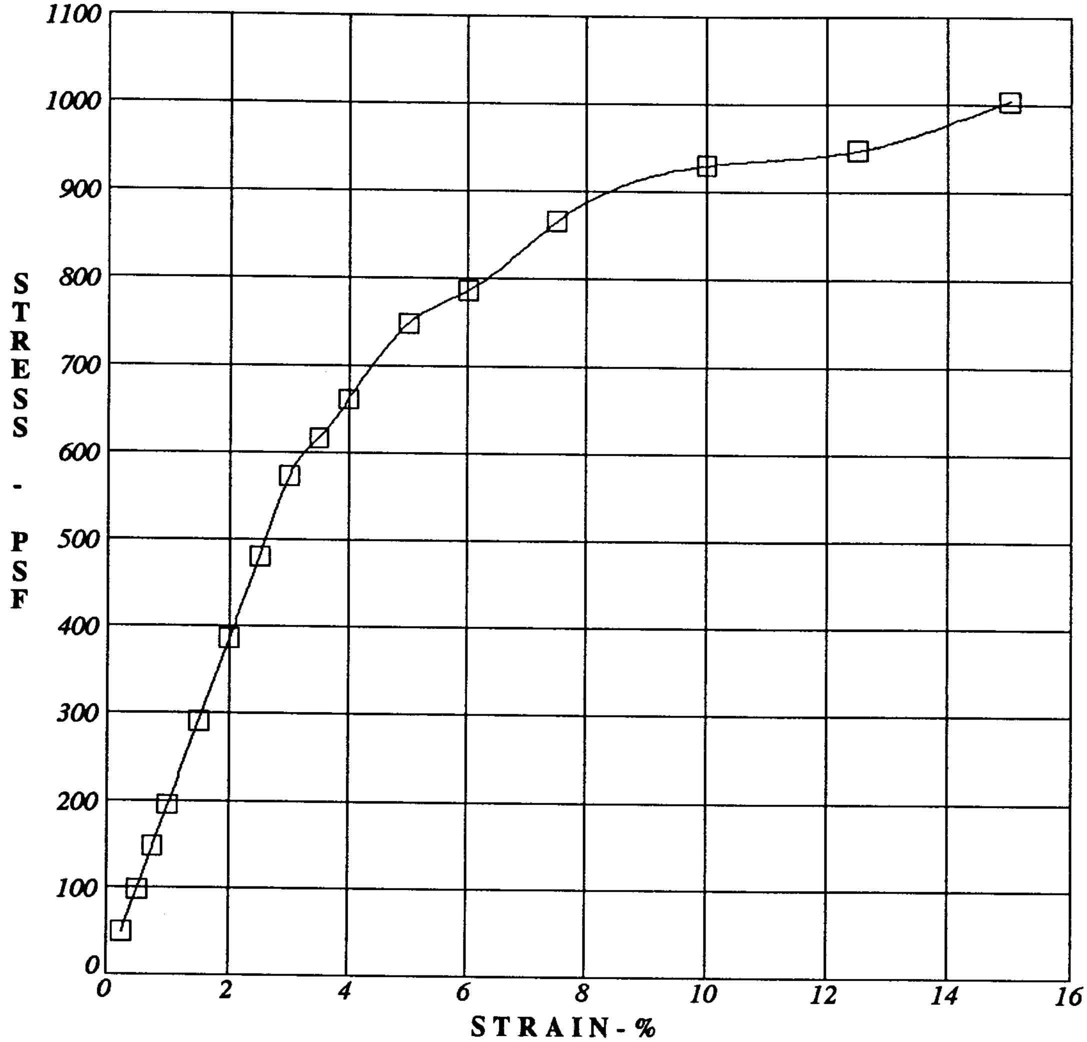
KLEINFELDER

PROJECT NO. 40-2695-01

UNCONFINED COMPRESSION
Solano Concrete Madison Plant

Yolo County, California

PLATE 28



BORING NO: B-10

DEPTH: 45.0 ft

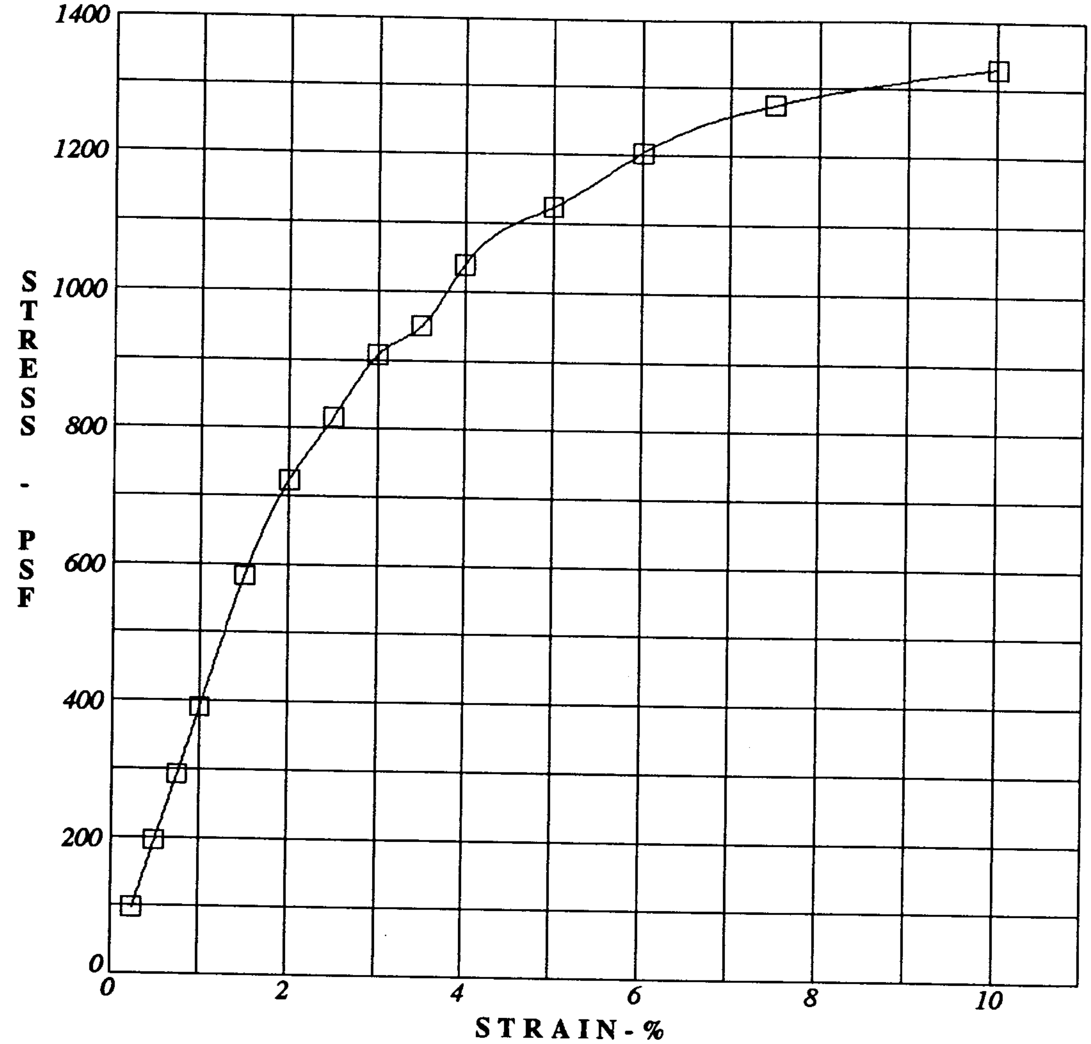
SOIL DESCRIPTION:

DRY DENSITY: 89.50 pcf

WATER CONTENT: 31.90 %

MAX. UC STRENGTH = 1004 psf AT 15.00% STRAIN

KLEINFELDER	UNCONFINED COMPRESSION Solano Concrete Madison Plant	PLATE 29
PROJECT NO. 40-2695-01	Yolo County, California	



BORING NO: B-12
DEPTH: 50.0 ft
SOIL DESCRIPTION: Gray Clay
DRY DENSITY: 78.40 pcf
WATER CONTENT: 38.10 %

MAX. UC STRENGTH = 1330 psf AT 10.00% STRAIN

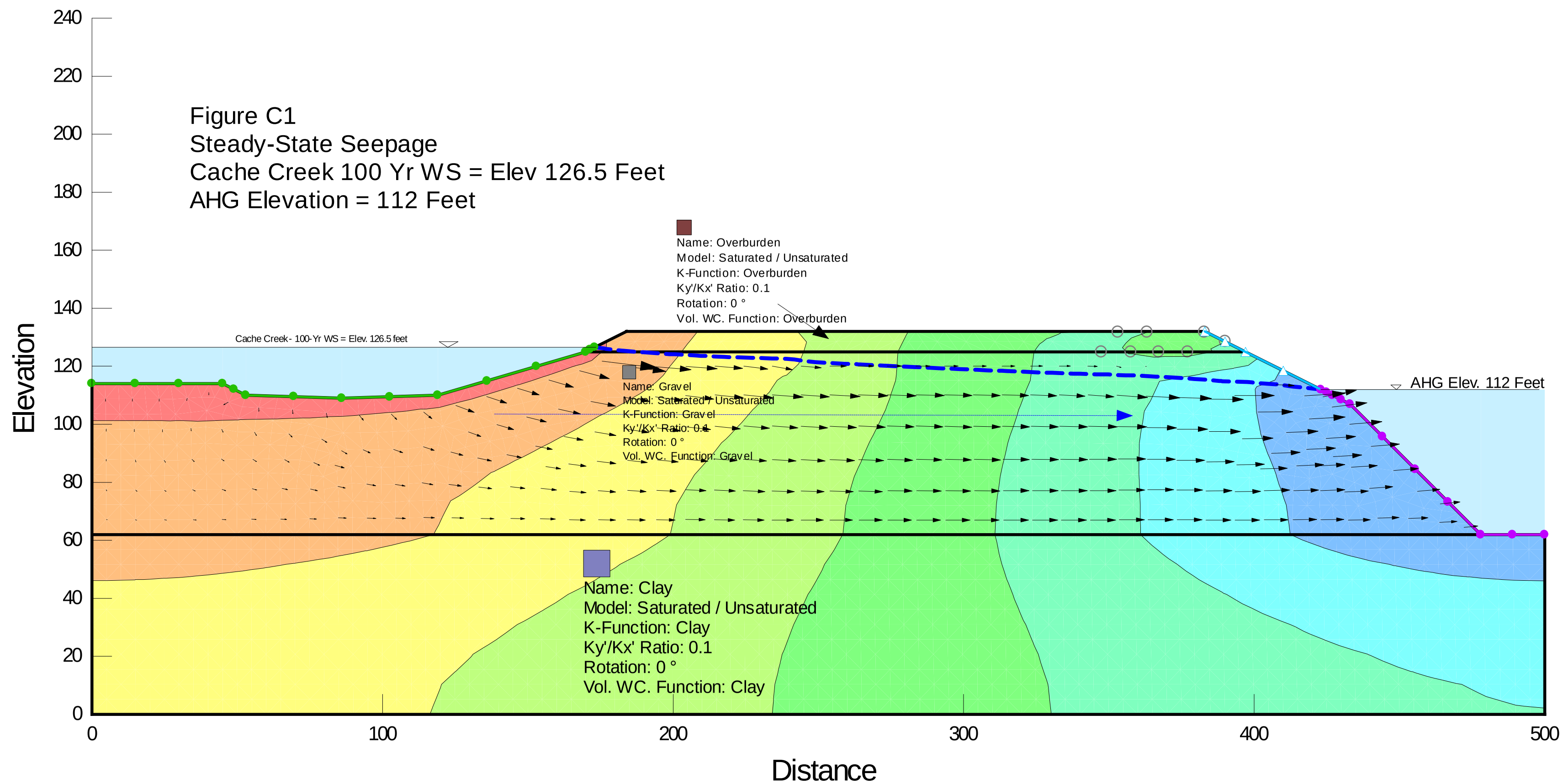
KLEINFELDER	**UNCONFINED COMPRESSION** **Solano Concrete Madison Plant** **Yolo County, California**	**PLATE** 30
PROJECT NO. 40-2695-01		

APPENDIX C

APPENDIX C
SLOPE STABILITY AND SEEPAGE ANALYSIS

The computer programs SLOPE/W and SEEP/W Version 7 distributed by Geo-Slope International were utilized to perform slope stability and seepage analyses. SEEP/W is a finite element analysis software product for analyzing groundwater seepage and excess-pore pressure dissipation problems within porous materials such as soil and rock. SLOPE/W uses conventional slope stability equations and a two-dimensional limit-equilibrium method to calculate the factor of safety against failure. For our analysis, the Morgenstern-Price Method with a circular failure mechanism was used. The Morgenstern-Price Method satisfies both moment and force equilibrium.

The computer program searches for the critical failure surface based on user-provided input parameters. For a circular failure search, a linear search of entry and exit locations is specified and the computer searches for the critical failure slip surface. Tabulated results of the factor of safety (FS) against failure for each slope configuration under the conditions of analysis (e.g. high groundwater, low groundwater, static, seismic, surficial and global) are summarized in Table 6.6. Graphical representations of the seepage analyses, potential critical failure surfaces, and parameters used for each analysis are presented on Figures C1 through C17.



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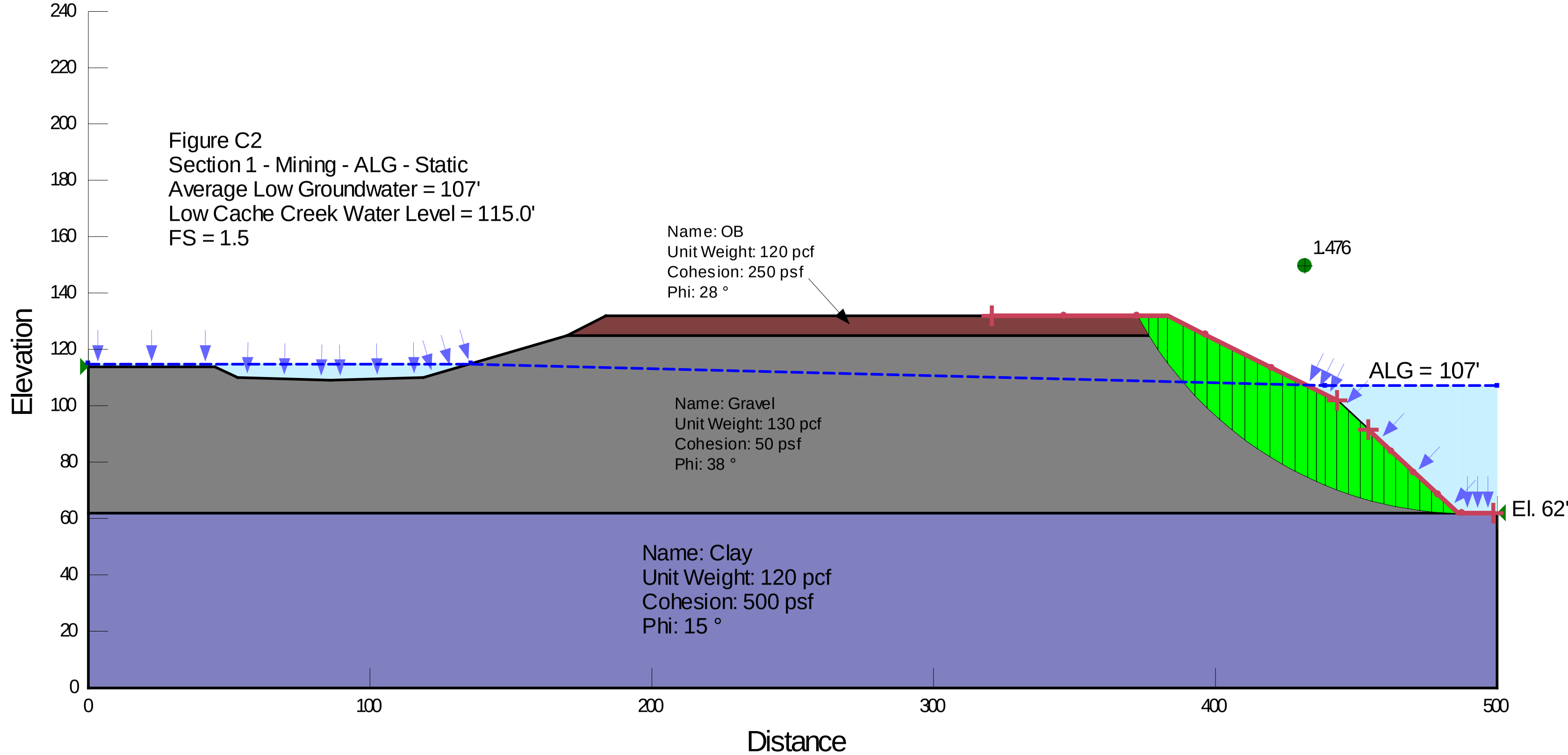
Cemex Cache Creek

Yolo County, California

Seepage Analysis: Section 1

S1294-05-01	February 2018	Figure C1



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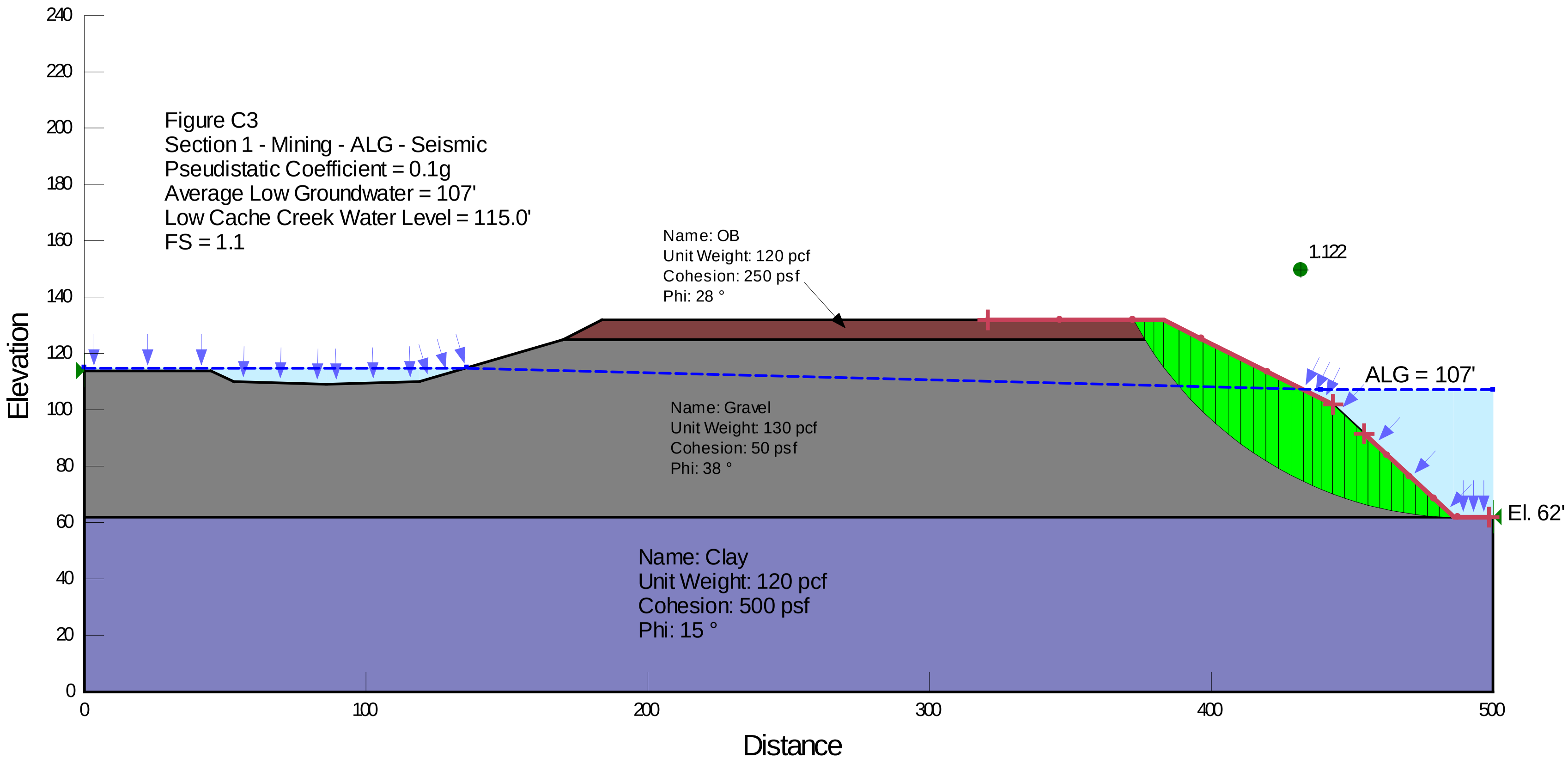
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 1		
S1294-05-01	February 2018	Figure C2



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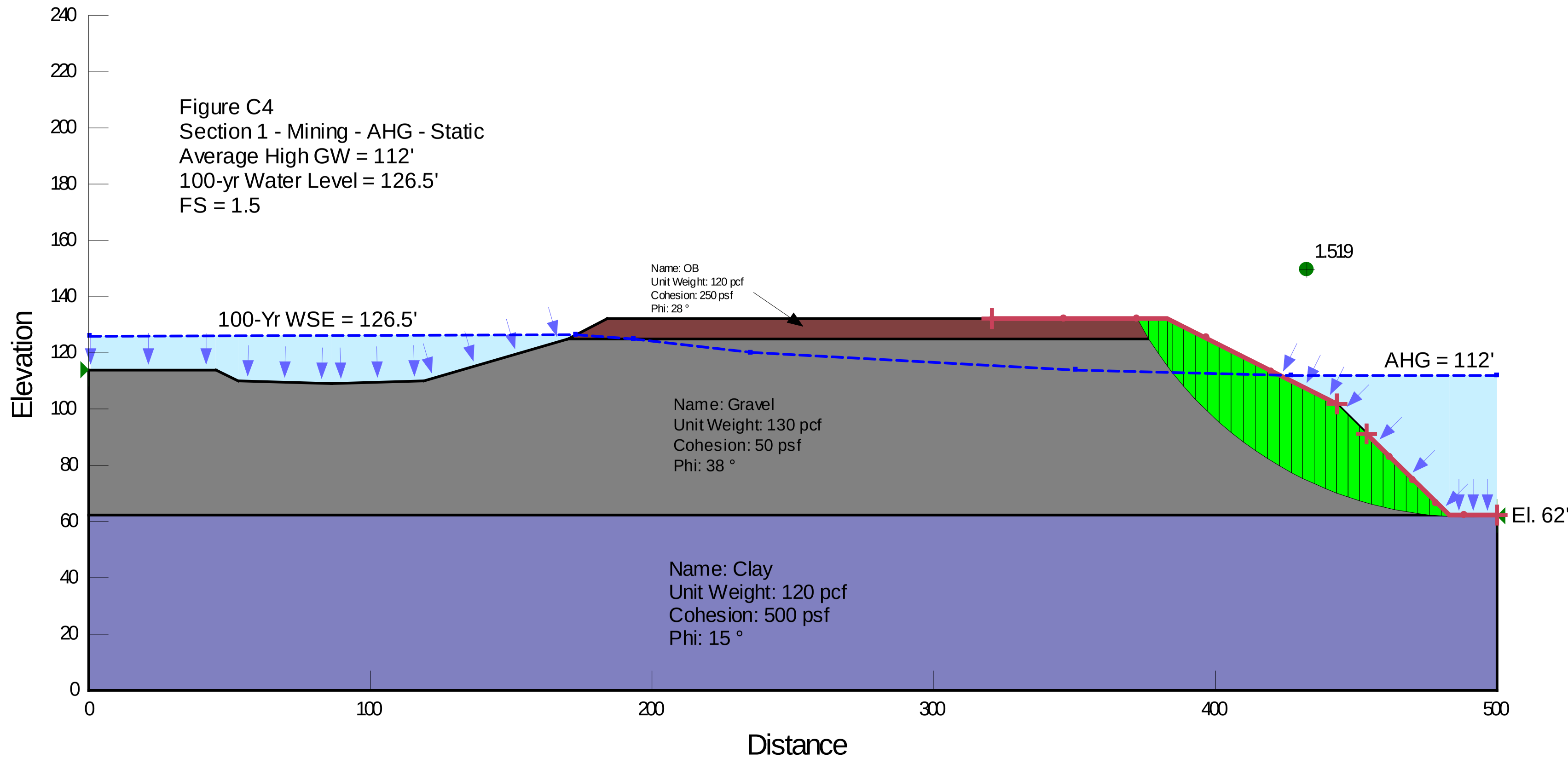
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 1		
S1294-05-01	February 2018	Figure C3



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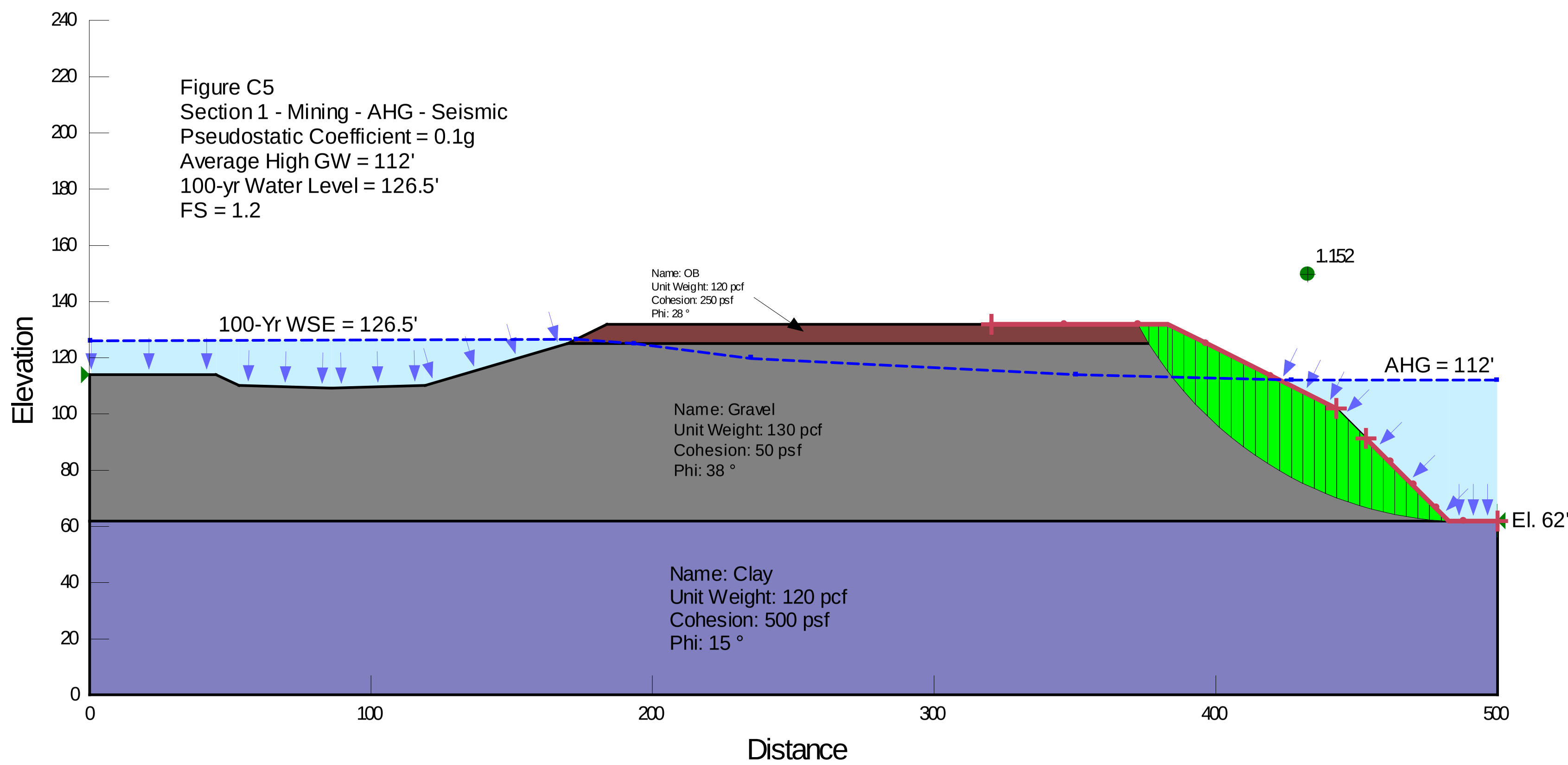
Cemex Cache Creek

Yolo County,
California

Slope Stability: Section 1

S1294-05-01	February 2018	Figure C4



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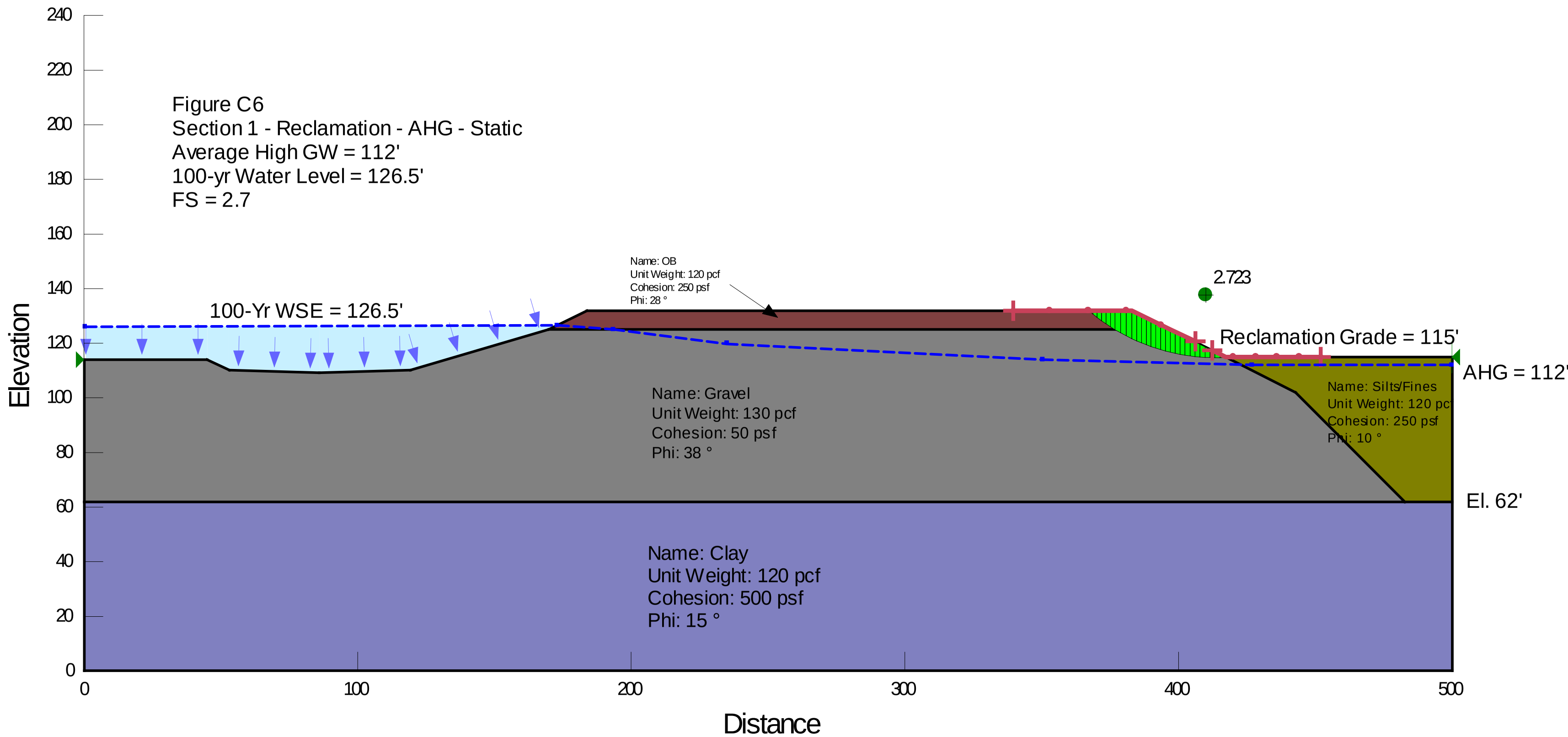
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 1		
S1294-05-01	February 2018	Figure C5



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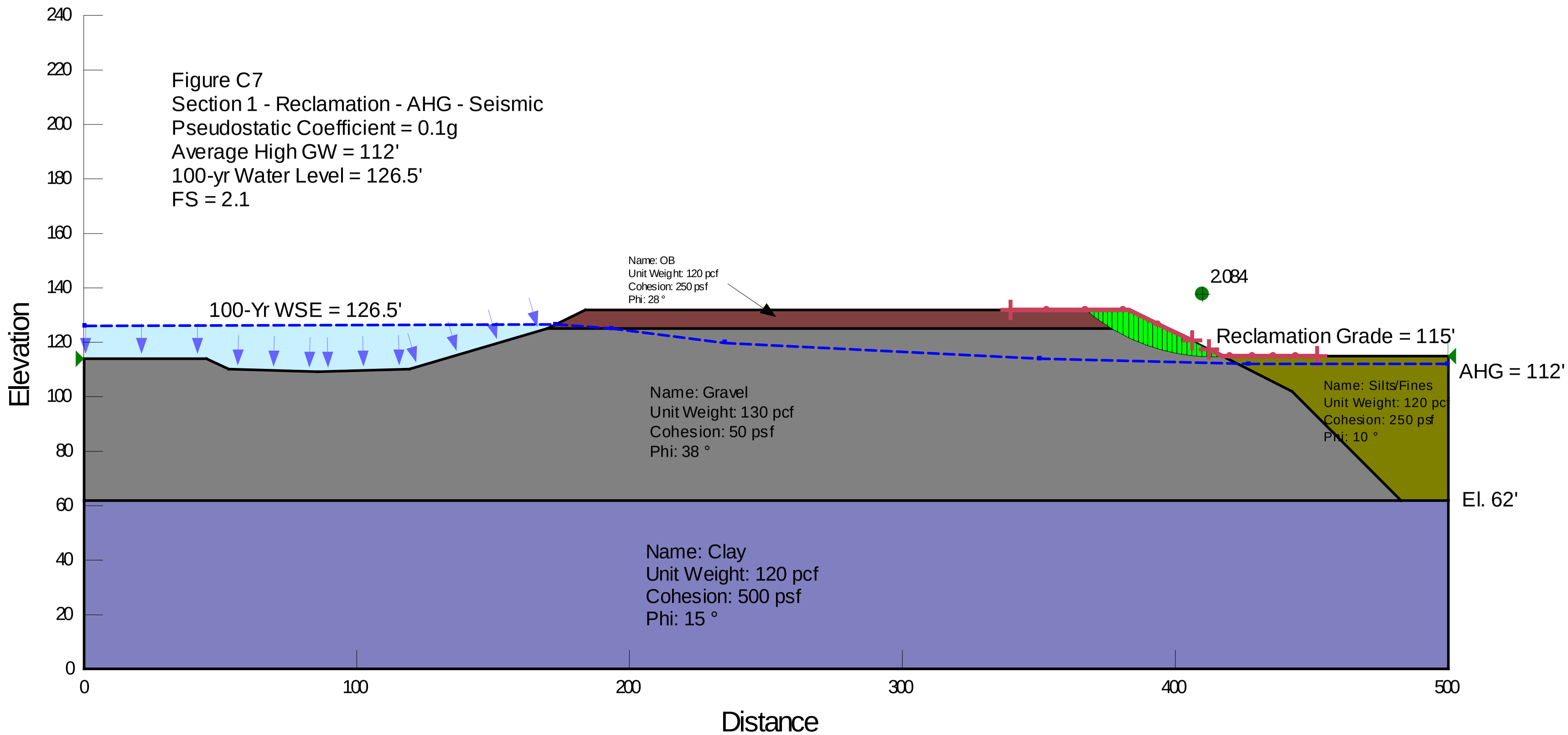
Cemex Cache Creek

Yolo County, California

Slope Stability: Section 1

S1294-05-01	February 2018	Figure C6



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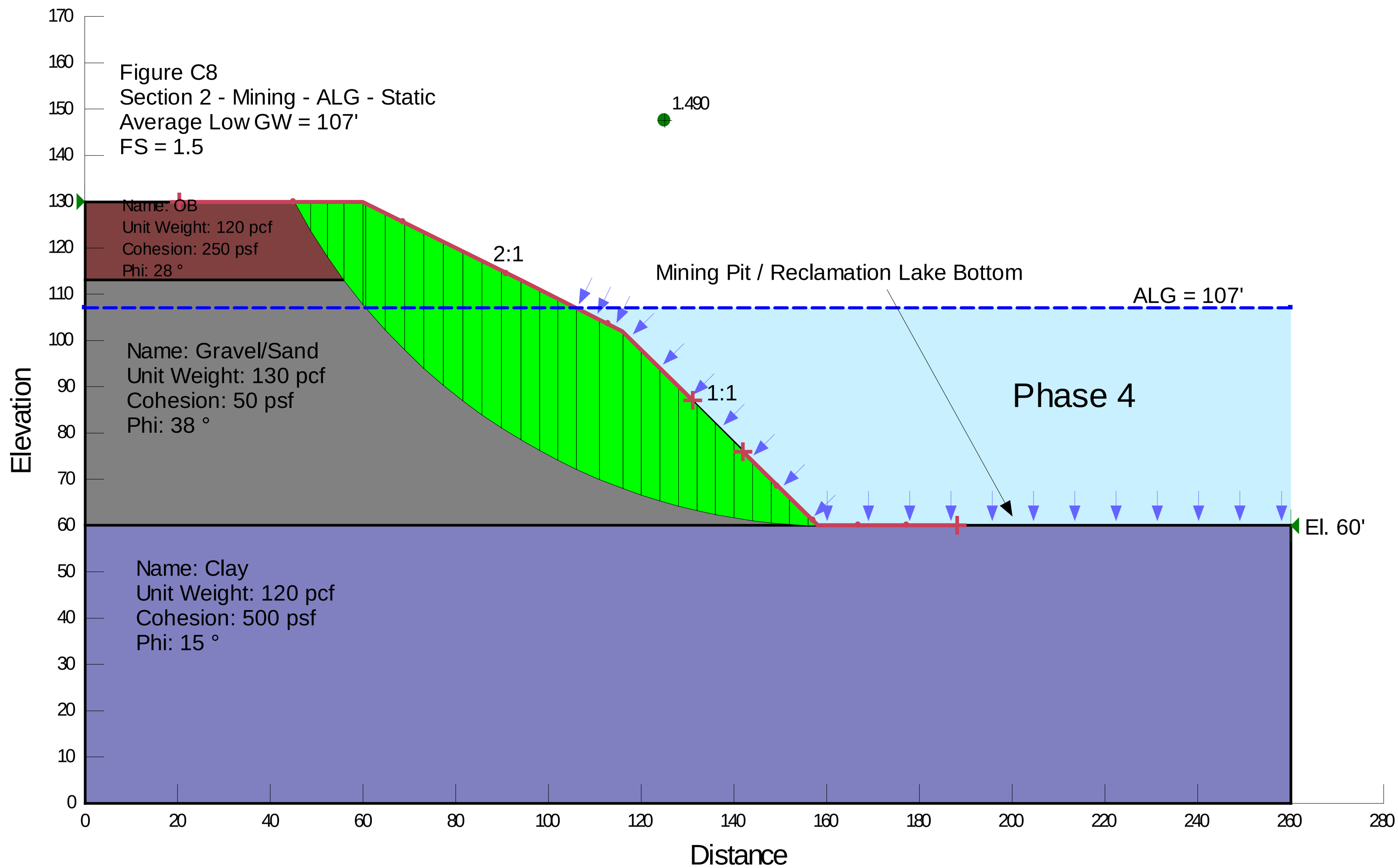
Cemex Cache Creek

Yolo County,
California

Slope Stability: Section 1

S1294-05-01	February 2018	Figure C7



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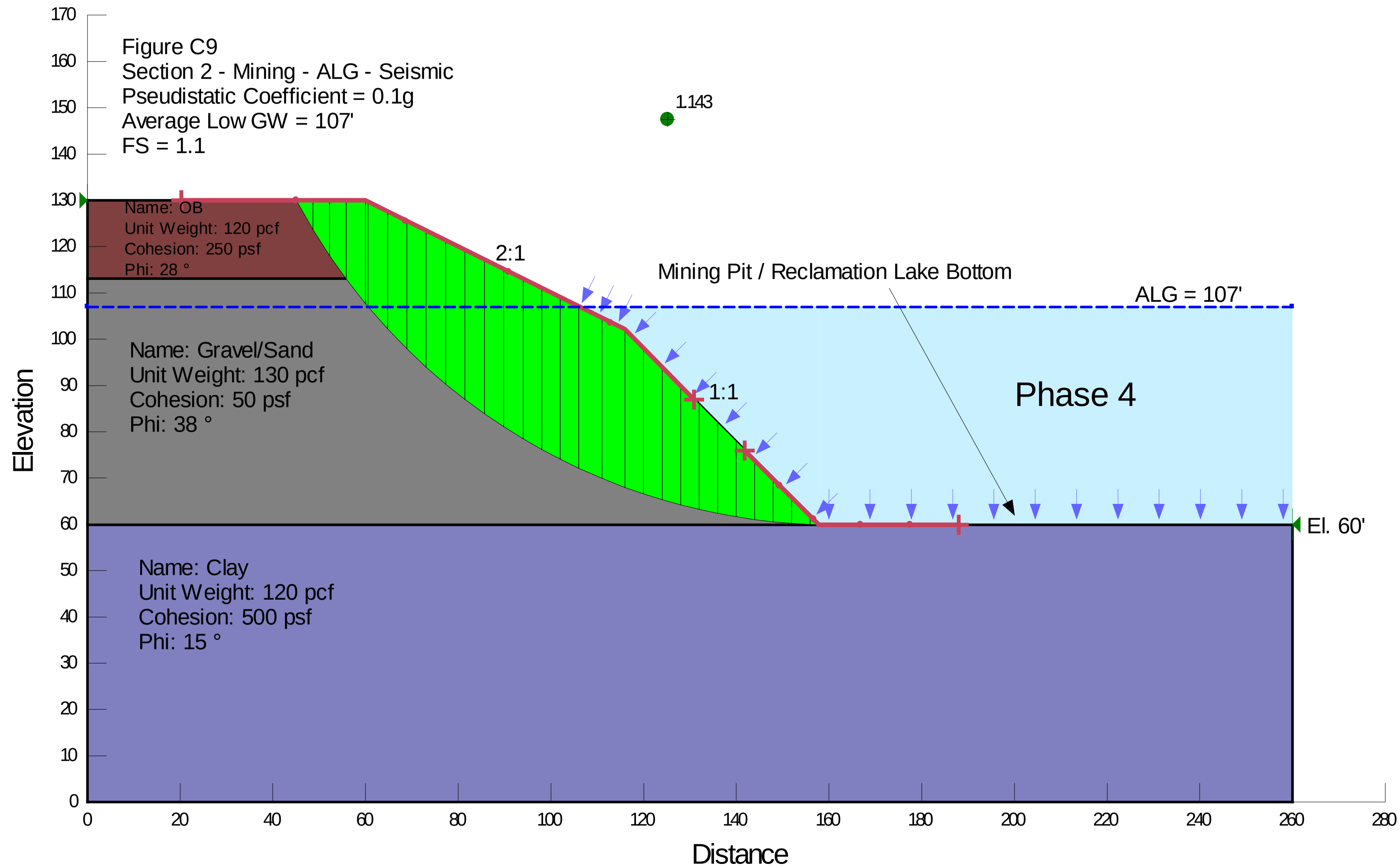
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 2		
S1294-05-01	February 2018	Figure C8



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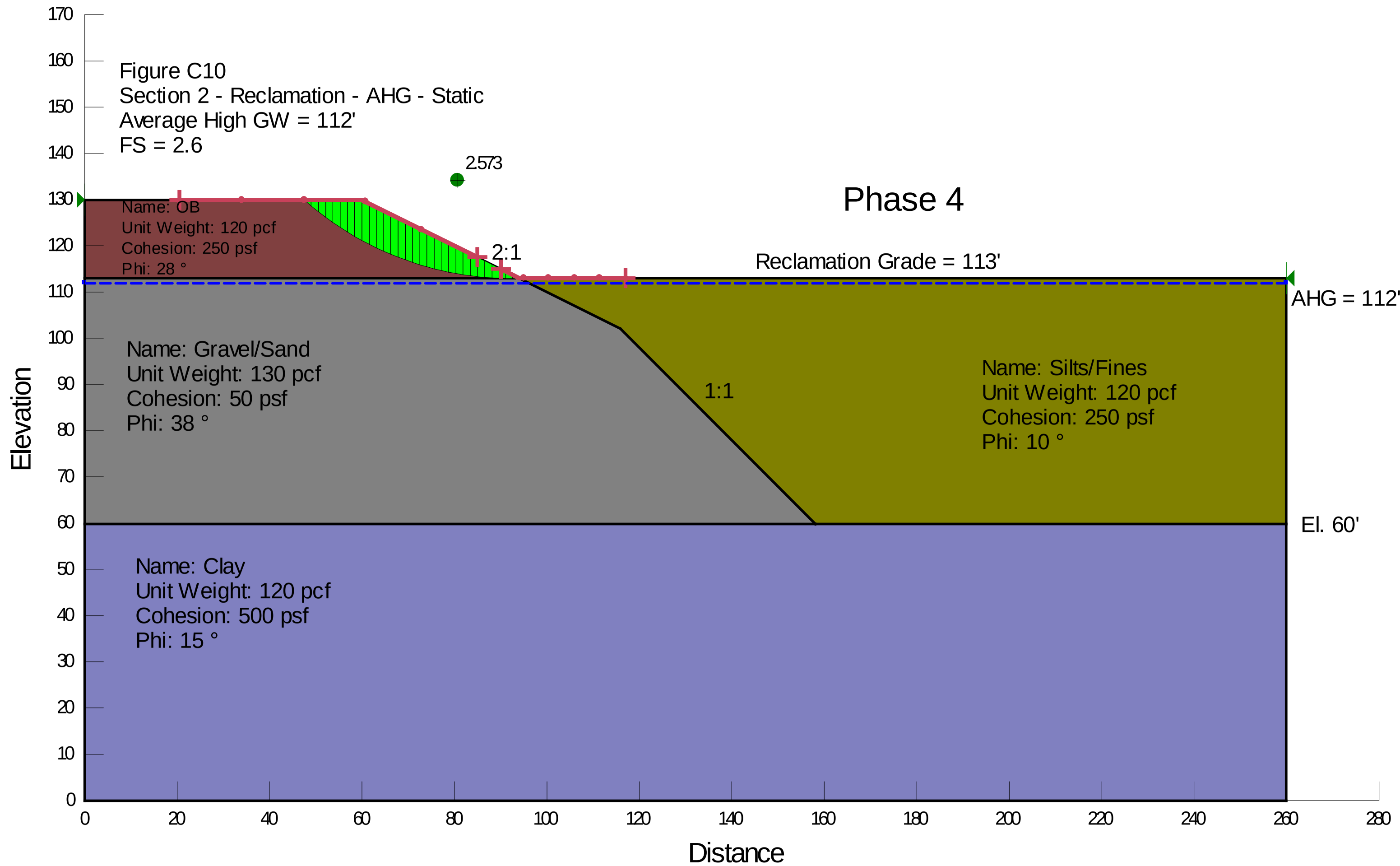
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 2		
S1294-05-01	February 2018	Figure C9



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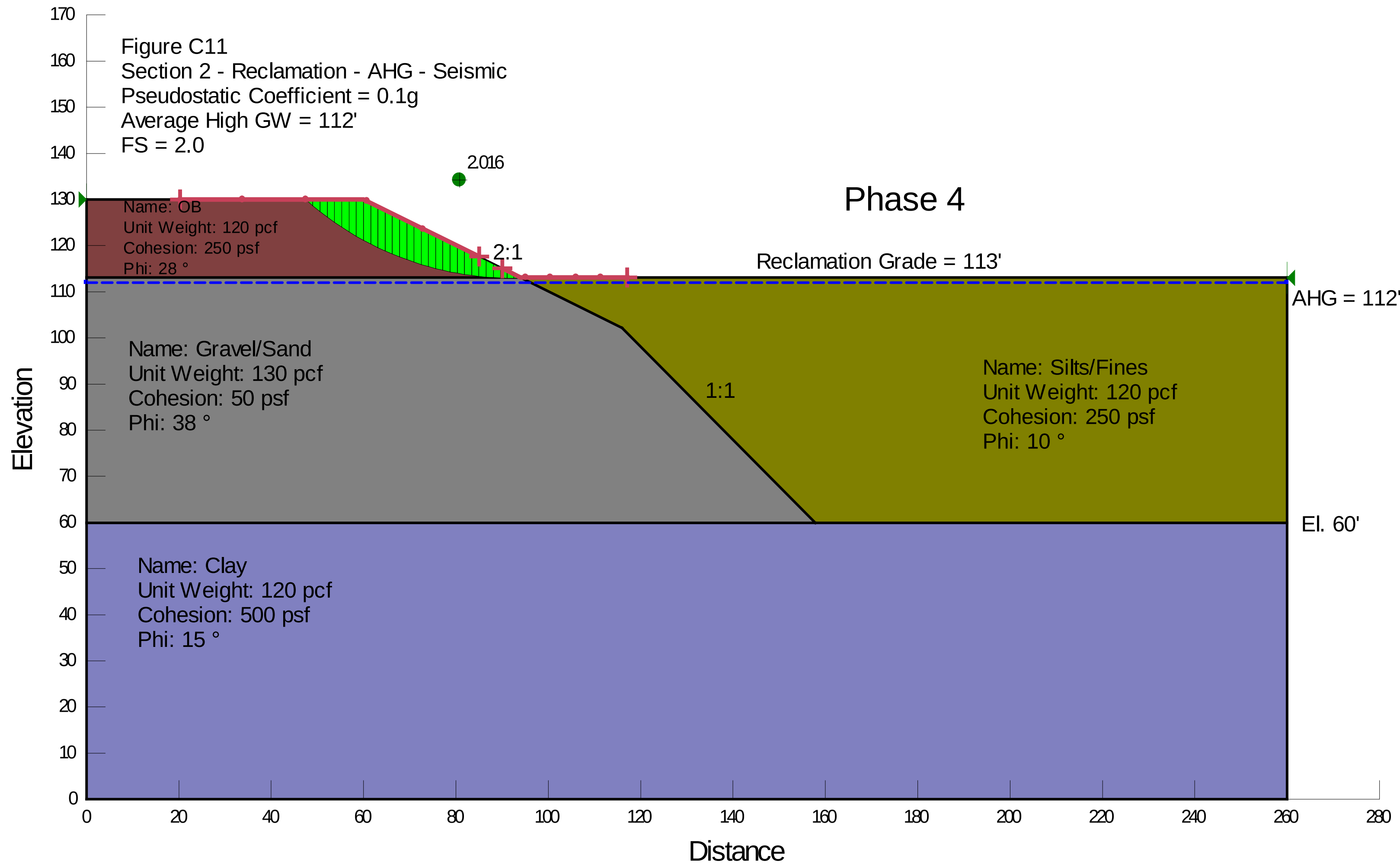
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 2		
S1294-05-01	February 2018	Figure C10



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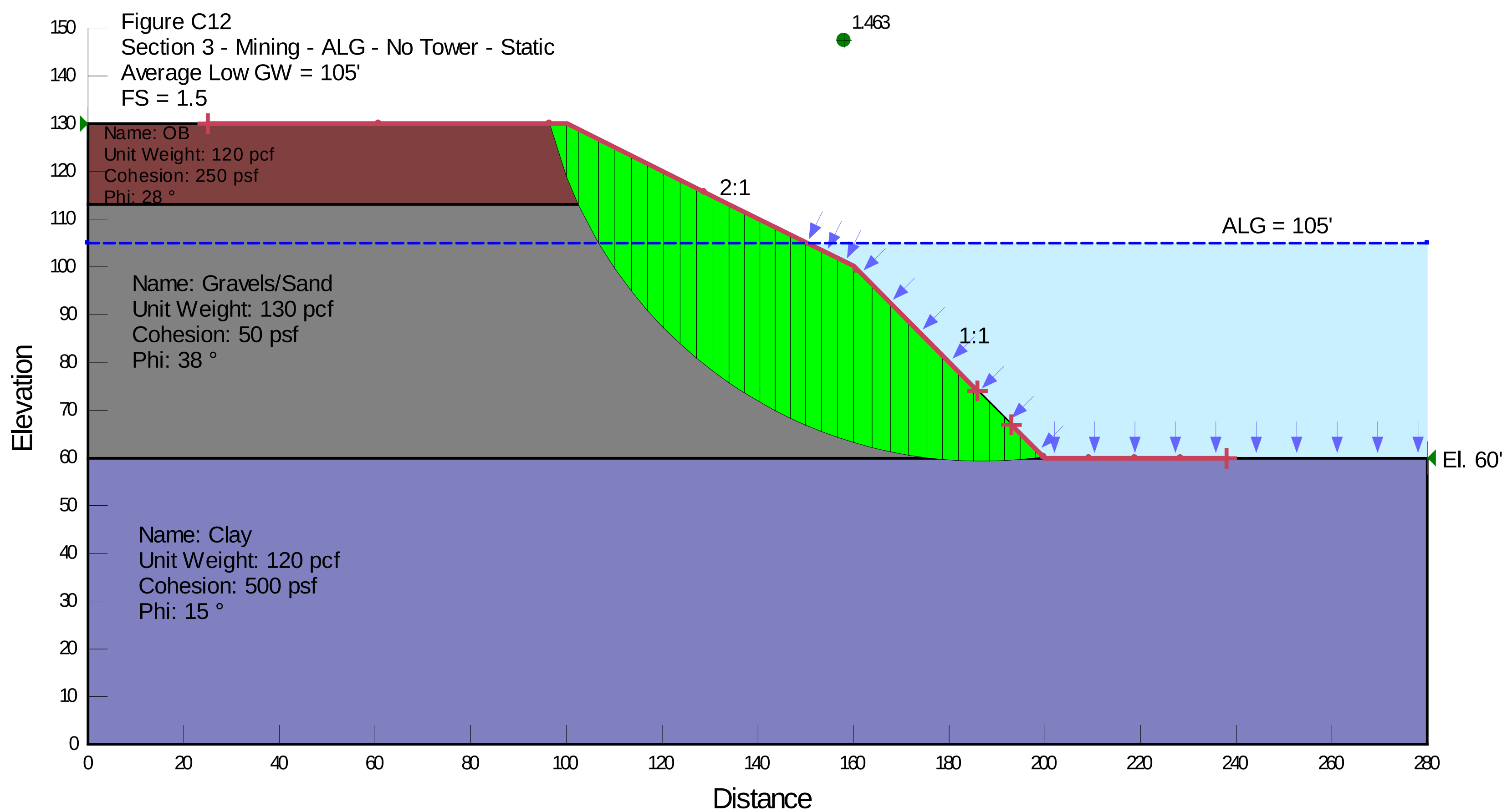
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 2		
S1294-05-01	February 2018	Figure C11



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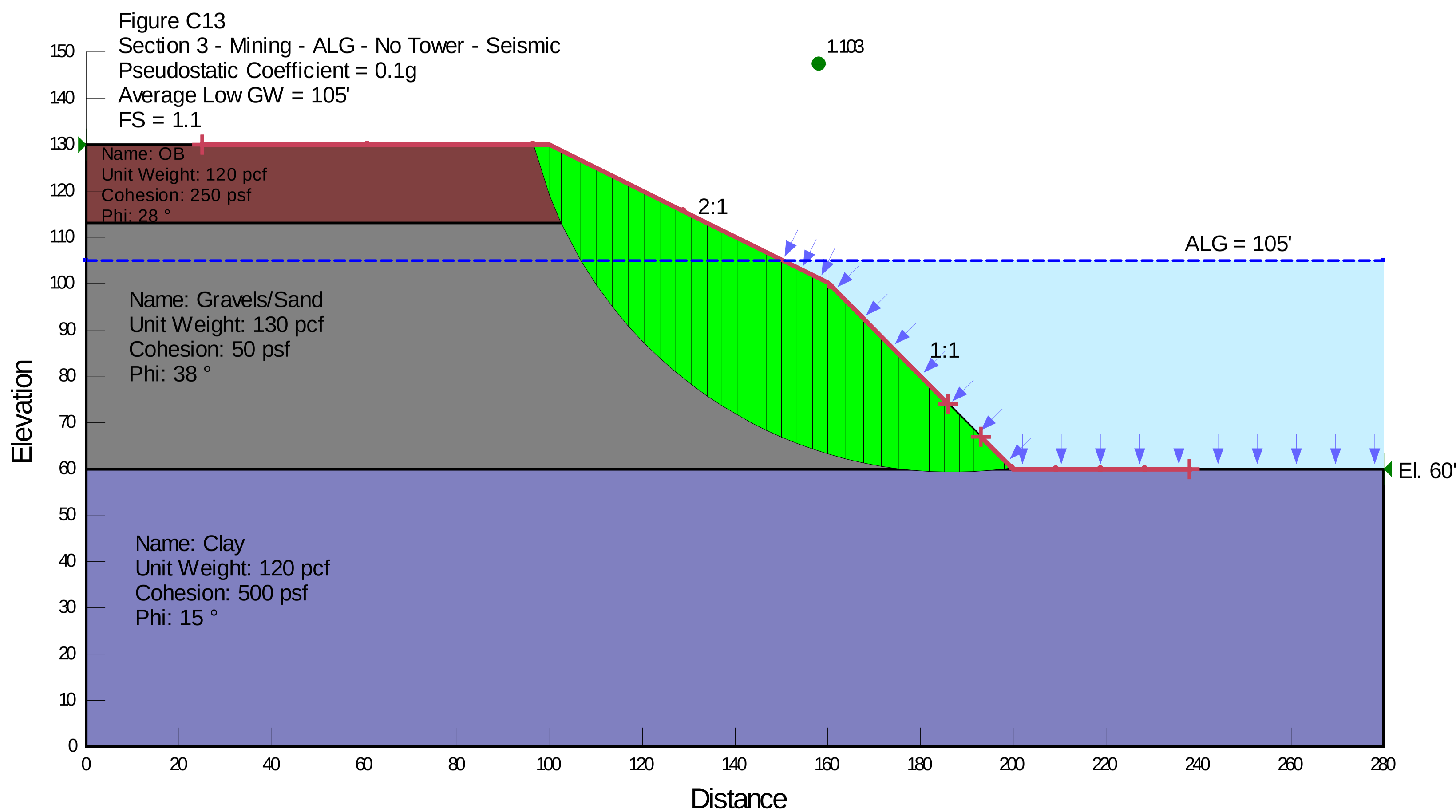
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 3		
S1294-05-01	February 2018	Figure C12



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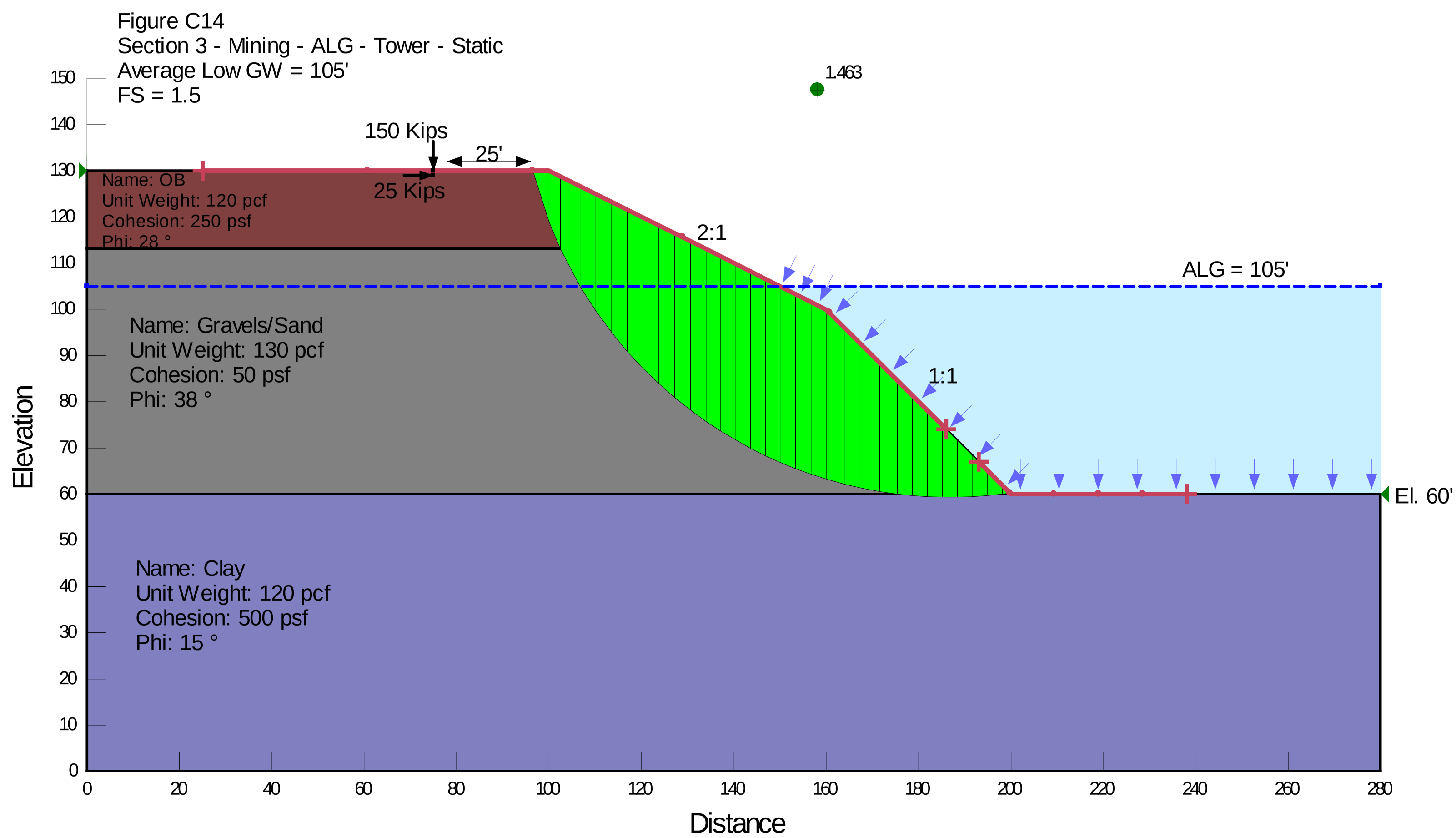
Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 3		
S1294-05-01	February 2018	Figure C13



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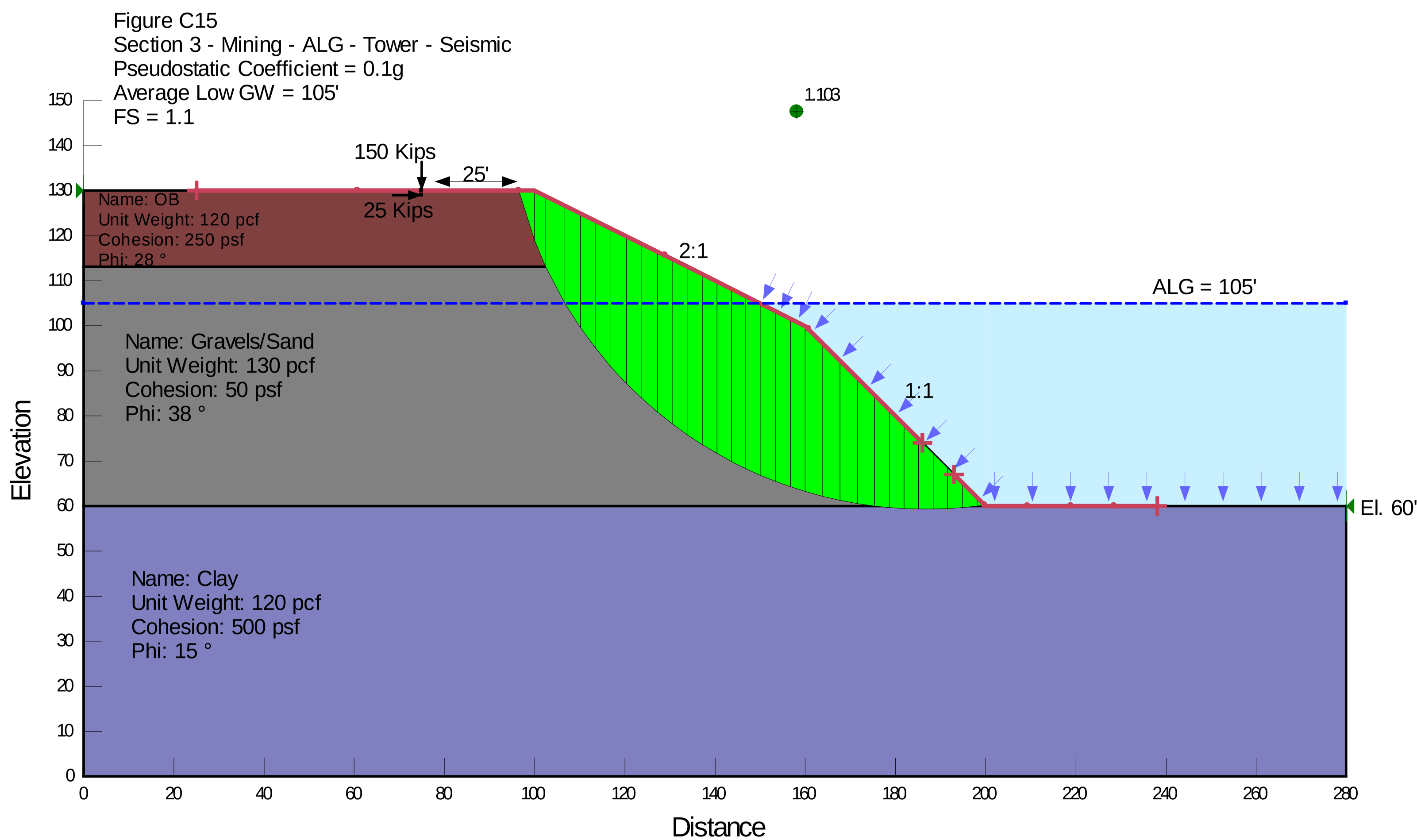
Cemex Cache Creek

Yolo County,
California

Slope Stability: Section 3

S1294-05-01	February 2018	Figure C14



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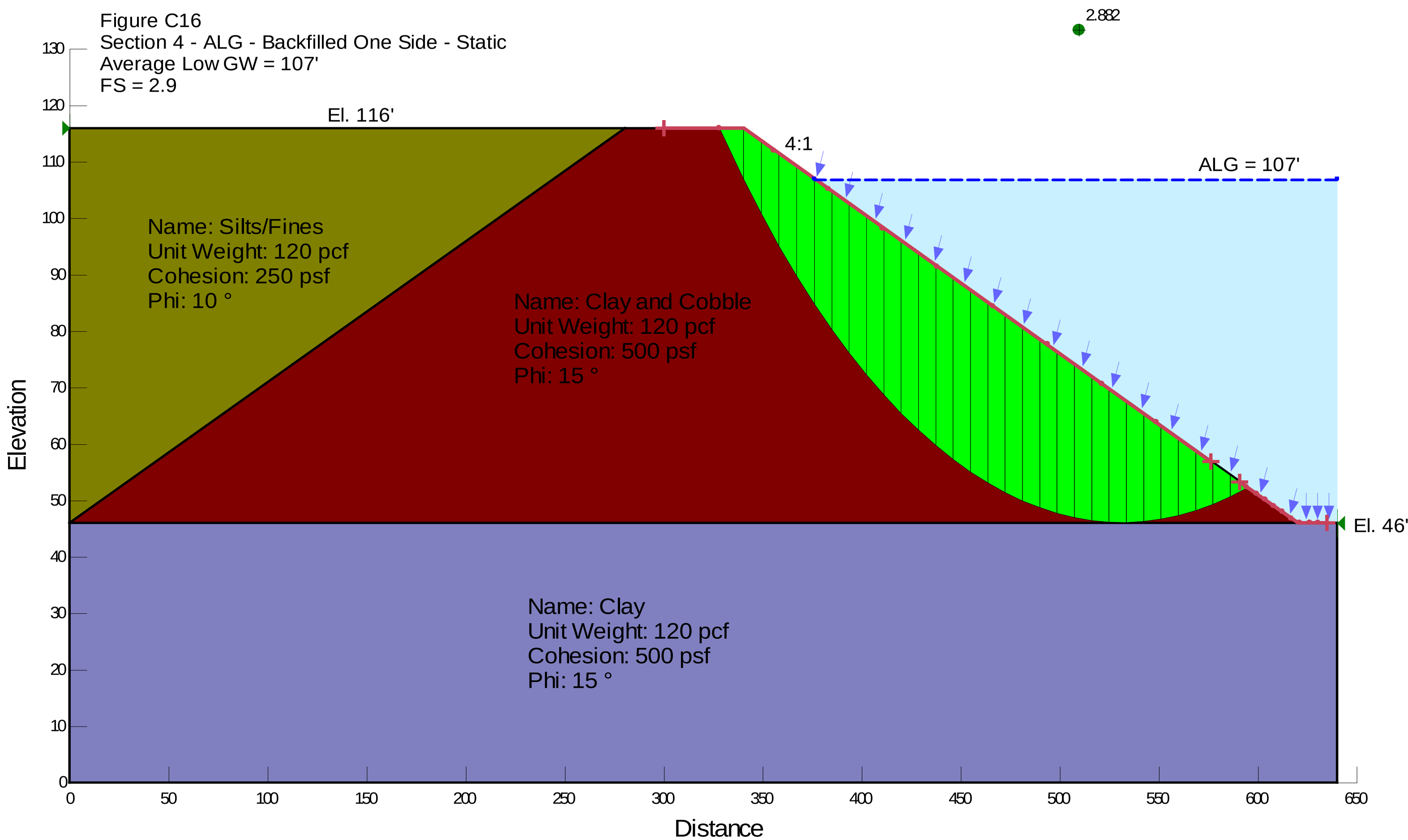
Cemex Cache Creek

Yolo County,
California

Slope Stability: Section 3

S1294-05-01	February 2018	Figure C15



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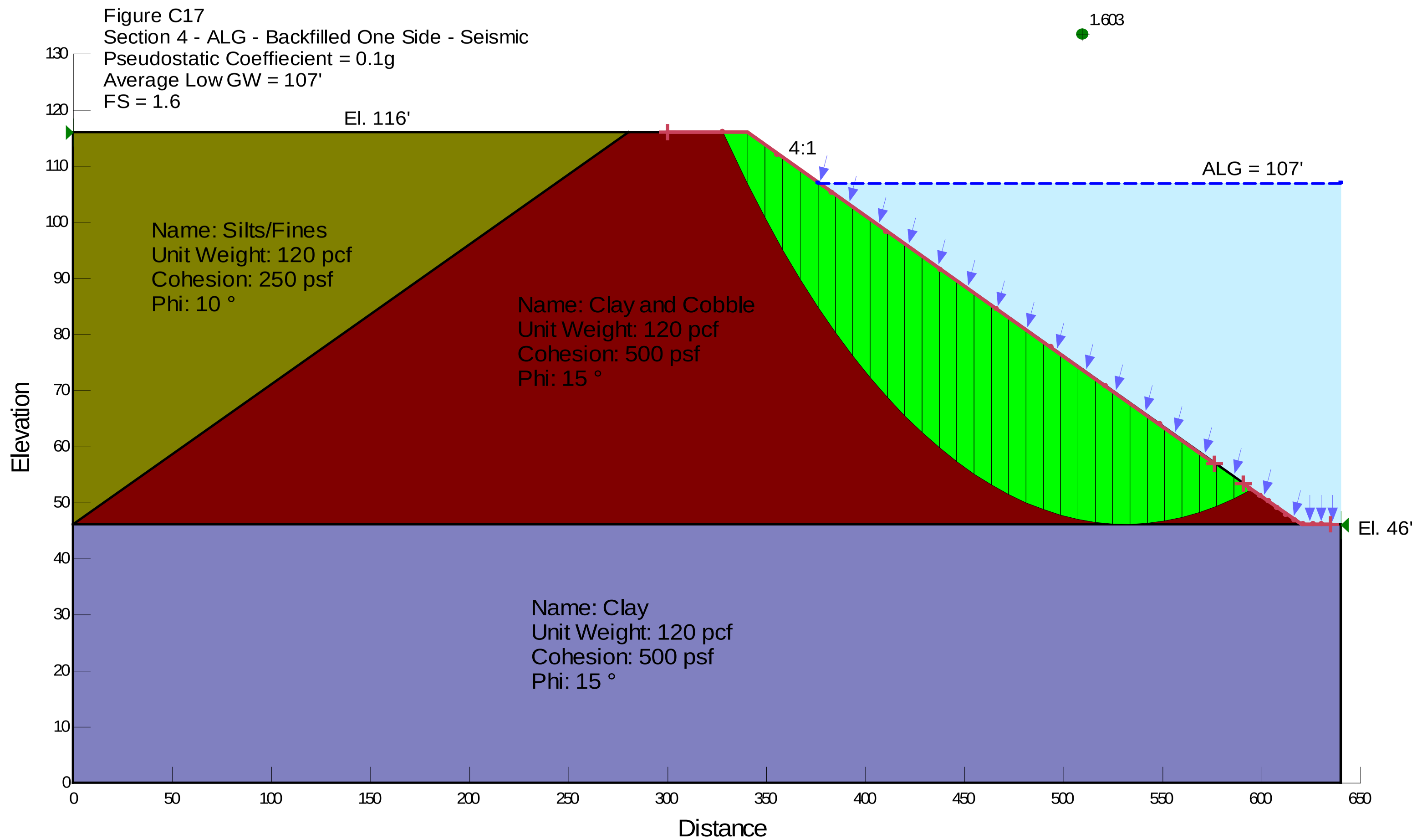
Cemex Cache Creek
Yolo County, California
Slope Stability: Section 4

S1294-05-01	February 2018	Figure C16



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Cemex Cache Creek		
Yolo County, California		
Slope Stability: Section 4		
S1294-05-01	February 2018	Figure C17

APPENDIX D

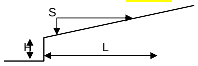
APPENDIX D
LIQUEFACTION ANALYSIS

GEOCON

Liquefaction Hazard Analysis

Youd, T. L. et al - 2001
Project: Cemex Cache Creek
Proj No: S1294-05-01
Location: B1

Earthquake Variables			Site variables			Slope and Free Face Variables		
2%	Probability of exceedence in		Water table depth:	30	ft	Slope, S	0.0	%
50	Years.		**Global variables**			Face Height, H	0	(ft)
Return Period:	2474.92	Years	γ_w	62.4	pcf	Dist. to Face, L	0	(ft)
a_{max}:	0.490	g	$P_{a\ (atmospheric\ pressure)}$	1.058	tsf			
Magnitude:	6.5	M_w	$FS_{min,\ allowable}$:	1.3				
MSF	1.44192		ε_v method:	Tokimatsu				



Results		
Liquified Layers:	0	
Thickness:	0.0	ft
Dry Settlement:	0.2	in
Liq. Settlement	0.0	in
Lateral Spread:	0	ft

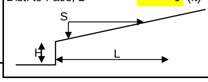
Layer	Top (ft)	Bottom (ft)	Soil Type	γ (pcf)	σ_{vo} (tsf)	σ'_{vo} (tsf)	r_d	CSR	N_{spt}	$(N_1)_{60}$	%Fines (%)	$(N_1)_{60cs}$	Calc?	$CRR_{7.5}$	CRR	FS	ε_v (%)	ΔH (in)	ΔH_{Dry} (in)	ΣΔH (in)	LD (ft)	S_r (tsf)
1	0.00	0.94	CL	120	0.03	0.03	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
2	0.94	1.89	CL	120	0.09	0.09	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
3	1.89	2.83	CL	120	0.14	0.14	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
4	2.83	3.78	CL	120	0.20	0.20	0.99	0.32	14.0	17.91	90.00	26.5	n						0.00	0.00	0.00	
5	3.78	4.72	CL	120	0.26	0.26	0.99	0.32	11.5	14.65	90.00	22.6	n						0.01	0.01	0.00	
6	4.72	5.67	CL	120	0.31	0.31	0.99	0.32	9.5	12.07	90.00	19.5	n						0.01	0.01	0.00	
7	5.67	6.61	CL	120	0.37	0.37	0.99	0.31	10.1	12.81	90.00	20.4	n						0.01	0.01	0.00	
8	6.61	7.56	CL	120	0.43	0.43	0.99	0.31	10.8	12.80	90.00	20.4	n						0.01	0.01	0.00	
9	7.56	8.50	CL	120	0.48	0.48	0.98	0.31	10.8	12.02	90.00	19.4	n						0.01	0.01	0.00	
10	8.50	9.00	CL	120	0.53	0.53	0.98	0.31	10.8	11.52	90.00	18.8	n						0.01	0.01	0.00	
11	9.00	9.44	CL-ML	120	0.55	0.55	0.98	0.31	12.2	12.62	90.00	20.1	n						0.00	0.00	0.00	
12	9.44	10.39	CL-ML	120	0.60	0.60	0.98	0.31	12.2	12.17	90.00	19.6	n						0.01	0.01	0.00	
13	10.39	11.33	CL-ML	120	0.65	0.65	0.98	0.31	12.2	15.50	90.00	23.6	n						0.01	0.01	0.00	
14	11.33	12.28	CL-ML	120	0.71	0.71	0.98	0.31	12.2	14.87	90.00	22.8	n						0.01	0.01	0.00	
15	12.28	13.00	CL-ML	120	0.76	0.76	0.97	0.31	12.2	14.37	90.00	22.2	n						0.01	0.01	0.00	
16	13.00	13.22	SP	115	0.79	0.79	0.97	0.31	35.2	40.77	5.10	40.8	y						0.00	0.00	0.00	
17	13.22	14.17	SP	115	0.82	0.82	0.97	0.31	35.2	39.93	5.10	40.0	y						0.00	0.00	0.00	
18	14.17	15.11	SP	115	0.87	0.87	0.97	0.31	35.2	38.67	5.10	38.7	y						0.00	0.00	0.00	
19	15.11	16.06	SP	115	0.93	0.93	0.97	0.31	35.2	37.52	5.10	37.6	y						0.00	0.00	0.00	
20	16.06	17.00	SP	115	0.98	0.98	0.96	0.31	35.2	36.47	5.10	36.5	y						0.00	0.00	0.00	
21	17.00	17.94	SP	115	1.04	1.04	0.96	0.31	35.2	35.50	5.10	35.6	y						0.00	0.00	0.00	
22	17.94	18.89	SP	115	1.09	1.09	0.96	0.31	35.2	34.61	5.10	34.7	y						0.00	0.00	0.00	
23	18.89	19.50	SP	115	1.14	1.14	0.96	0.31	35.2	33.92	5.10	34.0	y						0.00	0.00	0.00	
24	19.50	19.83	SW-SM	115	1.16	1.16	0.96	0.30	46.0	43.84	5.10	43.9	y						0.00	0.00	0.00	
25	19.83	20.78	SW-SM	115	1.20	1.20	0.96	0.30	46.0	43.16	5.10	43.2	y						0.00	0.00	0.00	
26	20.78	21.72	SW-SM	115	1.25	1.25	0.95	0.30	45.0	41.36	5.10	41.4	y						0.00	0.00	0.00	
27	21.72	22.67	SW-SM	115	1.31	1.31	0.95	0.30	44.3	39.86	5.10	39.9	y						0.00	0.00	0.00	
28	22.67	23.61	SW-SM	115	1.36	1.36	0.95	0.30	43.6	38.44	5.10	38.5	y						0.00	0.00	0.00	
29	23.61	24.56	SW-SM	115	1.42	1.42	0.94	0.30	42.9	37.09	5.10	37.2	y						0.00	0.00	0.00	
30	24.56	25.50	SW-SM	115	1.47	1.47	0.94	0.30	42.3	35.82	5.10	35.9	y						0.00	0.00	0.00	
31	25.50	26.44	SW-SM	115	1.53	1.53	0.94	0.30	42.3	35.18	5.10	35.2	y						0.00	0.00	0.00	
32	26.44	27.39	SW-SM	115	1.58	1.58	0.93	0.30	42.3	34.57	5.10	34.6	y						0.00	0.00	0.00	
33	27.39	28.33	SW-SM	115	1.63	1.63	0.93	0.30	42.3	33.99	5.10	34.0	y						0.01	0.01	0.00	
34	28.33	29.28	SW-SM	115	1.69	1.69	0.93	0.29	42.3	33.44	5.10	33.5	y						0.01	0.01	0.00	
35	29.28	30.00	SW-SM	115	1.74	1.74	0.92	0.29	42.3	32.98	5.10	33.0	y						0.00	0.00	0.00	
36	30.00	30.22	SW-SM	115	1.76	1.76	0.92	0.29	42.3	32.75	5.10	32.8	y							0.00	0.00	
37	30.22	31.17	SW-SM	115	1.80	1.78	0.92	0.30	42.3	32.61	5.10	32.7	y							0.00	0.00	
38	31.17	32.11	SW-SM	115	1.85	1.80	0.91	0.30	42.3	32.39	5.10	32.4	y							0.00	0.00	
39	32.11	33.06	SW-SM	115	1.91	1.83	0.91	0.30	42.3	32.17	5.10	32.2	y							0.00	0.00	
40	33.06	34.00	SW-SM	115	1.96	1.85	0.90	0.30	42.3	31.95	5.10	32.0	y							0.00	0.00	
41	34.00	34.00	ML	120	1.99	1.86	0.90	0.30	16.9	12.74	100.00	20.3	n							0.00	0.00	
42	34.00	34.94	ML	120	2.02	1.88	0.89	0.31	16.9	12.69	100.00	20.2	n							0.00	0.00	
43	34.94	35.89	ML	120	2.07	1.90	0.89	0.31	16.9	12.60	100.00	20.1	n							0.00	0.00	
44	35.89	36.83	ML	120	2.13	1.93	0.88	0.31	16.9	12.51	100.00	20.0	n							0.00	0.00	
45	36.83	37.78	ML	120	2.19	1.96	0.87	0.31	16.9	12.42	100.00	19.9	n							0.00	0.00	
46	37.78	38.72	ML	120	2.24	1.99	0.86	0.31	16.9	12.34	100.00	19.8	n							0.00	0.00	
47	38.72	39.00	ML	120	2.28	2.00	0.86	0.31	16.9	12.28	100.00	19.7	n							0.00	0.00	
48	39.00	39.67	GP	125	2.31	2.02	0.86	0.31	101.4	73.44	6.20	73.9	y							0.00	0.00	
49	39.67	40.61	GP	125	2.36	2.04	0.85	0.31	101.4	72.98	6.20	73.4	y							0.00	0.00	
50	40.61	41.56	GP	125	2.42	2.07	0.84	0.31	101.4	72.46	6.20	72.9	y							0.00	0.00	
51	41.56	42.50	GP	125	2.48	2.10	0.83	0.31	101.4	71.95	6.20	72.4	y							0.00	0.00	
52	42.50	43.44	GP	125	2.54	2.13	0.82	0.31	101.4	71.45	6.20	71.9	y							0.00	0.00	
53	43.44	44.39	GP	125	2.59	2.16	0.81	0.31	101.4	70.96	6.20	71.4	y							0.00	0.00	
54	44.39	45.33	GP	125	2.65	2.19	0.80	0.31	101.4	70.48	6.20	70.9	y							0.00	0.00	
55	45.33	46.28	GP	125	2.71	2.22	0.79	0.31	101.4	70.01	6.20	70.4	y							0.00	0.00	
56	46.28	47.22	GP	125	2.77	2.25	0.78	0.31	101.4	69.54	6.20	70.0	y							0.00	0.00	
57	47.22	48.17	GP	125	2.83	2.28	0.78	0.31	101.4	69.09	6.20	69.5	y							0.00	0.00	
58	48.17	49.11	GP	125	2.89	2.31	0.77	0.31	63.4	42.95	6.20	43.2	y							0.00	0.00	
59	49.11	50.06	GP	125	2.95	2.34	0.76	0.30	57.5	38.65	6.20	38.9	y							0.00	0.00	
60	50.06	51.00	GP	125	3.01	2.37	0.75	0.30	57.5	38.41	6.20	38.7	y							0.00	0.00	
61	51.00	51.94	GP	125	3.07	2.40	0.74	0.30	57.5	38.17	6.20	38.4	y							0.00	0.00	
62	51.94	52.89	GP	125	3.13	2.43	0.73	0.30	57.5	37.94	6.20	38.2	y							0.00	0.00	
63	52.89	53.50	GP	125	3.17	2.45	0.72	0.30	57.5	37.75	6.20	38.0	y							0.00	0.00	
64	53.50	53.83	SC-SM	120	3.20	2.47	0.71	0.30	82.8	54.25	22.00	63.2	y							0.00	0.00	
65	53.83	54.78	SC-SM	120	3.24	2.48	0.71	0.29	82.8	54.05	22.00	63.0	y							0.00	0.00	
66	54.78	55.72	SC-SM	120	3.30	2.51	0.70	0.29	82.8	53.75	22.00	62.7	y							0.00	0.00	
67	55.72	56.67	SC-SM	120	3.36	2.54	0.69	0.29	79.2	51.12	22.00	59.8	y							0.00	0.00	
68	56.67	57.61	SC-SM	120	3.41	2.57	0.68	0.29	76.3	49.00	22.00	57.5	y							0.00	0.00	
69	57.61	58.56	SC-SM	120	3.47	2.59	0.67	0.29	73.4	46.91	22.00	55.2	y							0.00	0.00	
70	58.56	59.50	SC-SM	120	3.53	2.62	0.67	0.29	70.6	44.84	22.00	52.9	y							0.00	0.00	
71	59.50	60.00	SC-SM	120	3.57	2.64	0.66	0.28	67.6	42.79	22.00	50.7	y							0.00	0.00	
72	60.00	60.44	GP	125	3.60	2.65	0.66	0.28	67.6	42.68	6.20	42.9	y							0.00	0.00	
73	60.44	61.39	GP	125	3.64	2.68	0.65	0.28	67.6	42.50	6.20	42.8	y							0.00	0.00	
74	61.39	62.33	GP	125	3.70	2.71	0.64	0.28	67.6	42.27	6.20	42.5	y							0.00	0.00	
75	62.33	63.28	GP	125	3.76	2.74	0.64	0.28	67.6	42.04	6.20	42.3	y							0.00	0.00	
76	63.28	64.22	GP	125	3.82	2.77	0.63	0.28	67.6	41.82	6.20	42.1	y							0.00	0.00	
77	64.22	65.17	GP	125	3.88	2.79	0.62	0.28	67.6	41.59	6.20	41.9	y							0.00	0.00	
78	65.17	66.11	GP	125	3.94	2.82	0.62	0.27	67.6	41.38	6.20	41.6	y							0.00	0.00	
79	66.11	67.06	GP	125	4.00	2.85	0.61	0.27	67.6	41.16	6.20	41.4	y							0.00	0.00	
80	67.06	68.00	GP	125	4.05	2.88	0.61	0.27	67.6	40.95	6.20	41.2	y							0.00	0.00	
81	68.00	68.94	GP	125	4.11	2.91	0.60	0.27	67.6	40.74	6.20	41.0	y							0.00	0.00	
82	68.94	69.00	GP	125	4.14	2.93	0.60	0.27	67.6	40.63	6.20	40.9	y							0.00	0.00	
83	69.00	69.89	SP	115	4.17	2.94	0.59	0.27	54.1	32.44	5.10	32.5	y							0.00	0.00	
84	69.89	70.83	SP	115	4.22	2.97	0.59	0.27	54.1	32.30	5.10	32.4	y							0.00	0.00	
85	70.83	71.78	SP	115	4.28	2.99	0.58	0.27	55.0	32.69	5.10	32.7	y							0.00	0.00	
86	71.78	72.72	SP	115	4.33	3.01	0.58	0.27	55.6	32.94	5.10	33.0	y							0.00	0.00	
87	72.72	73.67	SP	115	4.39	3.04	0.57	0.26	56.2	33.18	5.10	33.2	y							0.00	0.00	
88	73.67	74.61	SP	115	4.44	3.06	0.57	0.26	56.9	33.42	5.10	33.5	y							0.00	0.00	
89	74.61	75.56	SP	115	4.50	3.09	0.57	0.26	57.5	33.66	5.10	33.7	y							0.00	0.00	
90	75.56	76.50	SP	115	4.55	3.11	0.56	0.26	58.2	33.90	5.10	34.0	y							0.00	0.00	
91	76.50	77.44	SP	115	4.60	3.14	0.56	0.26	58.8	34.13	5.10	34.2	y							0.00	0.00	
92	77.44	78.39	SP	115	4.66	3.16	0.56	0.26	59.4	34.37	5.10	34.4	y							0.00	0.00	
93	78.39	79.33	SP	115	4.71	3.19	0.55	0.26	60.1	34.60	5.10	34.7	y							0.00	0.00	
94	79.33	80.28	SP	115	4.77	3.21	0.55	0.26	60.8	34.91	5.10	35.0	y							0.00	0.00	
95	80.28	81.22	SP	115	4.82	3.24	0.54	0.26	60.8	34.77	5.10	34.8	y							0.00	0.00	
96	81.22	82.17	SP	115	4.88	3.26	0.54	0.26	60.8	34.64	5.10	34.7	y							0.00	0.00	
97	82.17	83.00	SP	115	4.93	3.29	0.54	0.26	60.8	34.52	5.10	34.6	y							0.00	0.00	
98	83.00	83.11	CL	120	4.95	3.30	0.54	0.26	82.2	46.55	90.00	60.9	n							0.00	0.00	
99	83.11	84.06	CL	120	4.99	3.31	0.54	0.26	82.5	46.61	90.00	60.9	n							0.00	0.00	
100	84.06	85.00	CL	120	5.04	3.34	0.53	0.26	82.2	46.25	90.00	60.5	n							0.00	0.00	

GEOCON

Liquefaction Hazard Analysis

Youd, T. L. et al - 2001
Project: Cemex Cache Creek
Proj No: S1294-05-01
Location: B2

Earthquake Variables			Site variables			Slope and Free Face Variables			Results		
2%	Probability of exceedence in		Water table depth:	25	ft	Slope, S	0.0	%	Liquified Layers:	0	
50	Years.		**Global variables**			Face Height, H	0	(ft)	Thickness:	0.0	ft
Return Period:	2474.92	Years	γ_w	62.4	pcf	Dist. to Face, L	0	(ft)	Dry Settlement:	0.2	in
a_{max}:	0.490	g	P_a (atmospheric pressure)	1.058	tsf				Liq. Settlement	0.0	in
Magnitude:	6.5	M_w	$FS_{min, allowable}$:	1.3					Lateral Spread:	0	ft
MSF	1.44192		ε_v method:	Tokimatsu							



Layer	Top (ft)	Bottom (ft)	Soil Type	γ (pcf)	σ_{vo} (tsf)	σ'_{vo} (tsf)	r_d	CSR	N_{spt}	$(N_1)_{60}$	%Fines (%)	$(N_1)_{60cs}$	Calc?	$CRR_{7.5}$	CRR	FS	ε_v (%)	ΔH (in)	ΔH_{Dry} (in)	ΣΔH (in)	LD (ft)	S_r (tsf)
1	0.00	0.82	CL	115	0.02	0.02	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
2	0.82	1.65	CL	115	0.07	0.07	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
3	1.65	2.47	CL	115	0.12	0.12	1.00	0.32	17.7	22.57	90.00	32.1	n						0.00	0.00	0.00	
4	2.47	3.29	CL	115	0.17	0.17	1.00	0.32	14.9	18.96	90.00	27.8	n						0.00	0.00	0.00	
5	3.29	4.11	CL	115	0.21	0.21	0.99	0.32	13.6	17.30	90.00	25.8	n						0.00	0.00	0.00	
6	4.11	4.94	CL	115	0.26	0.26	0.99	0.32	12.7	16.17	90.00	24.4	n						0.00	0.00	0.00	
7	4.94	5.76	CL	115	0.31	0.31	0.99	0.32	12.2	15.51	90.00	23.6	n						0.01	0.01	0.00	
8	5.76	6.58	CL	115	0.35	0.35	0.99	0.31	11.9	15.11	90.00	23.1	n						0.01	0.01	0.00	
9	6.58	7.40	CL	115	0.40	0.40	0.99	0.31	11.6	14.15	90.00	22.0	n						0.01	0.01	0.00	
10	7.40	8.23	CL	115	0.45	0.45	0.98	0.31	11.4	13.13	90.00	20.8	n						0.01	0.01	0.00	
11	8.23	9.05	CL	115	0.50	0.50	0.98	0.31	11.2	12.24	90.00	19.7	n						0.01	0.01	0.00	
12	9.05	9.87	CL	115	0.54	0.54	0.98	0.31	11.0	11.47	90.00	18.8	n						0.01	0.01	0.00	
13	9.87	10.69	CL	115	0.59	0.59	0.98	0.31	10.8	14.47	90.00	22.4	n						0.01	0.01	0.00	
14	10.69	11.52	CL	115	0.64	0.64	0.98	0.31	10.8	13.92	90.00	21.7	n						0.01	0.01	0.00	
15	11.52	12.34	CL	115	0.69	0.69	0.97	0.31	10.8	13.43	90.00	21.1	n						0.01	0.01	0.00	
16	12.34	13.16	CL	115	0.73	0.73	0.97	0.31	10.8	12.99	90.00	20.6	n						0.01	0.01	0.00	
17	13.16	13.98	CL	115	0.78	0.78	0.97	0.31	10.8	12.59	90.00	20.1	n						0.01	0.01	0.00	
18	13.98	14.81	CL	115	0.83	0.83	0.97	0.31	10.8	12.23	90.00	19.7	n						0.01	0.01	0.00	
19	14.81	15.63	CL	115	0.88	0.88	0.97	0.31	10.8	11.89	90.00	19.3	n						0.01	0.01	0.00	
20	15.63	16.45	CL	115	0.92	0.92	0.97	0.31	10.8	11.58	90.00	18.9	n						0.01	0.01	0.00	
21	16.45	17.00	CL	115	0.96	0.96	0.96	0.31	10.8	11.34	90.00	18.6	n						0.01	0.01	0.00	
22	17.00	17.27	GW	125	0.99	0.99	0.96	0.31	36.5	37.81	1.50	37.8	y						0.00	0.00	0.00	
23	17.27	18.10	GW	125	1.02	1.02	0.96	0.31	36.5	37.17	1.50	37.2	y						0.00	0.00	0.00	
24	18.10	18.92	GW	125	1.07	1.07	0.96	0.31	36.5	36.27	1.50	36.3	y						0.00	0.00	0.00	
25	18.92	19.74	GW	125	1.12	1.12	0.96	0.31	36.5	35.43	1.50	35.4	y						0.00	0.00	0.00	
26	19.74	20.56	GW	125	1.17	1.17	0.96	0.30	36.5	34.65	1.50	34.6	y						0.00	0.00	0.00	
27	20.56	21.00	GW	125	1.21	1.21	0.95	0.30	36.5	34.08	1.50	34.1	y						0.00	0.00	0.00	
28	21.00	21.39	SP	125	1.24	1.24	0.95	0.30	41.9	38.72	10.00	40.4	y						0.00	0.00	0.00	
29	21.39	22.21	SP	125	1.28	1.28	0.95	0.30	41.9	38.14	10.00	39.8	y						0.00	0.00	0.00	
30	22.21	23.03	SP	125	1.33	1.33	0.95	0.30	41.9	37.40	10.00	39.1	y						0.00	0.00	0.00	
31	23.03	23.85	SP	125	1.38	1.38	0.95	0.30	41.9	36.69	10.00	38.4	y						0.00	0.00	0.00	
32	23.85	24.68	SP	125	1.43	1.43	0.94	0.30	41.9	36.03	10.00	37.7	y						0.00	0.00	0.00	
33	24.68	25.00	SP	125	1.47	1.47	0.94	0.30	41.9	35.59	10.00	37.2	y						0.00	0.00	0.00	
34	25.00	25.50	SP	125	1.49	1.49	0.94	0.30	41.9	35.37	10.00	37.0	y							0.00	0.00	
35	25.50	26.32	SP	125	1.53	1.51	0.94	0.30	41.9	35.12	10.00	36.7	y							0.00	0.00	
36	26.32	27.15	SP	125	1.59	1.53	0.93	0.31	41.9	34.82	10.00	36.4	y							0.00	0.00	
37	27.15	27.97	SP	125	1.64	1.56	0.93	0.31	41.9	34.53	10.00	36.1	y							0.00	0.00	
38	27.97	28.79	SP	125	1.69	1.58	0.93	0.32	41.9	34.25	10.00	35.9	y							0.00	0.00	
39	28.79	29.61	SP	125	1.74	1.61	0.92	0.32	41.9	33.98	10.00	35.6	y							0.00	0.00	
40	29.61	30.00	SP	125	1.78	1.63	0.92	0.32	41.9	33.78	10.00	35.4	y							0.00	0.00	
41	30.00	30.44	CL	120	1.80	1.64	0.92	0.32	10.1	8.14	90.00	14.8	n							0.00	0.00	
42	30.44	31.26	CL	120	1.84	1.66	0.92	0.32	11.4	9.10	90.00	15.9	n							0.00	0.00	
43	31.26	32.08	CL	120	1.89	1.68	0.91	0.33	12.6	10.01	90.00	17.0	n							0.00	0.00	
44	32.08	32.90	CL	120	1.94	1.71	0.91	0.33	13.8	10.90	90.00	18.1	n							0.00	0.00	
45	32.90	33.73	CL	120	1.99	1.73	0.90	0.33	15.1	11.79	90.00	19.1	n							0.00	0.00	
46	33.73	34.55	CL	120	2.04	1.75	0.90	0.33	16.3	12.66	90.00	20.2	n							0.00	0.00	
47	34.55	35.37	CL	120	2.09	1.78	0.89	0.33	17.6	13.56	90.00	21.3	n							0.00	0.00	
48	35.37	35.50	CL	120	2.12	1.79	0.89	0.33	17.6	13.51	90.00	21.2	n							0.00	0.00	
49	35.50	36.19	ML	120	2.14	1.80	0.88	0.33	17.6	13.48	90.00	21.2	n							0.00	0.00	
50	36.19	37.02	ML	120	2.19	1.82	0.88	0.34	17.6	13.40	90.00	21.1	n							0.00	0.00	
51	37.02	37.84	ML	120	2.24	1.85	0.87	0.34	17.6	13.32	90.00	21.0	n							0.00	0.00	
52	37.84	38.66	ML	120	2.29	1.87	0.86	0.34	17.6	13.23	90.00	20.9	n							0.00	0.00	
53	38.66	39.48	ML	120	2.33	1.90	0.86	0.34	17.6	13.15	90.00	20.8	n							0.00	0.00	
54	39.48	40.31	ML	120	2.38	1.92	0.85	0.34	17.6	13.07	90.00	20.7	n							0.00	0.00	
55	40.31	41.13	ML	120	2.43	1.94	0.84	0.34	17.6	12.99	90.00	20.6	n							0.00	0.00	
56	41.13	41.95	ML	120	2.48	1.97	0.84	0.34	17.6	12.91	90.00	20.5	n							0.00	0.00	
57	41.95	42.00	ML	120	2.51	1.98	0.83	0.34	17.6	12.87	90.00	20.4	n							0.00	0.00	
58	42.00	42.77	GP-GC	125	2.53	1.99	0.83	0.34	62.5	45.57	6.20	45.9	y							0.00	0.00	
59	42.77	43.60	GP-GC	125	2.58	2.02	0.82	0.33	62.5	45.29	6.20	45.6	y							0.00	0.00	
60	43.60	44.42	GP-GC	125	2.64	2.04	0.81	0.33	62.5	45.00	6.20	45.3	y							0.00	0.00	
61	44.42	45.24	GP-GC	125	2.69	2.07	0.80	0.33	62.5	44.72	6.20	45.0	y							0.00	0.00	
62	45.24	46.06	GP-GC	125	2.74	2.09	0.80	0.33	64.0	45.47	6.20	45.8	y							0.00	0.00	
63	46.06	46.89	GP-GC	125	2.79	2.12	0.79	0.33	65.8	46.47	6.20	46.8	y							0.00	0.00	
64	46.89	47.71	GP-GC	125	2.84	2.15	0.78	0.33	67.6	47.46	6.20	47.8	y							0.00	0.00	
65	47.71	48.53	GP-GC	125	2.89	2.17	0.77	0.33	69.4	48.44	6.20	48.7	y							0.00	0.00	
66	48.53	49.35	GP-GC	125	2.94	2.20	0.76	0.33	71.2	49.41	6.20	49.7	y							0.00	0.00	
67	49.35	50.18	GP-GC	125	3.00	2.22	0.75	0.32	73.0	50.37	6.20	50.7	y							0.00	0.00	
68	50.18	51.00	GP-GC	125	3.05	2.25	0.75	0.32	74.8	51.32	6.20	51.6	y							0.00	0.00	
69	51.00	51.82	GP-GC	125	3.10	2.27	0.74	0.32	76.6	52.26	6.20	52.6	y							0.00	0.00	
70	51.82	52.65	GP-GC	125	3.15	2.30	0.73	0.32	78.4	53.19	6.20	53.5	y							0.00	0.00	
71	52.65	53.47	GP-GC	125	3.20	2.33	0.72	0.32	80.2	54.11	6.20	54.4	y							0.00	0.00	
72	53.47	54.29	GP-GC	125	3.25	2.35	0.71	0.31	82.0	55.03	6.20	55.4	y							0.00	0.00	
73	54.29	55.11	GP-GC	125	3.30	2.38	0.70	0.31	84.5	56.37	6.20	56.7	y							0.00	0.00	
74	55.11	55.94	GP-GC	125	3.36	2.40	0.70	0.31	85.0	56.42	6.20	56.8	y							0.00	0.00	
75	55.94	56.76	GP-GC	125	3.41	2.43	0.69	0.31	85.9	56.67	6.20	57.0	y							0.00	0.00	
76	56.76	57.58	GP-GC	125	3.46	2.45	0.68	0.31	86.7	56.92	6.20	57.3	y							0.00	0.00	
77	57.58	58.40	GP-GC	125	3.51	2.48	0.67	0.30	87.5	57.17	6.20	57.5	y							0.00	0.00	
78	58.40	59.23	GP-GC	125	3.56	2.51	0.67	0.30	88.4	57.42	6.20	57.8	y							0.00	0.00	
79	59.23	60.05	GP-GC	125	3.61	2.53	0.66	0.30	89.6	57.90	6.20	58.3	y							0.00	0.00	
80	60.05	60.87	GP-GC	125	3.66	2.56	0.65	0.30	89.6	57.61	6.20	58.0	y							0.00	0.00	
81	60.87	61.69	GP-GC	125	3.72	2.58	0.65	0.30	89.6	57.32	6.20	57.7	y							0.00	0.00	
82	61.69	62.52	GP-GC	125	3.77	2.61	0.64	0.30	89.6	57.04	6.20	57.4	y							0.00	0.00	
83	62.52	63.34	GP-GC	125	3.82	2.63	0.64	0.29	89.6	56.76	6.20	57.1	y							0.00	0.00	
84	63.34	64.16	GP-GC	125	3.87	2.66	0.63	0.29	89.6	56.49	6.20	56.8	y							0.00	0.00	
85	64.16	64.98	GP-GC	125	3.92	2.69	0.62	0.29	89.6	56.21	6.20	56.6	y							0.00	0.00	
86	64.98	65.81	GP-GC	125	3.97	2.71	0.62	0.29	89.6	55.95	6.20	56.3	y							0.00	0.00	
87	65.81	66.63	GP-GC	125	4.02	2.74	0.61	0.29	89.6	55.68	6.20	56.0	y							0.00	0.00	
88	66.63	67.00	GP-GC	125	4.06	2.76	0.61	0.29	89.6	55.49	6.20	55.8	y							0.00	0.00	
89	67.00	67.45	CH	122	4.09	2.77	0.61	0.29	55.4	34.27	99.00	46.1	n							0.00	0.00	
90	67.45	68.27	CH	122	4.13	2.79	0.60	0.28	55.4	34.15	99.00	46.0	n							0.00	0.00	
91	68.27	69.10	CH	122	4.18	2.81	0.60	0.28	55.4	34.00	99.00	45.8	n							0.00	0.00	
92	69.10	69.92	CH	122	4.23	2.84	0.59	0.28	55.4	33.85	99.00	45.6	n							0.00	0.00	
93	69.92	70.74	CH	122	4.28	2.86	0.59	0.28	55.4	33.71	99.00	45.4	n							0.00	0.00	
94	70.74	71.56	CH	122	4.33	2.89	0.58	0.28	54.5	33.00	99.00	44.6	n							0.00	0.00	
95	71.56	72.39	CH	122	4.38	2.91	0.58	0.28	53.8	32.46	99.00	43.9	n							0.00	0.00	
96	72.39	73.21	CH	122	4.43	2.93	0.58	0.28	53.2	31.92	99.00	43.3	n							0.00	0.00	
97	73.21	74.03	CH	122	4.48	2.96	0.57	0.28	52.5	31.39	99.00	42.7	n							0.00	0.00	
98	74.03	74.85	CH	122	4.53	2.98	0.57	0.28	82.2	48.95	99.00	63.7	n							0.00	0.00	
99	74.85	75.68	CH	122	4.58	3.01	0.57	0.27	82.5	48.92	99.00	63.7	n							0.00	0.00	
100	75.68	76.50	CH	122	4.63	3.03	0.56	0.27	82.2	48.55	99.00	63.3	n							0.00	0.00	

APPENDIX J

HEALTH RISK ASSESSMENT

CEMEX CONSTRUCTION MATERIALS PACIFIC, LLC.

CACHE CREEK MINING PERMIT AND RECLAMATION PLAN AMENDMENT PROJECT

PUBLIC HEALTH RISK ASSESSMENT OF DIESEL PARTICULATE MATTER AND RESPIRABLE SILICA

PREPARED FOR:

CEMEX Construction Materials Pacific, LLC.
2365 Iron Point Road, Suite 120
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FOR SUBMITTAL TO:

Yolo County
Planning Division
292 West Beamer Street
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COMPASS LAND GROUP

AUGUST 2022

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1.0 INTRODUCTION

Compass Land Group ("Compass") has prepared this Public Health Risk Assessment of Diesel Particulate Matter and Respirable Silica ("HRA") in support of the CEMEX Construction Materials Pacific, LLC. ("CEMEX") Cache Creek Mining Permit and Reclamation Plan Amendment Project in unincorporated Yolo County, California ("Project"). This HRA evaluates the potential air quality related public health risks associated with the proposed Project's diesel particulate emissions and respirable silica. Public health risks are compared against significance thresholds adopted by the Yolo-Solano Air Quality Management District ("YSAQMD"). This HRA is intended to support the lead agency's evaluation of air quality related public health impacts pursuant to the California Environmental Quality Act ("CEQA").

The sections that follow provide a description of the Project, scope of the risk assessment, YSAQMD significance thresholds, exposure assessment, and risk analysis for use in Project CEQA review.

1.1 Project Description

Project Overview

The Project proposes to modify Long-Term Off-Channel Mining Permit No. ZF #95-093, Reclamation Plan No. ZF #95-093 and Development Agreement No. 96-287 (as subsequently amended, "Existing Entitlements") with revised mining and reclamation plans and a 20-year time extension. The Project would allow mining and associated processing plant operations to continue into year 2047.

The Project is an extension and modification of an approved project. CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, maximum depth of mining, processing operations, use of settling ponds to contain and settle aggregate wash fines, water use, truck routes, or hours of operation).

Surface mining is proposed to continue on 485± acres and reclamation is proposed to occur on 837± acres of the 1,902± acre property to a maximum depth of 70 feet below ground surface. The mine is planned to be further developed and ultimately reclaimed in six phases, the first two of which have already been mined.[1] Consistent with Existing Entitlements, all of the proposed mining areas are located outside the active channel of Cache Creek.

Project Activities Associated with Public Health Risks

The Project will involve the continuation of stripping, mining, concurrent reclamation, and ancillary aggregate, ready-mix concrete, and recycle processing operations. Each of these activities has the potential to emit fugitive dust and diesel exhaust from off-road equipment and/or engines. Exposure to diesel exhaust and fugitive dust can lead to various health impacts.

[1] The existing permit approvals include seven mining phases. However, on June 3, 2022, CEMEX submitted an application addendum that included a request to eliminate Phase 7 from the Project.

Specifically, the following three types of public health impacts are commonly associated with exposure to fugitive dust and diesel particulate matter:

1. Cancer risk (reported as a probability)
2. Acute non-cancer risk (reported as a hazard index)
3. Chronic non-cancer risk (reported as a hazard index)

These potential health impacts are more thoroughly described in Section 1.3, below. The objective of this HRA is to determine whether the Project is likely to expose nearby residents or workers to significant health risks that exceed applicable thresholds. The criteria used to determine if health risks are significant is discussed in Section 2.0, below. However, to put this analysis into proper context, the health risks discussed in this HRA are not new as the Project represents an extension of time for an existing, fully permitted and operating mining and processing facility.

1.2 Scope of the Risk Assessment

The preparation of health risk assessments is a three-step process. The first step is to identify the potential contaminants that may contribute to public health risks. The second step is to assess the amount of contaminants that may reach the public (exposure assessment). The third and last step is to calculate the magnitude of the health risk as a result of exposure to harmful contaminants on the basis of the toxicology of the contaminants.

To support environmental review pursuant to CEQA, the County has specifically requested that CEMEX provide an assessment of health risks associated with diesel particulate matter and respirable silica.

The modeling parameters used in this study are described in Section 4.0 below.

1.3 Toxic Air Contaminants and Fine Particulate Matter

The following discussion of toxic air contaminants and fine particulate matter is sourced from the U.S. Occupational Safety and Health Administration ("OSHA") and May 2017 *California Environmental Quality Act Air Quality Guidelines* issued by BAAQMD ("BAAQMD CEQA Guidelines") to provide information and background on the primary constituents contributing to the Project health risks that are evaluated in this report.[2]

1.3.1 Toxic Air Contaminants

Toxic air contaminants ("TACs") are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor

[2] The BAAQMD CEQA Guidelines were published in 2017 and are more up-to-date than the YSAQMD CEQA Guidelines published in 2007, which is why they are referenced simply for purposes of describing toxic air contaminants and fine particulate matter.

vehicles, emit TACs. TACs can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. This report will focus on direct TAC emissions that would be associated with Project activities, not those formed in the atmosphere.

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure. Non-carcinogenic substances differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed as a hazard index ("HI"), which is the ratio of expected exposure levels to an acceptable reference exposure level.

TACs are primarily regulated through State and local risk management programs. These programs are designed to eliminate, avoid, or minimize the risk of adverse health effects from exposures to TACs. A chemical becomes a regulated TAC in California based on designation by the Office of Environmental Health Hazard Assessment ("OEHHA"). As part of its jurisdiction under the Air Toxics Hot Spots Program (Health and Safety Code Section 44360(b)(2)), OEHHA derives cancer potencies and reference exposure levels ("RELs") for individual air contaminants based on the current scientific knowledge that includes consideration of possible differential effects on the health of infants, children and other sensitive subpopulations, in accordance with California Health and Safety Code Sections 39669.5 et seq.

1.3.2 Fine Particulate Matter

$PM_{2.5}$ is a fine particulate matter with a diameter equal to or less than 2.5 micrometers. $PM_{2.5}$ is a complex mixture of substances that includes elements such as carbon and metals; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust and wood smoke. $PM_{2.5}$ can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. This report will focus on direct $PM_{2.5}$ emissions that would be associated with Project activities, not those formed in the atmosphere.

A large body of scientific evidence indicates that both long-term and short-term exposure to $PM_{2.5}$ can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardio-vascular symptoms, and contributing to heart attacks and deaths).

1.3.3 Respirable Silica

Crystalline silica is a common mineral found in the earth's crust. Materials like sand, stone, concrete, and mortar contain crystalline silica. It is also used to make products such as glass, pottery, ceramics, bricks, and artificial stone. Respirable crystalline silica – very small particles at least 100 times smaller than ordinary sand you might find on beaches and playgrounds – is created when cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar. (OSHA 2022). The Project activities would have the potential to release and expose nearby workers to silica dust.

From a health risk perspective, the respirable fraction of silica is of principle concern. Workers who inhale these very small crystalline silica particles are at increased risk of developing serious silica-related diseases, including silicosis (an incurable lung disease that can lead to disability and death), lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease. (Ibid.) Due to the health risks posed by silica dust, OSHA has established work exposure standards that apply to construction and industry.

1.4 Report Organization

This report is divided into seven sections along with supporting figures and appendices. Following this introduction, Section 2.0 describes the applicable significance criteria that the lead agency may use for the evaluation of Project health risks pursuant to CEQA. Section 3.0 discusses the emissions and soil constituents associated with the Project. Section 4.0 describes the methods used for the exposure assessment, including the data and tools used to determine the dispersion pattern of emissions from the Project. This analysis considers the location of nearby homes, local wind patterns and topography. Section 5.0 describes the results of the Project risk assessment. Section 6.0 summarizes the results and the risk assessment findings relative to applicable thresholds of significance. Section 7.0 provides technical references. Technical data and calculations are provided in figures and appendices.

2.0 SIGNIFICANCE CRITERIA

This section describes the criteria that are used in this report to assess the significance of public health risks. These criteria are based on YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts* (July 11, 2007) ("YSAQMD Handbook"). The YSAQMD Handbook states that proposed development projects that have the potential to expose the public to TACs from *stationary sources* in excess of the following thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more.
- Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to 1 for the MEI or greater.

Regarding TACs, the Project does not propose any new stationary sources or any increase in permitted production levels for the existing stationary sources. CEMEX would continue to operate the facility in accordance with OSHA regulations and its existing Permits to Operate for stationary sources issued by the YSAQMD.

3.0 EMISSIONS SUMMARY

Project activities would release TACs, including diesel particulate matter ("DPM") and fugitive dust containing respirable silica.

A summary of emissions is presented in Appendix A, Modeling Emissions Inputs. DPM emissions are based on the number, type and duration of usage of off-road equipment and engines. Table 1 in Appendix A presents a breakdown of DPM by year and annual average DPM emissions. These emissions were sourced from the Project *Air and Greenhouse Gas Emissions Study* (Compass, July 2022). Complete methods for emissions estimating are described in that study. Compass' *Air and Greenhouse Gas Emissions Study* was peer-reviewed in July 2022 by Baseline Environmental Consulting on behalf of the County and determined to be acceptable for use in the CEQA process.

Project PM_{10} emission rates were used to quantify annual and hourly emission rates of respirable silica. These calculations are provided in Tables 2 of Appendix A. The emission factor for respirable silica used in this study is based on a frequently cited aggregate industry study titled, *PM4 Crystalline Silica Emission Factors and Ambient Concentrations at Aggregate-Producing Sources in California* (Richards et al., November 2009), published in the Journal of the Air & Waste Management Association, Vol. 59.[3] Respirable silica emissions are conservatively calculated by multiplying PM_{10} emission rates by the emission factor derived from the highest silica fraction value from the study's findings. Even so, the health risks associated with respirable silica will only represent a small fraction of the total Project health risk after accounting for DPM.

4.0 METHODS FOR EVALUATING EXPOSURE

Exposure assessment involves translating the emission rate (e.g., lbs/hr) of individual TACs (presented in Tables 1 and 2 of Appendix A) into a concentration (e.g., grams/cubic meter or parts per million) of each TAC. The key step in performing an exposure assessment is the application of an air dispersion model. In general, air dispersion modeling of pollutant emissions is used to estimate ground level concentrations at downwind receptors, which are distributed in a grid pattern of sufficient size and density to capture the maximum concentration. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature,

[3] This study is frequently cited by aggregate industry air modelers and the San Joaquin Valley Air Pollution Control District in assessments of respirable silica emissions at aggregate facilities. The study investigated respirable silica emissions at three aggregate facilities in California (Barstow, Caroll Canyon, and Vernalis) and found that the PM_4 crystalline silica emissions ranged from 3.21% to 7.95% of the simultaneously measured PM_{10} emission factors. The average of these values was 5.58%; however, the San Joaquin Air Pollution Control District recommends using 6.38% of the PM_{10} emission rate for aggregate industry air studies based on the findings at the Vernalis plant. This HRA conservatively uses a higher value of 8%.

inversion heights, etc.), emissions release height, and terrain characteristics into the concentration of individual air contaminant.

Dispersion modeling was performed using the latest version of AERMOD View (version 10.2.1), developed by Lakes Software. AERMOD is a steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD, like most dispersion models, uses mathematical formulations to characterize the atmospheric processes that disperse pollutants emitted by a source. Using source emission rates, exhaust parameters, terrain characteristics, and meteorological inputs, AERMOD calculates down-wind pollutant concentrations at specified receptor locations. AERMOD is recommended by both the U.S. EPA and YSAQMD for stationary source air dispersion modeling.

4.1 Model Setup and Options

The AERMOD dispersion model was employed for the exposure assessment. Model selection parameters are summarized in Table 1, below.

4.2 Modeling Grid

Based on input from YSAQMD[4], the modeling grid used to report the Project's distribution of health risk covers an area 7,500 meters x 7,500 meters with a 100-meter spacing, for a total of 5,625 receptors (see Figure 2, Modeling Grid). Fenceline receptors were added at the mine and plant boundary with 50-meter spacing, providing higher resolution of modeling outputs at the boundaries of the site, for an additional 414 receptors. Two discrete receptors were also located at nearby schools (Madison Community High School) and the Madison Migrant Child Development Center. Although protection of these sensitive receptors is already incorporated into OEHHA's risk assessment methodology for both cancer risk and noncancer risk assessment, the assessment of risk at these specific location may be useful to assure the public that such individuals have been considered in the analysis.

4.3 Meteorological Data

The Project site is located in a region characterized primarily by continuous agricultural lands within a broad, alluvial valley surrounded by distant rolling hills. The terrain at the site is relatively flat with surface elevations varying from approximately 149 feet above mean sea level (ft msl) at the west end of the property to 127 ft msl at the east end of the property. Mine excavations extend below groundwater in some areas to a maximum depth of 70 feet below ground surface.

Per input from YSAQMD, five years of surface and upper air meteorological data from the Sacramento International Airport (WBAN: ID 93225) for the period 2014-2018 were used in the exposure assessment. Figure 3, Windrose Plot, shows the overall wind patterns based on the five years of hourly wind data. This figure shows that the winds are predominantly from the south

[4] Personal communications with Kyle Rohlfing, YSAMQD, on 7/28/2022.

and northwest with an average annual speed of 7.1 knots. Calm winds occur approximately 1% of the time.

TABLE 1
MODEL SELECTION AND PARAMETERS

Category	Selection / Parameter	Notes
Model Selection	AERMOD View ver. 10.2.1	YSAQMD-approved , industry standard.
Pollutants Modeled	1. Diesel particulate matter (DPM) 2. Respirable silica	Annual and 1-Hour concentrations were calculated at each receptor.
Control Pathway	1. Regulatory default options used 2. Averaging time options: 1-hour and Period 3. Terrain selection: elevated.	YSAQMD-approved, industry standard. Elevated terrain is used to ensure maximum model functionality.
Source Pathway	1. Diesel fueled equipment and fugitive dust emissions from mining and processing operations. 2. Emissions are modeled as elevated (5-meter height) polygonal area sources, by source group. 3. For TACs, a unit emission rate (1 gram/sec) is assigned to each of the area sources. Scaling of emissions for purposes of calculating health risks is done in the HARP model.	Emission rates of DPM and fugitive dust were sourced from the Project Air and Greenhouse Gas Emissions Study (Compass July 2022).
Receptor Pathway / Modeling Grid	1. Uniform cartesian grid: 7,500 meters x 7,500 meters with a 100-meter spacing. 2. Fenceline receptors established with 50-meter spacing. 3. Sensitive receptors include nearby residences, school, and child development center.	See Figure 2. Total of 5,625 cartesian grid receptors, 414 fenceline (boundary) receptors, and 2 discrete sensitive receptors.
Meteorological Pathway	1. 5 years of surface and upper air data for the period 2014 to 2018 from the Sacramento International Airport.	Utilized per YSAQMD input.

5.0 RISK ANALYSIS

Health risks from public exposure to various TACs are discussed in this section. The emission rates of various TACs referenced in Section 3.0 are used as a basis to quantify various health risks. The Hotspots Analysis and Reporting Program Air Dispersion Modeling and Risk Tool ("HARP2"), dated May 1, 2019, developed by the CARB and OEHHA[5], was used to calculate Project health risks. As described in Section 1.0, three types of health risks were calculated (cancer, chronic non-cancer and acute non-cancer).

5.1 Project Risk Analysis

The Project's health risks were evaluated using the HARP2 risk model using the OEHHA Derived calculation method. Residential cancer risk is based on a 30-year exposure and worker cancer risk is based on a 25-year exposure. For cancer and chronic risks, the minimum mandatory exposure pathways (i.e., inhalation, soil, dermal, and mother's milk) were used. For acute risks, the inhalation pathway was used.

The spatial distribution of residential cancer risk is shown on Figure 4, Spatial Distribution of Residential Cancer Risk. The Project's incremental maximum residential cancer risk is estimated to be 8.1 cancers per million. This risk level is observed at a residence located south of the Project site, along Hwy. 16. (see Figure 5, Location of Maximum Residential Cancer Risk). The Project's incremental cancer risks at the Madison Community High School and Migrant Child Development Center are estimated to be 2.9 and 4.4 cancers per million, respectively.

The spatial distribution of worker cancer risk is shown on Figure 6, Spatial Distribution of Worker Cancer Risk. The Project's incremental maximum worker cancer risk at nearby businesses is estimated to be 0.6 cancers per million. The highest off-site worker risk appears to occur at an un-named agricultural business located south of the Project site but north of Hwy. 16 (see Figure 6).

The non-cancer risks at nearby homes and businesses are calculated in terms of a hazard index ("HI"). The maximum chronic hazard index is estimated to be 0.01 at the residence located south of the Project site, along Hwy. 16 (i.e., the residence with the highest observed cancer risk). The acute hazard index was 0.00 for all receptors. Given the low values for chronic and acute hazards, a meaningful contour map could not be generated to provide a spatial distribution of the hazard indices.

The risks for residential and worker locations are summarized in Table 2 in Section 6, below. Excerpts of the HARP2 model inputs are included in Appendix B. HARP model risk table excerpts showing the calculated health risks (including cancer risk and hazard indices) are provided in Appendix C.

[5] OEHHA Hotspots Analysis and Reporting Program (HARP) available at: https://ww3.arb.ca.gov/toxics/harp/harp.htm

6.0 RESULTS AND CONCLUSIONS

Table 2 below summarizes the Project health risks in comparison to YSAQMD significance thresholds. The Project's potential health risk impact in terms of excess cancer risk and non-cancer hazards is **less than significant**.

TABLE 2
SUMMARY OF PROJECT HEALTH RISKS

Risk Metric	Maximum Off-Site Value	Significance Threshold	Significant?
Residential Cancer Risk per Million (30-year exposure)	8.1 at private residence south of Project site along Hwy. 16	10	No
Worker Cancer Risk (25-year exposure)	0.6 at private agricultural business north of Hwy 16	10	No
Cancer Risk per Million at Discrete Sensitive Receptors	2.9 at Madison Community High School 4.4 at Madison Migrant Child Development Center	10	No
Chronic Hazard Index	Residential 0.01 Worker 0.02	1.0	No
Acute Hazard Index	Residential 0.00 Worker 0.00	1.0	No

The risk assessment process contains numerous, conservative assumptions to ensure that public health risks are not underestimated. These assumptions are related to the exposure duration, toxicity data and use of Gaussian type statistical atmospheric dispersion models. For example, it is unlikely that any individual would remain in the same location for 30 years. Moreover, with respect to Project emissions modeling:

- The Project only involves a 20-year extension.
- Zero adjustment has been made to subtract emissions from existing, baseline mining and processing operations.
- The Project air study and this HRA assume that CEMEX will operate at maximum mining and processing production levels for every year during the life of the permit, which is very unlikely. Accordingly, the emissions models likely over-estimate DPM and respirable silica emissions.
- Off-road equipment and/or engines used in the mining process will be upgraded over time with newer engines based on CARB fleet requirements that will generally emit less DPM

into the atmosphere. In turn, the Project's DPM emissions are expected to gradually decrease over time whereas the Project air study and this HRA assume that emissions will continue at 2022 levels for the duration of the Project.

As a result, the modeling assumptions may overstate the Project's contribution and the public's exposure to health risks.

7.0 REFERENCES

BAAQMD (2017). California Environmental Quality Act Air Quality Guidelines. May 2017.

CalEPA (2012). Technical Support Document for Exposure Assessment and Stochastic Analysis. Office of Environmental Health Hazard Assessment. California Environmental Protection Agency. August 2012.

CARB (2003). HARP User's Guide. Available at: http://www.arb.ca.gov/toxics/harp/harp.htm. December 2003.

Compass Land Group (2022). Air and Greenhouse Gas Emissions Study. July 2022.

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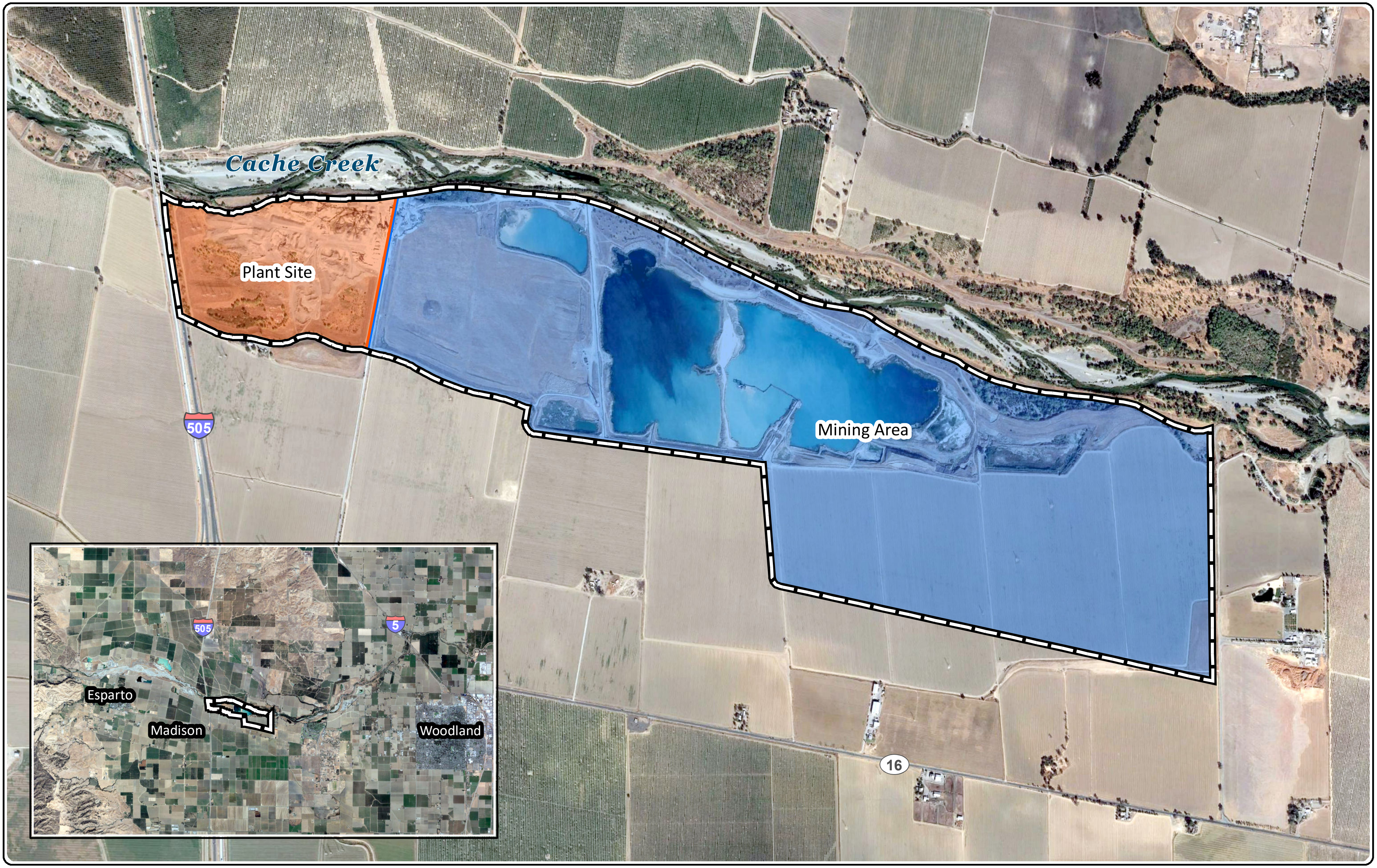
OEHHA (2014). Consolidated Table of Approved health Risk Values. Cal EPA, Office of Environmental Health Hazard Assessment. July 3, 2014.

Richards et al. (2009). PM4 Crystalline Silica Emission Factors and Ambient Concentrations at Aggregate-Producing Sources in California. Journal of the Air & Waste Management Association, Vol. 59. November 2009.

Yolo-Solano Air Quality Management District (2007). Handbook for Assessing and Mitigating Air Quality Impacts. July 2007.



Aerial photo adapted from Google Earth Maps Imagery Date 10/21/2020.

Legend:
- Rec Plan Boundary
- Mine Area Source
- Plant Area Source

0 800 1,600 3,200 Feet

N

Project Location and Site Map
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

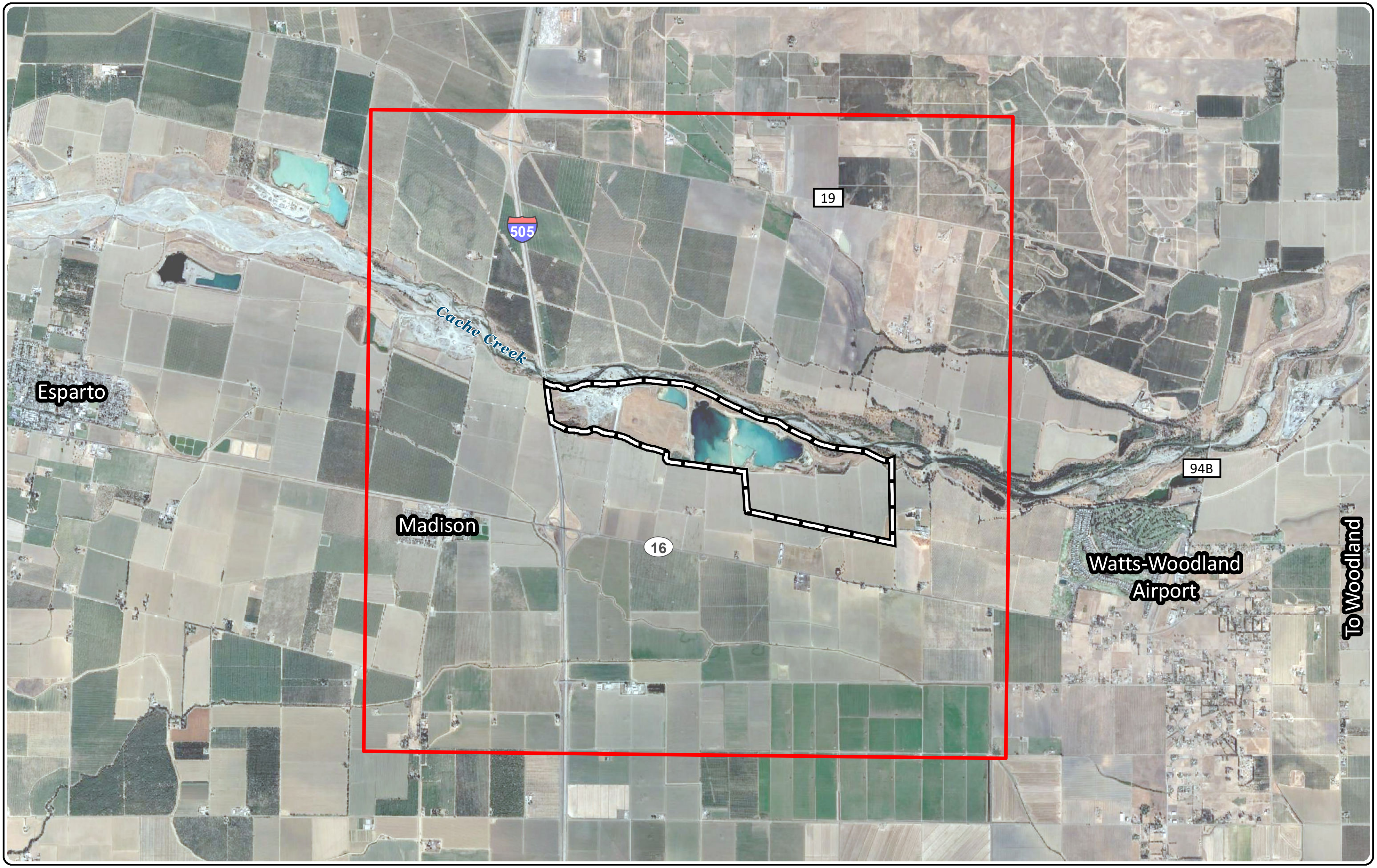
Figure 1

8/24/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

Projects\012 - Cemex\Cache Creek\Health Risk Assessment\1 Project Location and Site Map.mxd



Aerial photo adapted from Google Earth Maps Imagery Date 10/21/2020.

Legend:

Rec Plan Boundary

Modeling Grid

0 0.5 1 2 Miles

N

Modeling Grid
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

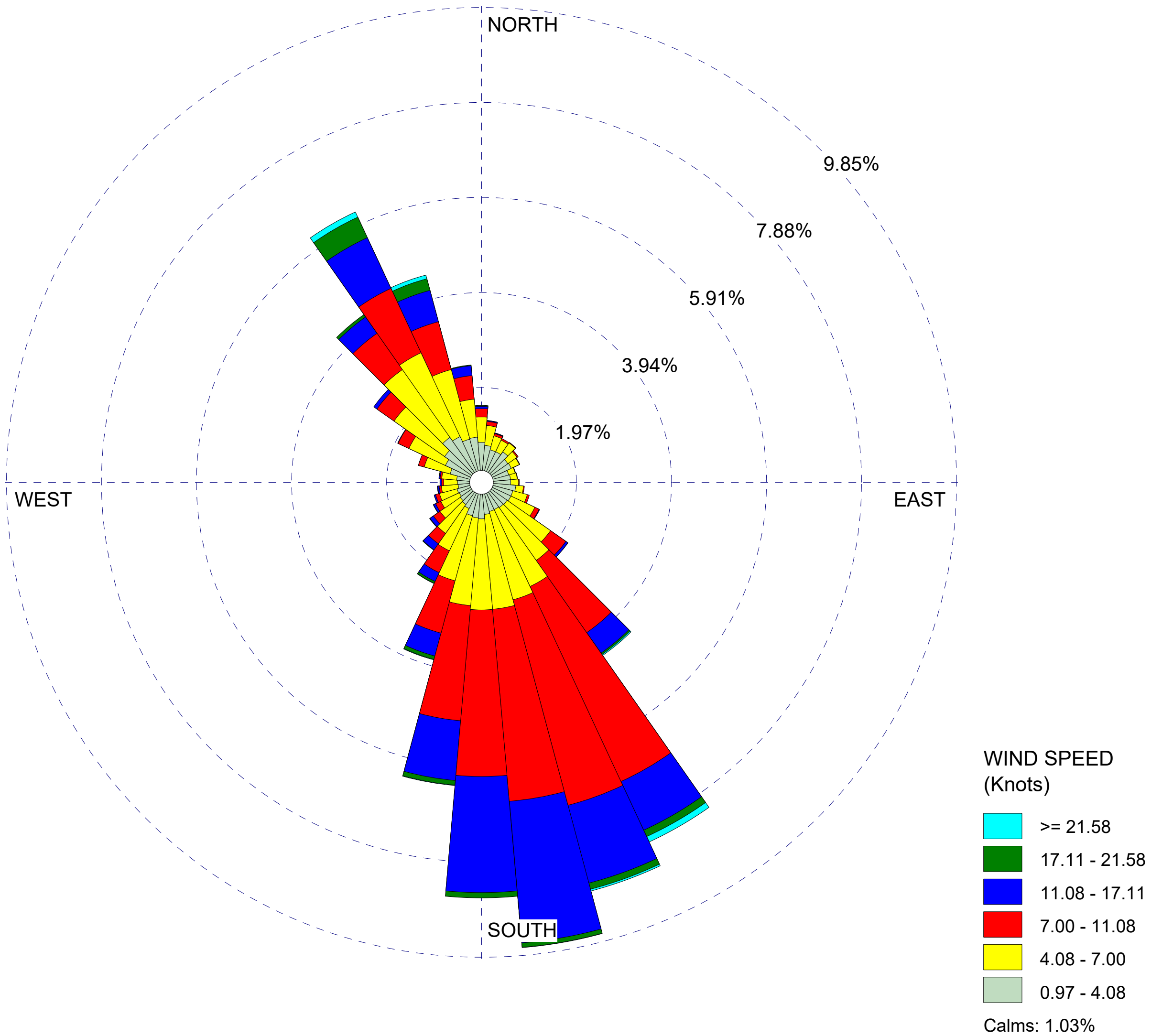
Figure 2

8/24/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

Projects\012 - Cemex\Cache Creek\Health Risk Assessment\1 Project Location and Site Map.mxd



Windrose Plot
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

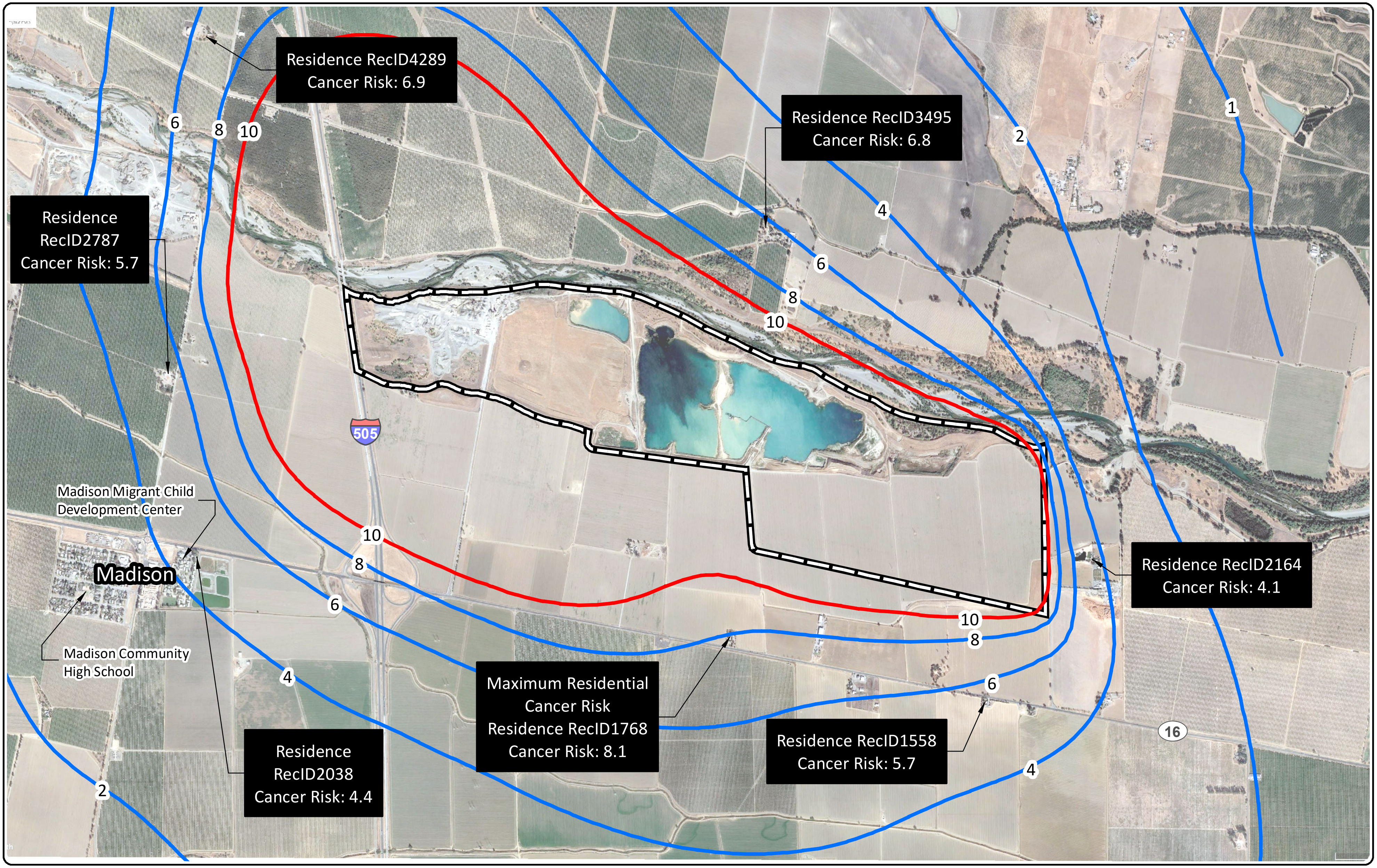
Figure 3

8/24/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

Projects\012 - Cemex\Cache Creek\Health Risk Assessment\3 Windrose Map.mxd



Aerial photo adapted from Google Earth Maps Imagery Date 10/21/2020.

Legend:
- Rec Plan Boundary
- Equal or Less than 8.0 per million
- 10.0 per million

0 1,200 2,400 4,800 Feet

N

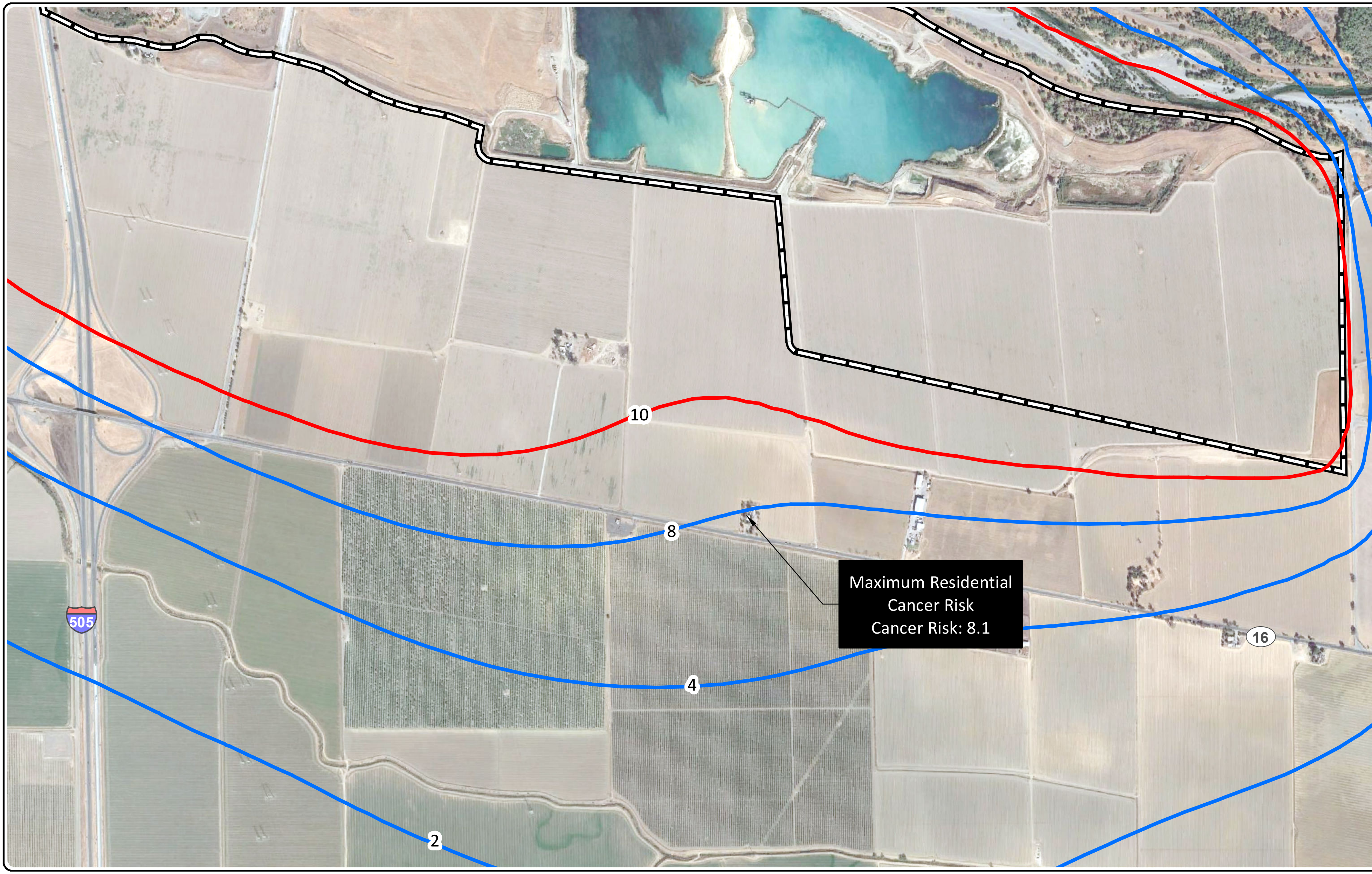
Spatial Distribution of Residential Cancer Risk
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

Figure 4

8/26/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP



Aerial photo adapted from Google Earth Maps Imagery Date 10/21/2020.

Legend:

- Rec Plan Boundary
- Equal or Less than 8.0 per million
- 10.0 per million

0 700 1,400 2,800 Feet

N

Location of Maximum Residential Cancer Risk
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

Figure 5

8/24/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

Aerial photo adapted from Google Earth Maps Imagery Date 10/21/2020.

Legend:

Rec Plan Boundary

Less than 5.0 per million

0 1,000 2,000 4,000 Feet

N

Spatial Distribution of Worker Cancer Risk
Cache Creek
CEMEX Construction Materials Pacific
Yolo County, California

Figure 6

8/24/2022

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

Appendix A
Modeling Emissions Inputs

Table 1
Summary of Annual DPM Emissions

CEMEX Construction Materials Pacific, LLC.
Cache Creek Mining Permit and Reclamation Plan Amendment Project
Health Risk Assessment

COMPASS LAND GROUP

AVERAGE ANNUAL PM2.5 EXHAUST EMISSIONS (TONS/YEAR)

Mining Operations[1]				Processing Plants[2]		
Year	**Calendar Year**	**PM2.5 Exhaust (tons/yr)**		**Year**	**Calendar Year**	**PM2.5 Exhaust (tons/yr)**
1	2022	0.1803		1	2022	0.3800
2	2023	0.1803		2	2023	0.3800
3	2024	0.1803		3	2024	0.3800
4	2025	0.1803		4	2025	0.3800
5	2026	0.1803		5	2026	0.3800
6	2027	0.1803		6	2027	0.3800
7	2028	0.1803		7	2028	0.3800
8	2029	0.1803		8	2029	0.3800
9	2030	0.1803		9	2030	0.3800
10	2031	0.1803		10	2031	0.3800
11	2032	0.1803		11	2032	0.3800
12	2033	0.1803		12	2033	0.3800
13	2034	0.1803		13	2034	0.3800
14	2035	0.1803		14	2035	0.3800
15	2036	0.1803		15	2036	0.3800
16	2037	0.1803		16	2037	0.3800
17	2038	0.1803		17	2038	0.3800
18	2039	0.1803		18	2039	0.3800
19	2040	0.1803		19	2040	0.3800
20	2041	0.1803		20	2041	0.3800
21	2042	0.1803		21	2042	0.3800
22	2043	0.1803		22	2043	0.3800
23	2044	0.1803		23	2044	0.3800
24	2045	0.1803		24	2045	0.3800
25	2046	0.1803		25	2046	0.3800
26	2047	0.1803		26	2047	0.3800
27	2048	0		27	2048	0
28	2049	0		28	2049	0
29	2050	0		29	2050	0
30	2051	0		30	2051	0
	Average:	**0.1563 tons/yr**			**Average:**	**0.3293 tons/yr**
		312.52 lbs/yr				658.67 lbs/yr

Source:
Air and Greenhouse Gas Emissions Study (Compass Land Group, July 2, 2020).

Notes:
1. PM2.5 exhaust inputs from Air and Greenhouse Gas Emissions Study, Appendix C-1, Annual Results Summary.
2. PM2.5 exhaust inputs from Air and Greenhouse Gas Emissions Study:
   Off-road equipment and engine use at processing plants from App C-3, Module 4, and App C-4, Module 4, and App C-5, Module 3.

Table 2
Summary of Respirable Silica Emissions

CEMEX Construction Materials Pacific, LLC.
Cache Creek Mining Permit and Reclamation Plan Amendment Project
Health Risk Assessment

RESPIRABLE SILICA INPUTS

Area	Emission Factor	Fugitive PM10 (lbs/yr)	Fugitive PM10 (lbs/hr)	Resp. Silica (lbs/yr)	Resp. Silica (lbs/hr)
Mine	0.08	17968.00	13.65	1437.44	1.09
Plant	0.08	30580.00	22.85	2446.40	1.83

Sources:

Air and Greenhouse Gas Emissions Study (Compass Land Group, July 2, 2020).

PM4 Crystalline Silica Emission Factors and Ambient Concentrations at Aggregate-Producing Sources in California (Richards et al., November 2009).

Notes:

1. Fugitive PM_{10} inputs from Air and Greenhouse Gas Emissions Study, Appendices C-1, C-2.1, C-2.2, C-3.1, C-3.2, C-4.1, C-4.2, C-5.1, and C-5.2.

Appendix B
HARP Model Excerpts

COMPASS LAND GROUP

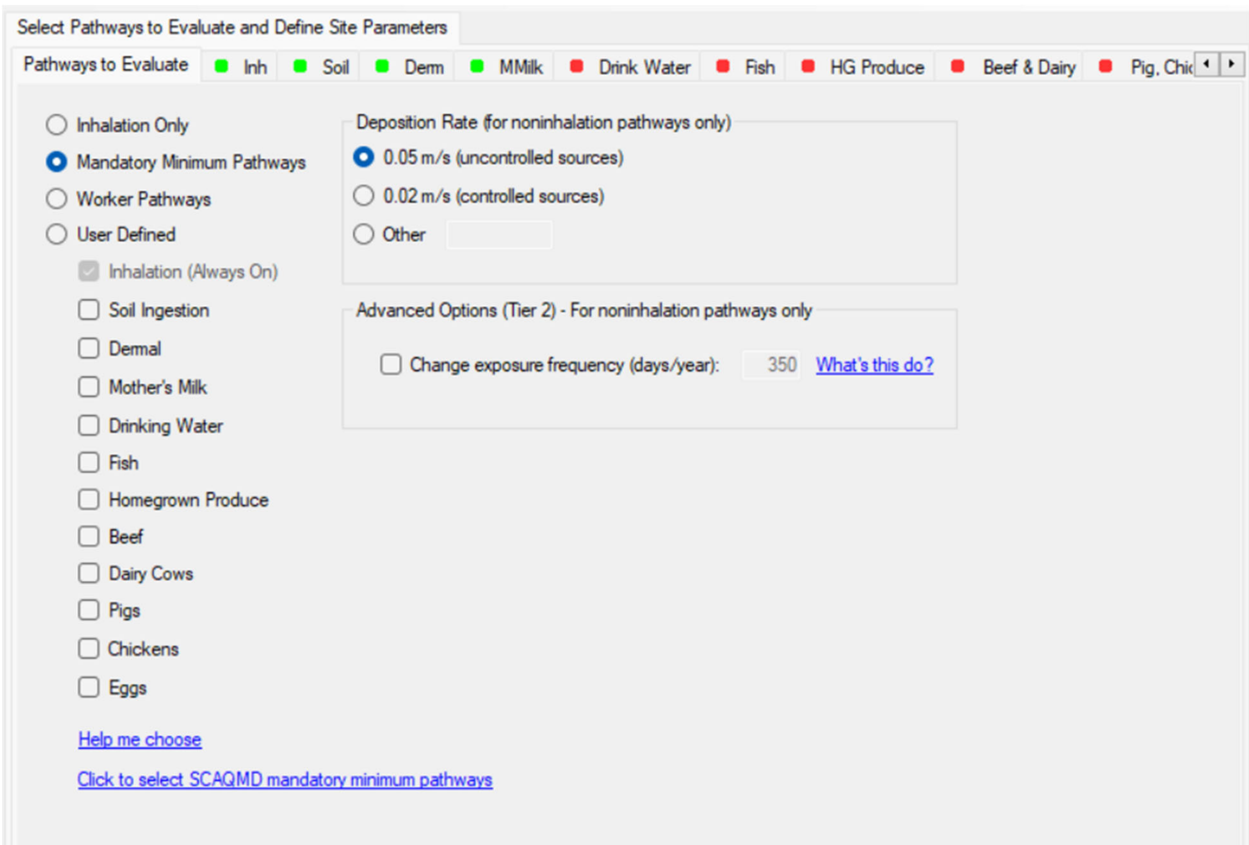
Screenshot of Emissions Inventory

Emission Inventory

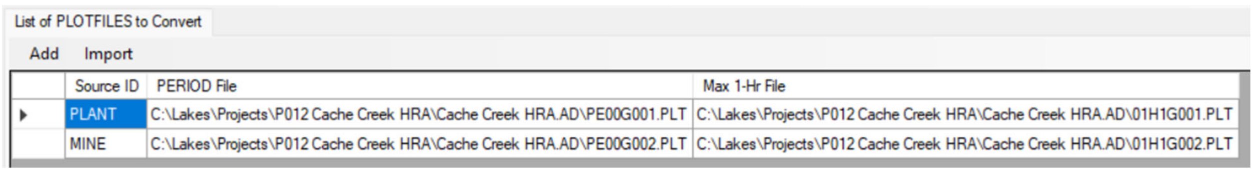
Add Import Export Delete All Options Filter: All All

SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)	Max Hr Ems (lbs/hr)	MWAF
PLANT	0	0	9901	DieselExhPM	1	658.67	0.075	1
MINE	0	0	9901	DieselExhPM	1	312.52	0.036	1
PLANT	0	0	1175	Silica, Crystln	1	2446.4	1.83	1
MINE	0	0	1175	Silica, Crystln	1	1437.44	1.09	1

Screenshot of Exposure Pathways for Cancer Risk Evaluation



Screenshot of Plot Files



List of PLOTFILES to Convert

Add Import

Source ID	PERIOD File	Max 1-Hr File
PLANT	C:\Lakes\Projects\P012 Cache Creek HRA\Cache Creek HRA.AD\PE00G001.PLT	C:\Lakes\Projects\P012 Cache Creek HRA\Cache Creek HRA.AD\01H1G001.PLT
MINE	C:\Lakes\Projects\P012 Cache Creek HRA\Cache Creek HRA.AD\PE00G002.PLT	C:\Lakes\Projects\P012 Cache Creek HRA\Cache Creek HRA.AD\01H1G002.PLT

COMPASS LAND GROUP

Screenshot of Cancer Risk By Receptor

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1	ALL	UCART1	588911.82	4279161.76	1.0912e-06	30YrCancerDerived_InhSoilDermMMilk
2	ALL	UCART1	589011.82	4279161.76	1.1129e-06	30YrCancerDerived_InhSoilDermMMilk
3	ALL	UCART1	589111.82	4279161.76	1.1398e-06	30YrCancerDerived_InhSoilDermMMilk
4	ALL	UCART1	589211.82	4279161.76	1.1706e-06	30YrCancerDerived_InhSoilDermMMilk
5	ALL	UCART1	589311.82	4279161.76	1.2052e-06	30YrCancerDerived_InhSoilDermMMilk
6	ALL	UCART1	589411.82	4279161.76	1.2407e-06	30YrCancerDerived_InhSoilDermMMilk
7	ALL	UCART1	589511.82	4279161.76	1.2760e-06	30YrCancerDerived_InhSoilDermMMilk
8	ALL	UCART1	589611.82	4279161.76	1.3129e-06	30YrCancerDerived_InhSoilDermMMilk
9	ALL	UCART1	589711.82	4279161.76	1.3478e-06	30YrCancerDerived_InhSoilDermMMilk
10	ALL	UCART1	589811.82	4279161.76	1.3803e-06	30YrCancerDerived_InhSoilDermMMilk
11	ALL	UCART1	589911.82	4279161.76	1.4098e-06	30YrCancerDerived_InhSoilDermMMilk
12	ALL	UCART1	590011.82	4279161.76	1.4446e-06	30YrCancerDerived_InhSoilDermMMilk
13	ALL	UCART1	590111.82	4279161.76	1.4694e-06	30YrCancerDerived_InhSoilDermMMilk
14	ALL	UCART1	590211.82	4279161.76	1.4921e-06	30YrCancerDerived_InhSoilDermMMilk
15	ALL	UCART1	590311.82	4279161.76	1.5187e-06	30YrCancerDerived_InhSoilDermMMilk
16	ALL	UCART1	590411.82	4279161.76	1.5418e-06	30YrCancerDerived_InhSoilDermMMilk
17	ALL	UCART1	590511.82	4279161.76	1.5669e-06	30YrCancerDerived_InhSoilDermMMilk
18	ALL	UCART1	590611.82	4279161.76	1.5947e-06	30YrCancerDerived_InhSoilDermMMilk
19	ALL	UCART1	590711.82	4279161.76	1.6253e-06	30YrCancerDerived_InhSoilDermMMilk
20	ALL	UCART1	590811.82	4279161.76	1.6579e-06	30YrCancerDerived_InhSoilDermMMilk
21	ALL	UCART1	590911.82	4279161.76	1.6904e-06	30YrCancerDerived_InhSoilDermMMilk
22	ALL	UCART1	591011.82	4279161.76	1.7218e-06	30YrCancerDerived_InhSoilDermMMilk
23	ALL	UCART1	591111.82	4279161.76	1.7514e-06	30YrCancerDerived_InhSoilDermMMilk
24	ALL	UCART1	591211.82	4279161.76	1.7781e-06	30YrCancerDerived_InhSoilDermMMilk
25	ALL	UCART1	591311.82	4279161.76	1.8018e-06	30YrCancerDerived_InhSoilDermMMilk
26	ALL	UCART1	591411.82	4279161.76	1.8237e-06	30YrCancerDerived_InhSoilDermMMilk
27	ALL	UCART1	591511.82	4279161.76	1.8454e-06	30YrCancerDerived_InhSoilDermMMilk
28	ALL	UCART1	591611.82	4279161.76	1.8683e-06	30YrCancerDerived_InhSoilDermMMilk

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CANCERCancerRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

Screenshot of Cancer Risk By Receptor (Continued)

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1760	ALL	UCART1	592311.82	4281461.76	8.6348e-06	30YrCancerDerived_InhSoilDermMMilk
1761	ALL	UCART1	592411.82	4281461.76	8.7122e-06	30YrCancerDerived_InhSoilDermMMilk
1762	ALL	UCART1	592511.82	4281461.76	8.7302e-06	30YrCancerDerived_InhSoilDermMMilk
1763	ALL	UCART1	592611.82	4281461.76	8.7024e-06	30YrCancerDerived_InhSoilDermMMilk
1764	ALL	UCART1	592711.82	4281461.76	8.6302e-06	30YrCancerDerived_InhSoilDermMMilk
1765	ALL	UCART1	592811.82	4281461.76	8.5213e-06	30YrCancerDerived_InhSoilDermMMilk
1766	ALL	UCART1	592911.82	4281461.76	8.3834e-06	30YrCancerDerived_InhSoilDermMMilk
1767	ALL	UCART1	593011.82	4281461.76	8.2431e-06	30Yr
1768	ALL	UCART1	593111.82	4281461.76	8.1044e-06	30Yr
1769	ALL	UCART1	593211.82	4281461.76	7.9836e-06	30Yr
1770	ALL	UCART1	593311.82	4281461.76	7.9022e-06	30YrCancerDerived_InhSoilDermMMilk
1771	ALL	UCART1	593411.82	4281461.76	7.8693e-06	30YrCancerDerived_InhSoilDermMMilk
1772	ALL	UCART1	593511.82	4281461.76	7.8871e-06	30YrCancerDerived_InhSoilDermMMilk
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1776	ALL	UCART1	593911.82	4281461.76	8.0942e-06	30YrCancerDerived_InhSoilDermMMilk
1777	ALL	UCART1	594011.82	4281461.76	8.1414e-06	30YrCancerDerived_InhSoilDermMMilk
1778	ALL	UCART1	594111.82	4281461.76	8.1671e-06	30YrCancerDerived_InhSoilDermMMilk
1779	ALL	UCART1	594211.82	4281461.76	8.1698e-06	30YrCancerDerived_InhSoilDermMMilk
1780	ALL	UCART1	594311.82	4281461.76	8.1492e-06	30YrCancerDerived_InhSoilDermMMilk
1781	ALL	UCART1	594411.82	4281461.76	8.0861e-06	30YrCancerDerived_InhSoilDermMMilk
1782	ALL	UCART1	594511.82	4281461.76	7.9906e-06	30YrCancerDerived_InhSoilDermMMilk
1783	ALL	UCART1	594611.82	4281461.76	7.8540e-06	30YrCancerDerived_InhSoilDermMMilk
1784	ALL	UCART1	594711.82	4281461.76	7.6830e-06	30YrCancerDerived_InhSoilDermMMilk
1785	ALL	UCART1	594811.82	4281461.76	7.4384e-06	30YrCancerDerived_InhSoilDermMMilk
1786	ALL	UCART1	594911.82	4281461.76	7.0913e-06	30YrCancerDerived_InhSoilDermMMilk
1787	ALL	UCART1	595011.82	4281461.76	6.6149e-06	30YrCancerDerived_InhSoilDermMMilk

Maximum Residential

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CANCERCancerRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

Appendix B
HARP Model Excerpts
August 2022

COMPASS LAND GROUP

Screenshot of Cancer Risk By Receptor (Continued)

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
5619	ALL	UCART1	595711.82	4286561.76	7.8330e-07	30YrCancerDerived_InhSoilDermMMilk
5620	ALL	UCART1	595811.82	4286561.76	7.7572e-07	30YrCancerDerived_InhSoilDermMMilk
5621	ALL	UCART1	595911.82	4286561.76	7.5904e-07	30YrCancerDerived_InhSoilDermMMilk
5622	ALL	UCART1	596011.82	4286561.76	7.1619e-07	30YrCancerDerived_InhSoilDermMMilk
5623	ALL	UCART1	596111.82	4286561.76	6.9800e-07	30YrCancerDerived_InhSoilDermMMilk
5624	ALL	UCART1	596211.82	4286561.76	6.7169e-07	30YrCancerDerived_InhSoilDermMMilk
5625	ALL	UCART1	596311.82	4286561.76	6.5833e-07	30YrC
5626	ALL		589504.54	4281702.7	2.9000e-06	30YrC
5627	ALL		590047.36	4281896.49	4.3891e-06	30YrC
5628	ALL		592104.83	4283540.64	2.3248e-05	30YrC
5629	ALL		592154.31	4283535.55	2.2079e-05	30YrCancerDerived_InhSoilDermMMilk
5630	ALL		592203.78	4283530.47	2.1102e-05	30YrCancerDerived_InhSoilDermMMilk
5631	ALL		592253.25	4283525.38	2.0287e-05	30YrCancerDerived_InhSoilDermMMilk
5632	ALL		592302.73	4283520.29	1.9595e-05	30YrCancerDerived_InhSoilDermMMilk
5633	ALL		592352.2	4283515.21	1.8996e-05	30YrCancerDerived_InhSoilDermMMilk
5634	ALL		592401.67	4283510.12	1.8468e-05	30YrCancerDerived_InhSoilDermMMilk
5635	ALL		592451.14	4283505.04	1.7990e-05	30YrCancerDerived_InhSoilDermMMilk
5636	ALL		592500.62	4283499.95	1.7541e-05	30YrCancerDerived_InhSoilDermMMilk
5637	ALL		592550.09	4283494.86	1.7091e-05	30YrCancerDerived_InhSoilDermMMilk
5638	ALL		592599.56	4283489.78	1.6555e-05	30YrCancerDerived_InhSoilDermMMilk
5639	ALL		592109.95	4283590.38	2.0927e-05	30YrCancerDerived_InhSoilDermMMilk
5640	ALL		592159.42	4283585.29	1.9851e-05	30YrCancerDerived_InhSoilDermMMilk
5641	ALL		592208.89	4283580.2	1.8962e-05	30YrCancerDerived_InhSoilDermMMilk
5642	ALL		592258.37	4283575.12	1.8216e-05	30YrCancerDerived_InhSoilDermMMilk
5643	ALL		592307.84	4283570.03	1.7580e-05	30YrCancerDerived_InhSoilDermMMilk
5644	ALL		592357.31	4283564.95	1.7026e-05	30YrCancerDerived_InhSoilDermMMilk
5645	ALL		592406.78	4283559.86	1.6532e-05	30YrCancerDerived_InhSoilDermMMilk
5646	ALL		592456.26	4283554.77	1.6103e-05	30YrCancerDerived_InhSoilDermMMilk

Discrete Receptors

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CANCERCancerRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

COMPASS LAND GROUP

Screenshot of Chronic Hazard Index by Receptor

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Export

Maximum Residential

REC	GRP	NETID	X	Y		CV	CNS	IMMUN
1768	ALL	UCART1	593111.82	4281461.76		0.0000e+00	0.0000e+00	0.0000e+00
1769	ALL	UCART1	593211.82	4281461.76		0.0000e+00	0.0000e+00	0.0000e+00
1770	ALL	UCART1	593311.82	4281461.76		0.0000e+00	0.0000e+00	0.0000e+00
1771	ALL	UCART1	593411.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1772	ALL	UCART1	593511.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1773	ALL	UCART1	593611.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1774	ALL	UCART1	593711.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1775	ALL	UCART1	593811.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1776	ALL	UCART1	593911.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1777	ALL	UCART1	594011.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1778	ALL	UCART1	594111.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1779	ALL	UCART1	594211.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1780	ALL	UCART1	594311.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1781	ALL	UCART1	594411.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1782	ALL	UCART1	594511.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1783	ALL	UCART1	594611.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1784	ALL	UCART1	594711.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1785	ALL	UCART1	594811.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1786	ALL	UCART1	594911.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1787	ALL	UCART1	595011.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1788	ALL	UCART1	595111.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1789	ALL	UCART1	595211.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1790	ALL	UCART1	595311.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1791	ALL	UCART1	595411.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1792	ALL	UCART1	595511.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1793	ALL	UCART1	595611.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00
1794	ALL	UCART1	595711.82	4281461.76	NonCancerChronicDerived_InhSoilDermMMilk	0.0000e+00	0.0000e+00	0.0000e+00

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CHRONICNCChronicRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

COMPASS LAND GROUP

Screenshot of Chronic Hazard Index by Receptor (continued)

RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
1.4344e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4344e-02
1.4223e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	[illegible]	[illegible]	[illegible]	1.4223e-02
1.4171e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	[illegible]	[illegible]	[illegible]	1.4171e-02
1.4206e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	[illegible]	[illegible]	[illegible]	1.4206e-02
1.4331e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	[illegible]	[illegible]	[illegible]	1.4331e-02
1.4499e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	[illegible]	[illegible]	[illegible]	1.4499e-02
1.4659e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4659e-02
1.4860e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4860e-02
1.5027e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5027e-02
1.5177e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5177e-02
1.5281e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5281e-02
1.5337e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5337e-02
1.5343e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5343e-02
1.5263e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5263e-02
1.5116e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.5116e-02
1.4885e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4885e-02
1.4583e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4583e-02
1.4133e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.4133e-02
1.3480e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.3480e-02
1.2571e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.2571e-02
1.1201e-02	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	1.1201e-02
9.6913e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	9.6913e-03
8.3753e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	8.3753e-03
7.2811e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	7.2811e-03
6.3870e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	6.3870e-03
5.6513e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	5.6513e-03
5.0413e-03	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	0.0000e+00	5.0413e-03

Maximum Residential (ID 1768)

S BY RECEPTOR]

Appendix B
HARP Model Excerpts
August 2022

COMPASS LAND GROUP

Screenshot of Acute Hazard Index by Receptor

View Risk Results

Cancer | Chronic | 8-hour | Acute

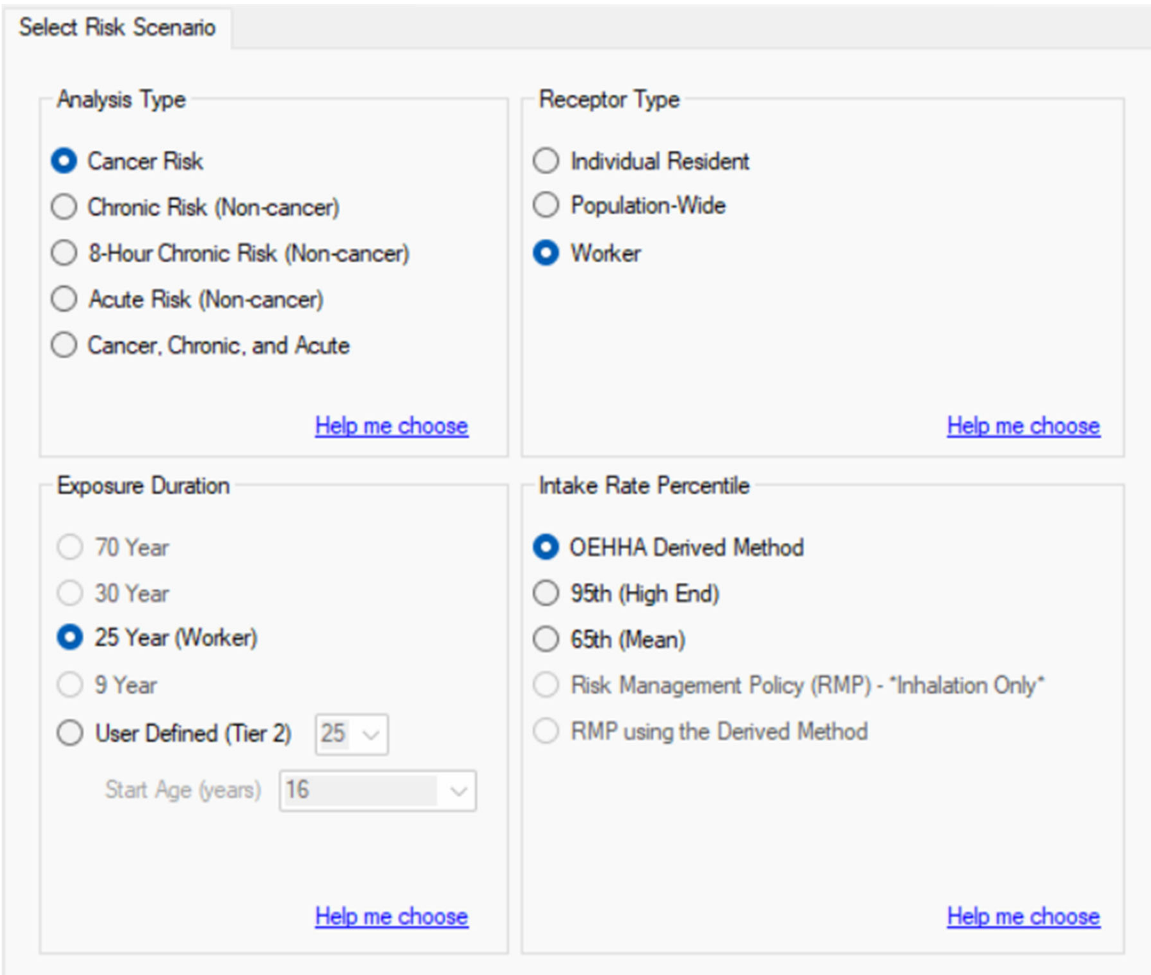
Load File | Risk Views | Export

All zero values

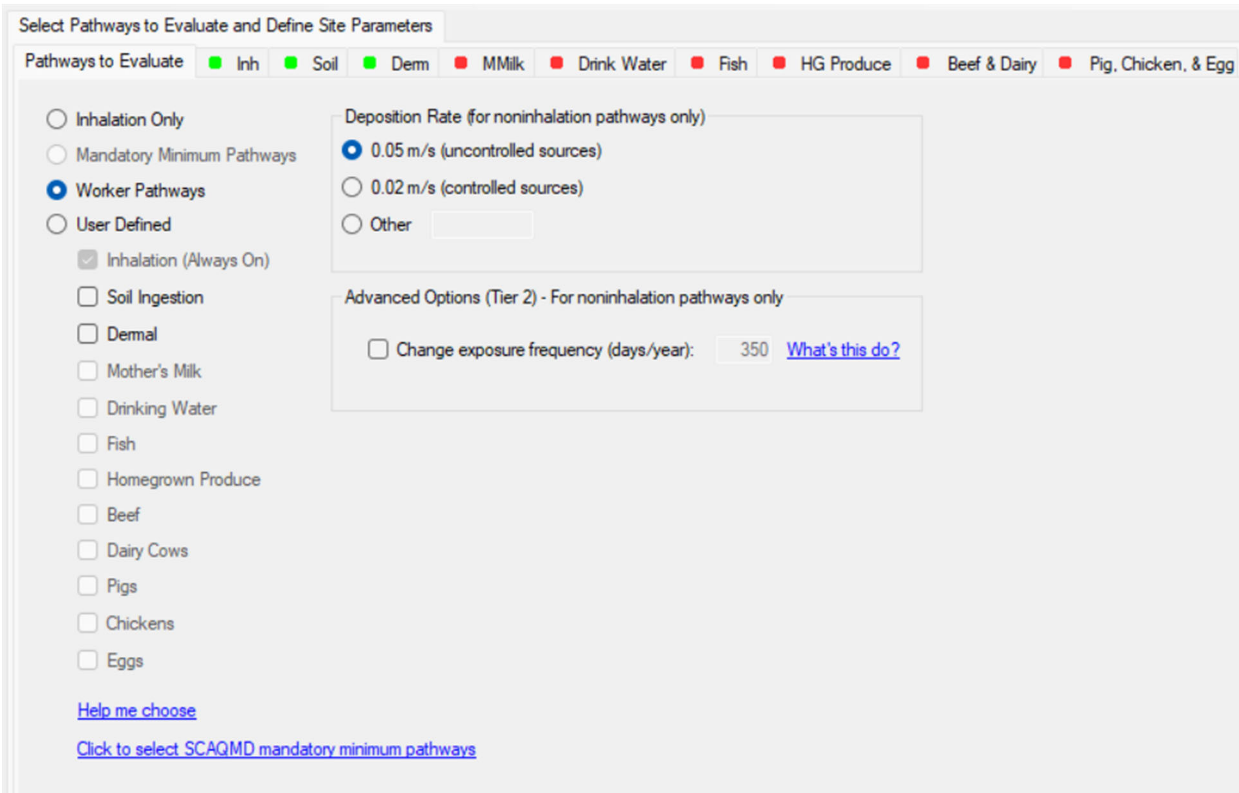
REC	GRP	NETID	X	Y	SCENARIO	CV	CNS
1	ALL	UCART1	588911.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
2	ALL	UCART1	589011.82	[illegible]	[illegible]	[illegible]	0.0000e+00
3	ALL	UCART1	589111.82	[illegible]	[illegible]	[illegible]	0.0000e+00
4	ALL	UCART1	589211.82	[illegible]	[illegible]	[illegible]	0.0000e+00
5	ALL	UCART1	589311.82	[illegible]	[illegible]	[illegible]	0.0000e+00
6	ALL	UCART1	589411.82	[illegible]	[illegible]	[illegible]	0.0000e+00
7	ALL	UCART1	589511.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
8	ALL	UCART1	589611.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
9	ALL	UCART1	589711.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
10	ALL	UCART1	589811.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
11	ALL	UCART1	589911.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
12	ALL	UCART1	590011.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
13	ALL	UCART1	590111.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
14	ALL	UCART1	590211.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
15	ALL	UCART1	590311.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
16	ALL	UCART1	590411.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
17	ALL	UCART1	590511.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
18	ALL	UCART1	590611.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
19	ALL	UCART1	590711.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
20	ALL	UCART1	590811.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
21	ALL	UCART1	590911.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
22	ALL	UCART1	591011.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
23	ALL	UCART1	591111.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
24	ALL	UCART1	591211.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
25	ALL	UCART1	591311.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
26	ALL	UCART1	591411.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
27	ALL	UCART1	591511.82	4279161.76	NonCancerAcute	0.0000e+00	0.0000e+00
[illegible]	ALL	UCART1	[illegible]	[illegible]	NonCancerAcute	[illegible]	[illegible]

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_ACUTENCAcuteRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

Screenshot of Worker Cancer Risk Selection



Screenshot of Worker Cancer Exposure Pathway



Screenshot of Worker Cancer Risk

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1849	ALL	UCART1	593711.82	4281561.76	6.1618e-07	25YrCancerDerived_InhSoilDerm
1850	ALL	UCART1	593811.82	4281561.76	6.2611e-07	25YrCa
1851	ALL	UCART1	593911.82	4281561.76	6.3462e-07	25YrCa
1852	ALL	UCART1	594011.82	4281561.76	6.3919e-07	25YrCa
1853	ALL	UCART1	594111.82	4281561.76	6.4177e-07	25YrCa
1854	ALL	UCART1	594211.82	4281561.76	6.5103e-07	25YrCa
1855	ALL	UCART1	594311.82	4281561.76	6.5389e-07	25YrCa
1856	ALL	UCART1	594411.82	4281561.76	6.5549e-07	25YrCa
1857	ALL	UCART1	594511.82	4281561.76	6.5071e-07	25YrCancerDerived_InhSoilDerm
1858	ALL	UCART1	594611.82	4281561.76	6.4485e-07	25YrCancerDerived_InhSoilDerm
1859	ALL	UCART1	594711.82	4281561.76	6.3846e-07	25YrCancerDerived_InhSoilDerm
1860	ALL	UCART1	594811.82	4281561.76	6.2484e-07	25YrCancerDerived_InhSoilDerm
1861	ALL	UCART1	594911.82	4281561.76	5.9853e-07	25YrCancerDerived_InhSoilDerm
1862	ALL	UCART1	595011.82	4281561.76	5.4122e-07	25YrCancerDerived_InhSoilDerm
1863	ALL	UCART1	595111.82	4281561.76	4.4347e-07	25YrCancerDerived_InhSoilDerm
1864	ALL	UCART1	595211.82	4281561.76	3.6775e-07	25YrCancerDerived_InhSoilDerm
1865	ALL	UCART1	595311.82	4281561.76	3.1185e-07	25YrCancerDerived_InhSoilDerm
1866	ALL	UCART1	595411.82	4281561.76	2.6852e-07	25YrCancerDerived_InhSoilDerm
1867	ALL	UCART1	595511.82	4281561.76	2.3434e-07	25YrCancerDerived_InhSoilDerm
1868	ALL	UCART1	595611.82	4281561.76	2.0666e-07	25YrCancerDerived_InhSoilDerm
1869	ALL	UCART1	595711.82	4281561.76	1.8425e-07	25YrCancerDerived_InhSoilDerm
1870	ALL	UCART1	595811.82	4281561.76	1.6562e-07	25YrCancerDerived_InhSoilDerm
1871	ALL	UCART1	595911.82	4281561.76	1.5025e-07	25YrCancerDerived_InhSoilDerm
1872	ALL	UCART1	596011.82	4281561.76	1.3722e-07	25YrCancerDerived_InhSoilDerm
1873	ALL	UCART1	596111.82	4281561.76	1.2616e-07	25YrCancerDerived_InhSoilDerm
1874	ALL	UCART1	596211.82	4281561.76	1.1667e-07	25YrCancerDerived_InhSoilDerm
1875	ALL	UCART1	596311.82	4281561.76	1.0844e-07	25YrCancerDerived_InhSoilDerm
1876	ALL	UCART1	588911.82	4281661.76	1.4240e-07	25YrCancerDerived_InhSoilDerm

Maximum Worker (Private agricultural business)

File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_WORKER_CANCERCancerRiskSumByRec.csv [DESC: RISK TOTALS BY RECEPTOR]

Appendix C
HARP Model Risk Tables

Cancer Risk

*HARP - HRACalc v19044 8/19/2022 1:52:18 PM - Cancer Risk - Input File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CANCERHRAInput.									
REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	RISK_SUM	SCENARIO
1	ALL	UCART1	588911.8	4279162	0.001234	9901	DieselExhPM	1.09E-06	30YrCancerDerived_InhSoilDermMMilk
2	ALL	UCART1	589011.8	4279162	0.001259	9901	DieselExhPM	1.11E-06	30YrCancerDerived_InhSoilDermMMilk
3	ALL	UCART1	589111.8	4279162	0.001289	9901	DieselExhPM	1.14E-06	30YrCancerDerived_InhSoilDermMMilk
4	ALL	UCART1	589211.8	4279162	0.001324	9901	DieselExhPM	1.17E-06	30YrCancerDerived_InhSoilDermMMilk
5	ALL	UCART1	589311.8	4279162	0.001363	9901	DieselExhPM	1.21E-06	30YrCancerDerived_InhSoilDermMMilk
6	ALL	UCART1	589411.8	4279162	0.001403	9901	DieselExhPM	1.24E-06	30YrCancerDerived_InhSoilDermMMilk
7	ALL	UCART1	589511.8	4279162	0.001443	9901	DieselExhPM	1.28E-06	30YrCancerDerived_InhSoilDermMMilk
8	ALL	UCART1	589611.8	4279162	0.001485	9901	DieselExhPM	1.31E-06	30YrCancerDerived_InhSoilDermMMilk
9	ALL	UCART1	589711.8	4279162	0.001524	9901	DieselExhPM	1.35E-06	30YrCancerDerived_InhSoilDermMMilk
10	ALL	UCART1	589811.8	4279162	0.001561	9901	DieselExhPM	1.38E-06	30YrCancerDerived_InhSoilDermMMilk
11	ALL	UCART1	589911.8	4279162	0.001594	9901	DieselExhPM	1.41E-06	30YrCancerDerived_InhSoilDermMMilk
12	ALL	UCART1	590011.8	4279162	0.001634	9901	DieselExhPM	1.44E-06	30YrCancerDerived_InhSoilDermMMilk
13	ALL	UCART1	590111.8	4279162	0.001662	9901	DieselExhPM	1.47E-06	30YrCancerDerived_InhSoilDermMMilk
14	ALL	UCART1	590211.8	4279162	0.001687	9901	DieselExhPM	1.49E-06	30YrCancerDerived_InhSoilDermMMilk
15	ALL	UCART1	590311.8	4279162	0.001717	9901	DieselExhPM	1.52E-06	30YrCancerDerived_InhSoilDermMMilk
16	ALL	UCART1	590411.8	4279162	0.001744	9901	DieselExhPM	1.54E-06	30YrCancerDerived_InhSoilDermMMilk
17	ALL	UCART1	590511.8	4279162	0.001772	9901	DieselExhPM	1.57E-06	30YrCancerDerived_InhSoilDermMMilk
18	ALL	UCART1	590611.8	4279162	0.001803	9901	DieselExhPM	1.59E-06	30YrCancerDerived_InhSoilDermMMilk
19	ALL	UCART1	590711.8	4279162	0.001838	9901	DieselExhPM	1.63E-06	30YrCancerDerived_InhSoilDermMMilk
20	ALL	UCART1	590811.8	4279162	0.001875	9901	DieselExhPM	1.66E-06	30YrCancerDerived_InhSoilDermMMilk
21	ALL	UCART1	590911.8	4279162	0.001912	9901	DieselExhPM	1.69E-06	30YrCancerDerived_InhSoilDermMMilk
22	ALL	UCART1	591011.8	4279162	0.001947	9901	DieselExhPM	1.72E-06	30YrCancerDerived_InhSoilDermMMilk
23	ALL	UCART1	591111.8	4279162	0.001981	9901	DieselExhPM	1.75E-06	30YrCancerDerived_InhSoilDermMMilk
24	ALL	UCART1	591211.8	4279162	0.002011	9901	DieselExhPM	1.78E-06	30YrCancerDerived_InhSoilDermMMilk
25	ALL	UCART1	591311.8	4279162	0.002038	9901	DieselExhPM	1.80E-06	30YrCancerDerived_InhSoilDermMMilk

COMPASS LAND GROUP

Cancer Risk (continued)

Maximum Residential

1768	ALL	UCART1	593111.8	4281462	0.009165	9901	DieselExhPM	8.10E-06	30YrCancerDerived_InhSoilDermMMilk
1769	ALL	UCART1	593211.8	4281462	0.009029	9901	DieselExhPM	7.98E-06	30YrCancerDerived_InhSoilDermMMilk
1770	ALL	UCA[illegible]	[illegible]	[illegible]	[illegible].008937	9901	DieselExhPM	7.90E-06	30YrCancerDerived_InhSoilDermMMilk
1771	ALL	UCA[illegible]	[illegible]	[illegible]	[illegible].008899	9901	DieselExhPM	7.87E-06	30YrCancerDerived_InhSoilDermMMilk
1772	ALL	UCA[illegible]	[illegible]	[illegible]	[illegible].008919	9901	DieselExhPM	7.89E-06	30YrCancerDerived_InhSoilDermMMilk
1773	ALL	UCART1	593611.8	4281462	0.008969	9901	DieselExhPM	7.93E-06	30YrCancerDerived_InhSoilDermMMilk
1774	ALL	UCART1	593711.8	4281462	0.009017	9901	DieselExhPM	7.97E-06	30YrCancerDerived_InhSoilDermMMilk
1775	ALL	UCART1	593811.8	4281462	0.009093	9901	DieselExhPM	8.04E-06	30YrCancerDerived_InhSoilDermMMilk
1776	ALL	UCART1	593911.8	4281462	0.009154	9901	DieselExhPM	8.09E-06	30YrCancerDerived_InhSoilDermMMilk
1777	ALL	UCART1	594011.8	4281462	0.009207	9901	DieselExhPM	8.14E-06	30YrCancerDerived_InhSoilDermMMilk
1778	ALL	UCART1	594111.8	4281462	0.009236	9901	DieselExhPM	8.17E-06	30YrCancerDerived_InhSoilDermMMilk
1779	ALL	UCART1	594211.8	4281462	0.009239	9901	DieselExhPM	8.17E-06	30YrCancerDerived_InhSoilDermMMilk
1780	ALL	UCART1	594311.8	4281462	0.009216	9901	DieselExhPM	8.15E-06	30YrCancerDerived_InhSoilDermMMilk
1781	ALL	UCART1	594411.8	4281462	0.009144	9901	DieselExhPM	8.09E-06	30YrCancerDerived_InhSoilDermMMilk
1782	ALL	UCART1	594511.8	4281462	0.009037	9901	DieselExhPM	7.99E-06	30YrCancerDerived_InhSoilDermMMilk
1783	ALL	UCART1	594611.8	4281462	0.008882	9901	DieselExhPM	7.85E-06	30YrCancerDerived_InhSoilDermMMilk
1784	ALL	UCART1	594711.8	4281462	0.008689	9901	DieselExhPM	7.68E-06	30YrCancerDerived_InhSoilDermMMilk
1785	ALL	UCART1	594811.8	4281462	0.008412	9901	DieselExhPM	7.44E-06	30YrCancerDerived_InhSoilDermMMilk
1786	ALL	UCART1	594911.8	4281462	0.00802	9901	DieselExhPM	7.09E-06	30YrCancerDerived_InhSoilDermMMilk
1787	ALL	UCART1	595011.8	4281462	0.007481	9901	DieselExhPM	6.61E-06	30YrCancerDerived_InhSoilDermMMilk
1788	ALL	UCART1	595111.8	4281462	0.006678	9901	DieselExhPM	5.90E-06	30YrCancerDerived_InhSoilDermMMilk
1789	ALL	UCART1	595211.8	4281462	0.005795	9901	DieselExhPM	5.12E-06	30YrCancerDerived_InhSoilDermMMilk
1790	ALL	UCART1	595311.8	4281462	0.005026	9901	DieselExhPM	4.44E-06	30YrCancerDerived_InhSoilDermMMilk
1791	ALL	UCART1	595411.8	4281462	0.004385	9901	DieselExhPM	3.88E-06	30YrCancerDerived_InhSoilDermMMilk
1792	ALL	UCART1	595511.8	4281462	0.00386	9901	DieselExhPM	3.41E-06	30YrCancerDerived_InhSoilDermMMilk
1793	ALL	UCART1	595611.8	4281462	0.003428	9901	DieselExhPM	3.03E-06	30YrCancerDerived_InhSoilDermMMilk
1794	ALL	UCART1	595711.8	4281462	0.003068	9901	DieselExhPM	2.71E-06	30YrCancerDerived_InhSoilDermMMilk
1795	ALL	UCART1	595811.8	4281462	0.002765	9901	DieselExhPM	2.44E-06	30YrCancerDerived_InhSoilDermMMilk

Cancer Risk (continued)

5626	ALL		589504.5	4281703	0.00328	9901	DieselExhPM	2.90E-06	30YrCancerDerived_InhSoilDermMMilk
5627	ALL		590047.4	4281896	0.004964	9901	DieselExhPM	4.39E-06	30YrCancerDerived_InhSoilDermMMilk
5628	ALL		[illegible]	[illegible]	0.026291	9901	DieselExhPM	2.32E-05	30YrCancerDerived_InhSoilDermMMilk
5629	ALL		[illegible]	[illegible]	0.024969	9901	DieselExhPM	2.21E-05	30YrCancerDerived_InhSoilDermMMilk
5630	ALL		[illegible]	[illegible]	0.023864	9901	DieselExhPM	2.11E-05	30YrCancerDerived_InhSoilDermMMilk
5631	ALL		[illegible]	[illegible]	0.022943	9901	DieselExhPM	2.03E-05	30YrCancerDerived_InhSoilDermMMilk
5632	ALL		592302.7	4283520	0.02216	9901	DieselExhPM	1.96E-05	30YrCancerDerived_InhSoilDermMMilk
5633	ALL		592352.2	4283515	0.021483	9901	DieselExhPM	1.90E-05	30YrCancerDerived_InhSoilDermMMilk
5634	ALL		592401.7	4283510	0.020886	9901	DieselExhPM	1.85E-05	30YrCancerDerived_InhSoilDermMMilk
5635	ALL		592451.1	4283505	0.020345	9901	DieselExhPM	1.80E-05	30YrCancerDerived_InhSoilDermMMilk
5636	ALL		592500.6	4283500	0.019837	9901	DieselExhPM	1.75E-05	30YrCancerDerived_InhSoilDermMMilk
5637	ALL		592550.1	4283495	0.019328	9901	DieselExhPM	1.71E-05	30YrCancerDerived_InhSoilDermMMilk
5638	ALL		592599.6	4283490	0.018722	9901	DieselExhPM	1.66E-05	30YrCancerDerived_InhSoilDermMMilk
5639	ALL		592110	4283590	0.023667	9901	DieselExhPM	2.09E-05	30YrCancerDerived_InhSoilDermMMilk
5640	ALL		592159.4	4283585	0.022449	9901	DieselExhPM	1.99E-05	30YrCancerDerived_InhSoilDermMMilk
5641	ALL		592208.9	4283580	0.021444	9901	DieselExhPM	1.90E-05	30YrCancerDerived_InhSoilDermMMilk
5642	ALL		592258.4	4283575	0.020601	9901	DieselExhPM	1.82E-05	30YrCancerDerived_InhSoilDermMMilk
5643	ALL		592307.8	4283570	0.019881	9901	DieselExhPM	1.76E-05	30YrCancerDerived_InhSoilDermMMilk
5644	ALL		592357.3	4283565	0.019254	9901	DieselExhPM	1.70E-05	30YrCancerDerived_InhSoilDermMMilk
5645	ALL		592406.8	4283560	0.018696	9901	DieselExhPM	1.65E-05	30YrCancerDerived_InhSoilDermMMilk
5646	ALL		592456.3	4283555	0.018211	9901	DieselExhPM	1.61E-05	30YrCancerDerived_InhSoilDermMMilk
5647	ALL		592505.7	4283550	0.01773	9901	DieselExhPM	1.57E-05	30YrCancerDerived_InhSoilDermMMilk
5648	ALL		592555.2	4283545	0.017225	9901	DieselExhPM	1.52E-05	30YrCancerDerived_InhSoilDermMMilk
5649	ALL		592604.7	4283540	0.016631	9901	DieselExhPM	1.47E-05	30YrCancerDerived_InhSoilDermMMilk
5650	ALL		592659.4	4283466	0.01851	9901	DieselExhPM	1.64E-05	30YrCancerDerived_InhSoilDermMMilk
5651	ALL		592704.1	4283446	0.018311	9901	DieselExhPM	1.62E-05	30YrCancerDerived_InhSoilDermMMilk
5652	ALL		592748.9	4283427	0.01813	9901	DieselExhPM	1.60E-05	30YrCancerDerived_InhSoilDermMMilk

Discrete Receptors (5626, 5627)

Appendix C
HARP Model Risk Tables
August 2022

COMPASS LAND GROUP

Chronic Risk

*HARP - HRACalc v19044 8/19/2022 2:20:25 PM - Chronic Risk - Input File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_CHRONICHRAInput.hra																				
REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
1	ALL	UCART1	588911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-03
2	ALL	UCART1	589011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E-03
3	ALL	UCART1	589111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-03
4	ALL	UCART1	589211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-03
5	ALL	UCART1	589311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-03
6	ALL	UCART1	589411.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-03
7	ALL	UCART1	589511.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-03
8	ALL	UCART1	589611.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.25E-03
9	ALL	UCART1	589711.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-03
10	ALL	UCART1	589811.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.36E-03
11	ALL	UCART1	589911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-03
12	ALL	UCART1	590011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-03
13	ALL	UCART1	590111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-03
14	ALL	UCART1	590211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.56E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.56E-03
15	ALL	UCART1	590311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E-03
16	ALL	UCART1	590411.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.65E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.65E-03
17	ALL	UCART1	590511.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-03
18	ALL	UCART1	590611.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E-03
19	ALL	UCART1	590711.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.79E-03
20	ALL	UCART1	590811.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.85E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.85E-03
21	ALL	UCART1	590911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.91E-03
22	ALL	UCART1	591011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-03
23	ALL	UCART1	591111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.01E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.01E-03
24	ALL	UCART1	591211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.06E-03
25	ALL	UCART1	591311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-03

Appendix C
HARP Model Risk Tables
August 2022

COMPASS LAND GROUP

Chronic Risk (continued)

Maximum Residential

1768	ALL	UCART1	593111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-02
1769	ALL	UCART1	593211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1770	ALL	UCART1	593311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1771	ALL	UCART1	593411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1772	ALL	UCART1	593511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1773	ALL	UCART1	593611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1774	ALL	UCART1	593711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-02	0.00E+00	0.00E+00	0.00E+00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1775	ALL	UCART1	593811.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-02
1776	ALL	UCART1	593911.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-02
1777	ALL	UCART1	594011.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-02
1778	ALL	UCART1	594111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02
1779	ALL	UCART1	594211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02
1780	ALL	UCART1	594311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02
1781	ALL	UCART1	594411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.53E-02
1782	ALL	UCART1	594511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E-02
1783	ALL	UCART1	594611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-02
1784	ALL	UCART1	594711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-02
1785	ALL	UCART1	594811.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-02
1786	ALL	UCART1	594911.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-02
1787	ALL	UCART1	595011.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-02
1788	ALL	UCART1	595111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-02
1789	ALL	UCART1	595211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-03
1790	ALL	UCART1	595311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.38E-03
1791	ALL	UCART1	595411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.28E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.28E-03
1792	ALL	UCART1	595511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.39E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.39E-03
1793	ALL	UCART1	595611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-03
1794	ALL	UCART1	595711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.04E-03

COMPASS LAND GROUP

Acute Risk

*HARP - HRACalc v19044 8/19/2022 2:29:43 PM - Acute Risk - Input File: C:\HARP2\Projects\CACHE_HRA\hra\CACHE_HRA_ACUTEHRAInput.hra																				
REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
1	ALL	UCART1	588911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	ALL	UCART1	589011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	ALL	UCART1	589111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	ALL	UCART1	589211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	ALL	UCART1	589311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	ALL	UCART1	589411.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7	ALL	UCART1	589511.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8	ALL	UCART1	589611.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	ALL	UCART1	589711.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10	ALL	UCART1	589811.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
11	ALL	UCART1	589911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12	ALL	UCART1	590011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13	ALL	UCART1	590111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	ALL	UCART1	590211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
15	ALL	UCART1	590311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	ALL	UCART1	590411.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	ALL	UCART1	590511.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	ALL	UCART1	590611.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	ALL	UCART1	590711.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	ALL	UCART1	590811.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	ALL	UCART1	590911.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	ALL	UCART1	591011.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	ALL	UCART1	591111.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	ALL	UCART1	591211.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	ALL	UCART1	591311.8	4279162	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

COMPASS LAND GROUP

Acute Risk (continued)

Maximum Residential

1768	ALL	UCART1	593111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1769	ALL	UCART1	593211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1770	ALL	UCART1	593311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1771	ALL	UCART1	593411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1772	ALL	UCART1	593511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1773	ALL	UCART1	593611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1774	ALL	UCART1	593711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1775	ALL	UCART1	593811.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	[illegible]	[illegible]	[illegible]	0
1776	ALL	UCART1	593911.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1777	ALL	UCART1	594011.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1778	ALL	UCART1	594111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1779	ALL	UCART1	594211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1780	ALL	UCART1	594311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1781	ALL	UCART1	594411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1782	ALL	UCART1	594511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1783	ALL	UCART1	594611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1784	ALL	UCART1	594711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1785	ALL	UCART1	594811.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1786	ALL	UCART1	594911.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1787	ALL	UCART1	595011.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1788	ALL	UCART1	595111.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1789	ALL	UCART1	595211.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1790	ALL	UCART1	595311.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1791	ALL	UCART1	595411.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1792	ALL	UCART1	595511.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1793	ALL	UCART1	595611.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1794	ALL	UCART1	595711.8	4281462	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

APPENDIX K

TRAFFIC OPERATIONS MEMORANDUM

FEHR & PEERS

Memorandum

Date: July 18, 2022

To: Bruce Abelli-Amen, Baseline Environmental Consulting

From: David Manciati, Fehr & Peers

Subject: CEMEX SEIR – Traffic Operations

RS21-4036

Introduction

Purpose

The purpose of this memorandum is to analyze traffic operations at selected intersections in Yolo County that may be affected by proposed changes to the CEMEX project. This analysis is required for entitlement review purposes related to the project's compliance with Yolo County's *2030 Countywide General Plan*. The General Plan contains specific policies related to traffic operations performance. These policies establish level of service (LOS) thresholds that must be maintained for county roadways and intersections.

Relevant to traffic operations, the proposed project includes the following changes to existing CEMEX operations.

- Extend the CEMEX mining permit by 20 years, from 2027 to 2047
- Maintain the annual production limit of 1,204,819 tons mined (1,000,000 tons sold). Under the 20 Percent Exceedance approval, this would maintain an annual maximum of 1,445,783 tons mined (1,200,000 tons sold) in any one year.
- Increase the total production limit by 20,000,000 tons sold, representing continued mining at the same annual amount over the 20-year extension as the original permit

Of these changes, the permit extension could influence future traffic operations at the study intersections. If the permit elapses in 2027, the project site would stop generating vehicle trips and local traffic volumes would reflect this change. Continuation of the permit would mean similar traffic levels as today from the site would continue. Because background (i.e., non-project) volumes are expected to increase over time in Yolo County, the project will be generally contributing a smaller proportion of the future traffic at the study intersections.

Approach

The traffic operations analysis begins with analyzing existing conditions to understand if current traffic operations meet the General Plan LOS expectations. These results set the foundation for the remainder of the project evaluation.

Traffic Operations Analysis

Methodology

Study Area

The following intersections were selected by the County for analysis in this study. These are the same locations analyzed for the project's 1996 EIR.

1. SR 16/I-505 Southbound Ramps
2. SR 16/I-505 Northbound Ramps
3. SR 16/CEMEX Driveway
4. SR 16/County Road 96
5. County Road 98/SR 16/W. Main Street
6. County Road 98/County Road 20/W. Kentucky Avenue

Data Collection

As this study has been conducted during the COVID-19 pandemic, which has had substantial impacts on travel patterns, it was not appropriate to collect new counts. Because the County did not have recent traffic counts for the study intersections, 2019 turning movement volume estimates were obtained from StreetLight Data. StreetLight Data technology uses mobile device data to estimate vehicle trips on the roadway network that can be used to derive volume estimates for specific roadways and intersections. Other traffic characteristics, such as peak hour factors, were based on 2014 traffic counts in the study area.

To estimate volumes representative of a typical mid-week day, StreetLight Data volumes were averaged for each AM and PM peak period hour (e.g., 7-8 AM, 8-9 AM, 5-6 PM, etc.) for Tuesdays, Wednesdays, and Thursdays in each month of 2019. The highest AM and PM peak hours across all months for each intersection were used in the analysis, except at the I-505/SR 16 interchange. Because the ramps operate as a system, the AM and PM peak period hours with the highest combined volume were evaluated at the two ramp terminal intersections. Traffic volume estimates were then adjusted to address any imbalances between the ramps and the SR 16/CEMEX driveway intersection.

With the above methodology, this analysis captures midweek AM and PM peak hour intersection operations during a busy month. This is critical, as seasonal variation in traffic volumes may be high in rural settings.

Definitions

Each study intersection was analyzed using methodology recommended in the *Highway Capacity Manual (HCM) 6th Edition* (Transportation Research Board, 2016). The HCM methodology estimates vehicle delay to determine a corresponding level of service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (representing free-flow vehicular traffic conditions with little to no congestion) to F (oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. **Table 1** displays the delay range associated with each LOS category for signalized and unsignalized intersections per the HCM.

Table 1: Level of Service Definitions at Intersections

Level of Service	Description (at Signalized Intersections)	Average Control Delay[1]	
		Signalized	Unsignalized
A	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is very short. Most vehicles arrive during the green phase and travel through the intersection without stopping.	≤ 10	< 10.0
B	Volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10 to 20	> 10.0 to 15.0
C	Progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35	> 15.0 to 25.0
D	Volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55	> 25.0 to 35.0
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80	> 35.0 to 50.0
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80	> 50.0

Notes: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A)

Source: Highway Capacity Manual, 6th Edition; Transportation Research Board, 2016.

Existing Conditions

Each study intersection was analyzed using the Synchro 11 capacity analysis software to determine existing midweek AM and PM peak hour operations during a "busy month". Synchro applies HCM methodologies and considers vehicle volumes, lane configurations, pedestrian volumes, heavy vehicle percentages, and other pertinent parameters of intersection operations.

Table 2 displays analysis results and indicates that each intersection operates at LOS C or better during the AM and PM peak hours, except for SR 16/County Road 96 (CR 96). The minor street (CR 96) approach to the intersection operates at LOS F. This indicates that drivers in busy months are waiting over 50 seconds before accessing SR 16. Refer to Attachment A for detailed calculations.

Table 2: Peak Hour Intersection Operations under Existing Conditions (Busy Month)

Intersection	Control	Delay/LOS[1]	
		AM Peak Hour	PM Peak Hour
1. SR 16/I-505 Southbound Ramps	Side Street Stop	2 (18) / A (C)	1 (23) / A (C)
2. SR 16/I-505 Northbound Ramps	Traffic Signal	7 / A	9 / A
3. SR 16/CEMEX Driveway	Side Street Stop	1 (14) / A (B)	1 (15) / A (C)
4. SR 16/County Road 96	Side Street Stop	9 **(58)** / A **(F)**	9 **(63)** / A **(F)**
5. County Road 98/SR 16/W. Main Street	Traffic Signal	25 / C	30 / C
6. County Road 98 (SR 16)/County Road 20/W. Kentucky Avenue	Traffic Signal	18 / B	18 / B

Notes: [1] For signalized intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side street stop-controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection, with the worst movement in parentheses. Red font identifies unacceptable LOS conditions.

Source: Fehr & Peers, 2022.

General Plan Consistency

The purpose of the following section is to evaluate intersection LOS performance based on the expectations established in Yolo County's *2030 Countywide General Plan* and to relate those expectations to the proposed project.

LOS Policy

Yolo County's *2030 Countywide General Plan* contains policy CI-3.1 with the following vehicle LOS expectations.

- CI-3.1 Maintain Level of Service (LOS) C or better for roadways and intersections in the unincorporated county. In no case shall land use be approved that would either result in worse than LOS C conditions, or require additional improvements to maintain the required level of service, except as specified below [note: the full policy includes multiple exceptions but only exception H applies in the study area]. The intent of this policy is to consider level of service as a limit on the planned capacity of the County's roadways.
- H. SR 16 from I-505 to CR 98 – LOS D is acceptable, assuming that passing lanes and appropriate intersection improvements are constructed. The County will secure a fair share towards these improvements from all feasible sources. Caltrans and the Rumsey Band of Wintun Indians shall be encouraged to establish a funding mechanism to pay the remainder.

Caltrans uses LOS D for all the study intersections, as confirmed by email communication in March 2022. Therefore, the minimum acceptable LOS for study intersections 1 through 5 is LOS D. The minimum acceptable LOS for study intersection 6 is LOS C.

Policy Application

The SR 16/CR 96 intersection has an existing LOS deficiency as documented in Table 2. A challenge to remedying this deficiency are the limitations on capacity expansion associated with General Plan policy CI-3.1 described above. As an intentional limit on new capacity, and therefore new development, this policy effectively requires the proposed project to reduce its contribution to existing AM and PM peak hour traffic volumes to achieve acceptable LOS conditions. Demand reduction could include employee or truck trips although truck trips tend to have the largest effect on this intersection's LOS performance.

Based on existing conditions, the AM peak hour would require a reduction of 206 vehicles (103 inbound and103 outbound) to maintain acceptable LOS for weekday conditions while 180 vehicles (90 inbound and 90 outbound) would need to be reduced during PM peak hour conditions. Based on recent aggregate mining projects in the Sacramento region, this level of reduction would likely exceed the CEMEX site's trip contribution during AM and PM peak hours. Therefore, even restricting all trip generation from the CEMEX site during the AM and PM peak hours would not produce acceptable peak hour operations.

Future Considerations

State Route 16/County Road 96

Caltrans is the owner and operator of the roadways used by vehicles traveling to and from the CEMEX site (i.e, SR 16, I-505, and I-5). Caltrans has developed its transportation network consistent with applicable design standards and has a process of investigating and identifying operational improvements on the State Highway System (SHS).

The SR 16 corridor was evaluated as part of the most recent regional transportation plan, the *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (2020 MTP/SCS) (SACOG, 2019). Relevant to the SR 16/County Road 96 intersection, the 2020 MTP/SCS identified the following project on SR 16 to be built within the 20-year planning horizon:

- SR 16 Pavement Rehabilitation C – In Yolo County on SR 16 from CR 98 to I-5 Junction (PM R40.5/R43.42; SHOPP ID 20445)

Without Caltrans modifying the roadway capacity of SR 16, the existing LOS deficiency at SR 16/CR 96 would likely persist in the future (beyond 2027) with or without approval of the proposed project. Caltrans may identify future roadway capacity expansion in the corridor at any time and re-evaluates corridor needs as part of the MTP/SCS update every four years.

Remaining Study Intersections

The other study intersections currently operate at an acceptable LOS. Although the proposed project changes would not result in an increase in traffic above current permitted levels, background (i.e., non-project) traffic growth could cause LOS deficiencies at study intersections under future conditions. According to traffic volume forecasts for the 2020 MTP/SCS, background traffic volumes on SR 16 are projected to increase in the study area by approximately 0.17% to 1.22% percent annually, depending on the segment. Current conditions combined with this level of growth did not yet warrant capacity expansion of SR 16 or its intersections with local roadways based on Caltrans and Yolo County input to the 2020 MTP/SCS, which covers the planning horizon to 2040. The next update to the MTP/SCS will extend the planning horizon to 2050, which is beyond the proposed permit extension year (2047). As part of that MTP/SCS update, any necessary modifications to SR 16 will be identified.

Recommendations

The project involves a unique combination of tradeoffs. The General Plan LOS policy is clear that roadway capacity expansion is intentionally limited. However, the project is in a mineral overlay zone designated in the General Plan for aggregate mining and is part of the Cache Creek Area Plan (CCAP), which contains the following reference in its draft environmental impact report (DEIR) about supporting local aggregate projects.

> *"…[minimization] of aggregate truck trips is a fundamental consideration in implementation of the CCAP. By ensuring a local source of aggregate, Yolo has maximized the opportunity to reduce mining truck traffic in the County… In support of state policy, and the recommendations of the Technical Advisory, the CCAP ensures a local source of aggregate for local construction projects that would otherwise be transported from greater distances, and thereby reduces the distance trucks must travel to deliver product to regional sites… Overall the CCAP provides a 'travel efficient' program for aggregate resources serving the region while recognizing that unlike most urban land uses which fundamentally can be located anywhere, resource-based land uses are limited to locations where the resource exists."*

The land use element and CCAP support for mining activity on the project site may be sufficient evidence to support a LOS exception. Policy CI-3.1 (section X) allows exceptions to the LOS policy by the Board of Supervisors as noted below.

> *X. Additional exceptions to this policy may be allowed by the Board of Supervisors on a case-by-case basis, where reducing the level of service would result in a clear public benefit. Such circumstances may include, but are not limited to, the following:*
>
> *1. Preserving agriculture or open space land;*
>
> *2. Enhancing the agricultural economy;*
>
> *3. Preserving scenic roadways/highways;*
>
> *4. Preserving the rural character of the county;*
>
> *5. Avoiding adverse impacts to alternative transportation modes;*
>
> *6. Avoiding growth inducement; or*
>
> *7. Preserving downtown community environments.*
>
> *8. Where right-of-way constraints would make the improvements infeasible. (DEIR MM CI-2)*

The proposed project may qualify as enhancing the agricultural community or offer other clear public benefits such as truck trip efficiency noted in the CCAP DEIR statement above. The County's evaluation of the exception could also consider that all other hours of the day generally have lower volumes and better traffic operations.

FEHR PEERS

Attachment A:

Existing Conditions Technical Calculations

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	303	69	21	239	162	0	0	0	69	0	5
Future Vol, veh/h	0	303	69	21	239	162	0	0	0	69	0	5
Conflicting Peds, #/hr	0	0	2	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	90	90	90	70	70	70
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	356	81	24	275	186	0	0	0	99	0	7

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	439	0	0				720	762	275
Stage 1	-	-	-	-	-	-				323	323	-
Stage 2	-	-	-	-	-	-				397	439	-
Critical Hdwy	-	-	-	4.17	-	-				6.47	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-				5.47	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.47	5.57	-
Follow-up Hdwy	-	-	-	2.263	-	-				3.563	4.063	3.363
Pot Cap-1 Maneuver	0	-	-	1095	-	0				387	329	752
Stage 1	0	-	-	-	-	0				723	641	-
Stage 2	0	-	-	-	-	0				668	570	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1095	-	-				377	0	752
Mov Cap-2 Maneuver	-	-	-	-	-	-				377	0	-
Stage 1	-	-	-	-	-	-				723	0	-
Stage 2	-	-	-	-	-	-				651	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.7	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1095	-	377	752
HCM Lane V/C Ratio	-	-	0.022	-	0.261	0.009
HCM Control Delay (s)	-	-	8.4	-	17.9	9.8
HCM Lane LOS	-	-	A	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	-	1	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	318	54	0	303	10	119	0	88	0	0	0
Future Volume (veh/h)	0	318	54	0	303	10	119	0	88	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1796	1796	0	1796	1796	1796	1796	1796			
Adj Flow Rate, veh/h	0	361	0	0	394	13	163	0	121			
Peak Hour Factor	0.88	0.88	0.88	0.77	0.77	0.77	0.73	0.73	0.73			
Percent Heavy Veh, %	0	7	7	0	7	7	7	7	7			
Cap, veh/h	0	656		0	656	543	460	0	408			
Arrive On Green	0.00	0.37	0.00	0.00	0.37	0.37	0.27	0.00	0.27			
Sat Flow, veh/h	0	1796	0	0	1796	1486	1711	0	1517			
Grp Volume(v), veh/h	0	361	0	0	394	13	163	0	121			
Grp Sat Flow(s),veh/h/ln	0	1796	0	0	1796	1486	1711	0	1517			
Q Serve(g_s), s	0.0	4.2	0.0	0.0	4.7	0.1	2.0	0.0	1.7			
Cycle Q Clear(g_c), s	0.0	4.2	0.0	0.0	4.7	0.1	2.0	0.0	1.7			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	656		0	656	543	460	0	408			
V/C Ratio(X)	0.00	0.55		0.00	0.60	0.02	0.35	0.00	0.30			
Avail Cap(c_a), veh/h	0	3425		0	3425	2834	1500	0	1331			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.6	0.0	0.0	6.8	5.3	7.7	0.0	7.6			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	0.2	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	0.0	0.4	0.0	0.3	0.0	0.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.9	0.0	0.0	7.1	5.3	7.9	0.0	7.8			
LnGrp LOS	A	A		A	A	A	A	A	A			
Approach Vol, veh/h		361	A		407			284				
Approach Delay, s/veh		6.9			7.0			7.9				
Approach LOS		A			A			A				

Timer - Assigned Phs		2				6		8	
Phs Duration (G+Y+Rc), s		15.1				15.1		11.1	
Change Period (Y+Rc), s		5.5				5.5		4.1	
Max Green Setting (Gmax), s		50.0				50.0		23.0	
Max Q Clear Time (g_c+I1), s		6.2				6.7		4.0	
Green Ext Time (p_c), s		1.1				1.2		0.3	

Intersection Summary	
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	1.1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	391	288	60	28	25
Future Vol, veh/h	15	391	288	60	28	25
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	7	7	7
Mvmt Flow	16	425	313	65	30	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	805	348
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	457	-
Critical Hdwy	4.17	-	-	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	2.263	-	-	-	3.563	3.363
Pot Cap-1 Maneuver	1152	-	-	-	345	684
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	339	683
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	445
HCM Lane V/C Ratio	0.014	-	-	-	0.129
HCM Control Delay (s)	8.2	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	179	544	13	22	214	8	12	16	47	5	46	12
Future Vol, veh/h	179	544	13	22	214	8	12	16	47	5	46	12
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	160	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	89	89	89	70	70	70	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	206	625	15	25	240	9	17	23	67	6	52	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	251	0	0	642	0	0	1375	1348	635	1387	1351	247
Stage 1	-	-	-	-	-	-	1047	1047	-	297	297	-
Stage 2	-	-	-	-	-	-	328	301	-	1090	1054	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1286	-	-	919	-	-	120	147	470	117	147	780
Stage 1	-	-	-	-	-	-	270	299	-	701	659	-
Stage 2	-	-	-	-	-	-	674	656	-	255	297	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	917	-	-	68	120	469	74	120	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	120	-	74	120	-
Stage 1	-	-	-	-	-	-	226	251	-	587	640	-
Stage 2	-	-	-	-	-	-	592	637	-	167	249	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.8	49.2	58.4
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	1284	-	-	917	-	-	135
HCM Lane V/C Ratio	0.585	0.16	-	-	0.027	-	-	0.53
HCM Control Delay (s)	49.2	8.3	-	-	9	-	-	58.4
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.2	0.6	-	-	0.1	-	-	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	147	217	55	85	32	97	356	41	64	340	83
Future Volume (veh/h)	315	147	217	55	85	32	97	356	41	64	340	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	342	160	236	60	92	35	105	387	45	70	370	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	393	458	398	87	161	131	135	479	56	94	503	416
Arrive On Green	0.23	0.27	0.27	0.05	0.09	0.09	0.08	0.30	0.30	0.06	0.28	0.28
Sat Flow, veh/h	1711	1706	1484	1711	1796	1470	1711	1577	183	1711	1796	1484
Grp Volume(v), veh/h	342	160	236	60	92	35	105	0	432	70	370	90
Grp Sat Flow(s),veh/h/ln	1711	1706	1484	1711	1796	1470	1711	0	1760	1711	1796	1484
Q Serve(g_s), s	12.5	4.9	9.0	2.2	3.2	1.4	3.9	0.0	14.8	2.6	12.2	3.0
Cycle Q Clear(g_c), s	12.5	4.9	9.0	2.2	3.2	1.4	3.9	0.0	14.8	2.6	12.2	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	393	458	398	87	161	131	135	0	534	94	503	416
V/C Ratio(X)	0.87	0.35	0.59	0.69	0.57	0.27	0.78	0.00	0.81	0.74	0.74	0.22
Avail Cap(c_a), veh/h	788	1205	1048	656	1268	1037	656	0	972	656	992	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	19.2	20.7	30.4	28.5	27.7	29.5	0.0	20.9	30.3	21.3	18.0
Incr Delay (d2), s/veh	2.4	0.6	2.0	3.6	3.8	1.3	3.7	0.0	3.6	4.3	2.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	1.9	3.1	1.0	1.5	0.5	1.6	0.0	5.7	1.1	4.6	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	19.9	22.7	34.0	32.3	29.0	33.1	0.0	24.5	34.6	23.8	18.3
LnGrp LOS	C	B	C	C	C	C	C	A	C	C	C	B
Approach Vol, veh/h		738			187			537			530	
Approach Delay, s/veh		23.9			32.2			26.2			24.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	23.3	9.7	24.2	19.6	11.6	8.2	25.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.0	4.6	* 5.8	4.6	6.0
Max Green Setting (Gmax), s	25.0	46.0	25.0	36.0	30.0	* 46	25.0	36.0
Max Q Clear Time (g_c+I1), s	4.2	11.0	5.9	14.2	14.5	5.2	4.6	16.8
Green Ext Time (p_c), s	0.1	3.8	0.1	2.6	0.4	0.8	0.1	2.8

Intersection Summary	
HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	185	45	86	31	13	11	239	177	17	205	11
Future Volume (veh/h)	22	185	45	86	31	13	11	239	177	17	205	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	27	226	55	112	40	17	13	291	216	23	277	15
Peak Hour Factor	0.82	0.82	0.82	0.77	0.77	0.77	0.82	0.82	0.82	0.74	0.74	0.74
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	76	286	70	200	331	141	34	373	307	57	372	20
Arrive On Green	0.04	0.21	0.21	0.12	0.28	0.28	0.02	0.21	0.21	0.03	0.22	0.22
Sat Flow, veh/h	1711	1387	338	1711	1186	504	1711	1796	1482	1711	1686	91
Grp Volume(v), veh/h	27	0	281	112	0	57	13	291	216	23	0	292
Grp Sat Flow(s),veh/h/ln	1711	0	1725	1711	0	1690	1711	1796	1482	1711	0	1777
Q Serve(g_s), s	0.7	0.0	7.0	2.8	0.0	1.1	0.3	6.9	6.1	0.6	0.0	6.9
Cycle Q Clear(g_c), s	0.7	0.0	7.0	2.8	0.0	1.1	0.3	6.9	6.1	0.6	0.0	6.9
Prop In Lane	1.00		0.20	1.00		0.30	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	76	0	356	200	0	472	34	373	307	57	0	392
V/C Ratio(X)	0.35	0.00	0.79	0.56	0.00	0.12	0.38	0.78	0.70	0.40	0.00	0.74
Avail Cap(c_a), veh/h	1026	0	1418	1026	0	1390	988	1836	1515	988	0	1816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	16.9	18.8	0.0	12.1	21.8	16.9	16.5	21.3	0.0	16.3
Incr Delay (d2), s/veh	1.0	0.0	1.5	0.9	0.0	0.0	2.6	1.4	1.1	1.7	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.1	1.0	0.0	0.3	0.1	2.2	1.7	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	18.4	19.7	0.0	12.1	24.3	18.2	17.6	23.0	0.0	17.4
LnGrp LOS	C	A	B	B	A	B	C	B	B	C	A	B
Approach Vol, veh/h		308			169			520			315	
Approach Delay, s/veh		18.7			17.1			18.1			17.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	15.3	9.4	14.7	5.0	15.9	6.1	18.0
Change Period (Y+Rc), s	4.1	6.0	4.1	5.4	4.1	6.0	4.1	5.4
Max Green Setting (Gmax), s	26.0	46.0	27.0	37.0	26.0	46.0	27.0	37.0
Max Q Clear Time (g_c+I1), s	2.6	8.9	4.8	9.0	2.3	8.9	2.7	3.1
Green Ext Time (p_c), s	0.0	0.3	0.0	0.4	0.0	0.2	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	376	196	0	493	246	0	0	0	18	0	38
Future Vol, veh/h	0	376	196	0	493	246	0	0	0	18	0	38
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	90	90	90	70	70	70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	442	231	0	567	283	0	0	0	26	0	54

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	-	-	0				1125	1242	567
Stage 1	-	-	-	-	-	-				567	567	-
Stage 2	-	-	-	-	-	-				558	675	-
Critical Hdwy	-	-	-	-	-	-				6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-				5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.43	5.53	-
Follow-up Hdwy	-	-	-	-	-	-				3.527	4.027	3.327
Pot Cap-1 Maneuver	0	-	-	0	-	0				226	174	521
Stage 1	0	-	-	0	-	0				566	505	-
Stage 2	0	-	-	0	-	0				571	452	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	-	-				226	0	521
Mov Cap-2 Maneuver	-	-	-	-	-	-				226	0	-
Stage 1	-	-	-	-	-	-				566	0	-
Stage 2	-	-	-	-	-	-				571	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	-	226	521
HCM Lane V/C Ratio	-	-	-	0.114	0.104
HCM Control Delay (s)	-	-	-	23	12.7
HCM Lane LOS	-	-	-	C	B
HCM 95th %tile Q(veh)	-	-	-	0.4	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	363	31	0	440	15	299	0	79	0	0	0
Future Volume (veh/h)	0	363	31	0	440	15	299	0	79	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1856	1856	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	0	412	0	0	571	19	410	0	108			
Peak Hour Factor	0.88	0.88	0.88	0.77	0.77	0.77	0.73	0.73	0.73			
Percent Heavy Veh, %	0	3	3	0	3	3	3	3	3			
Cap, veh/h	0	734		0	734	607	525	0	466			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.30	0.00	0.30			
Sat Flow, veh/h	0	1856	0	0	1856	1536	1767	0	1567			
Grp Volume(v), veh/h	0	412	0	0	571	19	410	0	108			
Grp Sat Flow(s),veh/h/ln	0	1856	0	0	1856	1536	1767	0	1567			
Q Serve(g_s), s	0.0	5.4	0.0	0.0	8.4	0.2	6.6	0.0	1.6			
Cycle Q Clear(g_c), s	0.0	5.4	0.0	0.0	8.4	0.2	6.6	0.0	1.6			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	734		0	734	607	525	0	466			
V/C Ratio(X)	0.00	0.56		0.00	0.78	0.03	0.78	0.00	0.23			
Avail Cap(c_a), veh/h	0	2971		0	2971	2459	1302	0	1154			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.3	0.0	0.0	8.2	5.8	10.0	0.0	8.3			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.7	0.0	1.0	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	1.2	0.0	1.5	0.0	0.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.6	0.0	0.0	8.9	5.8	11.0	0.0	8.4			
LnGrp LOS	A	A		A	A	A	B	A	A			
Approach Vol, veh/h		412	A		590			518				
Approach Delay, s/veh		7.6			8.8			10.5				
Approach LOS		A			A			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		17.8				17.8		13.4				
Change Period (Y+Rc), s		5.5				5.5		4.1				
Max Green Setting (Gmax), s		50.0				50.0		23.0				
Max Q Clear Time (g_c+I1), s		7.4				10.4		8.6				
Green Ext Time (p_c), s		1.3				1.9		0.7				

Intersection Summary			
HCM 6th Ctrl Delay			9.0
HCM 6th LOS			A

Notes
User approved pedestrian interval to be less than phase max green.
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	437	450	5	5	5
Future Vol, veh/h	5	437	450	5	5	5
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	475	489	5	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	496	0	-	0	979	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1063	-	-	-	276	573
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1061	-	-	-	274	572
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1061	-	-	-	371
HCM Lane V/C Ratio	0.005	-	-	-	0.029
HCM Control Delay (s)	8.4	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	481	5	25	567	8	11	41	42	5	10	156
Future Vol, veh/h	13	481	5	25	567	8	11	41	42	5	10	156
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	160	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	89	89	89	70	70	70	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	553	6	28	637	9	16	59	60	6	11	177

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	648	0	0	561	0	0	1380	1292	558	1346	1291	644
Stage 1	-	-	-	-	-	-	588	588	-	700	700	-
Stage 2	-	-	-	-	-	-	792	704	-	646	591	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	933	-	-	1005	-	-	121	162	527	128	162	471
Stage 1	-	-	-	-	-	-	493	494	-	428	440	-
Stage 2	-	-	-	-	-	-	381	438	-	459	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	931	-	-	1003	-	-	69	154	526	77	154	470
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	154	-	77	154	-
Stage 1	-	-	-	-	-	-	484	485	-	420	427	-
Stage 2	-	-	-	-	-	-	225	425	-	352	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	62.8	25
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	931	-	-	1003	-	-	370
HCM Lane V/C Ratio	0.722	0.016	-	-	0.028	-	-	0.525
HCM Control Delay (s)	62.8	8.9	-	-	8.7	-	-	25
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	4.6	0	-	-	0.1	-	-	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	233	176	94	269	61	141	386	109	59	348	174
Future Volume (veh/h)	160	233	176	94	269	61	141	386	109	59	348	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	174	253	191	102	292	66	153	420	118	64	378	189
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	215	494	357	132	388	320	191	484	136	85	536	443
Arrive On Green	0.12	0.26	0.26	0.07	0.21	0.21	0.11	0.35	0.35	0.05	0.29	0.29
Sat Flow, veh/h	1767	1930	1395	1767	1856	1531	1767	1389	390	1767	1856	1534
Grp Volume(v), veh/h	174	230	214	102	292	66	153	0	538	64	378	189
Grp Sat Flow(s),veh/h/ln	1767	1763	1562	1767	1856	1531	1767	0	1779	1767	1856	1534
Q Serve(g_s), s	7.4	8.6	9.1	4.4	11.4	2.7	6.5	0.0	21.8	2.8	14.0	7.7
Cycle Q Clear(g_c), s	7.4	8.6	9.1	4.4	11.4	2.7	6.5	0.0	21.8	2.8	14.0	7.7
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	215	451	400	132	388	320	191	0	620	85	536	443
V/C Ratio(X)	0.81	0.51	0.53	0.77	0.75	0.21	0.80	0.00	0.87	0.75	0.71	0.43
Avail Cap(c_a), veh/h	687	1051	931	573	1107	913	573	0	830	573	866	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	24.6	24.7	35.1	28.6	25.2	33.6	0.0	23.4	36.2	24.5	22.2
Incr Delay (d2), s/veh	2.8	1.3	1.6	3.6	3.6	0.4	2.9	0.0	8.0	4.8	2.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.6	3.4	1.9	5.2	1.0	2.8	0.0	9.4	1.2	5.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.8	25.8	26.3	38.7	32.2	25.6	36.5	0.0	31.5	41.1	26.6	23.0
LnGrp LOS	D	C	C	D	C	C	D	A	C	D	C	C
Approach Vol, veh/h		618			460			691			631	
Approach Delay, s/veh		28.8			32.7			32.6			27.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	25.5	13.0	28.3	14.0	21.9	8.3	32.9
Change Period (Y+Rc), s	4.6	5.8	4.6	6.0	4.6	* 5.8	4.6	6.0
Max Green Setting (Gmax), s	25.0	46.0	25.0	36.0	30.0	* 46	25.0	36.0
Max Q Clear Time (g_c+I1), s	6.4	11.1	8.5	16.0	9.4	13.4	4.8	23.8
Green Ext Time (p_c), s	0.1	4.2	0.2	3.1	0.2	2.4	0.1	3.0

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	138	22	129	98	19	22	381	121	13	182	38
Future Volume (veh/h)	87	138	22	129	98	19	22	381	121	13	182	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	106	168	27	168	127	25	27	465	148	18	246	51
Peak Hour Factor	0.82	0.82	0.82	0.77	0.77	0.77	0.82	0.82	0.82	0.74	0.74	0.74
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	195	225	36	230	247	49	67	538	445	47	414	86
Arrive On Green	0.11	0.15	0.15	0.13	0.17	0.17	0.04	0.29	0.29	0.03	0.28	0.28
Sat Flow, veh/h	1767	1552	249	1767	1498	295	1767	1856	1534	1767	1483	308
Grp Volume(v), veh/h	106	0	195	168	0	152	27	465	148	18	0	297
Grp Sat Flow(s),veh/h/ln	1767	0	1802	1767	0	1792	1767	1856	1534	1767	0	1791
Q Serve(g_s), s	2.7	0.0	5.0	4.4	0.0	3.7	0.7	11.4	3.6	0.5	0.0	6.9
Cycle Q Clear(g_c), s	2.7	0.0	5.0	4.4	0.0	3.7	0.7	11.4	3.6	0.5	0.0	6.9
Prop In Lane	1.00		0.14	1.00		0.16	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	195	0	261	230	0	296	67	538	445	47	0	499
V/C Ratio(X)	0.54	0.00	0.75	0.73	0.00	0.51	0.40	0.86	0.33	0.38	0.00	0.59
Avail Cap(c_a), veh/h	993	0	1388	993	0	1381	956	1777	1469	956	0	1715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	19.7	20.1	0.0	18.3	22.6	16.2	13.4	23.0	0.0	15.0
Incr Delay (d2), s/veh	0.9	0.0	1.6	1.7	0.0	0.5	1.5	1.7	0.2	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.7	1.6	0.0	1.3	0.3	3.6	1.0	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.3	21.7	0.0	18.8	24.0	17.8	13.6	24.9	0.0	15.4
LnGrp LOS	C	A	C	C	A	B	C	B	B	C	A	B
Approach Vol, veh/h		301			320			640			315	
Approach Delay, s/veh		21.2			20.4			17.1			15.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	19.9	10.4	12.4	5.9	19.4	9.4	13.3
Change Period (Y+Rc), s	4.1	6.0	4.1	5.4	4.1	6.0	4.1	5.4
Max Green Setting (Gmax), s	26.0	46.0	27.0	37.0	26.0	46.0	27.0	37.0
Max Q Clear Time (g_c+I1), s	2.5	13.4	6.4	7.0	2.7	8.9	4.7	5.7
Green Ext Time (p_c), s	0.0	0.4	0.1	0.3	0.0	0.3	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

APPENDIX L

PHASE 5 BIOLOGICAL RESOURCES ASSESSMENT

CEMEX CACHE CREEK MINE
PHASE 5 AREA

Biological Resources Survey and Assessment

Project
1147 CMX

Zentner Planning and Ecology
155 Filbert Street, Suite 206
Oakland, CA 94607

Prepared for:
CEMEX

Date Issued:
July 12, 2022

I. INTRODUCTION

A. Purpose

Zentner Planning and Ecology completed surveys for special status plant and wildlife species and habitats that have the potential to occur on the renumbered Phase 5 area of Cache Creek in Yolo County, CA. The surveys were required per Condition 12 of the new County Conditions of Approval as detailed in a letter from the County to Cemex with the subject titled, *Approval of Minor Modification (ZF #2022-0037) for CEMEX Mining and Reclamation Project (ZF #95-093)* and dated May 10, 2022. The surveys focused on the entire Phase 5 area with special attention to the Interim Dry Mining Area.

B. Location and Site Description

The CEMEX Cache Creek Mine (sometimes referred to as the Madison Quarry or Madison Plant) is an active sand and gravel mining operation on between Highway 16 and Cache Creek. The renumbered Phase 5 area is an agricultural field located in the southeastern portion of the site. The site is also located just south of the Phase 4 area, which is currently being actively mined. See **Figure 5** from Compass land Group.

Photo 1: View of the agricultural field and crops currently in production, facing south. July 6, 2022

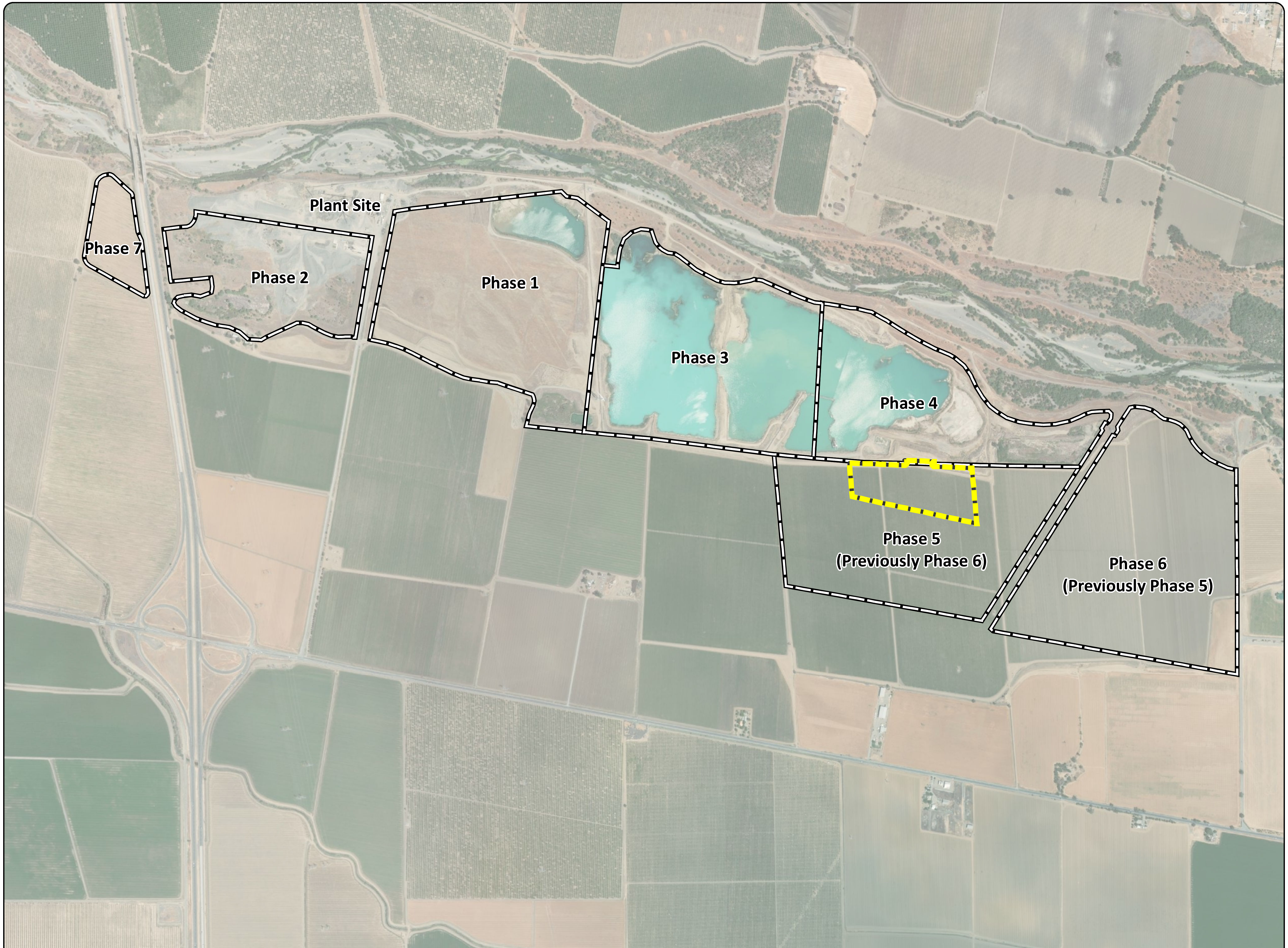


Figure 5

Substitution of Phase 5 and 6

CEMEX Cache Creek
Yolo County, California

Legend:

- Rec Plan Phase
- Interim Dry Mining Area

4/25/2022

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 500 1,000 2,000 Feet

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

Prepared by: Sage Thurmond, Compass Land Group
3140 Peacekeeper Way #102, McClellan Park, CA 95652

COMPASS LAND GROUP

C. Site Conditions

The Phase 5 site is an agricultural field. Currently the field is in cucumber and tomato production and is actively being worked and maintained. Dirt access roads surround the field and provide access through portions of the field as well as dividing the crops. No trees or shrubs are located on the site.

Photo 2: View of the northern Phase 5 area with crops and access road, facing west.
July 6, 2022

II. METHODS AND RESULTS

A. Methods

A survey of the site was conducted on July 6, 2022 by Chief Ecologist Sean Micallef and Senior Biologist Emily Mathews of Zentner Planning and Ecology.

Surveys were completed by walking the entire project site and adjacent areas. All observed wildlife species and plant taxa were noted and recorded. Particular attention was paid to any areas that would be or had the potential to be impacted by the project development. The site was specially surveyed for the presence of any potential special status wildlife and plant species, especially those noted in previous biological reports for the area.

The entire property, including this Phase 5 area, was previously reviewed as part of the Cache Creek Mine, Biological Resources Update (Zentner Planning and Ecology, February 2018).

B. Results

No special status species were observed on the site or are expected to occur at the site. The site is an active agricultural field. Besides the field crops, only a handful of weedy plant species were observed on the site. These species include, devils claw (*Proboscidea louisianica ssp. louisianica*), Powell's amaranth (*Amaranthus powellii*), and white goosefoot (*Chenopodium album*).

Outside of a common western fence lizard (*Sceloporus occidentalis*) only bird species were observed on or flying over the site. These bird species include house finch (*Haemorhous mexicanus*), American crow (*Corvus brachyrhyncos*), scrub jay (*Aphelocoma californica*) red-tail hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). In addition to these birds, a Swainson's hawk (*Buteo swainsoni*) was also observed flying over the site. As noted in the 2018 Updated Biological report, while Swainson's hawks are commonly observed flying over and foraging on the property, they have not been observed nesting on the site. It was also noted that the overall mining project will not impact any new Swainson's hawk foraging habitats that were not previously analyzed and mitigated for in the 1996 Solano EIR and Existing Entitlements. Finally, the Phase 5 area contains no trees or other viable Swainson's hawk nesting habitat on or adjacent to the site.

III. SUMMARY

No special status species were observed on, or are expected to occur, at the Phase 5 project site.